

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO**

PROCEEDING NO. 19R-0654E

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IN THE MATTER OF THE PROPOSED AMENDMENTS TO RULES REGULATING  
ELECTRIC UTILITIES, 4 CODE OF COLORADO REGULATIONS 723-3, RELATING  
TO INTERCONNECTION PROCEDURES AND STANDARDS.

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**RECOMMENDED DECISION OF  
ADMINISTRATIVE LAW JUDGE  
STEVEN H. DENMAN  
AMENDING AND ADOPTING RULES**

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Mailed Date: November 5, 2020

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**I. STATEMENT**

**A. Procedural History.**

1. On November 25, 2019, the Colorado Public Utilities Commission issued a Notice of Proposed Rulemaking (NOPR) to amend the rules governing Interconnection Standards and Procedures (Interconnection Rules) within the Commission’s Rules Regulating Electric Utilities, 4 *Code of Colorado Regulations* (CCR) 723-3.<sup>1</sup> This NOPR followed the issuance of a previous NOPR in Proceeding No. 19R-0096E,<sup>2</sup> which initially included the Interconnection Rules now the subject of this rulemaking proceeding. By Decision

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<sup>1</sup> Decision No. C19-0951 (issued on November 25, 2019).

<sup>2</sup> See Paragraph 23 at pages 8 and 9 of Decision No. C19-0951.

No. C19-0822-I (issued October 7, 2019), the Commission severed the Interconnection Rules from further consideration in the ongoing rulemaking in Proceeding No. 19R-0096E.<sup>3</sup>

2. This NOPR proposed substantive changes to the Interconnection Rules. In the NOPR, the Commission noted that, “The Interconnection Rules are presently located within the Renewable Energy Standard Rules (RES Rules) at 4 CCR 723-3-3667 *et seq.* This NOPR proposes to move the Interconnection Rules to a new standalone section within 4 CCR 723-3, comprising Rules 4 CCR 723-3-3850 *et seq.*”<sup>4</sup>

3. The Commission noticed the proposed rules, provided with Decision No. C19-0951 in legislative (*i.e.*, with strikeouts and underlines) format and in final format, available to the public through the Commission's Electronic Filings (E-Filings) system.

4. The NOPR adopted a schedule for filing comments and invited interested participants to file initial comments no later than January 7, 2020 and to file reply comments no later than January 21, 2020. A public rulemaking hearing was scheduled for February 3, 2020 at 9:00 a.m. The Commission referred this matter to an Administrative Law Judge (ALJ) to preside over rulemaking hearings and for the issuance of a recommended decision.<sup>5</sup> The proceeding was subsequently assigned to the undersigned ALJ.

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<sup>3</sup> Issuance of the first NOPR in Proceeding No. 19R-0096E was preceded by an investigation into rulemaking pursuant to § 24-4-103(2), C.R.S. (an outreach process), in which jurisdictional electric utilities and other interested persons submitted comments regarding potential changes to the Interconnection Rules and proposed amendments to the Commission. *See* Proceeding No. 17M-0694E. Before issuing the NOPR in the instant Proceeding, the Commission made many revisions to the proposed Interconnection Rules, addressing statutory changes and comments of participants in Proceeding No. 19R-0096E. *See* Decision No. C19-0951, Paragraph 1 at page 2.

<sup>4</sup> *Id.* Unless appearing in a quote, as in the above Paragraph, citations to rules in this Decision will use the form of citation to administrative rules required by the Commission Standards Manual (2016).

<sup>5</sup> Decision No. C19-0951, Ordering Paragraphs II.A.2 – 6 at pages 20 and 21.

5. On January 7, 2020, initial comments were filed by the City and County of Denver (Denver), the Colorado Energy Office (CEO), the Colorado Rural Electric Association (CREA), the Colorado Solar and Storage Association (COSSA) and the Solar Energy Industries Association (SEIA), Public Service Company of Colorado (Public Service), and Western Resource Advocates (WRA).

6. On January 21, 2020, reply comments were filed by Black Hills Colorado Electric, LLC (Black Hills), COSSA and SEIA, Public Service, SunShare, LLC (SunShare), Vote Solar, and WRA. On January 22, 2020, reply comments were filed by CEO and CREA. On January 31, 2020, public comments were filed by Pivot Energy.

7. Pursuant to the NOPR, the public rule-making hearing was held on February 3, 2020. Oral comments were presented by representatives of Public Service, CEO, COSSA and SEIA, Black Hills, and SunShare. The Participants at the rule-making hearing requested time before filing post-hearing comments within which to attempt to negotiate consensus rules.<sup>6</sup> The ALJ agreed, and by Bench Order, the ALJ set March 4, 2020, as the due date for Participants to file post-hearing comments.

8. On March 2, 2020, COSSA and SEIA filed an Unopposed Motion for an Extension of Time, seeking an extension of time to March 20, 2020 for Participants to file post-hearing comments.<sup>7</sup> Decision No. R20-0134-I (issued on March 2, 2020) extended the due date for Participants to file post-hearing comments to and including March 20, 2020.

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<sup>6</sup> Interested persons, government agencies, or organizations that filed written comments or made oral comments at the public rule-making hearing will be referred to in this Decision as “Participants.”

<sup>7</sup> Counsel for COSSA and SEIA reported that Public Service, Black Hills, WRA, CREA, CEO, and Vote Solar supported the requested extension, while Denver had no objection, and SunShare took no Position. Thus the motion was unopposed.

9. Joint Consensus Interconnection Rules (Consensus Rules) were filed on March 20, 2020, by Public Service, Black Hills, COSSA and SEIA, and WRA. The Consensus Rules included consensus definitions for certain terms in proposed Rule 3852 and consensus language for proposed Rules 3853, 3854, and 3855.

10. On March 20, 2020, post-hearing comments were filed individually by Public Service, WRA, Black Hills, COSSA and SEIA, and CEO.

11. Pursuant to § 24-4-103(4)(d), C.R.S., an administrative agency conducting a rulemaking proceeding shall adopt the rules within “one hundred eighty days after the last public hearing on the proposed rule[s].” In the case of this Proceeding that deadline was July 31, 2020.

12. By the spring of 2020, the record in this Proceeding contained a large volume of written and oral comments, as well as extensive post-hearing comments and numerous revisions to the proposed rules. In Decision No. R20-0423-I (issued on June 5, 2020), the ALJ found that holding an additional rulemaking hearing was needed to gather additional information from Participants and to help clarify certain issues, so that the ALJ could fully evaluate and consider the arguments and revised rules proposed by the Participants. Decision No. R20-0423-I posed four specific questions for Participants to answer and scheduled an additional, remote rulemaking hearing for Monday, July 27, 2020 at 9:30 a.m. If they wished, Participants could also file additional written comments no later than July 20, 2020.<sup>8</sup>

13. Additional written comments were filed on July 20, 2020 by CEO, WRA, Public Service, Black Hills, CREA, and COSSA and SEIA.

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<sup>8</sup> See Decision No. R20-0423-I, Paragraphs 10, 11, and 12 at page 4. Because of the novel coronavirus (COVID-19) pandemic and consistent with Colorado emergency declarations and public health advisories to prevent the spread of COVID-19, the ALJ ordered that the rulemaking hearing would be held remotely. *Id.*, Paragraph 13 at page 5.

14. The additional rulemaking hearing was held on July 27, 2020 as scheduled. Oral comments were presented by representatives of COSSA and SEIA, CEO, WRA, SunShare, Public Service, and Black Hills.

**B. The Decision and Amendments.**

15. In rendering this Recommended Decision, the ALJ has reviewed the record in this Proceeding and has evaluated and considered all written and oral comments submitted by the Participants, even if such comments are not specifically addressed in this Decision. Moreover, the ALJ has considered all arguments presented by the Participants, including those arguments not specifically addressed in this Decision.

16. This Decision does not specifically address every comment or every proposed amendment to the Interconnection Rules, as some were clarifications and edits to existing language or format changes and many were not contested. The Consensus Rules submitted by some of the Participants have been generally adopted with minimal changes to correct grammar, to add clarity, and for consistency with other adopted rules. All revisions and amendments to the Interconnection Rules are recommended for adoption and are incorporated into Attachment A to this Decision, which is in legislative (redline and strikeout) format, while Attachment B to this Decision is a clean version of the amended Interconnection Rules.<sup>9</sup> This Decision primarily addresses the major proposed amendments to the Interconnection Rules that were debated in written comments and during the rulemaking hearings.

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<sup>9</sup> Attachment A to Decision No. C19-0951 struck all the current Interconnection Rules and showed the proposed rules in redline format. Attachment A to this Decision starts with those redlines, and then shows the recommended revisions and amendments to the rules in redline format.

17. Being fully advised in this matter and consistent with the findings and discussion below, in accordance with § 40-6-109, C.R.S., the ALJ now transmits to the Commission the record in this Proceeding along with a written recommended decision, order, and amended Interconnection Rules.

## II. FINDINGS AND DISCUSSION

### A. The NOPR.

18. The statutory authority for the rules proposed here is found at §§ 24-4-101 *et seq.*, 40-2-124, 40-2-130, 40-2-201 *et seq.*, and 40-4-101, C.R.S.

19. The Commission established interconnection standards in 2005 by adopting, in large part, the Federal Energy Regulatory Commission's (FERC) rules for Small Generator Interconnection Procedures (SGIP). The FERC's SGIP procedures were most recently amended in 2013 by FERC Order No. 792<sup>10</sup> and have been significantly revised since the Colorado rules were enacted in 2005. The Commission issued Decision No. C17-0878 on October 26, 2017, in Proceeding No. 17M-0694E to solicit proposals to update its Interconnection Rules "to conform to standards, new interconnection rules, and guidelines promulgated by the FERC,"<sup>11</sup> including those updated standards.

20. The first NOPR in Proceeding No. 19R-0096E addressed the requirements of Senate Bill (SB) 18-009, which requires the Commission to adopt rules allowing the installation, interconnection, and use of energy storage systems.<sup>12</sup> Specifically, SB 18-009 requires the Commission to incorporate the following principles into the rules: (1) barriers to the installation,

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<sup>10</sup> FERC Order No. 792, available at <https://www.ferc.gov/whats-new/comm-meet/2013/112113/E-1.pdf>.

<sup>11</sup> Decision No C17-0878, Paragraph 19 at page 7. *See* Decision No. C19-0951, Paragraphs 12 and 22 at pages 5 and 8.

<sup>12</sup> SB 18-009 is codified at § 40-2-130, C.R.S. (2019).

interconnection, and use of customer-sited energy storage systems in Colorado should be limited; (2) Colorado consumers of electricity have a right to install, interconnect, and use energy storage systems on their property without unnecessary restrictions or regulations and without discriminatory rates or fees; (3) utility approval processes and required interconnection reviews shall be simple, streamlined, and affordable for customers; and (4) utilities shall not require the installation of customer-sited meters in addition to a single net energy meter for purposes of monitoring energy storage systems; except that the Commission may authorize the requirement of metering for certain large energy storage systems, as determined by the Commission.

21. As the Commission proposed in Proceeding No. 19R-0096E and in the NOPR in this Proceeding, the amended Interconnection Rules adopted in this Decision move the Interconnection Rules to a standalone section in the Rules Regulating Electric Utilities, 4 CCR 723-3. Consistent with the NOPR, the amendments propose to: (1) introduce a provision that addresses energy storage, pursuant to SB 18-009; (2) reorganize to consolidate provisions that apply generally to all interconnection requests and to separate out specific provisions that apply only to the Level 1 Process for certified inverter-based installations no larger than 10 kW; and (3) various other modifications to bring the rules up-to-date with recent FERC policies and IEEE standards.<sup>13</sup>

22. When an adopted rule incorporates a Commission rule or an IEEE standard by reference, the requirements of the State Administrative Procedure Act (APA) have been followed in this Decision. The APA requires that the rule identify the citation and date of the incorporated material and state “that the rule does not include any later amendments or editions” of the

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<sup>13</sup> Decision No. C19-0951, Paragraphs 6 – 8 at pages 3 and 4.



incorporated material. (*See* § 24-3-103(12.5)(a)(II), C.R.S.) The rule must also state the address of the agency where the incorporated material is available for public inspection.

23. The amended Interconnection Rules adopted in this Decision satisfy the requirements in SB 18-009, particularly that the Commission “adopt rules allowing the installation, interconnection, and use of energy storage systems by customers of utilities.”

**B. Adopted Rule Amendments.**

**1. Rule 3850, Applicability.**

24. Proposed Rule 3850 derives from the introduction to existing Rules 3850 through 3858. The rule adopts current terms for “small generation” as used throughout the Commission’s Electric Rules, 4 CCR 723-3, and references certain updates to FERC policies. Public Service proposed to clarify that the interconnection procedures and standards apply to all interconnection resources not subject to the jurisdiction of FERC. CEO agreed with that clarification. COSSA and SEIA recommended that utility-specific guidelines be consistent with the rules and be reviewable by the Commission upon request. Public Service agreed with COSSA and SEIA’s suggestion. COSSA and SEIA and WRA recommended clarification that the Interconnection Rules only apply to electric generation and storage operated in parallel with the utility grid.

25. These recommended changes to Rule 3850 are appropriate and will be adopted. They clarify which distributed energy resource (DER) and interconnection resources will be subject to the Interconnection Rules. Thus, demand response tools and electric vehicles that do not currently operate in parallel and do not export energy will be excluded. The added text also clarifies that the Commission can review utility standards and guidance for consistency when necessary.

## 2. Rule 3851, Overview and Purpose.

26. The first paragraph of proposed Rule 3851 derives from existing Rule 3667(b)(I)(D) without significant modification, while the second paragraph summarizes the purpose of these Interconnection Rules. The second paragraph of Adopted Rule 3851 incorporates revisions to Adopted Rule 3850 clarifying that the rules apply to interconnection resources that operate in parallel with and are connected to an electric utility.

## 3. Rule 3852, Definitions.

27. The proposed Interconnection Rules provide several new definitions to integrate energy storage technologies into the rules, in accordance with SB 18-009, and several revised definitions to promote clarity and effectiveness of the rules. Other revisions simplify or update the definitions. Consensus Rule definitions were adopted for export capacity, highly seasonal circuit, inadvertent export, minor modifications, operating mode, and party or parties. The definitions adopted in this Decision apply to Rules 3850 through 3859, 4 CCR 723-3.

## 4. Rule 3852(d), Energy Storage System.

28. The NOPR introduced a definition for an “energy storage system,” consistent with SB 18-009. Commenters suggested that energy storage is not an electric generation source. Another commenter suggested that an energy storage system may be a utility-sited system, not just a customer-sited system. Hence, the adopted definition starts with the statutory definition in § 40-2-130(2)(a), C.R.S., and then adds certain clarifying language suggested by commenters.

## 5. Rule 3852(l), Interconnection Resource.

29. CEO recommended a separate definition of Interconnection Resource in order to clarify which DERs are subject to the interconnection procedures and standards in these rules and to avoid confusion if all DERs are subject to other Commission rules, such as other electric

rules or distribution system planning rules. This Decision adopts a new definition of Interconnection Resource in Rule 3852(l), and adds language to clarify which interconnection resources fall within the definition. When appropriate throughout the adopted Interconnection Rules, the term “DER” has been changed to “interconnection resource.”

**6. Rule 3852(m), Interconnection Tariffs.**

30. COSSA and SEIA argued that terms in the proposed definition were too broad and could allow utilities to craft interconnection deadlines and procedures different from those contained in the Interconnection Rules. They proposed to require fees in interconnection tariffs to be “reasonable and verifiable” and to strike the words “and deadlines and procedures.”

31. These rules will establish interconnection deadlines and procedures, and the ALJ agrees that to allow utilities the option to establish lengthier deadlines and different procedures in their interconnection tariffs would be problematic and could be confusing for interconnection customers. The words “and deadlines and procedures” will be stricken from the definition.

32. The phrase “reasonable and verifiable” is also problematic. When tariffs are filed, the Commission determines whether fees included in the tariffs are just and reasonable. As part of the Commission’s determination on whether tariffed fees are just and reasonable – that is, should the tariffs be set for hearing and suspended or allowed to become effective by operation of law – the Advisory Staff and Commissioners necessarily verify whether the filing supports a conclusion that the fees are just and reasonable. If the Commission determines that the tariff and fees are not just and reasonable, the tariff is set for hearing and suspended.<sup>14</sup> Hence, it is redundant and unnecessary to include in the definition a requirement that fees must be

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<sup>14</sup> See § 40-6-111, C.R.S.

“reasonable and verifiable.” Moreover, in this context does the word “verifiable” mean something more than “just and reasonable?” If it does, the word “verifiable” is vague and overbroad. Therefore, the definition will strike the phrase “reasonable and verifiable.”

#### **7. Rules on “Large Utility” and “Small Utility.”**

33. COSSA and SEIA proposed new definitions for “Large” and “Small” utilities where the differentiation was serving either more or less than 75,000 meters within the utility’s service territory. This proposal, they argued, would address concerns raised by some smaller electric utilities that have fewer resources to process interconnection requests. Public Service disagreed and asserted that the number of 75,000 meters is arbitrary.

34. The ALJ does not agree that the rules should differentiate between large and small utilities. Based upon the record in this rulemaking, the ALJ agrees that the selection of 75,000 meters as the dividing line between large and small utilities is arbitrary. The timeframes, deadlines, and procedures in these Interconnection Rules should be appropriate for smaller utilities and larger utilities alike. The language adopted for Rule 3853(p), Interconnection Tariffs, makes it unnecessary to adopt different interconnection rules for large versus small utilities. When appropriate, larger utilities could propose shorter timeframes in their interconnection tariffs.

#### **8. Rule 3852(n), Material Modification.**

35. COSSA and SEIA proposed that the definition of material modification includes additional exemptions. Public Service opposed COSSA/SEIA’s inclusion of the direct current

(DC) / alternating current (AC) ratio (DC/AC ratio) as an exclusion within material modifications. Public Service argued that:

While a change in DC/AC ratio does not change the maximum export, use of a DC/AC ratio above 1.2 more significantly impacts the duration of that maximum export. [This use of a DC/AC ratio above 1.2 would change] the technical evaluation of the maximum export against minimum load, which is time-of-day dependent. This also changes evaluations under PV Watts to the 120 percent rule, as the default DC/AC ratio within PV watts is 1.2.<sup>15</sup>

36. The added exemptions proposed by COSSA and SEIA would not have material impacts within the intent of the definition, except for a change in DC/AC ratio. The ALJ will adopt the changes proposed by COSSA and SEIA, except for the final exemption regarding the DC/AC ratio.

#### **9. Rule 3852(x), Transmission System.**

37. The proposed Interconnection Rules did not contain a definition of transmission system. Some commenters recommended using the same definition as “transmission facilities” from the existing Electric Utility Rules.<sup>16</sup> The ALJ believes that using the same definition for two different concepts would merely be confusing. Moreover, the definition of “transmission facilities” includes the term “transmission system,” and it is unacceptable to define a term by using the term itself in the definition. COSSA and SEIA proposed a very simple definition.<sup>17</sup> Public Service recommended adopting the North American Electric Reliability Corporation (NERC) definition for “Transmission” with a slight modification.

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<sup>15</sup> Reply Comments of Public Service Company of Colorado, page 11.

<sup>16</sup> See Rule 3001(kk) of the Rules Regulating Electric Utilities, 4 CCR 723-3 (2020). The Electric Utility Rules do not contain a definition of “transmission system.”

<sup>17</sup> “Transmission system” means a utility’s higher voltage network that transports bulk power over longer distances than the distribution system. COSSA/SEIA Opening Comments, Attachment A, pages 3 and 4.

38. The ALJ concludes that the definition proposed by Public Service, derived from NERC's definition of transmission is the most suitable for purposes of these Interconnection Rules. NERC's definition is closer to an industry standard than other proposed definitions of transmission system.<sup>18</sup>

#### **10. Rule 3853, General Interconnection Procedures.**

39. Provisions that govern all interconnection requests are currently spread throughout Existing Rule 3667. The NOPR consolidated the generally applicable provisions under proposed Rule 3853, and this Decision will do the same.

40. The NOPR used 20kW as the nameplate rating demarcation point for smaller interconnection resources and also did not explain whether the resource was DC or AC, *e.g.* in proposed Rules 3853 and 3854. Based upon the record in this proceeding, the nameplate rating demarcation point will be increased to 25 kW, which is consistent with interconnection procedures adopted in Arizona and Minnesota. For clarity, the interconnection resources will be identified as AC.<sup>19</sup>

#### **11. Rule 3853(a), Pre-application Procedures.**

41. Proposed Rule 3853(a)(IV) includes a new option for customers to request a pre-application report. The intent of the proposed language is to expedite the implementation of the formal interconnection requests by customers. In addition, the proposed rule sets a maximum fee for a pre-application report at \$300. CREA and Black Hills recommended that the \$300 fee

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<sup>18</sup> Decision No. R20-0423-I also sought additional comments on the terms "mainline" and "Witness Test," which were not defined in the NOPR rules. After considering Supplemental Comments filed by Participants, the ALJ has determined that the rules do not require formal definitions of these terms.

<sup>19</sup> There is no DC electricity on the utility grid in Colorado, except for high voltage DC-to-AC conversion facilities at state borders. The use of AC makes it clear and consistent with all other generation on the utility grid.

be deleted and replaced with a fee to be set in a utility's interconnection tariff. Some commenters suggested to add language to Rule 3953(a)(IV) to increase transparency in the pre-application process, including that, when a utility cannot complete a pre-application report due to a lack of data, the utility must explain what data is not available and why.

42. The ALJ agrees with CREA and Black Hills that the \$300 fee should be replaced with a fee to be set in a utility's interconnection tariff under proposed Rule 3853(p). The ALJ also will adopt language in Rule 3953(a)(IV) and Rule 3953(a)(IV)(D) to increase transparency in the pre-application report.

43. COSSA and SEIA argued that proposed Rule 3854(a)(IV)(E) should require that the utility provide the limiting conductor's ratings and length from the proposed point of interconnection to the distribution substation. Public Service opposed this suggestion and asserted that it might require setting up and performing circuit traces within the geographical information system, which could add cost and more time to the pre-application process. The ALJ agrees that the rule should not add cost and more time to the pre-application process, and the adopted rule will not require conductor length and ratings to be provided.

## **12. Rule 3853(d), Interconnection Requests.**

44. Proposed Rules 3853(d)(I) through (V) would require new interconnection requests to be submitted when there are significant modifications to the proposed interconnection resource, but new requests would not be required for minor modifications.

45. CREA recommended that the interconnection queue order be based on the date an application is deemed complete rather than the date it is first received. The ALJ will adopt this revision, which should ensure that completed applications will be prioritized over incomplete applications, and could encourage ICs to be more attentive to their interconnection requests.

46. COSSA and SEIA propose additional specificity in proposed Rule 3853(d)(VI) to create a process for evaluating modifications to interconnection requests. These changes would explicitly define a dispute resolution process for when an interconnection customer and a utility may disagree about what modifications are material. COSSA and SEIA also proposed to allow smaller Level 1 applicants to demonstrate site control by signing the interconnection application. Public Service noted that in its Community Solar Gardens (CSGs) program, site control is considered part of the scoring criteria for CSGs in current Requests for Proposals, but it does not prohibit a new site from being selected later, unless the site was chosen for location-related reasons.

47. The ALJ concludes that these revisions will add transparency and will make more information available to interconnection customers. Adding a process for evaluating modifications to interconnection requests will also be helpful for both the utilities and the ICs. These suggested revisions will be adopted.

### **13. Rule 3853(f), Interconnection Agreements.**

48. Proposed Rule 3853(f)(I) is a new provision clarifying that an interconnection agreement is required when an interconnection customer's interconnection resource operates in parallel with the utility's system. Proposed Rule 3853(f)(III) adds language that brings the process to a close when the utility provides an executed agreement to the interconnection customer. Proposed Rule 3853(f)(IV) adds a provision to ensure that the interconnection customer abides by rules, tariffs, and the interconnection agreement. Proposed Rule 3853(f)(V) adds provisions to clarify that the interconnection customer is responsible for the costs of utility upgrades or facilities that are necessary for the interconnection, but not required to serve other



customers, and that the utility must identify such upgrades and facilities up front in the interconnection agreement.

49. COSSA and SEIA argued that Rule 3853(f)(V) requires an interconnection customer to be responsible for the utilities' reasonable and necessary cost of upgrades necessary to interconnect the resource. However, COSSA and SEIA noted that some utilities are now issuing "no capacity notices" and foreclosing interconnection applications at particular popular sites. COSSA/SEIA propose revisions to this rule to prohibit utilities from refusing to study the costs of upgrades to facilitate interconnection, so long as the interconnection customer is willing to pay for the necessary studies. SunShare agreed with COSSA and SEIA's revision to prohibit utilities from issuing "no capacity notices."<sup>20</sup>

50. Public Service disagreed with COSSA and SEIA's proposed redlines requiring fixed costs for interconnection facilities because it would be, at times, inconsistent with the principle of cost causation. Regarding "no capacity notices," Public Service asserted that since it filed Closing Comments on March 20, 2020, it has been working with COSSA and SunShare to resolve issues relating to no capacity notices.

51. The ALJ agrees with COSSA and SEIA and SunShare that utilities should not be allowed to refuse to study the costs of upgrades to facilitate interconnection, so long as the interconnection customer is willing to pay for the necessary studies. The ALJ was encouraged to learn that Public Service has been working with COSSA and SunShare to resolve the issues related to no capacity notices. The proposed revisions to Rule 3853(f)(IV) will be adopted.

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<sup>20</sup> SunShare suggested moving COSSA and SEIA's revision from Rule 3853(f) to Rule 3853(e)(V), regarding evaluating Interconnection Agreements. However, the ALJ rejects to moving this language to Rule 3853(e)(V), because this revision relates to the responsibility of interconnection customers to pay certain utility costs, not to the evaluation of interconnection requests.

**14. Rule 3853(g), Reasonable Efforts.**

52. Proposed Rule 3853(g) is the same as existing Rule 3667(e)(I). COSSA and SEIA recommend that proposed Rule 3853(g) be modified to require that a utility notify both the interconnection customer and the Commission when the utility is unable to meet a deadline. COSSA and SEIA believe such a requirement would encourage utilities to meet deadlines and would provide the Commission with information for future enforcement decisions, such as assessing civil penalties when utilities miss deadlines.

53. Public Service asserts that any reporting to the Commission should be reasonable and combined with existing reporting already required to avoid unnecessary duplication and administrative burden.

54. The ALJ agrees with COSSA and SEIA in part. Rule 3853(g) will be modified to include a reciprocal notification requirement when either the utility or the interconnection customer is unable to meet a deadline in the Interconnection Rules. The proposed requirement that the utility must notify the Commission when it fails to meet a deadline is unnecessary, since adopted Rule 3853(q), to be discussed *infra*, will require utilities to report a significant amount of information regarding interconnection requests, including processing times for various activities under the Interconnection Rules.

55. The proposed notification requirement, if adopted, could also be unworkable as a practical matter. As described in comments, this notification proposal has no procedures or process connected to it. Apparently, such notifications would be filed with the Commission, but not in an existing proceeding. What sort of proceeding would this notification be? As an initial filing, the Commission's Administrative Staff would assign a proceeding number to every such notification. Will the Commission be required to give notice of the filing? What happens then to

the proceeding?<sup>21</sup> To adopt such a notification requirement could create more confusion and questionable expense of the resources of the Commission and its Staff, the utilities, and interconnection customers without advancing the goals of the proposal. Moreover, adopted Rule 3853(h), to be discussed *infra*, will set forth a dispute resolution process tailored to the interconnection process. In the event an interconnection customer believes that Rule 3853(h) is inadequate to resolve its dispute with a utility, the Rules of Practice and Procedure contain ample, workable, and time-tested procedures for bringing disputes between regulated utilities and customers before the Commission and resolving them.<sup>22</sup>

#### 15. Rule 3853(h), Disputes.

56. Proposed Rule 3853(h) is the same as Existing Rule 3667(e)(II). COSSA and SEIA recommended that proposed Rule 3853(h) be modified to allow Commission Staff (Staff) to assign a dispute resolution service if the parties cannot agree upon one themselves. COSSA and SEIA's proposed Rule 3853(h)(IV) would prohibit utilities from recovering from ratepayers the costs to resolve interconnection disputes. They argue that if utilities are reimbursed for any dispute costs they have no incentive to resolve disputes quickly, while making utility shareholders pay for dispute costs puts pressure on utilities to avoid such costs or to resolve disputes expeditiously.

57. CEO recommended that proposed Rule 3853(h) be modified by designating an interconnection "ombudsperson" to help track and facilitate the resolution of disputes.

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<sup>21</sup> See e.g., Rules 1202 (Pleadings), 1206 (Commission Notice), 1211 (E-Filings System), 1300 (Commencement of Proceedings) of the Rules of Practice and Procedure, 4 CCR 723-1 (2020).

<sup>22</sup> See e.g., Rules 1301 (Informal Complaints and Mediation), 1302 (Formal Complaints and Show Cause Proceedings), and 1308 (Responses: Generally – Complaints) of the Rules of Practice and Procedure, 4 CCR 723-1 (2020).

58. Public Service noted that the integrated nature of a utility's power system, in order to ensure reliability during both normal operations and in response to disturbances, can be highly technical and unique to a system. Public Service disagreed with COSSA and SEIA's recommendation, asserting that mutual agreement for the selection of a dispute resolution service is essential to ensure that this complexity can be fully recognized and represented within dispute resolution.

59. Black Hills strongly disagreed with COSSA and SEIA's proposal that investor-owned utilities should be precluded from recovering any costs associated with interconnection disputes. Black Hills argued that their proposal: (1) failed to provide any legal argument why a utility's interconnection services are not prudently-incurred costs, recoverable from customers; (2) failed to assess any impact on provision of safe and reliable service if utilities were precluded from recovering their costs for interconnections; and (3) inappropriately attempted to punish investor-owned utilities, as compared to other Colorado utilities, without any basis.

60. With the substantial utility reporting requirements (*see* adopted Rule 3853(q) *infra*), the ALJ concludes that the proposed modifications to Rule 3853(h) are not necessary. The new reporting requirements should provide valuable background information to the Commission related to issues surrounding interconnections. There is no competent objective evidence in the record to support COSSA and SEIA's argument that prohibiting a utility from recovering dispute resolution costs will provide any real incentive to avoid such disputes or to resolve them quickly. The costs to resolve such disputes are recognized operating expenses recoverable from

ratepayers, just like a utility's costs of regulatory litigation are recovered from ratepayers.<sup>23</sup> This proposal also appears to prejudge which party should prevail in an interconnection dispute before any dispute resolution process is started or litigated.

61. CEO's proposal to designate an ombudsperson to help track and facilitate the resolution of interconnection disputes is also unneeded. The proposal had no procedure for appointing an ombudsperson, no indication of who would appoint the ombudsperson, and no indication of how it would be funded. The adopted Rule 3853(g) on disputes, existing Commission rules on complaints and mediation, and the competence and experience of the Commission's Staff and Administrative Law Judges are quite sufficient to facilitate the resolution of interconnection disputes.

62. Minor revisions have been made to adopted Rule 3853(h) for clarification.

#### **16. Rule 3853(i), Interconnection Metering.**

63. Proposed Rule 3853(i) is based on existing Rule 3667(e)(III), but the NOPR added a cross-reference to the Commission's proposed new Net Metering Rules, which are still under consideration and have not yet been adopted.<sup>24</sup>

64. Public Service argued that the proposed rule goes beyond SB 18-009, because that Act does not address load metering. Since SB 18-009 does not address load metering, Black Hills agreed with Public Service that the load metering language should be removed.

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<sup>23</sup> See *Mountain States Telephone and Telegraph v. Public Utilities Comm'n.*, 576 P.2d 544, 547 (Colo. 1978) ("On the basis of the constitutional and statutory grant of legislative authority, the PUC has always allowed Mountain Bell to charge off as a proper operating expense attorneys' fees and legal costs incurred in its efforts before the PUC to increase rates.")

<sup>24</sup> See Decision No. C20-0661-I (issued on September 15, 2020) in Proceeding No. 19R-0096E, which severed the Renewable Energy Standard and Net Metering Rules from the other proposed electric utility rules. Because the Net Metering Rules have not been finalized and adopted, the reference in Rule 3853(i) to the Net Metering Rules has been changed to "other Commission rules."

65. The ALJ agrees with Public Service and Black Hills that SB 18-009 does not address load metering. The ALJ will remove the load metering language from adopted Rule 3853(i).

66. Public Service recommended that the exemption of energy storage systems from additional metering requirements should be lowered from 500 kW to 20 kW, because 500 kW energy storage systems could cause significant impacts on distribution feeder circuits. Public Service argued that visibility is a critical component in grid modernization initiatives, requiring an understanding of the gross generation and load levels in order to plan and to operate a stable grid effectively and efficiently.

67. Black Hills agreed with Public Service that the additional metering exemption threshold should be lowered to 20 kW from 500 kW. For Black Hills, the introduction of energy storage systems on its grid is a new and evolving process, necessitating a measured approach to exempting metering requirements. According to Black Hills, as more information is obtained on the impact of these systems on its grid, raising this metering over time could be appropriate.

68. Based on the record in this rulemaking, the ALJ agrees that the exemption of energy storage systems from additional metering requirements should be lowered from 500 kW to 25 kW AC. (This revision is consistent with revisions of 20 kW to 25 kW in other adopted Interconnection Rules.)

69. CEO noted that Rule 3853(i) contains the phrase “cost effective retail renewable distributed generation.” CEO believed this text is legacy language from the Renewable Energy Standard Rules and is outside the scope and purpose of this interconnection rulemaking.

70. The ALJ agrees with CEO, and the phrase, “cost effective retail renewable distributed generation,” will be removed from the adopted Rule 3853(i).

**17. Rule 3853(o), Insurance.**

71. Proposed Rule 3853(o) derives from existing Rule 3667(e)(XI), but deletes the requirements that interconnection customers must carry liability insurance for bodily injury and that the utility be named as an additional insured, but only implies that interconnection customers pay for the insurance and that insurance coverage be for each occurrence. Under the proposed rule, a utility could only require an applicant to purchase insurance covering “Utility Damages” and with coverage limits less than the existing rule. In the NOPR, the Commission believed that the modifications to the existing insurance rule were consistent with best practices in other states. The NOPR sought comments on whether the proposed insurance provisions are appropriate.<sup>25</sup>

72. Public Service recommended that the insurance levels not be changed significantly at this time. Its concern appears to be that the insurance levels in the existing rule may have already been evaluated and adopted within Xcel operating companies. It proposed adding language to state that the “interconnection customer is not required to provide general liability insurance coverage as part of this agreement.” While Public Service found that the proposed rule provides some flexibility for the interconnection customer, it was concerned that the language was both ambiguous and potentially restrictive on the utilities. Black Hills agreed with Public Service.

73. CREA generally opposed the proposed rule decreasing the required amounts of insurance and specifically opposed eliminating all insurance requirements for inverter-based generating facilities smaller than 1 MW and for non-inverter-based facilities smaller than 50 kW. CREA asserted that the current insurance requirements are appropriate and should not be significantly modified. Black Hills agreed with CREA.

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<sup>25</sup> Decision No. C19-0951, Paragraph 54 at page 13.

74. WRA argued that interconnection customers need not carry insurance to protect the utility or utility equipment, as long properly written interconnection rules are applied rigorously by the utility. The ALJ rejects this argument as without merit, as the stated rationale is illogical and specious. Whether the interconnection rules were written properly or applied rigorously by the utility may be in the eye of the beholder, but in any event could only be determined after damage to utility property has occurred. Such a rule, if adopted, would likely result in more litigation over: (1) whether the interconnection rules were written properly; (2) whether the rules were applied rigorously by the utility; (3) who was liable for any damages to utility property; and (4) if liability is found, the amount of monetary damages. The insurance requirements of adopted Rule 3853(o) are intended to avoid these potential problems.

75. CEO supports proposed Rule 3853(o), and suggested several clarifications and minor edits. First, for non-inverter-based Generating Facilities, no amount or requirement is listed for systems with a nameplate rating of less than 50 kW; explicit clarification here would be beneficial. CEO suggests that the statement “no additional insurance” provides greater clarity than “no insurance,” and recommends this clarification.

76. The ALJ finds that the proposed insurance requirements in Rule 3853(o) are necessary and important to protect interconnection customers, the utilities, utility consumers, and the public interest. The ALJ agrees with the clarifications proposed by CEO. Adopted Rule 3853(o) will also clarify that interconnection customers shall pay for the required insurance coverage and that the required coverages be for each occurrence.

#### **18. Rule 3853(p), Implementation by Tariff.**

77. Proposed Rule 3853(p) would establish requirements for tariff filings from the utilities that set forth certain interconnection fees and deadlines. Tariff filings would



accommodate utility-specific costs and procedures, which were particular concerns for the rural cooperatives in Proceeding No. 19R-0096E, while allowing for appropriate statewide standardization in the provisions set forth in the Interconnection Rules. Specifically, the rule proposed that a tariff be required to address fees, timelines, material modifications, maximum rated capacity, and insurance.<sup>26</sup>

78. COSSA and SEIA opposed proposed Rule 3853(p) and suggested limiting interconnection tariffs to cover only utilities' fees, costs, or charges associated with interconnection applications or other procedures. COSSA and SEIA stressed, however, that any utility specific documents should not circumvent the timelines or procedures in the Interconnection Rules.

79. Public Service was concerned that proposed Rule 3853(p) would elevate into Commission rules, program elements that are now more appropriately handled in program policies and guidelines.

80. Black Hills recommended that Rule 3853(p) be revised to allow utilities to propose appropriate fees for Commissioning Tests (under Rule 3853(j)) in their Commission-approved interconnection tariffs. Black Hills noted that the costs for undertaking Commissioning Tests may differ between utilities. The ALJ agrees for that reason that it is appropriate to include fees for undertaking Commissioning Tests in interconnection tariffs.

81. CEO was concerned that, if certain baselines or parameters were not established in this proceeding, then utility tariff filings will become litigated proceedings addressing these topics, resulting in a patchwork of utility-specific policies.

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<sup>26</sup> Decision No. C19-0951, Paragraph 55 at pages 13 and 14.

82. Adopted Rule 3853(p) is intended to address the large versus small utility versus cooperative electric association issues raised by some commenters, and it will provide flexibility for certain unique electric utilities. The adopted rule also clarifies the information that a utility needs to file in the interconnection tariff.

83. A “Rule” is an administrative “agency statement of general applicability and future effect implementing, interpreting, or declaring law or policy or setting forth the procedure or practice requirements of any agency.”<sup>27</sup> The Commission’s rules set forth general requirements consistent with that definition, while tariffs are utility-specific.<sup>28</sup>

84. In the past, the Commission has adopted rules setting forth general criteria and requirements to be included in tariffs and requiring that utilities file tariffs in compliance with the rules. For example, the Commission’s rules for filing line extension tariffs and gas transportation tariffs followed this process.<sup>29</sup> After the general (and less complex) line extension rules became effective, each electric and natural gas utility was required to file line extension tariffs to comply with the rules.<sup>30</sup> After the first gas transportation rules became effective, each natural gas utility filed gas transportation tariffs to comply with the rules.<sup>31</sup> Thus, adopted Rule 3853(p) is not unusual or unreasonable because it sets forth the general criteria and requirements to be

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<sup>27</sup> See § 24-4-102(15), C.R.S. (2019).

<sup>28</sup> See Rules 1210 of the Rules of Practice and Procedure (Tariffs and Advice Letters), 4 CCR 723-1; Rule 3108 of the Rules Regulating Electric Utilities (Tariffs), 4 CCR 723-3; Rule 4108 of the Rules Regulating Gas Utilities and Pipeline Operators (Tariffs), 4 CCR 723-4.

<sup>29</sup> See *e.g.*, Rule 3210, 4 CCR 723-3, and Rule 4210, 4 CCR 723-4 (line extension); Rules 3303(c), 3304(e), and 3305(d), 4 CCR 723-3, and Rule 4303, 4 CCR 723-4 (meter testing); and Rule 4205, 4 CCR 723-4 (gas transportation).

<sup>30</sup> See *e.g.*, Rule 31 of the Rules Regulating the Service of Electric Utilities, 4 CCR 723-3 (2001); Rule 30 of the Rules Regulating the Service of Gas Utilities, 4 CCR 723-4 (2001).

<sup>31</sup> The first Gas Transportation Rules were adopted on April 17, 1991 and became effective on May 30, 1991. Rule 2.1 of the Gas Transportation Rules, 4 CCR 723-17 (1991), required all Colorado Local Distribution Companies to file tariffs including their rules, regulations, terms, conditions, and rates and charges for gas transportation service.

addressed in interconnection tariffs and requires that utilities file tariffs complying with the Interconnection Rules.

85. If the Commission finds that a utility's interconnection tariff is improper and fails to comply with the Interconnections Rules, the Commission could set the tariff for hearing and suspend its effectiveness; as a result of the hearing process, a just and reasonable interconnection tariff would be established. If the Commission finds that a utility's interconnection tariff is proper and complies with the Interconnections Rules, the Commission could allow the tariff to become effective.<sup>32</sup> CEO was concerned that these tariff filings will become litigated proceedings. However, this process for the Commission to determine just and reasonable tariffs is normal under Colorado's file-and-suspend scheme for regulating public utility rates, charges, classifications, practices, rules, and regulations. As an independent regulatory agency, this Commission is quite experienced in and accustomed to setting utility filings for hearings when necessary and then rendering a fair decision that adjudicates just and reasonable results.

#### **19. Proposed Rule 3853(q), Reporting.**

86. The NOPR did not propose a rule on reporting requirements. CEO recommended that the Commission adopt, as proposed Rule 3853(q), the reporting framework provided in the Interstate Renewable Energy Council's (IREC's) Model Interconnection Procedures with several modifications.<sup>33</sup> IREC recommends that each utility should report the relevant interconnection data to the Commission two times per year, including relevant totals for both the year and the

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<sup>32</sup> See § 40-6-111, C.R.S. (2019).

<sup>33</sup> Decision No. R20-0423-I requested additional comment on the proposed reporting rule, noting that, "In its post-hearing comments CEO proposed, for the first time, Rule 3853(q), which would require each utility to submit an interconnection report to the Commission twice per year on a number of interconnection-related topics." See Decision R20-0423-I, Paragraphs 11.a and 12 at page 4; Ordering Paragraph 1 at page 7.

most recent reporting period, and make its interconnection reports available to the public on its website.<sup>34</sup>

87. Public Service asserted that it had a total of 54,270 private solar installations, which number continues to grow daily. Characterizing the reporting rule as arduous and laborious, Public Service opposed the rule, arguing that the extensive reporting required would create a regulatory burden, as its systems are not currently designed to provide such detailed reporting information. From Public Service's written and oral comments at the second rulemaking hearing, the ALJ could not determine whether the reporting requirements were in fact burdensome, arduous, and laborious.

88. Black Hills opposed proposed Rule 3853(q), arguing that it deviated materially from the requirements of FERC Order No. 792, which contains no such similar reporting concept.

89. In the NOPR, the Commission invited Participants to submit alternative proposed rules. Based upon the record in this rulemaking, the ALJ concludes that reporting of this interconnection data two times per year will further increase transparency and will provide beneficial background information to the Commission and Staff when they address interconnection issues. Black Hills noted that it already reports to the Commission much of the information contained in proposed Rule 3853(q) on a monthly basis. Adopted Rule 3853(q) includes most of CEO's proposed reporting requirements with certain modifications intended to promote fairness. If a utility needs more time to update systems to be able to fulfill the reporting requirements in Rule 3853(q), it can always file an appropriate pleading showing good cause for an extension of time.

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<sup>34</sup> See IREC's Model Interconnection Procedures, Attachment 9.

**20. Rule 3854, Level 1 Process.**

90. Provisions governing “Level 1” interconnections are dispersed throughout existing Rule 3667. In the NOPR, these rules were consolidated under proposed Rule 3854. Proposed Rule 3854(a)(IV) replaced the components of the initial Level 1 review with the screens applied in the Level 2 process. This change allows for existing Rules 3667(f)(IV)(A) through (D) to be eliminated. Proposed Rule 3854(b) contains the same outline for a Level 1 interconnection application as found in existing Rule 3667(g) with additional information required for energy storage systems.

91. Public Service asserted that timeframes in proposed Rule 3854 should be consistent with the updated FERC SGIP and be based on business days, noting that the SGIP timeframes represent compromised timeframes that were developed by an extensive input process facilitated by the FERC. Public Service argued that the timeframes represent the maximum allowable time and need to be suitable for a wide range of technologies and interconnection volumes over a variety of utility characteristics and designs. Public Service proposed to add Rule 3855(a)(V), permitting utilities to use more advanced screening within the Level 1 process. Black Hills agreed with that addition.

92. Public Service asserts that a certificate of completion provides the needed written notification that wiring has been installed and then inspected by the authority having jurisdiction prior to allowing parallel operation of the system. Public Service argues that any change that does not provide similar written assurance of safety prior to allowing parallel operation with the utility would not be acceptable. COSSA and SEIA suggested that the “Certificate of completion” be removed throughout the interconnection process, arguing that a Certificate of competition is

just a form in which the interconnection customer attests to having completed the electrical wiring inspection and the associated permit must also be provided.

93. CEO recommended that the increase in the upper limit for system size to be processed under Level 1 should be extended to 25 kW, as specified in the IREC Model Interconnection Procedures. CEO noted that corresponding changes should be referenced in other subparagraphs of Rule 3854(b).

94. WRA recommended that the timeline for screening Level 1 applications should be seven business days. This change should be made in Rule 3854(a)(IV). WRA also recommended that Level 2 applications should be screened within 15 business days, consistent with proposed Rule 3855(b).

95. COSSA and SEIA supported CEO's recommendation to raise the Level 1 process to 25 kW inverter-based systems, consistent with what they believe to be best practices from other states that use 25 kW or higher for their Level 1 threshold.

96. Based on the record in this rulemaking, adopted Rule 3854 changes 20 kW to 25 kW AC. The proposed small utility language in proposed Rule 3854(a) has been deleted as inconsistent with the FERC SGIP. Deadlines have been stated in business days and have been conformed to the FERC SGIP when appropriate. In some instances, for example when the proposed rules stated 15 days and IREC suggested 7 days, 10 business days were adopted as a reasonable compromise. The certificate of completion has been retained, as it focuses on wiring and inspections by the authority with local jurisdiction.

#### **21. Rule 3855, Level 2 Process (Fast Track).**

97. The introduction to proposed Rule 3855 updates the introduction to existing Rule 3667(c), which was adopted without modification in the initial promulgation of the

RES Rules in Proceeding No. 05R-112E. The eligibility criteria for the Level 2 Process have been modified substantially in proposed Rule 3855(a).

98. Public Service proposed to add subparagraph (V) to Rule 3855(a), asserting that similar language was adopted in Minnesota.

The technical screens shall not preclude the utility from utilizing tools that perform screening functions using different methodology given that the analysis is aimed at preventing the same voltage, thermal and protection limitations as the initial and supplemental review screens under 3855.<sup>35</sup>

Black Hills agreed. Adopted Rule 3855(a) includes revisions for clarity and adds Rule 3855(a)(V), which the ALJ finds to be reasonable.

99. Proposed Rule 3855(b) derives from existing Rule 3667(c)(II). Proposed Rule 3855(b)(I) adds a provision that requires the Level 2 “supplemental review” for highly seasonal circuits. Proposed Rule 3855(b)(V) has been updated to reference the most current IEEE standards.

100. WRA proposed to add a new subparagraph (XII) to Rule 3855(b) that would screen for proposed interconnection resource installations that are larger than the customer’s existing or augmented electrical service provided by the utility:

The nameplate capacity of a proposed interconnection resource, in combination with the nameplate capacity of any previously interconnected interconnection resource, shall not exceed the capacity of the customer’s existing electrical service unless there is a simultaneous request for an upgrade to the customer’s electrical service, regardless of exporting or non-exporting designations for any of the interconnection resources.

WRA argued that safety and reliability would be jeopardized if the DER could export more energy than the electrical service allows at the location. Public Service and Black Hills

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<sup>35</sup> Public Service Closing Comments at p. 17.

supported the new subparagraph. Adopted Rule 3855(b) includes revisions for clarity and adds Rule 3855(b)(XII), which the ALJ finds to be reasonable.

101. Proposed Rule 3855(c) is based on existing Rule 3667(c)(II)(E), regarding the “customer options meeting” in the event a proposed interconnection fails the Level 2 screens. The provisions are largely unchanged, except that proposed Rule 3855(c)(II)(B) now would require the utility to offer the customer a supplemental review with a good faith estimate of the costs and time of such review. The supplemental review is addressed in detail in proposed Rule 3855(d), which is based on existing Rule 3667(c)(III).

102. CEO recommended adding to Rule 3855(c)(I) language to require the utility to provide detailed information to the IC in writing on the reason(s) for failure.

103. Adopted Rule 3855(c) and (d) include revisions for clarity and adds CEO’s proposed language to Rule 3855(c)(I), which the ALJ finds to be reasonable.

## **22. Rule 3856. - Level 3 Process (Study Process)**

104. Proposed Rule 3856 tracks existing Rule 3667(d) with certain changes discussed in the NOPR. The introduction to the rule is based on existing Rule 3667(d)(I), and proposes to increase the maximum size for the interconnection resource eligible for the Level 3 Process from 10 MW to 20 MW.

105. Proposed Rule 3856(a)(IV) adds a provision to existing Rule 3667(d)(II)(D), setting a deadline for the utility to provide an executable interconnection agreement if the utility and the customer were to reach a mutual agreement on the lack of need for studies related to “simpler projects.”

106. WRA recommended that the restriction in Proposed Rule 3856 limiting applications to 20 MW be removed, arguing that the Study Process is a very thorough vetting of



a proposed project, and as such can handle proposals for any size application. WRA argued there is no need for a limitation in the rules, because if the proposed project is too large, the utility would not approve it.

107. COSSA and SEIA proposed a clarification that the decision to enter into the Level 3 study process should be at the discretion of the interconnection customer, since responsibility for the costs falls to the customer. SunShare agreed.

108. COSSA and SEIA also proposed, in a new Rule 3856(a)(V), to permit Level 3 studies, including “feasibility studies,” “scoping studies,” and “facilities studies,” to be combined and run in parallel.

109. Public Service opposed COSSA/SEIA’s proposal, arguing that the requirement to combine all studies into a single study is not the industry norm or how Public Service performs interconnection studies. According to Public Service industry practice, as reflected in the FERC SGIP process, is to perform preliminary studies to determine facility needs and potential impacts prior to performing a detailed study to determine exactly what must be done.

110. Black Hills opposed including timelines in the Level 3 Study Process. Black Hills asserted that currently it works with interconnection customers to develop mutually agreeable study timelines, meeting the needs of its customers and balancing the imposition of unnecessary utility costs. If timelines are included in the Level 3 Study Process, Black Hills argued that the timelines should be addressed in utility interconnection tariffs and that the utility should be able to seek reasonable time extensions, when unknown circumstances outside of the utility’s reasonable control may warrant extensions of time.

111. Adopted Rule 3856 removes the language limiting applications to 20 MW. The ALJ agrees that the Level 3 Study Process should be a thorough vetting of a proposed project

and should be able to handle proposals for any size application. The ALJ agrees with WRA that, if the proposed project is too large, the utility would likely not approve it.

112. Adopted Rule 3856(a)(V) will adopt COSSA and SEIA's proposal to permit a single Level 3 study to be combined to include feasibility studies, scoping studies, and facilities studies. Adopted Rule 3856(a)(VI) will require a utility to offer a developer the opportunity to pay full fees upfront and proceed straight to the system impact study. Adopted Rule 3856(c) is otherwise as proposed in the NOPR with minor revisions for clarity.

113. Proposed Rule 3856(b)(I) is based on existing Rule 3667(d)(III)(A). Given the enhancements to the Level 2 supplemental studies in other proposed rules, Rule 3856(b)(I) would give the utility the option to use those studies in lieu of the Level 3 feasibility study. Proposed Rule 3856(b)(VI) is a new rule that sets a deadline for the utility to provide an executable interconnection agreement in the event that no further Level 3 studies are necessary following the feasibility study.

114. Public Service reiterated that timeframes memorialized in rules should be consistent with the updated FERC SGIP and be based on business days.

115. COSSA and SEIA proposed to add "reasonable and verifiable" to proposed Rule 3856(b)(II). SunShare agreed. Public Service objected, asserting that the feasibility study agreement includes non-binding good faith estimates of the costs to perform the study that is reviewable by the customer prior to signing of the study agreement. As such, adding "reasonable and verifiable" is not required.

116. Adopted Rule 3856(b)(II) will not adopt a requirement that feasibility study costs must be "reasonable and verifiable." The ALJ agrees with Public Service's argument that it is not required in the Level 3 rule. Moreover, as discussed *supra*, the phrase "reasonable and

verifiable” is also rejected because it is problematic and may be vague and overbroad. Otherwise the ALJ adopts Rule 3856(b) as proposed in the NOPR with minor revisions for clarity.

117. Proposed Rule 3856(c) retains existing Rule 3667(d)(IV) without substantive revision. However, similar to proposed Rule 3856(b)(VI), proposed Rule 3856(c)(VI) sets a deadline for the utility to provide an executable interconnection agreement in the event that no other Level 3 study (*i.e.*, the facilities study) is required.

118. CEO recommended the rule be revised such that once a system impact study agreement is executed between the utility and the interconnection customer, the utility must complete the system impact study and provide it to the customer within a specified time. Public Service recommended maintaining the current approach of mutually-agreed timeframes within the study agreement, in order to provide needed flexibility to address program changes and to address unusual circumstances and transmission impacts when legitimate safety and reliability concerns exist.

119. COSSA and SEIA proposed a new rule differentiating timeframes for large and small utilities to perform a system impact study. For the reasons discussed *supra*, no rules will be adopted differentiating between large and small utilities for timeframes or other procedures.

120. Adopted Rule 3856(c)(I) will include the requirement that, within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth in Rule 3856(c).

121. Otherwise, the ALJ has adopted Rule 3856(c) as proposed in the NOPR with minor revisions for clarity. Ensuring certainty for both interconnection customers and the utilities is important in the Level 3 feasibility study process, and establishing reasonable timeframes will assist to accomplish this objective.

122. Proposed Rule 3856(d) includes the Level 3 facilities study provisions in existing Rule 3667(d)(V) without any changes.

123. CEO recommended that Rule 3856(d) establish a time limit for a facilities study to be completed and proposed that the facilities study be completed within 45 business days of the interconnection customer's delivery of the executed facilities study agreement. According to CEO, this is consistent with the IREC Model Interconnection Procedures and industry best practices.

124. CEO argued that Rule 3856(d)(III) should set a parameter around the accuracy of a utility when estimating the cost of equipment, engineering, procurement, and construction work (including overhead) needed to implement the conclusions of the system impact studies. CEO recommended that Rule 3856(d)(III) be modified to implement binding cost envelopes or to require careful tracking of costs that exceed a specified margin.

125. COSSA and SEIA proposed that the interconnection customer should have the option of constructing utility assets, when necessary. Public Service objected, arguing that construction of utility assets by an interconnection customer would bypass utility methods and processes for designing, building, and maintaining a safe and reliable grid.

126. Noting that proposed Rule 3856(d)(VII) requires a utility to provide an executable interconnection agreement within five business days of completing a facilities study, CREA recommended extending this deadline to 15 business days. CREA argued that, because specific costs of necessary upgrades in the agreement may need to be identified, it may not be possible to meet this timeline in many cases.

127. Adopted Rule 3856(d)(I) will include the requirement that, within 45 business days of executing an appropriate agreement, the utility shall perform a facilities study using the

screens set forth in Rule 3856(d). Adopted Rule 3856(d)(III) sets forth the items to be included in the facilities study and includes CEO's recommendation that costs for completing actual upgrades may not be exceeded by 125 percent of the cost estimate, which should afford utilities with greater flexibility.

128. Otherwise, the ALJ has adopted Rule 3856(d) as proposed in the NOPR with minor revisions for clarity.

### **23. Rule 3857, Certification Codes and Standards**

129. Proposed Rule 3857 is based on Existing Rule 3667(h). In the NOPR, the Commission updated the listed codes and standards to reflect recent and relevant sources. In addition, the Commission proposes adding the inclusion of UL 1741 SA (the standard for testing advanced DERs with grid support functions).

130. The intent of this list of codes and standards in the Interconnection Rules has never been clear. This list of codes and standards first appeared in the initial RES rules in Rule 3665 Attachment 3, which was part of the consensus rules adopted by the Commission.<sup>36</sup> In a 2008 rulemaking, the title of Rule 3665 was changed to "Small Generation Interconnection Procedures," the Level 1 10 kW Inverter Process, was renumbered to Rule 3665(g), and the list of Certification Codes and Standards was renumbered to Rule 3665(h).<sup>37</sup>

131. After reviewing the legislative history of rules containing this list of Certification Codes and Standards, the ALJ concludes that initially the list was intended as a screening device for when the Level 1 10 kW Inverter Process and the Level 2 - Fast Track Process could

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<sup>36</sup> See Decision No. C05-1461 in Proceeding No. 05R-112E (issued December 15, 2005), Paragraph Nos. 158 and 159 at pages 55 and 56, and Attachment A at page 25.

<sup>37</sup> See Decision No. C10-0080 in Proceeding No. 08R-424E (issued January 27, 2010), Attachment A, pages 38, 52 – 54.

be used. If the Small Generating Facility met the size criteria and the codes, standards and certification requirements of the documents in the list, then these processes could be used going forward in the utility's evaluation of the interconnection of a small generating facility. It is clear to the ALJ that the list was not intended to be an enforceable requirement for interconnections.

132. An introduction to Adopted Rule 3857 has been added to clarify the intent and purpose of the list of codes and standards.

#### **24. Rule 3859, Filing of Interconnection Manual.**

133. The NOPR contained no proposed Rule 3859. In its Reply Comments, WRA proposed the addition of a new rule, similar to a rule adopted in Arizona, to require utilities to file their interconnection manuals and that the Commission approve the manuals.<sup>38</sup> At the February 3, 2020 rulemaking hearing, Public Service argued that its interconnection manuals are publicly displayed on its website, and that WRA's proposed manual filing rule was unnecessary. Black Hills opposed any rule that required utilities to file their interconnection manuals.

134. The ALJ will adopt Rule 3859, which requires that, within 90 days after the effective date of the Interconnection Rules, each utility subject to these rules shall file with the Commission, information about its Interconnection Manual in an advice letter and tariff filing pursuant to Rule 1210 of the Rules of Practice and Procedure, 4 CCR 723-1. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. Rule 3859 also requires each utility to update the filed information about its Interconnection Manual within 30 days after changes have been made to its manual. Requiring utilities to file their Interconnection Manuals and updates to their manuals is intended to ensure

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<sup>38</sup> See Reply Comments of Western Resource Advocates, at page 7; see also Final Comments of Western Resource Advocates, at page 3; Arizona Administrative Code R14-2-2601 *et seq.*

increased transparency for developers, interconnection customers, the Commission and its Staff and should thereby provide benefits to the interconnection process in Colorado.

135. The Interconnection Manual and update filings required by Rule 3859 are only informational filings. Rule 3859 *does not* require that the Commission approve the filed Interconnection Manuals and updates to Interconnection Manuals.

**C. Conclusion.**

136. Attachment A of this Recommended Decision contains the rule amendments adopted by this Decision with modifications to the Interconnection Rules proposed in the NOPR indicated in redline and strikeout format (including modifications in accordance with this Recommended Decision).

137. Attachment B of this Recommended Decision contains the rule amendments adopted by this Decision in clean and final format.

138. The ALJ finds and concludes that the Interconnection Rules proposed in the NOPR, as modified by this Recommended Decision, are just and reasonable and should be adopted.

139. Pursuant to the provisions of § 40-6-109, C.R.S., it is recommended that the Commission adopt the attached Interconnection Rules.

**III. ORDER**

**A. The Commission Orders That:**

1. The Interconnection Rules contained in 4 *Code of Colorado Regulations* 723-3, set forth in legislative (redline and strikeout) format in Attachment A and in clean format in

Attachment B, are adopted. Both attachments are also available in the Commission's E-Filings system at:

[https://www.dora.state.co.us/pls/efi/EFI.Show\\_Docket?p\\_session\\_id=&p\\_docket\\_id=19R-0654E](https://www.dora.state.co.us/pls/efi/EFI.Show_Docket?p_session_id=&p_docket_id=19R-0654E)

2. This Recommended Decision shall be effective on the day it becomes the Decision of the Commission, if that is the case, and is entered as of the date above.

3. If this Recommended Decision becomes a Commission Decision, the relevant rules are adopted on the date the Recommended Decision becomes a final Commission Decision.

4. As provided by § 40-6-109, C.R.S., copies of this Recommended Decision shall be served upon the participants and the representative group of participants, who may file exceptions to it.

a) If no exceptions are filed within 20 days after service of this Recommended Decision or within any extended period of time authorized, or unless the decision is stayed by the Commission upon its own motion, the Recommended Decision shall become the decision of the Commission and subject to the provisions of § 40-6-114, C.R.S.

b) If a party seeks to amend, modify, annul, or reverse basic findings of fact in its exceptions, that party must request and pay for a transcript to be filed, or the participants may stipulate to portions of the transcript according to the procedure stated in § 40-6-113, C.R.S. If no transcript or stipulation is filed, the Commission is bound by the facts set out by the administrative law judge and the participants cannot challenge these facts. This will limit what the Commission can review if exceptions are filed.



5. If exceptions to this decision are filed, they shall not exceed 30 pages in length, unless the Commission for good cause shown permits this limit to be exceeded.

(S E A L)



THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO

STEVEN H. DENMAN

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Administrative Law Judge

ATTEST: A TRUE COPY

A handwritten signature in cursive script that reads "Doug Dean".

Doug Dean,  
Director

## COLORADO DEPARTMENT OF REGULATORY AGENCIES

### Public Utilities Commission

#### 4 CODE OF COLORADO REGULATIONS (CCR) 723-3

#### PART 3 RULES REGULATING ELECTRIC UTILITIES

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#### RENEWABLE ENERGY STANDARD

\* \* \* \*

[indicates omission of unaffected rules]

#### ~~3667.—Small Generation Interconnection Procedures.~~

~~The following small generator interconnection procedures (SGIP) shall apply to all small generation resources including eligible renewable energy resources connected to the utility. Each utility shall also provide, on its web site, interconnection standards not included in these procedures. This rule largely tracks FERC Order 2006.~~

~~(a) Definitions. The following definitions apply only to rule 3665.~~

~~(I) “Business day” means Monday through Friday, excluding Federal Holidays.~~

~~(II) “Distribution system” means the utility’s facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.~~

~~(III) “Distribution upgrades” means the additions, modifications, and upgrades to the utility’s distribution system at or beyond the point of interconnection to facilitate interconnection of the small generating facility and render the service necessary to effect the interconnection customer’s operation of on-site generation. Distribution upgrades do not include interconnection facilities.~~

~~(IV) “Highly seasonal circuit” means a circuit with a ratio of annual peak load to off-season peak load greater than six.~~

- ~~(V) — “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its small generating facility with the utility’s system.~~
  - ~~(VI) — “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the small generating facility and the point of interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the small generating facility to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.~~
  - ~~(VII) — “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing small generating facility that is interconnected with the utility’s system.~~
  - ~~(VIII) — “Minimum daytime loading” means the lowest daily peak in the year on the line section.~~
  - ~~(IX) — “Party” or “Parties” means the utility, interconnection customer, or any combination of the above.~~
  - ~~(X) — “Point of interconnection” means the point where the Interconnection facilities connect with the utility’s system.~~
  - ~~(XI) — “Small generating facility” means the interconnection customer’s device for the production of electricity identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer.~~
  - ~~(XII) — “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.~~
  - ~~(XIII) — “System” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.~~
  - ~~(XIV) — “Upgrades” means the required additions and modifications to the utility’s system at or beyond the point of interconnection. Upgrades do not include interconnection facilities.~~
- ~~(b) — General overview.~~
- ~~(I) — Applicability.~~
    - ~~(A) — A request to interconnect a certified small generating facility no larger than two MW shall be evaluated under the Level 2 Process. A request to interconnect a certified inverter based small generating facility no larger than ten kW shall be evaluated under the Level 1 Process. A request to interconnect a small generating facility larger than two MW but no larger than ten MW or a small~~

~~generating facility that does not pass the Level 1 or Level 2 Process, shall be evaluated under the Level 3 Process.~~

- ~~(B) — Defined terms used herein shall have the meanings specified in the paragraph (a) of this rule.~~
- ~~(C) — Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.~~
- ~~(D) — Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and Interconnection Customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All public utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.~~
- ~~(E) — References in these procedures to interconnection agreement are to the Small Generator Interconnection Agreement (SGIA).~~
- ~~(H) — Pre-application. The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's Internet web site. Electric system information for specific locations, feeders, or small areas shall be provided to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.~~

- ~~(III) — Interconnection request. The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. The interconnection request shall be date- and time-stamped upon receipt. The original date- and time-stamp applied to the interconnection request at the time of its original submission shall be accepted as the qualifying date- and time-stamp for the purposes of any timetable in these procedures. The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by IC. The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. An interconnection request will be deemed complete upon submission of the listed information to the utility.~~
- ~~(IV) — Modification of the interconnection request. Any modification to machine data or equipment configuration or to the interconnection site of the small generating facility not agreed to in writing by the utility and the IC may be deemed a withdrawal of the interconnection request and may require submission of a new interconnection request, unless proper notification of each party by the other and a reasonable time to cure the problems created by the changes are undertaken.~~
- ~~(V) — Site control. Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:~~
- ~~(A) — ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the small generating facility;~~
  - ~~(B) — an option to purchase or acquire a leasehold site for such purpose; or~~
  - ~~(C) — an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.~~
- ~~(VI) — Queue position. The utility shall place interconnection requests in a first come, first served order per feeder and per substation based upon the date- and time-stamp of the interconnection request. The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.~~

~~(VII) — Assignment/Transfer of ownership of the facility. Interconnection agreements shall survive transfer of ownership of the generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.~~

~~(c) — Level 2 - fast track process.~~

~~(I) — Applicability. The fast track process is available to an IC proposing to interconnect its small generating facility with the utility's system if the small generating facility is no larger than two MW and if the IC's proposed small generating facility meets the codes, standards, and certification requirements of Attachments 3 and 4 of these procedures.~~

~~(II) — Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the screens.~~

~~(A) — Screens.~~

~~(i) — The proposed small generating facility's point of interconnection must be on a portion of the utility's distribution system that is subject to the tariff.~~

~~(ii) — For interconnection of a proposed small generating facility to a radial distribution circuit, the aggregated generation, including the proposed small generating facility, on the line section shall not exceed 15 percent of the line section's annual peak load as most recently measured at the substation or calculated for the line section. For highly seasonal circuits only, the aggregate generation, including the proposed small generation facility, on the line section shall not exceed 15 percent of two times the minimum daytime loading. A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device.~~

~~(iii) — The proposed small generating facility, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit's maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.~~

~~(iv) — The proposed small generating facility, in aggregate with other generation on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.~~

- ~~(v) — The proposed small generating facility shall have a starting voltage dip less than five percent and meet the flicker requirements of IEEE 519, 1992 version. To meet this screen, the proposed generating facility must conform to the following two tests:~~
  - ~~(1) — For starting voltage dip, the utility has two options for determining whether starting voltage dip is acceptable. The option to be used is at the utility's discretion.~~
    - ~~(a) — Option 1: The utility may determine that the proposed generating facility's starting in-rush current is equal to or less than the continuous ampere rating of the Interconnection Customer's service equipment.~~
    - ~~(b) — Option 2: The utility may determine the impedances of the service distribution transformer (if present) and the secondary conductors to the Interconnection Customer's service equipment and perform a voltage dip calculation. Alternatively, the utility may use tables or nomographs to determine the voltage dip. Voltage dips caused by starting the proposed generation facility must be less than five percent when measured at the primary side (high side) of a dedicated distribution transformer serving the proposed generating facility, for primary interconnections. The five percent voltage dip limit applies to the distribution transformer low side if the low side is shared with other customers and to the high side if the transformer is dedicated to the Interconnection Customer.~~
  - ~~(2) — The second test is conformance with the relationship between voltage fluctuation and starting frequency presented in the table for flicker requirements in IEEE 519, 1992 version.~~

~~(vi) — Using the table below, determine the type of interconnection to a primary distribution line. This screen includes a review of the type of electrical service provided to the IC, including line configuration and the transformer connection to limit the potential for creating over-voltages on the utility's electric power system due to a loss of ground during the operating time of any anti-islanding function.~~

<b>Primary Distribution Line Type</b>	<b>Type of Interconnection to Primary Distribution Line</b>	<b>Result/Criteria</b>
<del>Three-phase, three-wire</del>	<del>3-phase or single-phase, phase-to-phase</del>	<del>Pass screen</del>
<del>Three-phase, four-wire</del>	<del>Effectively-grounded 3-phase or Single-phase, line-to-neutral</del>	<del>Pass screen</del>

~~(vii) — If the proposed small generating facility is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 20 kW.~~

~~(viii) — If the proposed small generating facility is single phase and is to be interconnected on a center tap neutral of a 240-volt service, its addition shall not create an imbalance between the two sides of the 240-volt service of more than 20 percent of the nameplate rating of the service transformer.~~

~~(ix) — No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.~~

~~(x) — Interconnections to distribution networks.~~



- ~~(1) — For interconnection of a proposed small generating facility to the load side of spot network protectors serving more than a single customer, the proposed small generating facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the small generator facility must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.~~
- ~~(2) — For interconnection of a proposed small generating facility to the load side of area network protectors, the proposed small generating facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW.~~
- ~~(3) — Notwithstanding sub-sections (1) or (2) above, each utility may incorporate into its interconnection standards, any change in interconnection guidelines related to networks pursuant to standards developed under IEEE 1547 for interconnections to networks. To the extent the new IEEE standards conflict with these existing guidelines, the new standards shall apply. In addition, and with the consent of the utility, a small generator facility may be interconnected to a spot or area network provided the facility uses a protection scheme that will prevent any power export from the customer's site including inadvertent export under fault conditions or otherwise prevent nuisance operation of the network protectors.~~
- ~~(B) — If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.~~
- ~~(C) — If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.~~
- ~~(D) — If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting.~~

- ~~(E) — Customer options meeting. If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; or a supplemental study or other additional studies or actions; or at significant cost to address safety, reliability, or power quality problems, within the five business day period after the determination, the utility shall notify the IC and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:~~
- ~~(i) — offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;~~
  - ~~(ii) — offer to perform a supplemental review if the utility concludes that the supplemental review might determine that the small generating facility could continue to qualify for interconnection pursuant to the fast track process, and provide a non-binding good faith estimate of the costs and time of such review; or~~
  - ~~(iii) — obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 Study Process.~~
- ~~(III) — Supplemental Review. If the interconnection customer agrees to a supplemental review, the interconnection customer shall agree in writing within 15 business days of the offer, and submit a deposit for the estimated costs provided in subsection (c)(III)(A)(ii) of this rule. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.~~
- ~~(A) — Within ten business days following receipt of the deposit for a supplemental review, the utility will determine if the Small Generating Facility can be interconnected safely and reliably.~~
- ~~(i) — If so, the utility shall forward an executable interconnection agreement to the IC within five business days.~~
  - ~~(ii) — If so, and IC facility modifications are required to allow the small generating facility to be interconnected consistent with safety, reliability, and power quality standards under these procedures, the utility shall forward an executable interconnection agreement to the IC within five business days after confirmation that the interconnection customer has agreed to make the necessary changes at the interconnection customer's cost.~~

- ~~(iii) — If so, and minor modifications to the utility's electric system are required to allow the small generating facility to be interconnected consistent with safety, reliability, and power quality standards under the Level 2 Fast Track Process, the utility shall forward an executable interconnection agreement to the IC within ten business days that requires the IC to pay the costs of such system modifications prior to interconnection.~~
- ~~(iv) — If not, the interconnection request will continue to be evaluated under the Level 3 Study Process.~~

~~(d) — Level 3 – Study Process.~~

- ~~(I) — Applicability. The study process shall be used by an interconnection customer proposing to interconnect its small generating facility with the utility's system if the small generating facility is larger than two MW but no larger than ten MW; is not certified; or, is certified but did not pass the Fast Track Process or the ten kW Inverter Process.~~
- ~~(II) — Scoping meeting.
  - ~~(A) — A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.~~
  - ~~(B) — The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection agreement. If the parties agree that a feasibility study should be performed, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(C) — The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the parties agree not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(D) — Feasibility studies, scoping studies, and facility studies may be combined for simpler projects by mutual agreement of the utility and the parties.~~~~
- ~~(III) — Feasibility study.
  - ~~(A) — The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the small generating facility.~~~~

- ~~(B) — A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.~~
  - ~~(C) — The scope of and cost responsibilities for the feasibility study are described in the attached feasibility study agreement.~~
  - ~~(D) — If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(E) — If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).~~
- ~~(IV) — System impact study.~~
- ~~(A) — A system impact study shall identify and detail the electric system impacts that would result if the proposed small generating facility were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.~~
  - ~~(B) — If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.~~
  - ~~(C) — In instances where the feasibility study or the distribution system impact study shows potential for transmission system adverse system impacts, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, if such a study is required.~~
  - ~~(D) — If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.~~

- ~~(E) — If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.~~
- ~~(F) — In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.~~
- ~~(G) — A deposit of the good faith estimated costs for each system impact study may be required from the IC.~~
- ~~(H) — The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.~~
- ~~(I) — Where transmission systems and distribution systems have separate owners, such as is the case with transmission dependent utilities (TDUs) — whether investor-owned or not — the IC may apply to the nearest utility (Transmission Owner, Regional Transmission Operator, or Independent utility) providing transmission service to the TDU to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.~~
- ~~(V) — Facilities study.~~
  - ~~(A) — Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC along with a facilities study agreement within five business days, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.~~
  - ~~(B) — In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.~~
  - ~~(C) — The facilities study shall specify and estimate the cost of the equipment, engineering, procurement, and construction work (including overheads) needed to implement the conclusions of the system impact study(s).~~
  - ~~(D) — Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement. The IC and the utility may agree to allow the IC to separately arrange for the design of some of the interconnection facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the utility, under the provisions of the facilities study agreement. If the parties agree to separately~~

~~arrange for design and construction, and provided security and confidentiality requirements can be met, the utility shall make sufficient information available to the IC in accordance with confidentiality and critical infrastructure requirements to permit the IC to obtain an independent design and cost estimate for any necessary facilities.~~

~~(E) — A deposit of the good faith estimated costs for the facilities study may be required from the IC.~~

~~(F) — The scope of and cost responsibilities for the facilities study are described in a facilities study agreement.~~

~~(G) — Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.~~

~~(e) — Provisions that apply to all interconnection requests.~~

~~(I) — Reasonable efforts. The utility shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility cannot meet a deadline provided herein, it shall notify the IC explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.~~

~~(II) — Disputes.~~

~~(A) — The parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this article.~~

~~(B) — In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third party dispute resolution service for assistance in resolving the dispute.~~

~~(C) — The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.~~

~~(D) — Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs paid to neutral third parties.~~

~~(E) — If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission.~~

- ~~(III) — Interconnection metering. Except as otherwise required by rule 3664, any metering necessitated by the use of the small generating facility shall be installed at the IC's expense in accordance with Commission requirements or the utility's specifications.~~
- ~~(IV) — Commissioning tests. Commissioning tests of the IC's installed equipment shall be performed pursuant to applicable codes and standards, including IEEE1547.1 2005 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems". The utility must be given at least five business days written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing level 2 and Level 3 commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.~~
- ~~(V) — Confidentiality.~~
- ~~(A) — Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.~~
- ~~(B) — Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.~~
- ~~(i) — Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.~~
- ~~(ii) — Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.~~
- ~~(C) — Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from~~



~~public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.~~

- ~~(VI) — Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this document. The utility shall use the same reasonable efforts in processing and analyzing interconnection requests from all interconnection customers, whether the small generating facility is owned or operated by the utility, its subsidiaries or affiliates, or others.~~
- ~~(VII) — Record retention. The utility shall maintain for three years records, subject to audit, of all interconnection requests received under these procedures, the times required to complete Interconnection Request approvals and disapprovals, and justification for the actions taken on the interconnection requests.~~
- ~~(VIII) — Interconnection agreement. After receiving an interconnection agreement from the utility, the IC shall have 30 business days or another mutually agreeable time frame to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement, or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. After the interconnection agreement is signed by the parties, the interconnection of the small generating facility shall proceed under the provisions of the interconnection agreement.~~
- ~~(IX) — Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in these procedures. The utility will include such affected system operators in all meetings held with the IC as required by these procedures. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems.~~
- ~~(X) — Capacity of the small generating facility.
  - ~~(A) — If the interconnection request is for an increase in capacity for an existing small generating facility, the interconnection request shall be evaluated on the basis of the new total capacity of the small generating facility.~~
  - ~~(B) — If the interconnection request is for a small generating facility that includes multiple energy production devices at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple devices.~~~~



~~(C) — The interconnection request shall be evaluated using the maximum rated capacity of the small generating facility.~~

~~(XI) — Insurance.~~

~~(A) — For systems of ten kW or less, the customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$300,000 for each occurrence. For systems above ten kW and up to 500 kW, customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 for each occurrence. For systems above 500 kW and up to two MW, customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$2,000,000 for each occurrence. Insurance coverage for systems greater than two MW shall be determined on a case-by-case basis by the utility and shall reflect the size of the installation and the potential for system damage.~~

~~(B) — For systems over 500 kW, the utility shall be named as an additional insured by endorsement to the insurance policy and the policy shall provide that written notice be given to the utility at least 30 days prior to any cancellation or reduction of any coverage. Such liability insurance shall provide, by endorsement to the policy, that the utility shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium of such insurance. For all solar systems, the liability insurance shall not exclude coverage for any incident related to the subject generator or its operation.~~

~~(C) — Certificates of Insurance evidencing the requisite coverage and provision(s) shall be furnished to utility prior to the date of interconnection of the generation system. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the generating customer in order to verify proper liability insurance coverage. Customer will not be allowed to commence or continue interconnected operations unless evidence is provided that satisfactory insurance coverage is in effect at all times.~~

~~(f) — Level 1 ten kW inverter process. The procedure for evaluating an interconnection request for a certified inverter-based small generating facility no larger than ten kW. The application process uses an all-in-one document that includes a simplified Interconnection Request, simplified procedures, and a brief set of terms and conditions.~~

~~(I) — The interconnection customer (customer) completes the interconnection request (Application) and submits it to the utility.~~

~~(II) — The utility acknowledges to the customer receipt of the application within three business days of receipt.~~

- ~~(III) — The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.~~
- ~~(IV) — Within 15 days the utility shall conduct an initial review, which shall include the following screening criteria.~~
  - ~~(A) — For interconnection of a proposed small generating facility to a radial distribution circuit, the aggregated generation, including the proposed small generating facility, on the line section shall not exceed 15 percent of the line section annual peak load as most recently measured at the substation or calculated for the line section. For highly seasonal circuits only, the aggregate generation, including the proposed small generation facility, on the line section shall not exceed 15 percent of two times the minimum daytime loading. A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device.~~
  - ~~(B) — If the proposed small generating facility is to be interconnected on single phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 20 kW.~~
  - ~~(C) — If the proposed small generating facility is single phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.~~
  - ~~(D) — No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.~~
  - ~~(E) — Provided all the criteria in paragraph (g) of this rule are met, unless the utility determines and demonstrates that the small generating facility cannot be interconnected safely and reliably, the utility approves and executes the application and returns it to the customer.~~
  - ~~(F) — After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the small generating facility for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary.~~
  - ~~(G) — The utility notifies the customer in writing or by fax or e-mail that interconnection of the small generating facility is authorized within five business days. If the witness test is not satisfactory, the utility has the right to disconnect the small generating facility. The customer has no right to operate in parallel until a witness test has been performed, or previously waived on the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.~~

~~(H) — Contact information. The customer must provide the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.~~

~~(g) — Level 1 10 kW Inverter Process. The following constitutes an application for interconnecting a certified inverter-based small generating facility no larger than ten KW. Application for Interconnecting a Certified Inverter-Based Small Generating Facility No Larger than 10kW~~

~~This Application is considered complete when it provides all applicable and correct information required below. Additional information to evaluate the application may be required.~~

~~Processing fee:~~

~~\_\_\_\_\_ A fee of \_\_\_\_\_ must accompany this application.~~

~~Interconnection customer~~

~~\_\_\_\_\_ Name:~~

~~\_\_\_\_\_ Contact Person:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone (Day): (Evening):~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~Engineering firm (if applicable):~~

~~\_\_\_\_\_ Contact Person:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone:~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~Contact (if different from Interconnection customer):~~

~~\_\_\_\_\_ Name:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone (Day): (Evening):~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~\_\_\_\_\_ Owner of the facility (include percent ownership by any electric utility):~~

Small generating facility information:

~~\_\_\_\_\_ Location (if different from above):~~

~~\_\_\_\_\_ Electric service company:~~

~~\_\_\_\_\_ Account number:~~

~~\_\_\_\_\_ Small generator ten kW inverter process:~~

~~\_\_\_\_\_ Inverter manufacturer: \_\_\_\_\_ Model~~

~~\_\_\_\_\_ Nameplate rating: (kW) (kVA) (AC Volts)~~

~~\_\_\_\_\_ Single phase \_\_\_\_\_ Three phase \_\_\_\_\_~~

~~\_\_\_\_\_ System design capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)~~

~~\_\_\_\_\_ Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other~~

~~\_\_\_\_\_ Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)~~

~~\_\_\_\_\_ Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_~~

~~\_\_\_\_\_ If Yes, attach manufacturer's cut-sheet showing UL1741 listing.~~

~~\_\_\_\_\_ Estimated installation date: \_\_\_\_\_ Estimated in-service date: \_\_\_\_\_~~

~~The ten kW inverter process is available only for inverter-based small generating facilities no larger than ten kW that meet the codes, standards, and certification requirements of paragraphs (h) and (i) of this rule, or the QRU has reviewed the design or tested the proposed small generating facility and is satisfied that it is safe to operate.~~

~~List components of the small generating facility equipment package that are currently certified:~~

~~Equipment type certifying entity:~~

- ~~1.~~
- ~~2.~~
- ~~3.~~

~~4.~~

~~5.~~

~~Interconnection customer signature: \_\_\_\_\_~~

~~I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based Small Generating Facility No Larger than 10kW and return the Certificate of Completion when the Small Generating Facility has been installed.~~

~~Signed: \_\_\_\_\_~~

~~Title: \_\_\_\_\_ Date: \_\_\_\_\_~~

~~Contingent approval to interconnect the small generating facility.~~

~~(For company use only)~~

~~Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than ten kW and return of the certificate of completion.~~

~~\_\_\_\_\_ Company signature: \_\_\_\_\_~~

~~\_\_\_\_\_ Title: Date: \_\_\_\_\_~~

~~\_\_\_\_\_ Application ID number: \_\_\_\_\_~~

~~\_\_\_\_\_ Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_~~

~~(h) \_\_\_\_\_ Certification codes and standards.~~

~~ANSI C84.1-2011 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)~~

~~ANSI/NEMA MG 1--2011, Motors and Generators~~

~~IEEE Std C37.90.1-2002, IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems~~

~~IEEE Std C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers~~

~~IEEE Std C37.108-2002, IEEE Guide for the Protection of Network Transformers~~

~~IEEE Std C57.12.44-2005, IEEE Standard Requirements for Secondary Network Protectors~~

~~IEEE Std C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text~~

~~IEEE Std C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low Voltage (1000V and Less) AC Power Circuits~~

~~IEEE Std 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition~~

~~IEEE Std 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems~~

~~IEEE Std 929-2000 IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems~~

~~IEEE Std 1547-2003, IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems~~

~~IEEE Std 547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems~~

~~NFPA 70 (2014), National Electrical Code~~

~~UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems~~

~~(i) Certification of small generator equipment packages.~~

~~(I) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in paragraph (h); it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.~~

~~(II) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.~~

~~(III) Certified equipment shall not require further type test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.~~

- ~~(IV) — If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.~~
- ~~(V) — Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of common coupling shall be required to meet the requirements of this interconnection procedure.~~
- ~~(VI) — An equipment package does not include equipment provided by the utility.~~
- ~~(j) — Terms and conditions for Level 1 interconnections — small generating facility no larger than ten kW.~~
  - ~~(I) — Construction of the facility. The interconnection customer may proceed to construct the small generating facility when the utility approves the interconnection request (the application) and returns it to the IC.~~
  - ~~(II) — Interconnection and operation. The IC may operate small generating facility and interconnect with the utility's electric system once all of the following have occurred:
    - ~~(A) — upon completing construction, the interconnection customer will cause the small generating facility to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;~~
    - ~~(B) — the customer returns the certificate of completion to the utility; and~~
    - ~~(C) — the utility has completed its inspection of the small generating facility. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the small generating facility has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.~~
    - ~~(D) — The utility has the right to disconnect the small generating facility in the event of improper installation or failure to return the certificate of completion.~~~~
  - ~~(III) — Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the small generating facility as required to ensure that it complies at all times with the interconnection standards to which it has been certified.~~

- ~~(IV) — Access. The utility shall have access to the disconnect switch and metering equipment of the small generating facility at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.~~
- ~~(V) — Disconnection. The utility may temporarily disconnect the small generating facility upon the following conditions:~~
- ~~(A) — for scheduled outages per notice requirements in the utility's tariff or Commission rules;~~
  - ~~(B) — for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or~~
  - ~~(C) — if the small generating facility does not operate in the manner consistent with these terms and conditions.~~
  - ~~(D) — The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.~~
- ~~(VI) — Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.~~
- ~~(VII) — Insurance. The interconnection customer, at its own expense, shall secure and maintain in effect during the term of this agreement, liability insurance with a combined single limit for bodily injury and property damage of not less than \$300,000 each occurrence. Such liability insurance shall not exclude coverage for any incident related to the subject generator or its operation. The utility shall be named as an additional insured under the liability policy unless the system is a solar system installed on a premise using the residential tariff and has a design capacity of ten kW or less. The policy shall include that written notice be given to the utility at least 30 days prior to any cancellation or reduction of any coverage. A copy of the liability insurance certificate must be received by the utility prior to plant operation. Certificates of insurance evidencing the requisite coverage and provision(s) shall be furnished to utility prior to date of interconnection of the generation system. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the generating customer in order to verify proper liability insurance coverage. The interconnection customer will not be allowed to commence or continue interconnected operations unless evidence is provided that satisfactory insurance coverage is in effect at all times.~~



- ~~(VIII) — Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (i)(VI) of this rule.~~
- ~~(IX) — Termination. The agreement to operate in parallel may be terminated under the following conditions.~~
- ~~(A) — By the customer by providing written notice to the utility.~~
- ~~(B) — By the utility if the small generating facility fails to operate for any consecutive 12 month period or the customer fails to remedy a violation of these terms and conditions.~~
- ~~(C) — Permanent disconnection. In the event this agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its small generating facility.~~
- ~~(D) — Survival rights. This agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.~~
- ~~(X) — Assignment/Transfer of ownership of the facility. This agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of this agreement and so notifies the utility.~~

**3667. [Reserved].**

\* \* \* \*

[indicates omission of unaffected rules]

**3806. – 38949. [Reserved].**

**INTERCONNECTION PROCEDURES AND STANDARDS.**

**3850. Applicability.**

The following interconnection procedures shall apply to the interconnection of all retail renewable distributed generation and other distributed energy resources including energy storage systems that operate in parallel with and are connected to the utility, when such interconnections are not subject to the jurisdiction of FERC. Each utility shall also provide, on its web site, interconnection standards or other technical guidance not included in, but that are consistent with, these procedures and which shall be

reviewable by the Commission upon a Commission decision after the filing of an advice letter and tariff or application pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1. This rule largely tracks the 2013 FERC amended version of the FERC 2006 Small Generator Interconnection Procedures.

### **3851. Overview and Purpose.**

Infrastructure, security of electric system equipment, and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and interconnection customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

The purpose of these rules is to establish reasonable interconnection and insurance requirements for interconnection resources retail renewable distributed generation and other distributed energy resources that connect to a utility's system that operate in parallel with and are connected to the utility.

### **3852. Definitions.**

The following definitions apply only to rules 3850 to 3859.

- (a) "Business day" means Monday through Friday, excluding federal holidays.
- (b) "Distributed energy resource" or "DER" means the interconnection customer's source of electric power connected to the utility's distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. DER includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (c) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from interconnection resources or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.
- (d) "Energy storage system" means any commercially available, customer-sited system or utility-sited system, including batteries and the batteries paired with on-site generation, that does not generate energy, that is capable of retaining, storing, and delivering energy by chemical, thermal, mechanical, or other means.
- (e) "Export capacity" means the amount of alternating current (AC) electrical energy that an interconnection resource is designed intentionally to transfer to the utility's system across the point of interconnection.

- (f) “Highly seasonal circuit” means a circuit with a ratio of annual peak load to off-season peak load greater than six.
- (g) “Inadvertent export” means the potential condition in which a normally non-exporting or limited-exporting DER experiences a momentary export that does not exceed limitations specified in paragraph 3853(c).
- (h) “Interconnection agreement” means legally binding contract between the interconnection customers and the utility that formally documents terms and conditions related to the operation and maintenance of any DER in accordance with the utility’s tariffs on file with the Commission.
- (i) “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its DER with the utility’s system.
- (j) “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the DER and the point of interconnection, including any modification, additions or upgrades that are necessary physically and electrically to interconnect the DER to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.
- (k) “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing DER that is interconnected with the utility’s system.
- (l) “Interconnection resource” means the interconnection customer’s source of electric power connected to the utility’s distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, bidirectional storage, electric vehicle chargers with vehicle to grid, vehicle to home, vehicle to building or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. “Interconnection resource” includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (m) “Interconnection tariffs” are required filings from the utilities that set forth certain fees associated with interconnection. Tariff filings would accommodate utility-specific costs, while allowing for appropriate statewide standardization in the provisions set forth.
- (n) “Line section” means that portion of the utility’s electric delivery system that is connected to a Customer and bounded by automatic sectionalizing devices or the end of the distribution line.
- (o) “Material modification” means a modification that has a material impact on the cost or timing of processing an application with a later queue priority date or a change in the point of interconnection. A material modification does not include, for example: (a) a change of ownership of an interconnection resource; (b) changes to the address of the generating facility, so long as the generating facility remains on the same parcel; (c) a change or replacement of

interconnection resource that is a like-kind substitution in size, ratings, impedances, efficiencies, or capabilities of the equipment specified in the original application; or (d) a reduction in the capacity of the interconnection resource of ten percent or less.

- (p) “Minor modifications” means modifications to the utility’s distribution system or to the interconnection facilities that do have a material impact on the cost or on the timing of an interconnection request.
- (q) “Non-exporting system” means an interconnection resource that is designed so that it does not intentionally transfer electrical energy to the utility’s distribution or transmission system across the point of common coupling. Such systems may be used to supply part or all of a customers’ load continuously or during an outage. A system can be non-exporting by virtue of inverter programming or by some other on-site limiting element. Non-exporting systems may or may not produce inadvertent exports as defined in paragraph (g) of this rule.
- (r) “Operating mode” means the mode of DER operational characteristics that determines the performance during normal and abnormal conditions. For example, an operating mode such as “export only,” “import only,” and “no exchange.”
- (s) “Parallel operation” means a DER facility that is connected to the utility’s system and can supply AC electricity to the interconnection customer simultaneously with the utility’s supply of AC electricity.
- (t) “Party” or “parties” means the utility, interconnection customer, or any combination thereof.
- (u) “Point of interconnection” means the point where the interconnection facilities connect with the utility’s system.
- (v) “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.
- (w) “System upgrades” means the additions, modifications, and upgrades to the utility’s distribution or Commission-jurisdictional transmission system at or beyond the point of interconnection to facilitate interconnection of interconnection resources and render the service necessary to effect the interconnection customer’s operation of interconnection resources. System upgrades do not include interconnection facilities.
- (x) “Transmission system” means an interconnected group of transmission lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.
- (y) “Utility system” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.
- (z) “Upgrades” means the additions and modifications to the utility’s system at or beyond the point of interconnection that are necessary to interconnect an interconnection resources. Upgrades do not include interconnection facilities.

**3853. General Interconnection Procedures.**

**(a) Pre-application procedures.**

- (I) Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.
- (II) The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's website.
- (III) In response to an informal pre-application request, the utility shall provide electric system information for specific locations, feeders, or small areas to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.
- (IV) In addition to the information described in subparagraphs 3853(a)(I) and (III), which may be provided in response to an informal request, an interconnection customer may submit a formal written request for a pre-application report on a proposed interconnection at a specific site using a form supplied by the utility, unless such confidential and cannot be provided pursuant to a confidentiality agreement. The utility may charge up to a Commission-approved fee for the pre-application report. Upon completion, each pre-application report shall be dated and publicly posted to the utility's website with any customer identifying information redacted.

  - (A) The utility shall provide the pre-application report to the interconnection customer within 20 business days of receipt of the completed request form and payment of the fee.
  - (B) The pre-application report shall be non-binding on the utility and shall not confer any rights to the interconnection customer. The provided information shall not guarantee that an interconnection may be completed. Data provided in the pre-application report may become outdated at the time of the submission of the complete interconnection request.
  - (C) The pre-application report need only include existing information. A pre-application report request does not obligate the utility to conduct a study or other analysis of the proposed DER in the event that data is not readily available.
  - (D) If the utility cannot complete all or some of a pre-application report due to lack of available data, the utility should nonetheless explain what information is not available and why it is not available, and the utility shall provide the

interconnection customer with a pre-application report that includes the data that is available.

- (E) Notwithstanding any of the provisions of this section, the utility shall, in good faith, include data in the pre-application report that represents the best available information at the time of reporting. The pre-application report will include the following information:
- (i) total capacity (in MW AC) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed point of interconnection;
  - (ii) existing aggregate generation DER capacity (in MW AC) interconnected to a substation/area bus, bank or circuit (i.e., amount of DER online) likely to serve the proposed point of interconnection;
  - (iii) aggregate queued DER capacity (in MW AC) for a substation/area bus, bank or circuit (i.e., amount of DER in the queue) likely to serve the proposed point of interconnection;
  - (iv) available capacity (in MW AC) of substation/area bus or bank and circuit likely to serve the proposed point of interconnection (i.e., total capacity less the sum of existing aggregate DER capacity and aggregate queued DER capacity);
  - (v) substation nominal distribution voltage and/or transmission nominal voltage, if applicable;
  - (vi) nominal distribution or transmission circuit voltage at the proposed point of interconnection whether the proposed DER is eligible for the Level 1, Level 2 or non-export process;
  - (vii) approximate circuit distance between the proposed point of interconnection and the substation;
  - (viii) relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load as described in the supplemental review minimum load screen in subparagraph 3855(d)(VI)(A) and absolute minimum load at the time of DER production, when available;
  - (ix) number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed point of interconnection and the substation/area. Identify whether the substation has a load tap changer;
  - (x) number of phases available at the proposed point of interconnection. If a single phase, distance from the three- phase circuit;

- (xi) whether the point of interconnection is located on a spot network, grid network, or radial supply; and
- (xii) existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks, based on the proposed point of interconnection.

(b) Capacity of the DER.

- (I) If the interconnection request is for an increase in capacity for an existing DER, the interconnection request shall be evaluated on the basis of the new total capacity of the DER, except as provided below in subparagraph 3853(c)(III).
- (II) If the interconnection request is for a DER that includes multiple components at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple components, except as provided below in subparagraph 3853(c)(III).
- (III) The interconnection request shall be evaluated using the maximum rated capacity of the DER, except as provided below in subparagraph 3853(c)(III). At the utility's discretion in accordance with subparagraph 3853(c)(III), the interconnection request may be evaluated using less than the maximum rated capacity of the DER if the utility determines that the DER is only capable of injecting less power into the utility's system.

(c) Energy storage interconnections.

- (I) Non-exporting energy storage may inadvertently export, so long as the magnitude is less than the energy storage's nameplate rating (kW-gross) and the duration of export of power from the customer's energy storage is less than 30 seconds for any single event. There are no limits to the number of events. Inadvertent export events shall not exceed thermal, service voltage, power quality or network limits defined within Commission rules or interconnection requirements. For good cause shown, the Commission may grant a variance of this section.
- (II) When a storage system is installed in conjunction with a DER facility, both shall be reviewed at the same time and be included in one interconnection agreement.
- (III) Interconnection requests are reviewed based on the combined nameplate rating of exporting systems accounting for their export capacity, and energy storage operating mode(s) configuration. The ongoing operation capacity portion of the interconnection review is based on the actual simultaneous performance AC ratings, taking into account the operational differences of load offset and export. If the contribution of the energy storage to the total contribution is limited by programming of the maximum active power output, use of a power control system, use of a power relay, or some other mutually agreeable on-site limiting element, only the capacity that is designed to inject electricity to the utility's distribution or transmission system (other than inadvertent exports and fault contribution) will be used within certain technical screens and evaluations as specified in paragraphs 3855(b) and (d).



- (IV) Failure of hardware or software system(s) intended to limit energy storage export capacity shall cause the energy storage system to enter a safe operating state. An energy storage system combined with a UL 1741 certified power control system shall be considered capable of entering a safe operating state upon failure of hardware or software system(s). When mutually agreed fail-safe provisions are not provided, at the utility's discretion, the interconnection request may be evaluated using the maximum rated capacity of the energy storage system.
- (V) When a storage system that is an exporting system is installed at the same point of interconnection location as an existing interconnected DER facility, the review level will be based upon the incremental addition of the DER rated capacity and the exporting energy storage system rated capacity for their selected operating, as provided in subparagraph 3853(c)(III) configurations.
- (VI) A storage system may be located on the same side of a production meter as a generating facility when a production meter is required by these rules provided that the storage system is either non-exporting at the service meter or is charged exclusively by the generating facility and only the production recorded by the production meter will be eligible for incentives.
- (d) Interconnection requests.
- (I) The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. Additional fees or deposits shall not be required, except as otherwise specified in these procedures. A single request to interconnect may be submitted by the interconnection customer distributed generation paired with energy storage systems and shall be subject to one interconnection agreement.
- (II) The interconnection request shall be date-stamped and time-stamped upon receipt. The original date- stamped and time-stamp applied to the interconnection request at the time of its original submission shall be the order in which the utility reviews applications to determine completeness.
- (III) The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by the IC.
- (IV) The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, with a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. The IC may re-submit the application within one year without paying an additional interconnection application fee.



- (V) An interconnection request will be deemed complete upon submission of the listed information to the utility. The interconnection request shall be date-stamped and time-stamped upon being deemed complete. This date shall be accepted as the qualifying date-stamp and time-stamp for the purposes of any timetable in subsequent procedures.
- (VI) Any modification to interconnection resource data or equipment configuration or to the interconnection site that is a material modification, may be deemed by the utility to be a withdrawal of the interconnection request, and may require submission of a new interconnection request. A new interconnection request shall not be required for minor modifications to interconnection resource data or equipment configuration or to the interconnection site. Within ten business days of receipt of a proposed modification, the utility, in consultation with an affected system owner, if applicable, shall evaluate whether a proposed modification constitutes a material modification.
- (A) If the proposed modification is determined to be a material modification, then the utility shall notify the IC in writing that the customer may: withdraw the proposed modification; or proceed with a new interconnection request for such modification. The IC shall provide its determination in writing to the utility within ten business days after the utility provides the material modification determination results. If the IC does not provide its determination, the customer's request shall be deemed withdrawn.
- (B) If the proposed modification is determined not to be a material modification, then the utility shall notify the IC in writing that the modification has been accepted and that the IC shall retain its eligibility for interconnection, including its place in the interconnection queue.
- (C) Any dispute as to the utility's determination that a modification constitutes a material modification shall proceed in accordance with the dispute resolution provisions in these procedures.
- (VII) Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:
- (A) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the interconnection resource;
- (B) an option to purchase or acquire a leasehold site for such purpose which may include a letter of intent; or
- (C) an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.
- (D) For generating facilities utilizing the Level 1 25 kW AC inverter process, proof of site control may be demonstrated by the IC's signature on the interconnection application.

(VIII) The utility shall place interconnection requests in a first come, first served order per feeder, per substation transformer, and per substation based upon the date an application is complete pursuant to subparagraph 3853(d)(V). The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.

(e) Evaluation of interconnection requests.

- (I) A request to interconnect an interconnection resource no larger than 25 kW AC, which may be paired with a non-exporting storage system no larger than 25 kW AC, shall be evaluated under the Level 1 process.
- (II) If not eligible for Level 1, a request to interconnect an interconnection resource with a combined nameplate rating larger than 25 kW AC but smaller than 2 MW AC shall be evaluated under the Level 2 process (Fast Track) in accordance with the eligibility requirements in paragraph 3855(a).
- (III) A request to interconnect an interconnection resource that does not pass the Level 1 or Level 2 process shall be evaluated under the Level 3 process.
- (IV) Non-exporting interconnection resources shall be evaluated under the simplified “non-export” interconnection processes outlined in rule 3859. The “non-export” interconnection process is also applicable to additions of new non-exporting interconnection resources paired with existing interconnection resources when the existing interconnection resources have already executed an interconnection agreement.

(f) Interconnection agreements.

- (I) Any interconnection resource operating in parallel with the utility's system is required to have an interconnection agreement with the utility to ensure safety, system reliability, and operational compatibility. References in these procedures to interconnection agreement are to the utility's interconnection agreement as provided on its website, which interconnection agreement is subject to Commission approval upon request.
- (II) Interconnection agreements shall survive transfer of ownership of the interconnection resource to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.
- (III) After receiving an interconnection agreement from the utility, the IC shall have 30 business days to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement, or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. The utility shall provide the IC a fully executed interconnection agreement within two business days after receiving a signed interconnection agreement from the IC. After the parties sign the interconnection agreement, the interconnection of the interconnection resource shall proceed under the provisions of the interconnection agreement.

- (IV) Once the interconnection resource has been authorized by the utility to commence operation in parallel with the utility system, the interconnection customer shall abide by all rules and procedures pertaining to parallel operation in the utility's tariffs and in the interconnection agreement.
- (V) The interconnection customer shall be responsible for the utility's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair and replacement of utility upgrades or utility interconnection facilities not required to serve other utility customers. Such upgrades or facilities shall be specified in the interconnection agreement unless otherwise covered by the utility's tariff or excluded by interconnection agreement. Utilities may not refuse to provide an IC with a fixed dollar amount to cover reasonable and necessary utility upgrades or utility interconnection facilities in order to facilitate an interconnection.
- (g) Reasonable efforts. The utility and IC shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility or IC cannot meet a deadline provided herein, it shall notify the IC, or the utility if the notifying party is the IC, and explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.
- (h) Disputes.
- (I) The utility and IC shall agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this subparagraph.
- (II) In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third-party dispute resolution service for assistance in resolving the dispute.
- (III) The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.
- (IV) Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs billed by and to be paid to neutral third-parties.
- (V) If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission, pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1.
- (i) Interconnection metering. Except as otherwise required by other Commission rules or by the terms of a Commission-approved program offered by the utility any metering necessitated by the use of the interconnection resource shall be installed at the IC's expense in accordance with

Commission requirements or the utility's specifications. For systems below 25 kW AC, additional metering shall not be installed for the purposes of monitoring energy storage systems.

(j) Commissioning tests. Commissioning tests of the IC's installed DER shall be performed pursuant to applicable codes and standards, including IEEE Standard 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" (2005). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202. The utility must be given at least five business days' written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.

(k) Confidentiality.

(I) Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.

(II) Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.

(A) Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.

(B) Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.

(III) Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The

party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.

- (l) Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this rule. The utility shall use the same reasonable and expeditious efforts in processing and analyzing interconnection requests from all interconnection customers, whether the interconnection resource is owned or operated by the utility, its subsidiaries or affiliates, or others.
- (m) Record retention. The utility shall maintain for three years, records, subject to audit, of all interconnection requests received under these procedures, the times required to complete each step of the interconnection request approvals and disapprovals, enumerated in these rules and justification for the actions taken on the interconnection requests.
- (n) Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in this rule. The utility will include such affected system operators in all meetings held with the IC as required by this rule. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems and shall provide to the IC any analysis and data underlying the affected system utility's determinations.
- (o) Insurance. A Utility may only require an applicant (i.e., an interconnection customer) to purchase insurance covering Utility damages, and then only in the amounts stated below. An interconnection customer, at its own expense, shall secure and maintain in effect during the term of the interconnection agreement, insurance coverage in the following amounts:

(I) For non-inverter-based generating facilities:

Nameplate Rating > 5 MW – \$3,000,000 for each occurrence

2 MW < Nameplate Rating < 5 MW – \$2,000,000 for each occurrence

500 kW < Nameplate Rating < 2 MW – \$1,000,000 for each occurrence

50 kW < Nameplate Rating < 500 kW – \$500,000 for each occurrence

Nameplate Rating < 50 kW - no additional insurance

(II) For inverter-based Generating Facilities:

Nameplate Rating > 5 MW – \$2,000,000 for each occurrence

1 MW < Nameplate Rating > 5 MW – \$1,000,000 for each occurrence

Nameplate Rating > 1 MW - no additional insurance

(III) Colorado governmental entities that self-insure against liability in amounts above those required in paragraph (n) for interconnection resources DER up to 2 MW or to the replacement value of the interconnection resource DER for those interconnection resources above 2 MW, shall not be required to purchase additional insurance or to add the utility as an additional insured to any policy, nor shall they be obligated to indemnify the utility, though they shall be liable for any negligent or intentional act or omission of the municipality, its employees, contractors, subcontractors, or agents.

(IV) Certificates of Insurance evidencing the requisite coverage and provision(s) when required shall be furnished to the utility prior to the date of interconnection of the interconnection resource. Utilities shall be permitted to obtain proof of current insurance coverage periodically from the interconnection customer in order to verify proper liability insurance coverage. Customers will not be allowed to commence or continue interconnected operations unless they provide to the utility evidence that satisfactory insurance coverage is in effect at all times.

(p) Implementation by tariff.

(I) Each utility shall have on file with the Commission an interconnection tariff that sets forth certain fees, deadlines, and interconnection procedures. A utility's interconnection tariff shall comply with these Interconnection Rules, but when appropriate may include shorter deadlines for certain procedures.

(II) The interconnection tariff shall be filed along with an advice letter. Tariffs filed by cooperative electric associations shall be informational only. Tariffs filed by investor-owned electric utilities may be set for hearing and suspended in accordance with the Commission's Rules of Practice and Procedure and applicable statutes.

(III) The interconnection tariff shall include the following provisions:

(A) timelines: paragraphs 3853(a),(d),(f),(h), 3854(a), 3855(b),(c), and (d), and 3856(a),(b),(c),(d);

(B) fees: paragraphs 3853(a),(d),(f),(j), 3854(a) and (b), and 3856(a);

(C) material modification withdrawals: paragraph 3853(d); and

(D) maximum rated capacity: paragraphs 3853(a),(b), and (c).

(q) Reporting.

(I) Each utility shall submit an interconnection report to the Commission two times per year and shall make it available to the public on its website. The first interconnection report shall be due 180 days after the effective date of these interconnection rules. Upon a filing by a party with proper standing showing good cause, and when necessary and appropriate, the Commission may by order increase the frequency of such reporting on a temporary basis. The report shall contain relevant totals for both the year and the most

recent reporting period, including the following information listed in subparagraphs (g)(II) and (III) of this rule.

(II) Pre-application reports:

- (A) total number of reports requested;
- (B) total number of reports in process;
- (C) total number of reports issued;
- (D) total number of requests withdrawn;
- (E) maximum, mean, and median processing times from receipt of request to issuance of report; and
- (F) number of reports processed in more than the 20 business days allowed in subparagraph 3853(a)(IV)(A).

(III) Interconnection applications:

- (A) total number received, broken down by:
  - (i) primary fuel type (e.g., solar, wind, bio-gas, etc.); and
  - (ii) system size (e.g., <25 kW, <1 MW, <5MW, >5MW).
- (B) Level 1 review process.
  - (i) total number of applications processed; and
  - (ii) maximum, mean, and median processing times from receipt of complete application to provision of a counter-signed interconnection agreement.
- (C) Level 2 review process.
  - (i) total number of applications that passed the screens in paragraph 3855(b);
  - (ii) total number of applications that failed the screens in paragraph 3855(b); and
  - (iii) maximum, mean, and median processing times from receipt of complete application to issuance of an interconnection agreement.
- (D) Supplemental review.
  - (i) total number of applications that passed the screens in paragraph 3855(d);



(ii) total number of applications that failed the screens in paragraph 3855(d); and

(iii) maximum, mean, and median processing times from receipt of complete application to issuance of interconnection agreement.

(E) Level 3 review process:

(i) system impact studies

(ii) total number of system impact studies completed under paragraph 3856(c); and

(iii) maximum, mean, and median processing times from receipt of a signed interconnection system impact study agreement to provision of study results.

#### **3854. Level 1 Process (25 kW AC Inverter Process).**

This rule establishes the procedures for evaluating an interconnection request for a certified inverter-based DER no larger than 25 kW AC which may be paired with a non-exporting energy storage system no larger than 25 kW AC. The application process uses an all-in-one document (application) that includes a simplified interconnection request, simplified procedures, and a brief set of terms and conditions.

(a) General Level 1 procedures.

(I) The IC completes application and submits it to the utility.

(II) The utility acknowledges to the customer receipt of the application within three business days of receipt.

(III) The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.

(IV) Within ten business days, the utility shall verify whether the interconnection resource can be interconnected safely and reliability using the same screens as applied in Level 2 process as set forth in rule 3855 except for screens (V), (VI), (X) and (XI) which will not be deemed necessary for the Level 1 process (25 kW AC Inverter Process). If the interconnection fails these screens, the utility shall consider this a failure of the Level 2 process screens in rule 3855. The utility shall continue the interconnection review under the Level 2 process, starting at paragraph 3855(c), provided that the IC pays the difference in the Level 2 process application fee and deposit requirements. The utility may also review the application within the 105 business day period to evaluate issues associated with highly seasonal circuits.

(V) Provided all the criteria of this rule 3854 are met, unless the utility determines and demonstrates that the interconnection resource cannot be interconnected safely and



reliably and requires upgrades, the utility approves and executes the application and returns it to the customer within ten business days.

(VI) After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the interconnection resource for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary. The utilities should define “witness test” in their interconnection tariff.

(VII) The utility shall notify the customer that parallel operation of the interconnection resource is authorized within ten business days of the certificate of completion. If the witness test is not satisfactory, the utility has the right to disconnect the interconnection resource. The customer has no right to operate in parallel until a witness test has been performed, or previously waived in the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.

(b) Level 1 application.

(I) The customer must provide in the application the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.

(II) The application is considered complete when it provides all applicable and correct information as required below. Additional information to evaluate the application may be required.

(III) The application shall include the following information, as applicable:

(A) Processing fee. A fee of \_\_\_\_\_ must accompany this application.

(B) Interconnection customer:

\_\_\_\_\_  
Name  
\_\_\_\_\_  
Contact Person  
\_\_\_\_\_  
Address  
\_\_\_\_\_  
City State Zip  
\_\_\_\_\_  
Telephone (Day) and (Evening)  
\_\_\_\_\_  
Fax Number and E-Mail Address

(C) Engineering firm or Installer (If applicable):

\_\_\_\_\_  
Contact Person  
\_\_\_\_\_  
Address  
\_\_\_\_\_  
City State Zip  
\_\_\_\_\_  
Telephone  
\_\_\_\_\_  
Fax and E-Mail Address

(D) Contact (if different from Interconnection Customer):

\_\_\_\_\_  
Name  
\_\_\_\_\_  
Address  
\_\_\_\_\_  
City State Zip

Telephone (Day) and (Evening)  
Fax Number and E-Mail Address  
Owner of the facility (include percent ownership by any electric utility)

(E) DER information:  
Location (if different from above)  
Utility  
Account number  
DER components  
Inverter manufacturer: \_\_\_\_\_ Model  
Nameplate rating: (kW AC) (kVA) (AC Volts)  
Single phase \_\_\_\_\_ Three phase \_\_\_\_\_  
System design capacity: \_\_\_\_\_ (kW AC) \_\_\_\_\_ (kVA)  
Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other  
Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)  
Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_  
If Yyes, attach manufacturer's cut-sheet showing UL1741 listing  
Estimated installation date: \_\_\_\_\_ Estimated in-service date: \_\_\_\_\_

The ten kW AC inverter process is available only for inverter-based interconnection resources no larger than ten kW AC that satisfy the codes, standards, and certification requirements specified in certain of these interconnection rules, or the utility has reviewed the design or tested the proposed interconnection resource and is satisfied that it is safe to operate.

(F) List components of the small generating facility equipment package that are currently certified:

Equipment type certifying entity:

- 1.
- 2.
- 3.
- 4.
- 5.

(G) Limited-Export / Non-Export / Limited-Import Data:

If multiple export control systems are used, provide for each control system and use additional sheets if needed.

Is export controlled to less than the Total Aggregate Nameplate Rating? Yes:

No:

Method of export limitation: Power Control System / Reverse Power Protection / Minimum Power Protection / Other (describe):

Export controls are applied to how many generators? Multiple: One:

If Power Control System is used, open loop response time(s): \_\_\_\_\_

Power Control System output limit setting: (kW AC) (kVA)

Energy Storage System Power Control System operating mode:

Unrestricted: Export Only: Import Only: No Exchange:

Describe which Generators the export control system controls:

(H) Interconnection customer signature and certification:

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based interconnection resource No Larger than 10kW AC and return the certificate of completion when the interconnection resource has been installed.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Contingent approval to interconnect the small generating facility.

(For company use only)

Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than ten kW AC and return of the certificate of completion.

Company signature: \_\_\_\_\_

Title: Date: \_\_\_\_\_

Application ID number: \_\_\_\_\_

Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_

(c) Level 1 terms and conditions.

(I) Construction of the facility. The interconnection customer may proceed to construct the interconnection resource when the utility approves the interconnection request (the application) and returns it to the IC.

(II) Interconnection and operation. The IC may operate the interconnection resource and interconnect with the utility's electric system once all of the following have occurred:

(A) upon completing construction, the interconnection customer will cause the interconnection resource to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;

(B) the customer returns the certificate of completion to the utility; and

(C) the utility has completed its inspection of the interconnection resource. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the interconnection resource has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.

- (D) The utility has the right to disconnect the interconnection resource in the event of improper installation or failure to return the certificate of completion.
- (III) Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the interconnection resource as required to ensure that it complies at all times with the interconnection standards to which it has been certified.
- (IV) Access. The utility shall have access to the disconnect switch and metering equipment of the interconnection resource at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.
- (V) Disconnection. The utility may temporarily disconnect the interconnection resource as allowed in the interconnection agreement and upon the following conditions:
  - (A) for scheduled outages per notice requirements in the utility's tariff or Commission rules;
  - (B) for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or
  - (C) if the interconnection resource does not operate in the manner consistent with these terms and conditions.
  - (D) The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.
- (VI) Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.
- (VII) The interconnection customer is not required to provide general liability insurance coverage as part of this agreement, or through any other utility requirement.
- (VIII) Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of the interconnection agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (c)(VI) of this rule.
- (IX) Termination. The interconnection agreement to operate in parallel may be terminated under the following conditions.
  - (A) By the customer by providing written notice to the utility.

- (B) By the utility if the interconnection resource fails to operate for any consecutive 12-month period or the customer fails to remedy a violation of these terms and conditions.
- (C) Permanent disconnection. In the event the interconnection agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its interconnection resource.
- (D) Survival rights. The interconnection agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.
- (X) Assignment/Transfer of ownership of the facility. The interconnection agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.

**3855. Level 2 Process (Fast Track).**

This fast track process is available to an IC proposing to interconnect its interconnection resource with the utility's system if the interconnection resource meets the eligibility provisions in this rule 3855.

(a) Eligibility.

- (I) Eligibility for the Level 2 process is determined based upon the type and size of the interconnection resource as well as the voltage of the utility line and the location of and the type of utility line at the point of interconnection. An interconnection customer may determine whether the interconnection resource is eligible for the Level 2 process by requesting a pre-application report pursuant to subparagraph 3853(a)(IV).
- (II) For certified inverter-based systems, the size limit of the interconnection resource varies according to the voltage of the utility line at the proposed point of interconnection. Certified inverter-based interconnection resource facilities located within 2.5 electrical circuit miles of a substation and on a mainline are eligible for the Level 2 process under the higher thresholds pursuant to this rule 3855. The utilities should define "mainline" in their interconnection tariff.

<b><u>Level 2 Process Eligibility for Inverter-Based Systems kW and MW are AC</u></b>		
<b><u>Line Voltage</u></b>	<b><u>Eligibility Regardless of Location</u></b>	<b><u>Eligibility Meeting Location Requirements (Mainline and Substation)</u></b>
<u>&lt; 5 kV</u>	<u>≤ 500 kW</u>	<u>≤ 500 kW</u>
<u>≥ 5 kV and &lt; 15 kV</u>	<u>≤ 2 MW</u>	<u>≤ 3 MW</u>
<u>≥ 15 kV and &lt; 30 kV</u>	<u>≤ 3 MW</u>	<u>≤ 4 MW</u>
<u>≥ 30 kV and &lt; 69 kV</u>	<u>≤ 4 MW</u>	<u>≤ 5 MW</u>

- (III) All synchronous and induction facilities must be no larger than 2 MW AC to be eligible for the Level 2 process, regardless of location.
  - (IV) In addition to the size threshold, the DER must satisfy the codes, standards, and certification requirements specified in certain of these interconnection rules.
  - (V) The technical screens shall not preclude the utility from utilizing tools that perform screening functions using different methodology given that the analysis is aimed at preventing the same voltage, thermal and protection limitations as the initial and supplemental review screens under paragraph 3855(d).
- (b) Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the following.
- (I) The proposed interconnection resource's point of interconnection must be on a portion of the utility's distribution system that is subject to the utility's tariffs. Proposed interconnection resources on highly seasonal circuits shall also be subject to the supplemental review pursuant to paragraph 3855(d).

- (II) For interconnection of a proposed interconnection resource to a radial distribution circuit, the aggregated generation, including the proposed interconnection resource, on the line section(s) shall not exceed 15 percent of the line section’s annual peak load as most recently measured at the substation or calculated for the line section(s). A line section is that portion of a utility’s electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device. Energy storage system(s) capacity for purposes of this screen shall be based on subparagraph 3853(c)(III).
- (III) The proposed interconnection resource, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit’s maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.
- (IV) The proposed interconnection resource, in aggregate with other interconnection resources on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or interconnection customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.
- (V) The proposed interconnection resource shall meet the rapid voltage change and flicker requirements of IEEE Standard 1453 (2015) and IEEE Standard 1547 (2018) based on the appropriate test. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (VI) The type of interconnection to a primary distribution line shall be determined based on the table below, including a review of the type of electrical service provided to the interconnection customer, line configuration, and the transformer connection to limit the potential for creating over-voltages on the utility’s electric power system due to a loss of ground during the operating time of any anti-islanding function.

<u>Primary Distribution Line Type</u>	<u>Type of Interconnection to Primary Distribution Line</u>	<u>Result/Criteria</u>
<u>Three-phase, three wire</u>	<u>3-phase or single phase, phase-to-phase</u>	<u>Pass screen</u>
<u>Three-phase, four wire</u>	<u>Effectively-grounded 3 phase or Single-phase, line-to-neutral</u>	<u>Pass screen</u>

- (VII) If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 205 kW AC. Energy storage

system(s) capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).

- (VIII) If the proposed interconnection resource is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.
  - (IX) No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.
  - (X) For interconnection of a proposed interconnection resource to the load side of spot network protectors serving more than a single customer, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the interconnection resource must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.
  - (XI) For interconnection of a proposed interconnection resource to the load side of area network protectors, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW AC.
  - (XII) The nameplate capacity of a proposed interconnection resource, in combination with the nameplate capacity of any previously interconnected interconnection resource, shall not exceed the capacity of the customer's existing electrical service unless there is a simultaneous request for an upgrade to the customer's electrical service, regardless of exporting or non-exporting designations for any of the interconnection resources.
- (c) Customer options meeting.
- (I) If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review that the interconnection resource may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting. The utility shall provide to the IC in writing with a detailed information on the reasons(s) for failure.
  - (II) If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; without a supplemental study or other additional studies or actions; or without significant costs to address safety, reliability, or power quality problems, the utility shall notify the IC within the five business day period after the determination and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen



analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:

- (A) offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;
- (B) offer to perform a supplemental review pursuant to paragraph 3855(d) and provide a non-binding good faith estimate of the costs and time of such review; or
- (C) obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 study process.

(d) Supplemental review.

- (I) To accept a utility's offer to conduct a supplemental review, the interconnection customer, within 15 business days of the offer, shall agree in writing to the supplemental review and submit a deposit for the estimated costs. If the written agreement and deposit have not been received by the utility within the 15 days, the interconnection request shall continue to be evaluated under the Level 3 process, unless the request is withdrawn by the IC. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.
- (II) Within 30 business days following receipt of the deposit for a supplemental review, the utility will perform a supplemental review of the proposed interconnection resource using the screens set forth below, notify the interconnection customers of the results of the screens in writing, and include with the notification copies of the analysis and data underlying the utility's determinations.
- (III) The interconnection customer may specify the order in which the utility completes the supplemental review screens.
- (IV) The utility shall notify the interconnection customer of the failure of the interconnection resource in any supplement review screen or of the utility's inability to perform any screen for the interconnection resource. Within two business days of the receipt of such notice, the interconnection customer may grant the utility permission:
  - (A) to continue evaluating the proposed interconnection under this paragraph 3855(d);
  - (B) to continue evaluating the proposed interconnection under this paragraph 3855(d) subject to the utility's determination of minor modifications;

- (C) to terminate the supplemental review and instead to continue evaluating the interconnection resource under the Level 3 process; or
- (D) to terminate the supplemental review upon withdrawal of the interconnection request by the interconnection customer.
- (V) Minimum load, minimum loading, and minimum load data shall be specific to time(s) that the interconnection resource exports active power to the utility.
- (VI) Supplemental review screens.
  - (A) Minimum load screen.
    - (i) The interconnection resource capacity on the line section(s) shall be less than 100 percent of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed interconnection resource. Energy storage system(s), proposed and aggregated capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
    - (ii) This screen shall be determined using 12 months of line section(s) minimum load data (including onsite load but not station service load served by the proposed interconnection resource), calculated minimum load data, or estimated minimum load data using existing data a power flow model. If minimum load data is not available or the minimum load data cannot be calculated estimated, the utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under subparagraph 3855(d)(IV).
    - (iii) The type of interconnection resource shall be taken into account when calculating or estimating circuit or line section(s) minimum load. The utility shall use daytime minimum load for solar photovoltaic (PV) interconnection resource with no battery storage (i.e., 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems). The utility shall use absolute minimum load for all other types of interconnection resources.
    - (iv) Only the net injection into the utility's electric system shall be considered as part of the interconnection resource when this screen is applied to an interconnection resource serving some station service load.
    - (v) The utility shall not consider as part of the interconnection resource the capacity known to be already reflected in the minimum load data.
  - (B) Voltage and power quality screen.
    - (i) In aggregate with existing interconnection resource on the circuit and line section(s), the voltage regulation on the circuit and line section(s) shall

be maintained in compliance with relevant requirements under all system conditions;

- (ii) in aggregate with existing interconnection resource on the circuit and line section(s), the voltage fluctuation shall be within acceptable limits as defined by IEEE Standard 1453 (2015) and conforming with IEEE Standard 1453 (2015), while also taking into account activated inverter functionality, and by the limits defined by IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202; and
- (iii) in aggregate with existing interconnection resource on the circuit and line section(s), the harmonic levels shall meet IEEE Standard 519 (2014) limits. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.

(C) Safety and reliability screen.

- (i) The location of the proposed interconnection resource and the aggregate interconnection resource capacity on the line section(s) shall not create impacts to safety or reliability that cannot be adequately addressed without application of the Level 3 process.
- (ii) Minimum load, minimum loading and minimum load data shall be specific to time(s) of interconnection resource export capacity.
- (iii) The utility shall consider whether the line section(s) has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).
- (iv) The utility shall consider whether the loading along the line section(s) is uniform or even given the sources of the screening data.
- (v) The utility shall consider whether the proposed interconnection resource is located in close proximity to a substation (i.e., less than 2.5 electrical circuit miles) and whether the line section(s) from the substation to the point of interconnection is a mainline rated for normal and emergency ampacity.
- (vi) The utility shall consider whether the proposed interconnection resource incorporates a time delay function to prevent reconnection of the interconnection resource to the utility's system until system voltage and frequency are within normal limits for a prescribed time.
- (vii) The utility shall consider whether operational flexibility is reduced by the proposed interconnection resource, such that transfer of the line distribution circuit/substation may trigger overloads or voltage issues.

(viii) The utility shall consider whether the proposed interconnection resource employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, and voltage quality.

(VII) If the supplemental screening meets utility determined adequacy with minor modifications, the utility shall provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system upon notification of review results.

(e) Interconnection agreements.

(I) If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.

(II) If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.

(III) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(c)(II)(A), the utility will provide the interconnection customer with an executable interconnection agreement within ten business days of the customer options meeting.

(IV) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(d)(VII), the utility will provide the interconnection customer with an executable interconnection agreement within five business days of IC agreement to pay.

### **3856. Level 3 Process (Study Process).**

This study process shall be used by an interconnection customer proposing to interconnect its interconnection resource with the utility's system if the interconnection resource does not meet the size limitations for the Level 2 Process, is not certified; or, is certified but did not pass the Level 1 process or Level 2 process.

(a) Scoping meeting.

(I) A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.

(II) The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection

agreement. If the IC elects to move forward with a feasibility study, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.

- (III) The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the IC elects not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
- (IV) Feasibility studies, scoping studies, and facility studies may be combined or waived for simpler projects by mutual agreement of the utility and the IC. If all such studies are waived, the utility shall provide the IC an executable interconnection agreement within ten business days after the scoping meeting. If the scoping meeting is also omitted by mutual agreement, the utility shall provide the IC an executable interconnection agreement within ten business days after the interconnection request is deemed complete and this Level 2 process is completed.
- (V) If feasibility studies, system impact studies, and facility studies are combined, or required to be completed for a single application, a utility shall perform the combined studies within no more than 60 business days of the date upon which the IC authorizes the utility to proceed with the level 3 process.
- (VI) Utility must offer a developer the opportunity to pay full fees upfront and proceed straight to the system impact study.

(b) Feasibility study.

- (I) The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the interconnection resource. At its discretion, the utility may use the Level 2 supplemental review as described in paragraph 3855(d) as the feasibility study.
- (II) A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.
- (III) The scope of and cost responsibilities for the feasibility study are described in the feasibility study agreement.
- (IV) If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
- (V) If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).

(VI) If no system impact study is required and no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the feasibility study.

(c) System impact study.

(I) Within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth below. A system impact study shall identify and detail the electric system impacts that would result if the proposed interconnection resource were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.

(II) If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.

(III) In instances where the feasibility study or the distribution system impact study shows potential for adverse impacts on the utility's transmission system, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the transmission-supplied scope of the study and a transmission-supplied non-binding good faith estimate of the cost to perform the study, if such a study is required.

(IV) If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.

(V) If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.

(VI) In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.

(VII) A deposit of the good faith estimated costs for each system impact study may be required from the IC.

(VIII) The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.

- (IX) Where transmission systems and distribution systems have separate owners, such as is the case with transmission-dependent utilities– whether investor-owned or not – the IC may apply to the nearest utility (transmission owner, regional transmission operator, or independent utility) providing transmission service to the transmission-dependent utility to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.
- (X) If no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the system impact study.
- (d) Facilities study.
- (I) Within 45 business days of executing an appropriate agreement or contract, the utility shall perform a facilities study using the screens set forth below. Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC within five business days along with a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.
- (II) In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.
- (III) The facilities study shall include a detailed list of necessary system upgrades and an itemized cost estimate, breaking out equipment, labor, operation and maintenance and other costs, including overheads, for completing such upgrades, which may not be exceeded by 125 percent if actual upgrades are completed.
- (IV) Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement. At the option of the IC, the IC may separately arrange for the design and upgrade of some of the interconnection facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the utility, under the provisions of the facilities study agreement. If the IC separately arranges for design and construction, and provided that security and confidentiality requirements can be met, the utility shall make sufficient information available to the IC in accordance with confidentiality and critical infrastructure requirements in order to permit the IC to obtain an independent design and cost estimate for any necessary facilities.
- (V) A deposit of the good faith estimated costs for the facilities study may be required from the IC.
- (VI) The scope of and cost responsibilities for the facilities study shall be described in a facilities study agreement.



(VII) Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.

**3857. Certification Codes and Standards.**

Unless one or more of the following standards has been incorporated by reference into these interconnection rules, the Commission encourages the utilities and their interconnection customers, to whom these rules apply, to use the following standards and reference materials for guidance.

ANSI C84.1- (2016) Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

ANSI/NEMA MG 1 — (2016), Motors and Generators

IEEE Std. C37.90.1- (2012), IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std. C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std. C37.108-2002, IEEE Guide for the Protection of Network Transformers

IEEE Std. C57.12.44-2014, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std. C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text

IEEE Std. C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

IEEE Std. 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition

IEEE Std. 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std. 1453-2015 IEEE Recommended Practice for the Analysis of Fluctuating Installation on Power Systems

IEEE Std. 1547-2018, IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEEE Std. 1547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

NFPA 70 (2017), National Electrical Code

UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems



UL 1741 SA-2018, IEEE Standards for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

**3858. Certification of DER Packages.**

- (a) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in rule 3857; it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- (b) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- (c) Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.
- (d) If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- (e) Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of interconnection shall be required to meet the requirements of this interconnection procedure.
- (f) An equipment package does not include equipment provided by the utility.

**3859. Filing of Interconnection Manual.**

No later than 90 calendar days after the effective date of these rules, each utility subject to these rules shall file with the Commission information about its interconnection manual in an advice letter and tariff filing pursuant to rule 3108. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. The utility shall update this information within 30 days after any changes have been made to its manual.

**3860. – 3899. [Reserved]**

## COLORADO DEPARTMENT OF REGULATORY AGENCIES

### Public Utilities Commission

#### 4 CODE OF COLORADO REGULATIONS (CCR) 723-3

#### PART 3 RULES REGULATING ELECTRIC UTILITIES

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#### RENEWABLE ENERGY STANDARD

\* \* \* \*

[indicates omission of unaffected rules]

**3667. [Reserved].**

\* \* \* \*

[indicates omission of unaffected rules]

**3806. – 3849. [Reserved].**

#### INTERCONNECTION PROCEDURES AND STANDARDS.

**3850. Applicability.**

The following interconnection procedures shall apply to the interconnection of all retail renewable distributed generation and other distributed energy resources including energy storage systems that operate in parallel with and are connected to the utility, when such interconnections are not subject to the jurisdiction of FERC. Each utility shall also provide, on its web site, interconnection standards or other technical guidance not included in, but that are consistent with, these procedures and which shall be reviewable by the Commission upon a Commission decision after the filing of an advice letter and tariff or application pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1. This rule largely tracks the 2013 FERC amended version of the FERC 2006 Small Generator Interconnection Procedures.

### **3851. Overview and Purpose.**

Infrastructure, security of electric system equipment, and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and interconnection customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

The purpose of these rules is to establish reasonable interconnection and insurance requirements for interconnection resources retail renewable distributed generation and other distributed energy resources that connect to a utility's system that operate in parallel with and are connected to the utility.

### **3852. Definitions.**

The following definitions apply only to rules 3850 to 3859.

- (a) "Business day" means Monday through Friday, excluding federal holidays.
- (b) "Distributed energy resource" or "DER" means the interconnection customer's source of electric power connected to the utility's distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. DER includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (c) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from interconnection resources or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.
- (d) "Energy storage system" means any commercially available, customer-sited system or utility-sited system, including batteries and the batteries paired with on-site generation, that does not generate energy, that is capable of retaining, storing, and delivering energy by chemical, thermal, mechanical, or other means.
- (e) "Export capacity" means the amount of alternating current (AC) electrical energy that an interconnection resource is designed intentionally to transfer to the utility's system across the point of interconnection.
- (f) "Highly seasonal circuit" means a circuit with a ratio of annual peak load to off-season peak load greater than six.

- (g) “Inadvertent export” means the potential condition in which a normally non-exporting or limited-exporting DER experiences a momentary export that does not exceed limitations specified in paragraph 3853(c).
- (h) “Interconnection agreement” means legally binding contract between the interconnection customers and the utility that formally documents terms and conditions related to the operation and maintenance of any DER in accordance with the utility’s tariffs on file with the Commission.
- (i) “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its DER with the utility’s system.
- (j) “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the DER and the point of interconnection, including any modification, additions or upgrades that are necessary physically and electrically to interconnect the DER to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.
- (k) “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing DER that is interconnected with the utility’s system.
- (l) “Interconnection resource” means the interconnection customer’s source of electric power connected to the utility’s distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, bidirectional storage, electric vehicle chargers with vehicle to grid, vehicle to home, vehicle to building or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. “Interconnection resource” includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (m) “Interconnection tariffs” are required filings from the utilities that set forth certain fees associated with interconnection. Tariff filings would accommodate utility-specific costs, while allowing for appropriate statewide standardization in the provisions set forth.
- (n) “Line section” means that portion of the utility’s electric delivery system that is connected to a Customer and bounded by automatic sectionalizing devices or the end of the distribution line.
- (o) “Material modification” means a modification that has a material impact on the cost or timing of processing an application with a later queue priority date or a change in the point of interconnection. A material modification does not include, for example: (a) a change of ownership of an interconnection resource; (b) changes to the address of the generating facility, so long as the generating facility remains on the same parcel; (c) a change or replacement of interconnection resource that is a like-kind substitution in size, ratings, impedances, efficiencies, or capabilities of the equipment specified in the original application; or (d) a reduction in the capacity of the interconnection resource of ten percent or less.

- (p) “Minor modifications” means modifications to the utility’s distribution system or to the interconnection facilities that do have a material impact on the cost or on the timing of an interconnection request.
- (q) “Non-exporting system” means an interconnection resource that is designed so that it does not intentionally transfer electrical energy to the utility’s distribution or transmission system across the point of common coupling. Such systems may be used to supply part or all of a customers’ load continuously or during an outage. A system can be non-exporting by virtue of inverter programming or by some other on-site limiting element. Non-exporting systems may or may not produce inadvertent exports as defined in paragraph (g) of this rule.
- (r) “Operating mode” means the mode of DER operational characteristics that determines the performance during normal and abnormal conditions. For example, an operating mode such as “export only,” “import only,” and “no exchange.”
- (s) “Parallel operation” means a DER facility that is connected to the utility’s system and can supply AC electricity to the interconnection customer simultaneously with the utility’s supply of AC electricity.
- (t) “Party” or “parties” means the utility, interconnection customer, or any combination thereof.
- (u) “Point of interconnection” means the point where the interconnection facilities connect with the utility’s system.
- (v) “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.
- (w) “System upgrades” means the additions, modifications, and upgrades to the utility’s distribution or Commission-jurisdictional transmission system at or beyond the point of interconnection to facilitate interconnection of interconnection resources and render the service necessary to effect the interconnection customer’s operation of interconnection resources. System upgrades do not include interconnection facilities.
- (x) “Transmission system” means an interconnected group of transmission lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.
- (y) “Utility system” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.
- (z) “Upgrades” means the additions and modifications to the utility’s system at or beyond the point of interconnection that are necessary to interconnect an interconnection resources. Upgrades do not include interconnection facilities.

**3853. General Interconnection Procedures.**

- (a) Pre-application procedures.

- (I) Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.
- (II) The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's website.
- (III) In response to an informal pre-application request, the utility shall provide electric system information for specific locations, feeders, or small areas to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.
- (IV) In addition to the information described in subparagraphs 3853(a)(I) and (III), which may be provided in response to an informal request, an interconnection customer may submit a formal written request for a pre-application report on a proposed interconnection at a specific site using a form supplied by the utility, unless such confidential and cannot be provided pursuant to a confidentiality agreement. The utility may charge up to a Commission-approved fee for the pre-application report. Upon completion, each pre-application report shall be dated and publicly posted to the utility's website with any customer identifying information redacted.
  - (A) The utility shall provide the pre-application report to the interconnection customer within 20 business days of receipt of the completed request form and payment of the fee.
  - (B) The pre-application report shall be non-binding on the utility and shall not confer any rights to the interconnection customer. The provided information shall not guarantee that an interconnection may be completed. Data provided in the pre-application report may become outdated at the time of the submission of the complete interconnection request.
  - (C) The pre-application report need only include existing information. A pre-application report request does not obligate the utility to conduct a study or other analysis of the proposed DER in the event that data is not readily available.
  - (D) If the utility cannot complete all or some of a pre-application report due to lack of available data, the utility should nonetheless explain what information is not available and why it is not available, and the utility shall provide the interconnection customer with a pre-application report that includes the data that is available.

- (E) Notwithstanding any of the provisions of this section, the utility shall, in good faith, include data in the pre-application report that represents the best available information at the time of reporting. The pre-application report will include the following information:
- (i) total capacity (in MW AC) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed point of interconnection;
  - (ii) existing aggregate generation DER capacity (in MW AC) interconnected to a substation/area bus, bank or circuit (i.e., amount of DER online) likely to serve the proposed point of interconnection;
  - (iii) aggregate queued DER capacity (in MW AC) for a substation/area bus, bank or circuit (i.e., amount of DER in the queue) likely to serve the proposed point of interconnection;
  - (iv) available capacity (in MW AC) of substation/area bus or bank and circuit likely to serve the proposed point of interconnection (i.e., total capacity less the sum of existing aggregate DER capacity and aggregate queued DER capacity);
  - (v) substation nominal distribution voltage and/or transmission nominal voltage, if applicable;
  - (vi) nominal distribution or transmission circuit voltage at the proposed point of interconnection whether the proposed DER is eligible for the Level 1, Level 2 or non-export process;
  - (vii) approximate circuit distance between the proposed point of interconnection and the substation;
  - (viii) relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load as described in the supplemental review minimum load screen in subparagraph 3855(d)(VI)(A) and absolute minimum load at the time of DER production, when available;
  - (ix) number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed point of interconnection and the substation/area. Identify whether the substation has a load tap changer;
  - (x) number of phases available at the proposed point of interconnection. If a single phase, distance from the three- phase circuit;
  - (xi) whether the point of interconnection is located on a spot network, grid network, or radial supply; and

- (xii) existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks, based on the proposed point of interconnection.
- (b) Capacity of the DER.
  - (I) If the interconnection request is for an increase in capacity for an existing DER, the interconnection request shall be evaluated on the basis of the new total capacity of the DER, except as provided below in subparagraph 3853(c)(III).
  - (II) If the interconnection request is for a DER that includes multiple components at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple components, except as provided below in subparagraph 3853(c)(III).
  - (III) The interconnection request shall be evaluated using the maximum rated capacity of the DER, except as provided below in subparagraph 3853(c)(III). At the utility's discretion in accordance with subparagraph 3853(c)(III), the interconnection request may be evaluated using less than the maximum rated capacity of the DER if the utility determines that the DER is only capable of injecting less power into the utility's system.
- (c) Energy storage interconnections.
  - (I) Non-exporting energy storage may inadvertently export, so long as the magnitude is less than the energy storage's nameplate rating (kW-gross) and the duration of export of power from the customer's energy storage is less than 30 seconds for any single event. There are no limits to the number of events. Inadvertent export events shall not exceed thermal, service voltage, power quality or network limits defined within Commission rules or interconnection requirements. For good cause shown, the Commission may grant a variance of this section.
  - (II) When a storage system is installed in conjunction with a DER facility, both shall be reviewed at the same time and be included in one interconnection agreement.
  - (III) Interconnection requests are reviewed based on the combined nameplate rating of exporting systems accounting for their export capacity, and energy storage operating mode(s) configuration. The ongoing operation capacity portion of the interconnection review is based on the actual simultaneous performance AC ratings, taking into account the operational differences of load offset and export. If the contribution of the energy storage to the total contribution is limited by programming of the maximum active power output, use of a power control system, use of a power relay, or some other mutually agreeable on-site limiting element, only the capacity that is designed to inject electricity to the utility's distribution or transmission system (other than inadvertent exports and fault contribution) will be used within certain technical screens and evaluations as specified in paragraphs 3855(b) and (d).
  - (IV) Failure of hardware or software system(s) intended to limit energy storage export capacity shall cause the energy storage system to enter a safe operating state. An



energy storage system combined with a UL 1741 certified power control system shall be considered capable of entering a safe operating state upon failure of hardware or software system(s). When mutually agreed fail-safe provisions are not provided, at the utility's discretion, the interconnection request may be evaluated using the maximum rated capacity of the energy storage system.

- (V) When a storage system that is an exporting system is installed at the same point of interconnection location as an existing interconnected DER facility, the review level will be based upon the incremental addition of the DER rated capacity and the exporting energy storage system rated capacity for their selected operating, as provided in subparagraph 3853(c)(III) configurations.
  - (VI) A storage system may be located on the same side of a production meter as a generating facility when a production meter is required by these rules provided that the storage system is either non-exporting at the service meter or is charged exclusively by the generating facility and only the production recorded by the production meter will be eligible for incentives.
- (d) Interconnection requests.
- (I) The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. Additional fees or deposits shall not be required, except as otherwise specified in these procedures. A single request to interconnect may be submitted by the interconnection customer distributed generation paired with energy storage systems and shall be subject to one interconnection agreement.
  - (II) The interconnection request shall be date-stamped and time-stamped upon receipt. The original date- stamped and time-stamp applied to the interconnection request at the time of its original submission shall be the order in which the utility reviews applications to determine completeness.
  - (III) The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by the IC.
  - (IV) The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, with a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. The IC may re-submit the application within one year without paying an additional interconnection application fee.

- (V) An interconnection request will be deemed complete upon submission of the listed information to the utility. The interconnection request shall be date-stamped and time-stamped upon being deemed complete. This date shall be accepted as the qualifying date-stamp and time-stamp for the purposes of any timetable in subsequent procedures.
  
- (VI) Any modification to interconnection resource data or equipment configuration or to the interconnection site that is a material modification, may be deemed by the utility to be a withdrawal of the interconnection request, and may require submission of a new interconnection request. A new interconnection request shall not be required for minor modifications to interconnection resource data or equipment configuration or to the interconnection site. Within ten business days of receipt of a proposed modification, the utility, in consultation with an affected system owner, if applicable, shall evaluate whether a proposed modification constitutes a material modification.
  - (A) If the proposed modification is determined to be a material modification, then the utility shall notify the IC in writing that the customer may: withdraw the proposed modification; or proceed with a new interconnection request for such modification. The IC shall provide its determination in writing to the utility within ten business days after the utility provides the material modification determination results. If the IC does not provide its determination, the customer's request shall be deemed withdrawn.
  - (B) If the proposed modification is determined not to be a material modification, then the utility shall notify the IC in writing that the modification has been accepted and that the IC shall retain its eligibility for interconnection, including its place in the interconnection queue.
  - (C) Any dispute as to the utility's determination that a modification constitutes a material modification shall proceed in accordance with the dispute resolution provisions in these procedures.
  
- (VII) Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:
  - (A) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the interconnection resource;
  - (B) an option to purchase or acquire a leasehold site for such purpose which may include a letter of intent; or
  - (C) an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.
  - (D) For generating facilities utilizing the Level 1 25 kW AC inverter process, proof of site control may be demonstrated by the IC's signature on the interconnection application.

- (VIII) The utility shall place interconnection requests in a first come, first served order per feeder, per substation transformer, and per substation based upon the date an application is complete pursuant to subparagraph 3853(d)(V). The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.
- (e) Evaluation of interconnection requests.
- (I) A request to interconnect an interconnection resource no larger than 25 kW AC, which may be paired with a non-exporting storage system no larger than 25 kW AC, shall be evaluated under the Level 1 process.
- (II) If not eligible for Level 1, a request to interconnect an interconnection resource with a combined nameplate rating larger than 25 kW AC but smaller than 2 MW AC shall be evaluated under the Level 2 process (Fast Track) in accordance with the eligibility requirements in paragraph 3855(a).
- (III) A request to interconnect an interconnection resource that does not pass the Level 1 or Level 2 process shall be evaluated under the Level 3 process.
- (IV) Non-exporting interconnection resources shall be evaluated under the simplified "non-export" interconnection processes outlined in rule 3859. The "non-export" interconnection process is also applicable to additions of new non-exporting interconnection resources paired with existing interconnection resources when the existing interconnection resources have already executed an interconnection agreement.
- (f) Interconnection agreements.
- (I) Any interconnection resource operating in parallel with the utility's system is required to have an interconnection agreement with the utility to ensure safety, system reliability, and operational compatibility. References in these procedures to interconnection agreement are to the utility's interconnection agreement as provided on its website, which interconnection agreement is subject to Commission approval upon request.
- (II) Interconnection agreements shall survive transfer of ownership of the interconnection resource to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.
- (III) After receiving an interconnection agreement from the utility, the IC shall have 30 business days to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement, or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. The utility shall provide the IC a fully executed interconnection agreement within two business days after receiving a signed interconnection agreement from the IC. After the parties sign the interconnection agreement, the interconnection of the interconnection resource shall proceed under the provisions of the interconnection agreement.

- (IV) Once the interconnection resource has been authorized by the utility to commence operation in parallel with the utility system, the interconnection customer shall abide by all rules and procedures pertaining to parallel operation in the utility's tariffs and in the interconnection agreement.
  - (V) The interconnection customer shall be responsible for the utility's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair and replacement of utility upgrades or utility interconnection facilities not required to serve other utility customers. Such upgrades or facilities shall be specified in the interconnection agreement unless otherwise covered by the utility's tariff or excluded by interconnection agreement. Utilities may not refuse to provide an IC with a fixed dollar amount to cover reasonable and necessary utility upgrades or utility interconnection facilities in order to facilitate an interconnection.
- (g) Reasonable efforts. The utility and IC shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility or IC cannot meet a deadline provided herein, it shall notify the IC, or the utility if the notifying party is the IC, and explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.
- (h) Disputes.
- (I) The utility and IC shall agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this subparagraph.
  - (II) In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third-party dispute resolution service for assistance in resolving the dispute.
  - (III) The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.
  - (IV) Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs billed by and to be paid to neutral third-parties.
  - (V) If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission, pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1.
- (i) Interconnection metering. Except as otherwise required by other Commission rules or by the terms of a Commission-approved program offered by the utility any metering necessitated by the use of the interconnection resource shall be installed at the IC's expense in accordance with

Commission requirements or the utility's specifications. For systems below 25 kW AC, additional metering shall not be installed for the purposes of monitoring energy storage systems.

- (j) Commissioning tests. Commissioning tests of the IC's installed DER shall be performed pursuant to applicable codes and standards, including IEEE Standard 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" (2005). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202. The utility must be given at least five business days' written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.
- (k) Confidentiality.
  - (I) Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.
  - (II) Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.
    - (A) Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.
    - (B) Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.
  - (III) Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The

party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.

- (l) Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this rule. The utility shall use the same reasonable and expeditious efforts in processing and analyzing interconnection requests from all interconnection customers, whether the interconnection resource is owned or operated by the utility, its subsidiaries or affiliates, or others.
- (m) Record retention. The utility shall maintain for three years, records, subject to audit, of all interconnection requests received under these procedures, the times required to complete each step of the interconnection request approvals and disapprovals, enumerated in these rules and justification for the actions taken on the interconnection requests.
- (n) Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in this rule. The utility will include such affected system operators in all meetings held with the IC as required by this rule. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems and shall provide to the IC any analysis and data underlying the affected system utility's determinations.
- (o) Insurance. A Utility may only require an applicant (i.e., an interconnection customer) to purchase insurance covering Utility damages, and then only in the amounts stated below. An interconnection customer, at its own expense, shall secure and maintain in effect during the term of the interconnection agreement, insurance coverage in the following amounts:

(I) For non-inverter-based generating facilities:

Nameplate Rating > 5 MW – \$3,000,000 for each occurrence

2 MW < Nameplate Rating < 5 MW – \$2,000,000 for each occurrence

500 kW < Nameplate Rating < 2 MW – \$1,000,000 for each occurrence

50 kW < Nameplate Rating < 500 kW – \$500,000 for each occurrence

Nameplate Rating < 50 kW - no additional insurance

(II) For inverter-based Generating Facilities:

Nameplate Rating > 5 MW – \$2,000,000 for each occurrence

1 MW < Nameplate Rating > 5 MW – \$1,000,000 for each occurrence

Nameplate Rating > 1 MW - no additional insurance

- (III) Colorado governmental entities that self-insure against liability in amounts above those required in paragraph (n) for interconnection resources DER up to 2 MW or to the replacement value of the interconnection resource DER for those interconnection resources above 2 MW, shall not be required to purchase additional insurance or to add the utility as an additional insured to any policy, nor shall they be obligated to indemnify the utility, though they shall be liable for any negligent or intentional act or omission of the municipality, its employees, contractors, subcontractors, or agents.
  - (IV) Certificates of Insurance evidencing the requisite coverage and provision(s) when required shall be furnished to the utility prior to the date of interconnection of the interconnection resource. Utilities shall be permitted to obtain proof of current insurance coverage periodically from the interconnection customer in order to verify proper liability insurance coverage. Customers will not be allowed to commence or continue interconnected operations unless they provide to the utility evidence that satisfactory insurance coverage is in effect at all times.
- (p) Implementation by tariff.
- (I) Each utility shall have on file with the Commission an interconnection tariff that sets forth certain fees, deadlines, and interconnection procedures. A utility's interconnection tariff shall comply with these Interconnection Rules, but when appropriate may include shorter deadlines for certain procedures.
  - (II) The interconnection tariff shall be filed along with an advice letter. Tariffs filed by cooperative electric associations shall be informational only. Tariffs filed by investor-owned electric utilities may be set for hearing and suspended in accordance with the Commission's Rules of Practice and Procedure and applicable statutes.
  - (III) The interconnection tariff shall include the following provisions:
    - (A) timelines: paragraphs 3853(a),(d),(f),(h), 3854(a), 3855(b),(c), and (d), and 3856(a),(b),(c),(d);
    - (B) fees: paragraphs 3853(a),(d),(f),(j), 3854(a) and (b), and 3856(a);
    - (C) material modification withdrawals: paragraph 3853(d); and
    - (D) maximum rated capacity: paragraphs 3853(a),(b), and (c).
- (q) Reporting.
- (I) Each utility shall submit an interconnection report to the Commission two times per year and shall make it available to the public on its website. The first interconnection report shall be due 180 days after the effective date of these interconnection rules. Upon a filing by a party with proper standing showing good cause, and when necessary and appropriate, the Commission may by order increase the frequency of such reporting on a temporary basis. The report shall contain relevant totals for both the year and the most

recent reporting period, including the following information listed in subparagraphs (q)(II) and (III) of this rule.

- (II) Pre-application reports:
  - (A) total number of reports requested;
  - (B) total number of reports in process;
  - (C) total number of reports issued;
  - (D) total number of requests withdrawn;
  - (E) maximum, mean, and median processing times from receipt of request to issuance of report; and
  - (F) number of reports processed in more than the 20 business days allowed in subparagraph 3853(a)(IV)(A).
  
- (III) Interconnection applications:
  - (A) total number received, broken down by:
    - (i) primary fuel type (e.g., solar, wind, bio-gas, etc.); and
    - (ii) system size (e.g., <25 kW, <1 MW, <5MW, >5MW).
  - (B) Level 1 review process.
    - (i) total number of applications processed; and
    - (ii) maximum, mean, and median processing times from receipt of complete application to provision of a counter-signed interconnection agreement.
  - (C) Level 2 review process.
    - (i) total number of applications that passed the screens in paragraph 3855(b);
    - (ii) total number of applications that failed the screens in paragraph 3855(b); and
    - (iii) maximum, mean, and median processing times from receipt of complete application to issuance of an interconnection agreement.
  - (D) Supplemental review.
    - (i) total number of applications that passed the screens in paragraph 3855(d);



- (ii) total number of applications that failed the screens in paragraph 3855(d); and
  - (iii) maximum, mean, and median processing times from receipt of complete application to issuance of interconnection agreement.
- (E) Level 3 review process:
- (i) system impact studies
  - (ii) total number of system impact studies completed under paragraph 3856(c); and
  - (iii) maximum, mean, and median processing times from receipt of a signed interconnection system impact study agreement to provision of study results.

**3854. Level 1 Process (25 kW AC Inverter Process).**

This rule establishes the procedures for evaluating an interconnection request for a certified inverter-based DER no larger than 25 kW AC which may be paired with a non-exporting energy storage system no larger than 25 kW AC. The application process uses an all-in-one document (application) that includes a simplified interconnection request, simplified procedures, and a brief set of terms and conditions.

- (a) General Level 1 procedures.
- (I) The IC completes application and submits it to the utility.
  - (II) The utility acknowledges to the customer receipt of the application within three business days of receipt.
  - (III) The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.
  - (IV) Within ten business days, the utility shall verify whether the interconnection resource can be interconnected safely and reliability using the same screens as applied in Level 2 process as set forth in rule 3855 except for screens (V), (VI), (X) and (XI) which will not be deemed necessary for the Level 1 process (25 kW AC Inverter Process). If the interconnection fails these screens, the utility shall consider this a failure of the Level 2 process screens in rule 3855. The utility shall continue the interconnection review under the Level 2 process, starting at paragraph 3855(c), provided that the IC pays the difference in the Level 2 process application fee and deposit requirements. The utility may also review the application within the 105 business day period to evaluate issues associated with highly seasonal circuits.
  - (V) Provided all the criteria of this rule 3854 are met, unless the utility determines and demonstrates that the interconnection resource cannot be interconnected safely and

reliably and requires upgrades, the utility approves and executes the application and returns it to the customer within ten business days.

- (VI) After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the interconnection resource for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary. The utilities should define “witness test” in their interconnection tariff.
  - (VII) The utility shall notify the customer that parallel operation of the interconnection resource is authorized within ten business days of the certificate of completion. If the witness test is not satisfactory, the utility has the right to disconnect the interconnection resource. The customer has no right to operate in parallel until a witness test has been performed, or previously waived in the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.
- (b) Level 1 application.
- (I) The customer must provide in the application the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.
  - (II) The application is considered complete when it provides all applicable and correct information as required below. Additional information to evaluate the application may be required.
  - (III) The application shall include the following information, as applicable:
    - (A) Processing fee. A fee of \_\_\_\_\_ must accompany this application.
    - (B) Interconnection customer:
      - Name
      - Contact Person
      - Address
      - City State Zip
      - Telephone (Day) and (Evening)
      - Fax Number and E-Mail Address
    - (C) Engineering firm or Installer (If applicable):
      - Contact Person
      - Address
      - City State Zip
      - Telephone
      - Fax and E-Mail Address
    - (D) Contact (if different from Interconnection Customer):
      - Name
      - Address
      - City State Zip

Telephone (Day) and (Evening)  
Fax Number and E-Mail Address  
Owner of the facility (include percent ownership by any electric utility)

- (E) DER information:  
Location (if different from above)  
Utility  
Account number  
DER components  
Inverter manufacturer: \_\_\_\_\_ Model  
Nameplate rating: (kW AC) (kVA) (AC Volts)  
Single phase \_\_\_\_\_ Three phase \_\_\_\_\_  
System design capacity: \_\_\_\_\_ (kW AC) \_\_\_\_\_ (kVA)  
Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other  
Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)  
Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_  
If Yes, attach manufacturer's cut-sheet showing UL1741 listing  
Estimated installation date: \_\_\_\_\_ Estimated in-service date:

The ten kW AC inverter process is available only for inverter-based interconnection resources no larger than ten kW AC that satisfy the codes, standards, and certification requirements specified in certain of these interconnection rules, or the utility has reviewed the design or tested the proposed interconnection resource and is satisfied that it is safe to operate.

- (F) List components of the small generating facility equipment package that are currently certified:  
Equipment type certifying entity:  
1.  
2.  
3.  
4.  
5.
- (G) Limited-Export / Non-Export / Limited-Import Data:  
If multiple export control systems are used, provide for each control system and use additional sheets if needed.  
Is export controlled to less than the Total Aggregate Nameplate Rating? Yes:  
No:  
Method of export limitation: Power Control System / Reverse Power Protection / Minimum Power Protection / Other (describe):  
Export controls are applied to how many generators? Multiple: One:  
If Power Control System is used, open loop response time(s): \_\_\_\_\_  
Power Control System output limit setting: (kW AC) (kVA)  
Energy Storage System Power Control System operating mode:  
Unrestricted: Export Only: Import Only: No Exchange:  
Describe which Generators the export control system controls:
- (H) Interconnection customer signature and certification:

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based interconnection resource No Larger than 10kW AC and return the certificate of completion when the interconnection resource has been installed.

Signed: \_\_\_\_\_

Title:

Date:

Contingent approval to interconnect the small generating facility.

(For company use only)

Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than ten kW AC and return of the certificate of completion.

Company signature: \_\_\_\_\_

Title: Date:

Application ID number: \_\_\_\_\_

Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_

(c) Level 1 terms and conditions.

- (I) Construction of the facility. The interconnection customer may proceed to construct the interconnection resource when the utility approves the interconnection request (the application) and returns it to the IC.
- (II) Interconnection and operation. The IC may operate the interconnection resource and interconnect with the utility's electric system once all of the following have occurred:
  - (A) upon completing construction, the interconnection customer will cause the interconnection resource to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;
  - (B) the customer returns the certificate of completion to the utility; and
  - (C) the utility has completed its inspection of the interconnection resource. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the interconnection resource has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.

- (D) The utility has the right to disconnect the interconnection resource in the event of improper installation or failure to return the certificate of completion.
- (III) Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the interconnection resource as required to ensure that it complies at all times with the interconnection standards to which it has been certified.
- (IV) Access. The utility shall have access to the disconnect switch and metering equipment of the interconnection resource at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.
- (V) Disconnection. The utility may temporarily disconnect the interconnection resource as allowed in the interconnection agreement and upon the following conditions:
  - (A) for scheduled outages per notice requirements in the utility's tariff or Commission rules;
  - (B) for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or
  - (C) if the interconnection resource does not operate in the manner consistent with these terms and conditions.
  - (D) The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.
- (VI) Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.
- (VII) The interconnection customer is not required to provide general liability insurance coverage as part of this agreement, or through any other utility requirement.
- (VIII) Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of the interconnection agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (c)(VI) of this rule.
- (IX) Termination. The interconnection agreement to operate in parallel may be terminated under the following conditions.
  - (A) By the customer by providing written notice to the utility.

- (B) By the utility if the interconnection resource fails to operate for any consecutive 12-month period or the customer fails to remedy a violation of these terms and conditions.
- (C) Permanent disconnection. In the event the interconnection agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its interconnection resource.
- (D) Survival rights. The interconnection agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.
- (X) Assignment/Transfer of ownership of the facility. The interconnection agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.

**3855. Level 2 Process (Fast Track).**

This fast track process is available to an IC proposing to interconnect its interconnection resource with the utility's system if the interconnection resource meets the eligibility provisions in this rule 3855.

- (a) Eligibility.
  - (I) Eligibility for the Level 2 process is determined based upon the type and size of the interconnection resource as well as the voltage of the utility line and the location of and the type of utility line at the point of interconnection. An interconnection customer may determine whether the interconnection resource is eligible for the Level 2 process by requesting a pre-application report pursuant to subparagraph 3853(a)(IV).
  - (II) For certified inverter-based systems, the size limit of the interconnection resource varies according to the voltage of the utility line at the proposed point of interconnection. Certified inverter-based interconnection resource facilities located within 2.5 electrical circuit miles of a substation and on a mainline are eligible for the Level 2 process under the higher thresholds pursuant to this rule 3855. The utilities should define "mainline" in their interconnection tariff.

<b>Level 2 Process Eligibility for Inverter-Based Systems kW and MW are AC</b>		
<b>Line Voltage</b>	<b>Eligibility Regardless of Location</b>	<b>Eligibility Meeting Location Requirements (Mainline and Substation)</b>
< 5 kV	≤ 500 kW	≤ 500 kW
≥ 5 kV and < 15 kV	≤ 2 MW	≤ 3 MW
≥ 15 kV and < 30 kV	≤ 3 MW	≤ 4 MW
≥ 30 kV and < 69 kV	≤ 4 MW	≤ 5 MW

- (III) All synchronous and induction facilities must be no larger than 2 MW AC to be eligible for the Level 2 process, regardless of location.
  - (IV) In addition to the size threshold, the DER must satisfy the codes, standards, and certification requirements specified in certain of these interconnection rules.
  - (V) The technical screens shall not preclude the utility from utilizing tools that perform screening functions using different methodology given that the analysis is aimed at preventing the same voltage, thermal and protection limitations as the initial and supplemental review screens under paragraph 3855(d).
- (b) Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the following.
- (I) The proposed interconnection resource's point of interconnection must be on a portion of the utility's distribution system that is subject to the utility's tariffs. Proposed interconnection resources on highly seasonal circuits shall also be subject to the supplemental review pursuant to paragraph 3855(d).

- (II) For interconnection of a proposed interconnection resource to a radial distribution circuit, the aggregated generation, including the proposed interconnection resource, on the line section(s) shall not exceed 15 percent of the line section’s annual peak load as most recently measured at the substation or calculated for the line section(s). A line section is that portion of a utility’s electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device. Energy storage system(s) capacity for purposes of this screen shall be based on subparagraph 3853(c)(III).
- (III) The proposed interconnection resource, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit’s maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.
- (IV) The proposed interconnection resource, in aggregate with other interconnection resources on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or interconnection customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.
- (V) The proposed interconnection resource shall meet the rapid voltage change and flicker requirements of IEEE Standard 1453 (2015) and IEEE Standard 1547 (2018) based on the appropriate test. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (VI) The type of interconnection to a primary distribution line shall be determined based on the table below, including a review of the type of electrical service provided to the interconnection customer, line configuration, and the transformer connection to limit the potential for creating over-voltages on the utility’s electric power system due to a loss of ground during the operating time of any anti-islanding function.

<b>Primary Distribution Line Type</b>	<b>Type of Interconnection to Primary Distribution Line</b>	<b>Result/Criteria</b>
Three-phase, three wire	3-phase or single phase, phase-to-phase	Pass screen
Three-phase, four wire	Effectively-grounded 3 phase or Single-phase, line-to-neutral	Pass screen

- (VII) If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 205 kW AC. Energy storage



system(s) capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).

- (VIII) If the proposed interconnection resource is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.
  - (IX) No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.
  - (X) For interconnection of a proposed interconnection resource to the load side of spot network protectors serving more than a single customer, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the interconnection resource must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.
  - (XI) For interconnection of a proposed interconnection resource to the load side of area network protectors, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW AC.
  - (XII) The nameplate capacity of a proposed interconnection resource, in combination with the nameplate capacity of any previously interconnected interconnection resource, shall not exceed the capacity of the customer's existing electrical service unless there is a simultaneous request for an upgrade to the customer's electrical service, regardless of exporting or non-exporting designations for any of the interconnection resources.
- (c) Customer options meeting.
- (I) If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review that the interconnection resource may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting. The utility shall provide to the IC in writing with a detailed information on the reasons(s) for failure.
  - (II) If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; without a supplemental study or other additional studies or actions; or without significant costs to address safety, reliability, or power quality problems, the utility shall notify the IC within the five business day period after the determination and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen

analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:

- (A) offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;
- (B) offer to perform a supplemental review pursuant to paragraph 3855(d) and provide a non-binding good faith estimate of the costs and time of such review; or
- (C) obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 study process.

(d) Supplemental review.

- (I) To accept a utility's offer to conduct a supplemental review, the interconnection customer, within 15 business days of the offer, shall agree in writing to the supplemental review and submit a deposit for the estimated costs. If the written agreement and deposit have not been received by the utility within the 15 days, the interconnection request shall continue to be evaluated under the Level 3 process, unless the request is withdrawn by the IC. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.
- (II) Within 30 business days following receipt of the deposit for a supplemental review, the utility will perform a supplemental review of the proposed interconnection resource using the screens set forth below, notify the interconnection customers of the results of the screens in writing, and include with the notification copies of the analysis and data underlying the utility's determinations.
- (III) The interconnection customer may specify the order in which the utility completes the supplemental review screens.
- (IV) The utility shall notify the interconnection customer of the failure of the interconnection resource in any supplement review screen or of the utility's inability to perform any screen for the interconnection resource. Within two business days of the receipt of such notice, the interconnection customer may grant the utility permission:
  - (A) to continue evaluating the proposed interconnection under this paragraph 3855(d);
  - (B) to continue evaluating the proposed interconnection under this paragraph 3855(d) subject to the utility's determination of minor modifications;

- (C) to terminate the supplemental review and instead to continue evaluating the interconnection resource under the Level 3 process; or
  - (D) to terminate the supplemental review upon withdrawal of the interconnection request by the interconnection customer.
- (V) Minimum load, minimum loading, and minimum load data shall be specific to time(s) that the interconnection resource exports active power to the utility.
- (VI) Supplemental review screens.
- (A) Minimum load screen.
    - (i) The interconnection resource capacity on the line section(s) shall be less than 100 percent of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed interconnection resource. Energy storage system(s), proposed and aggregated capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
    - (ii) This screen shall be determined using 12 months of line section(s) minimum load data (including onsite load but not station service load served by the proposed interconnection resource), calculated minimum load data, or estimated minimum load data using existing data a power flow model. If minimum load data is not available or the minimum load data cannot be calculated estimated, the utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under subparagraph 3855(d)(IV).
    - (iii) The type of interconnection resource shall be taken into account when calculating or estimating circuit or line section(s) minimum load. The utility shall use daytime minimum load for solar photovoltaic (PV) interconnection resource with no battery storage (i.e., 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems). The utility shall use absolute minimum load for all other types of interconnection resources.
    - (iv) Only the net injection into the utility's electric system shall be considered as part of the interconnection resource when this screen is applied to an interconnection resource serving some station service load.
    - (v) The utility shall not consider as part of the interconnection resource the capacity known to be already reflected in the minimum load data.
  - (B) Voltage and power quality screen.
    - (i) In aggregate with existing interconnection resource on the circuit and line section(s), the voltage regulation on the circuit and line section(s) shall

be maintained in compliance with relevant requirements under all system conditions;

- (ii) in aggregate with existing interconnection resource on the circuit and line section(s), the voltage fluctuation shall be within acceptable limits as defined by IEEE Standard 1453 (2015) and conforming with IEEE Standard 1453 (2015), while also taking into account activated inverter functionality, and by the limits defined by IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202; and
- (iii) in aggregate with existing interconnection resource on the circuit and line section(s), the harmonic levels shall meet IEEE Standard 519 (2014) limits. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.

(C) Safety and reliability screen.

- (i) The location of the proposed interconnection resource and the aggregate interconnection resource capacity on the line section(s) shall not create impacts to safety or reliability that cannot be adequately addressed without application of the Level 3 process.
- (ii) Minimum load, minimum loading and minimum load data shall be specific to time(s) of interconnection resource export capacity.
- (iii) The utility shall consider whether the line section(s) has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).
- (iv) The utility shall consider whether the loading along the line section(s) is uniform or even given the sources of the screening data.
- (v) The utility shall consider whether the proposed interconnection resource is located in close proximity to a substation (i.e., less than 2.5 electrical circuit miles) and whether the line section(s) from the substation to the point of interconnection is a mainline rated for normal and emergency ampacity.
- (vi) The utility shall consider whether the proposed interconnection resource incorporates a time delay function to prevent reconnection of the interconnection resource to the utility's system until system voltage and frequency are within normal limits for a prescribed time.
- (vii) The utility shall consider whether operational flexibility is reduced by the proposed interconnection resource, such that transfer of the line distribution circuit/substation may trigger overloads or voltage issues.

- (viii) The utility shall consider whether the proposed interconnection resource employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, and voltage quality.
  - (VII) If the supplemental screening meets utility determined adequacy with minor modifications, the utility shall provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system upon notification of review results.
- (e) Interconnection agreements.
  - (I) If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.
  - (II) If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.
  - (III) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(c)(II)(A), the utility will provide the interconnection customer with an executable interconnection agreement within ten business days of the customer options meeting.
  - (IV) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(d)(VII), the utility will provide the interconnection customer with an executable interconnection agreement within five business days of IC agreement to pay.

**3856. Level 3 Process (Study Process).**

This study process shall be used by an interconnection customer proposing to interconnect its interconnection resource with the utility's system if the interconnection resource does not meet the size limitations for the Level 2 Process, is not certified; or, is certified but did not pass the Level 1 process or Level 2 process.

- (a) Scoping meeting.
  - (I) A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.
  - (II) The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection

agreement. If the IC elects to move forward with a feasibility study, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.

- (III) The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the IC elects not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (IV) Feasibility studies, scoping studies, and facility studies may be combined or waived for simpler projects by mutual agreement of the utility and the IC. If all such studies are waived, the utility shall provide the IC an executable interconnection agreement within ten business days after the scoping meeting. If the scoping meeting is also omitted by mutual agreement, the utility shall provide the IC an executable interconnection agreement within ten business days after the interconnection request is deemed complete and this Level 2 process is completed.
  - (V) If feasibility studies, system impact studies, and facility studies are combined, or required to be completed for a single application, a utility shall perform the combined studies within no more than 60 business days of the date upon which the IC authorizes the utility to proceed with the level 3 process.
  - (VI) Utility must offer a developer the opportunity to pay full fees upfront and proceed straight to the system impact study.
- (b) Feasibility study.
- (I) The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the interconnection resource. At its discretion, the utility may use the Level 2 supplemental review as described in paragraph 3855(d) as the feasibility study.
  - (II) A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.
  - (III) The scope of and cost responsibilities for the feasibility study are described in the feasibility study agreement.
  - (IV) If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (V) If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).

- (VI) If no system impact study is required and no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the feasibility study.
- (c) System impact study.
- (I) Within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth below. A system impact study shall identify and detail the electric system impacts that would result if the proposed interconnection resource were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.
  - (II) If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.
  - (III) In instances where the feasibility study or the distribution system impact study shows potential for adverse impacts on the utility's transmission system, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the transmission-supplied scope of the study and a transmission-supplied non-binding good faith estimate of the cost to perform the study, if such a study is required.
  - (IV) If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.
  - (V) If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.
  - (VI) In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.
  - (VII) A deposit of the good faith estimated costs for each system impact study may be required from the IC.
  - (VIII) The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.

- (IX) Where transmission systems and distribution systems have separate owners, such as is the case with transmission-dependent utilities— whether investor-owned or not – the IC may apply to the nearest utility (transmission owner, regional transmission operator, or independent utility) providing transmission service to the transmission-dependent utility to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.
  - (X) If no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the system impact study.
- (d) Facilities study.
- (I) Within 45 business days of executing an appropriate agreement or contract, the utility shall perform a facilities study using the screens set forth below. Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC within five business days along with a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.
  - (II) In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.
  - (III) The facilities study shall include a detailed list of necessary system upgrades and an itemized cost estimate, breaking out equipment, labor, operation and maintenance and other costs, including overheads, for completing such upgrades, which may not be exceeded by 125 percent if actual upgrades are completed.
  - (IV) Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement. At the option of the IC, the IC may separately arrange for the design and upgrade of some of the interconnection facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the utility, under the provisions of the facilities study agreement. If the IC separately arranges for design and construction, and provided that security and confidentiality requirements can be met, the utility shall make sufficient information available to the IC in accordance with confidentiality and critical infrastructure requirements in order to permit the IC to obtain an independent design and cost estimate for any necessary facilities.
  - (V) A deposit of the good faith estimated costs for the facilities study may be required from the IC.
  - (VI) The scope of and cost responsibilities for the facilities study shall be described in a facilities study agreement.



- (VII) Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.

**3857. Certification Codes and Standards.**

Unless one or more of the following standards has been incorporated by reference into these interconnection rules, the Commission encourages the utilities and their interconnection customers, to whom these rules apply, to use the following standards and reference materials for guidance.

ANSI C84.1- (2016) Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

ANSI/NEMA MG 1 — (2016), Motors and Generators

IEEE Std. C37.90.1- (2012), IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std. C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std. C37.108-2002, IEEE Guide for the Protection of Network Transformers

IEEE Std. C57.12.44-2014, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std. C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text

IEEE Std. C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

IEEE Std. 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition

IEEE Std. 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std. 1453-2015 IEEE Recommended Practice for the Analysis of Fluctuating Installation on Power Systems

IEEE Std. 1547-2018, IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEEE Std. 1547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

NFPA 70 (2017), National Electrical Code

UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems

UL 1741 SA-2018, IEEE Standards for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

**3858. Certification of DER Packages.**

- (a) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in rule 3857; it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- (b) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- (c) Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.
- (d) If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- (e) Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of interconnection shall be required to meet the requirements of this interconnection procedure.
- (f) An equipment package does not include equipment provided by the utility.

**3859. Filing of Interconnection Manual.**

No later than 90 calendar days after the effective date of these rules, each utility subject to these rules shall file with the Commission information about its interconnection manual in an advice letter and tariff filing pursuant to rule 3108. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. The utility shall update this information within 30 days after any changes have been made to its manual.

**3860. – 3899. [Reserved].**

Decision No. R20-0773-E

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO**

PROCEEDING NO. 19R-0654E

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IN THE MATTER OF THE PROPOSED AMENDMENTS TO RULES REGULATING  
ELECTRIC UTILITIES, 4 CODE OF COLORADO REGULATIONS 723-3, RELATING  
TO INTERCONNECTION PROCEDURES AND STANDARDS.

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**ERRATA NOTICE FOR  
RECOMMENDED DECISION OF  
ADMINISTRATIVE LAW JUDGE  
STEVEN H. DENMAN  
AMENDING AND ADOPTING RULES**

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Errata mailed November 13, 2020

Original Decision No. R20-0773 mailed November 5, 2020

1. The first sentence of Rule 3853(j) on page 35 of Attachment A (Redline Copy of the Rules) and page 12 of Attachment B (Clean Copy of the rules) of the amended rules reads as:

Commissioning tests of the IC's installed DER shall be performed pursuant to applicable codes and standards, including IEEE Standard 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" (2005).

That sentence cites to the 2005 edition of IEEE Standard 1547.1. That is incorrect. The correct edition is 2020. The sentence shall be amended to read as follows:

Commissioning tests of the IC's installed DER shall be performed pursuant to applicable codes and standards, including IEEE Standard 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" (2020).

2. The first sentence of Subparagraph 3855(b)(VII) on pages 46 and 47 of Attachment A (Redline Copy of the Rules) and page 23 of Attachment B (Clean Copy of the rules) of the amended rules reads as:

If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 205 kW AC.

That sentence states that the aggregate generation capacity shall not exceed 205 kW AC. That is incorrect. The correct aggregate generation capacity should be 25 kW AC. The sentence shall be amended to read as follows:

If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 25 kW AC.

3. In Rule 3857, which is the list of Certification Codes and Standards, on page 55 of Attachment A (Redline Copy of the Rules) and page 32 of Attachment B (Clean Copy of the rules) shows the “IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems” as:

IEEE Std. 1547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

The cite to the 2005 edition is incorrect. The correct edition is 2020. That entry shall be amended to read as follows:

IEEE Std. 1547.1-2020, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

4. Amended copies of Attachments A and B are attached to this Errata Notice. There are no changes to the Recommended Decision in this matter.

(S E A L)



THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO

STEVEN H. DENMAN

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Administrative Law Judge

ATTEST: A TRUE COPY

A handwritten signature in cursive script that reads "Doug Dean".

Doug Dean,  
Director

## COLORADO DEPARTMENT OF REGULATORY AGENCIES

### Public Utilities Commission

#### 4 CODE OF COLORADO REGULATIONS (CCR) 723-3

#### PART 3 RULES REGULATING ELECTRIC UTILITIES

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#### RENEWABLE ENERGY STANDARD

\* \* \* \*

[indicates omission of unaffected rules]

#### ~~3667.—Small Generation Interconnection Procedures.~~

~~The following small generator interconnection procedures (SGIP) shall apply to all small generation resources including eligible renewable energy resources connected to the utility. Each utility shall also provide, on its web site, interconnection standards not included in these procedures. This rule largely tracks FERC Order 2006.~~

~~(a) Definitions. The following definitions apply only to rule 3665.~~

~~(I) “Business day” means Monday through Friday, excluding Federal Holidays.~~

~~(II) “Distribution system” means the utility’s facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.~~

~~(III) “Distribution upgrades” means the additions, modifications, and upgrades to the utility’s distribution system at or beyond the point of interconnection to facilitate interconnection of the small generating facility and render the service necessary to effect the interconnection customer’s operation of on-site generation. Distribution upgrades do not include interconnection facilities.~~

~~(IV) “Highly seasonal circuit” means a circuit with a ratio of annual peak load to off-season peak load greater than six.~~

- ~~(V) — “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its small generating facility with the utility’s system.~~
  - ~~(VI) — “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the small generating facility and the point of interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the small generating facility to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.~~
  - ~~(VII) — “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing small generating facility that is interconnected with the utility’s system.~~
  - ~~(VIII) — “Minimum daytime loading” means the lowest daily peak in the year on the line section.~~
  - ~~(IX) — “Party” or “Parties” means the utility, interconnection customer, or any combination of the above.~~
  - ~~(X) — “Point of interconnection” means the point where the Interconnection facilities connect with the utility’s system.~~
  - ~~(XI) — “Small generating facility” means the interconnection customer’s device for the production of electricity identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer.~~
  - ~~(XII) — “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.~~
  - ~~(XIII) — “System” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.~~
  - ~~(XIV) — “Upgrades” means the required additions and modifications to the utility’s system at or beyond the point of interconnection. Upgrades do not include interconnection facilities.~~
- ~~(b) — General overview.~~
- ~~(I) — Applicability.~~
    - ~~(A) — A request to interconnect a certified small generating facility no larger than two MW shall be evaluated under the Level 2 Process. A request to interconnect a certified inverter based small generating facility no larger than ten kW shall be evaluated under the Level 1 Process. A request to interconnect a small generating facility larger than two MW but no larger than ten MW or a small~~

~~generating facility that does not pass the Level 1 or Level 2 Process, shall be evaluated under the Level 3 Process.~~

- ~~(B) — Defined terms used herein shall have the meanings specified in the paragraph (a) of this rule.~~
- ~~(C) — Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.~~
- ~~(D) — Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and Interconnection Customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All public utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.~~
- ~~(E) — References in these procedures to interconnection agreement are to the Small Generator Interconnection Agreement (SGIA).~~
- ~~(H) — Pre-application. The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's Internet web site. Electric system information for specific locations, feeders, or small areas shall be provided to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.~~



- ~~(III) — Interconnection request. The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. The interconnection request shall be date- and time-stamped upon receipt. The original date- and time-stamp applied to the interconnection request at the time of its original submission shall be accepted as the qualifying date- and time-stamp for the purposes of any timetable in these procedures. The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by IC. The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. An interconnection request will be deemed complete upon submission of the listed information to the utility.~~
- ~~(IV) — Modification of the interconnection request. Any modification to machine data or equipment configuration or to the interconnection site of the small generating facility not agreed to in writing by the utility and the IC may be deemed a withdrawal of the interconnection request and may require submission of a new interconnection request, unless proper notification of each party by the other and a reasonable time to cure the problems created by the changes are undertaken.~~
- ~~(V) — Site control. Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:~~
- ~~(A) — ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the small generating facility;~~
  - ~~(B) — an option to purchase or acquire a leasehold site for such purpose; or~~
  - ~~(C) — an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.~~
- ~~(VI) — Queue position. The utility shall place interconnection requests in a first come, first served order per feeder and per substation based upon the date- and time-stamp of the interconnection request. The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.~~

~~(VII) — Assignment/Transfer of ownership of the facility. Interconnection agreements shall survive transfer of ownership of the generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.~~

~~(c) — Level 2 - fast track process.~~

~~(I) — Applicability. The fast track process is available to an IC proposing to interconnect its small generating facility with the utility's system if the small generating facility is no larger than two MW and if the IC's proposed small generating facility meets the codes, standards, and certification requirements of Attachments 3 and 4 of these procedures.~~

~~(II) — Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the screens.~~

~~(A) — Screens.~~

~~(i) — The proposed small generating facility's point of interconnection must be on a portion of the utility's distribution system that is subject to the tariff.~~

~~(ii) — For interconnection of a proposed small generating facility to a radial distribution circuit, the aggregated generation, including the proposed small generating facility, on the line section shall not exceed 15 percent of the line section's annual peak load as most recently measured at the substation or calculated for the line section. For highly seasonal circuits only, the aggregate generation, including the proposed small generation facility, on the line section shall not exceed 15 percent of two times the minimum daytime loading. A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device.~~

~~(iii) — The proposed small generating facility, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit's maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.~~

~~(iv) — The proposed small generating facility, in aggregate with other generation on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.~~

- ~~(v) The proposed small generating facility shall have a starting voltage dip less than five percent and meet the flicker requirements of IEEE 519, 1992 version. To meet this screen, the proposed generating facility must conform to the following two tests:~~
  - ~~(1) For starting voltage dip, the utility has two options for determining whether starting voltage dip is acceptable. The option to be used is at the utility's discretion.~~
    - ~~(a) Option 1: The utility may determine that the proposed generating facility's starting in-rush current is equal to or less than the continuous ampere rating of the Interconnection Customer's service equipment.~~
    - ~~(b) Option 2: The utility may determine the impedances of the service distribution transformer (if present) and the secondary conductors to the Interconnection Customer's service equipment and perform a voltage dip calculation. Alternatively, the utility may use tables or nomographs to determine the voltage dip. Voltage dips caused by starting the proposed generation facility must be less than five percent when measured at the primary side (high side) of a dedicated distribution transformer serving the proposed generating facility, for primary interconnections. The five percent voltage dip limit applies to the distribution transformer low side if the low side is shared with other customers and to the high side if the transformer is dedicated to the Interconnection Customer.~~
  - ~~(2) The second test is conformance with the relationship between voltage fluctuation and starting frequency presented in the table for flicker requirements in IEEE 519, 1992 version.~~

~~(vi) — Using the table below, determine the type of interconnection to a primary distribution line. This screen includes a review of the type of electrical service provided to the IC, including line configuration and the transformer connection to limit the potential for creating over-voltages on the utility's electric power system due to a loss of ground during the operating time of any anti-islanding function.~~

<del>Primary Distribution Line Type</del>	<del>Type of Interconnection to Primary Distribution Line</del>	<del>Result/Criteria</del>
<del>Three-phase, three-wire</del>	<del>3-phase or single-phase, phase-to-phase</del>	<del>Pass screen</del>
<del>Three-phase, four-wire</del>	<del>Effectively-grounded 3-phase or Single-phase, line-to-neutral</del>	<del>Pass screen</del>

~~(vii) — If the proposed small generating facility is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 20 kW.~~

~~(viii) — If the proposed small generating facility is single phase and is to be interconnected on a center tap neutral of a 240-volt service, its addition shall not create an imbalance between the two sides of the 240-volt service of more than 20 percent of the nameplate rating of the service transformer.~~

~~(ix) — No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.~~

~~(x) — Interconnections to distribution networks.~~

- ~~(1) — For interconnection of a proposed small generating facility to the load side of spot network protectors serving more than a single customer, the proposed small generating facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the small generator facility must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.~~
- ~~(2) — For interconnection of a proposed small generating facility to the load side of area network protectors, the proposed small generating facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW.~~
- ~~(3) — Notwithstanding sub-sections (1) or (2) above, each utility may incorporate into its interconnection standards, any change in interconnection guidelines related to networks pursuant to standards developed under IEEE 1547 for interconnections to networks. To the extent the new IEEE standards conflict with these existing guidelines, the new standards shall apply. In addition, and with the consent of the utility, a small generator facility may be interconnected to a spot or area network provided the facility uses a protection scheme that will prevent any power export from the customer's site including inadvertent export under fault conditions or otherwise prevent nuisance operation of the network protectors.~~
- ~~(B) — If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.~~
- ~~(C) — If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.~~
- ~~(D) — If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting.~~

- ~~(E) — Customer options meeting. If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; or a supplemental study or other additional studies or actions; or at significant cost to address safety, reliability, or power quality problems, within the five business day period after the determination, the utility shall notify the IC and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:~~
- ~~(i) — offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;~~
  - ~~(ii) — offer to perform a supplemental review if the utility concludes that the supplemental review might determine that the small generating facility could continue to qualify for interconnection pursuant to the fast track process, and provide a non-binding good faith estimate of the costs and time of such review; or~~
  - ~~(iii) — obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 Study Process.~~
- ~~(III) — Supplemental Review. If the interconnection customer agrees to a supplemental review, the interconnection customer shall agree in writing within 15 business days of the offer, and submit a deposit for the estimated costs provided in subsection (c)(III)(A)(ii) of this rule. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.~~
- ~~(A) — Within ten business days following receipt of the deposit for a supplemental review, the utility will determine if the Small Generating Facility can be interconnected safely and reliably.~~
- ~~(i) — If so, the utility shall forward an executable interconnection agreement to the IC within five business days.~~
  - ~~(ii) — If so, and IC facility modifications are required to allow the small generating facility to be interconnected consistent with safety, reliability, and power quality standards under these procedures, the utility shall forward an executable interconnection agreement to the IC within five business days after confirmation that the interconnection customer has agreed to make the necessary changes at the interconnection customer's cost.~~

- ~~(iii) — If so, and minor modifications to the utility's electric system are required to allow the small generating facility to be interconnected consistent with safety, reliability, and power quality standards under the Level 2 Fast Track Process, the utility shall forward an executable interconnection agreement to the IC within ten business days that requires the IC to pay the costs of such system modifications prior to interconnection.~~
- ~~(iv) — If not, the interconnection request will continue to be evaluated under the Level 3 Study Process.~~

~~(d) — Level 3 – Study Process.~~

- ~~(I) — Applicability. The study process shall be used by an interconnection customer proposing to interconnect its small generating facility with the utility's system if the small generating facility is larger than two MW but no larger than ten MW; is not certified; or, is certified but did not pass the Fast Track Process or the ten kW Inverter Process.~~
- ~~(II) — Scoping meeting.~~
  - ~~(A) — A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.~~
  - ~~(B) — The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection agreement. If the parties agree that a feasibility study should be performed, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(C) — The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the parties agree not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(D) — Feasibility studies, scoping studies, and facility studies may be combined for simpler projects by mutual agreement of the utility and the parties.~~
- ~~(III) — Feasibility study.~~
  - ~~(A) — The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the small generating facility.~~

- ~~(B) — A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.~~
  - ~~(C) — The scope of and cost responsibilities for the feasibility study are described in the attached feasibility study agreement.~~
  - ~~(D) — If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(E) — If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).~~
- ~~(IV) — System impact study.~~
- ~~(A) — A system impact study shall identify and detail the electric system impacts that would result if the proposed small generating facility were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.~~
  - ~~(B) — If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.~~
  - ~~(C) — In instances where the feasibility study or the distribution system impact study shows potential for transmission system adverse system impacts, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, if such a study is required.~~
  - ~~(D) — If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.~~



- ~~(E) — If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.~~
- ~~(F) — In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.~~
- ~~(G) — A deposit of the good faith estimated costs for each system impact study may be required from the IC.~~
- ~~(H) — The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.~~
- ~~(I) — Where transmission systems and distribution systems have separate owners, such as is the case with transmission-dependent utilities (TDUs) — whether investor-owned or not — the IC may apply to the nearest utility (Transmission Owner, Regional Transmission Operator, or Independent utility) providing transmission service to the TDU to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.~~
- ~~(V) — Facilities study.~~
  - ~~(A) — Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC along with a facilities study agreement within five business days, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.~~
  - ~~(B) — In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.~~
  - ~~(C) — The facilities study shall specify and estimate the cost of the equipment, engineering, procurement, and construction work (including overheads) needed to implement the conclusions of the system impact study(s).~~
  - ~~(D) — Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement. The IC and the utility may agree to allow the IC to separately arrange for the design of some of the interconnection facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the utility, under the provisions of the facilities study agreement. If the parties agree to separately~~

~~arrange for design and construction, and provided security and confidentiality requirements can be met, the utility shall make sufficient information available to the IC in accordance with confidentiality and critical infrastructure requirements to permit the IC to obtain an independent design and cost estimate for any necessary facilities.~~

~~(E) — A deposit of the good faith estimated costs for the facilities study may be required from the IC.~~

~~(F) — The scope of and cost responsibilities for the facilities study are described in a facilities study agreement.~~

~~(G) — Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.~~

~~(e) — Provisions that apply to all interconnection requests.~~

~~(I) — Reasonable efforts. The utility shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility cannot meet a deadline provided herein, it shall notify the IC explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.~~

~~(II) — Disputes.~~

~~(A) — The parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this article.~~

~~(B) — In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third party dispute resolution service for assistance in resolving the dispute.~~

~~(C) — The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.~~

~~(D) — Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs paid to neutral third parties.~~

~~(E) — If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission.~~

- ~~(III) — Interconnection metering. Except as otherwise required by rule 3664, any metering necessitated by the use of the small generating facility shall be installed at the IC's expense in accordance with Commission requirements or the utility's specifications.~~
- ~~(IV) — Commissioning tests. Commissioning tests of the IC's installed equipment shall be performed pursuant to applicable codes and standards, including IEEE1547.1 2005 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems". The utility must be given at least five business days written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing level 2 and Level 3 commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.~~
- ~~(V) — Confidentiality.~~
- ~~(A) — Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.~~
- ~~(B) — Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.~~
- ~~(i) — Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.~~
- ~~(ii) — Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.~~
- ~~(C) — Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from~~

~~public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.~~

- ~~(VI) — Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this document. The utility shall use the same reasonable efforts in processing and analyzing interconnection requests from all interconnection customers, whether the small generating facility is owned or operated by the utility, its subsidiaries or affiliates, or others.~~
- ~~(VII) — Record retention. The utility shall maintain for three years records, subject to audit, of all interconnection requests received under these procedures, the times required to complete Interconnection Request approvals and disapprovals, and justification for the actions taken on the interconnection requests.~~
- ~~(VIII) — Interconnection agreement. After receiving an interconnection agreement from the utility, the IC shall have 30 business days or another mutually agreeable time frame to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement, or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. After the interconnection agreement is signed by the parties, the interconnection of the small generating facility shall proceed under the provisions of the interconnection agreement.~~
- ~~(IX) — Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in these procedures. The utility will include such affected system operators in all meetings held with the IC as required by these procedures. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems.~~
- ~~(X) — Capacity of the small generating facility.
  - ~~(A) — If the interconnection request is for an increase in capacity for an existing small generating facility, the interconnection request shall be evaluated on the basis of the new total capacity of the small generating facility.~~
  - ~~(B) — If the interconnection request is for a small generating facility that includes multiple energy production devices at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple devices.~~~~

~~(C) — The interconnection request shall be evaluated using the maximum rated capacity of the small generating facility.~~

~~(XI) — Insurance.~~

~~(A) — For systems of ten kW or less, the customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$300,000 for each occurrence. For systems above ten kW and up to 500 kW, customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 for each occurrence. For systems above 500 kW and up to two MW, customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$2,000,000 for each occurrence. Insurance coverage for systems greater than two MW shall be determined on a case-by-case basis by the utility and shall reflect the size of the installation and the potential for system damage.~~

~~(B) — For systems over 500 kW, the utility shall be named as an additional insured by endorsement to the insurance policy and the policy shall provide that written notice be given to the utility at least 30 days prior to any cancellation or reduction of any coverage. Such liability insurance shall provide, by endorsement to the policy, that the utility shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium of such insurance. For all solar systems, the liability insurance shall not exclude coverage for any incident related to the subject generator or its operation.~~

~~(C) — Certificates of Insurance evidencing the requisite coverage and provision(s) shall be furnished to utility prior to the date of interconnection of the generation system. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the generating customer in order to verify proper liability insurance coverage. Customer will not be allowed to commence or continue interconnected operations unless evidence is provided that satisfactory insurance coverage is in effect at all times.~~

~~(f) — Level 1 ten kW inverter process. The procedure for evaluating an interconnection request for a certified inverter-based small generating facility no larger than ten kW. The application process uses an all-in-one document that includes a simplified Interconnection Request, simplified procedures, and a brief set of terms and conditions.~~

~~(I) — The interconnection customer (customer) completes the interconnection request (Application) and submits it to the utility.~~

~~(II) — The utility acknowledges to the customer receipt of the application within three business days of receipt.~~

- ~~(III) — The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.~~
- ~~(IV) — Within 15 days the utility shall conduct an initial review, which shall include the following screening criteria.~~
  - ~~(A) — For interconnection of a proposed small generating facility to a radial distribution circuit, the aggregated generation, including the proposed small generating facility, on the line section shall not exceed 15 percent of the line section annual peak load as most recently measured at the substation or calculated for the line section. For highly seasonal circuits only, the aggregate generation, including the proposed small generation facility, on the line section shall not exceed 15 percent of two times the minimum daytime loading. A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device.~~
  - ~~(B) — If the proposed small generating facility is to be interconnected on single phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 20 kW.~~
  - ~~(C) — If the proposed small generating facility is single phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.~~
  - ~~(D) — No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.~~
  - ~~(E) — Provided all the criteria in paragraph (g) of this rule are met, unless the utility determines and demonstrates that the small generating facility cannot be interconnected safely and reliably, the utility approves and executes the application and returns it to the customer.~~
  - ~~(F) — After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the small generating facility for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary.~~
  - ~~(G) — The utility notifies the customer in writing or by fax or e-mail that interconnection of the small generating facility is authorized within five business days. If the witness test is not satisfactory, the utility has the right to disconnect the small generating facility. The customer has no right to operate in parallel until a witness test has been performed, or previously waived on the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.~~

~~(H) — Contact information. The customer must provide the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.~~

~~(g) — Level 1 10-kW Inverter Process. The following constitutes an application for interconnecting a certified inverter-based small generating facility no larger than ten KW. Application for Interconnecting a Certified Inverter-Based Small Generating Facility No Larger than 10kW~~

~~This Application is considered complete when it provides all applicable and correct information required below. Additional information to evaluate the application may be required.~~

~~Processing fee:~~

~~\_\_\_\_\_ A fee of \_\_\_\_\_ must accompany this application.~~

~~Interconnection customer~~

~~\_\_\_\_\_ Name:~~

~~\_\_\_\_\_ Contact Person:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone (Day): (Evening):~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~Engineering firm (if applicable):~~

~~\_\_\_\_\_ Contact Person:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone:~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~Contact (if different from Interconnection customer):~~

~~\_\_\_\_\_ Name:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone (Day): (Evening):~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~\_\_\_\_\_ Owner of the facility (include percent ownership by any electric utility):~~

Small generating facility information:

~~\_\_\_\_\_ Location (if different from above):~~

~~\_\_\_\_\_ Electric service company:~~

~~\_\_\_\_\_ Account number:~~

~~\_\_\_\_\_ Small generator ten kW inverter process:~~

~~\_\_\_\_\_ Inverter manufacturer: \_\_\_\_\_ Model~~

~~\_\_\_\_\_ Nameplate rating: (kW) (kVA) (AC Volts)~~

~~\_\_\_\_\_ Single phase \_\_\_\_\_ Three phase \_\_\_\_\_~~

~~\_\_\_\_\_ System design capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)~~

~~\_\_\_\_\_ Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other~~

~~\_\_\_\_\_ Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)~~

~~\_\_\_\_\_ Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_~~

~~\_\_\_\_\_ If Yes, attach manufacturer's cut-sheet showing UL1741 listing.~~

~~\_\_\_\_\_ Estimated installation date: \_\_\_\_\_ Estimated in-service date: \_\_\_\_\_~~

~~The ten kW inverter process is available only for inverter-based small generating facilities no larger than ten kW that meet the codes, standards, and certification requirements of paragraphs (h) and (i) of this rule, or the QRU has reviewed the design or tested the proposed small generating facility and is satisfied that it is safe to operate.~~

~~List components of the small generating facility equipment package that are currently certified:~~

~~Equipment type certifying entity:~~

- ~~1.~~
- ~~2.~~
- ~~3.~~



~~4.~~

~~5.~~

~~Interconnection customer signature: \_\_\_\_\_~~

~~I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based Small Generating Facility No Larger than 10kW and return the Certificate of Completion when the Small Generating Facility has been installed.~~

~~Signed: \_\_\_\_\_~~

~~Title: \_\_\_\_\_ Date: \_\_\_\_\_~~

~~Contingent approval to interconnect the small generating facility.~~

~~(For company use only)~~

~~Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than ten kW and return of the certificate of completion.~~

~~\_\_\_\_\_ Company signature: \_\_\_\_\_~~

~~\_\_\_\_\_ Title: Date: \_\_\_\_\_~~

~~\_\_\_\_\_ Application ID number: \_\_\_\_\_~~

~~\_\_\_\_\_ Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_~~

~~(h) \_\_\_\_\_ Certification codes and standards.~~

~~ANSI C84.1-2011 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)~~

~~ANSI/NEMA MG 1--2011, Motors and Generators~~

~~IEEE Std C37.90.1-2002, IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems~~

~~IEEE Std C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers~~

~~IEEE Std C37.108-2002, IEEE Guide for the Protection of Network Transformers~~

~~IEEE Std C57.12.44-2005, IEEE Standard Requirements for Secondary Network Protectors~~

~~IEEE Std C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text~~

~~IEEE Std C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low Voltage (1000V and Less) AC Power Circuits~~

~~IEEE Std 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition~~

~~IEEE Std 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems~~

~~IEEE Std 929-2000 IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems~~

~~IEEE Std 1547-2003, IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems~~

~~IEEE Std 547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems~~

~~NFPA 70 (2014), National Electrical Code~~

~~UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems~~

~~(i) Certification of small generator equipment packages.~~

~~(I) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in paragraph (h); it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.~~

~~(II) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.~~

~~(III) Certified equipment shall not require further type test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.~~

- ~~(IV) — If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.~~
- ~~(V) — Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of common coupling shall be required to meet the requirements of this interconnection procedure.~~
- ~~(VI) — An equipment package does not include equipment provided by the utility.~~
- ~~(j) — Terms and conditions for Level 1 interconnections — small generating facility no larger than ten kW.~~
  - ~~(I) — Construction of the facility. The interconnection customer may proceed to construct the small generating facility when the utility approves the interconnection request (the application) and returns it to the IC.~~
  - ~~(II) — Interconnection and operation. The IC may operate small generating facility and interconnect with the utility's electric system once all of the following have occurred:
    - ~~(A) — upon completing construction, the interconnection customer will cause the small generating facility to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;~~
    - ~~(B) — the customer returns the certificate of completion to the utility; and~~
    - ~~(C) — the utility has completed its inspection of the small generating facility. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the small generating facility has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.~~
    - ~~(D) — The utility has the right to disconnect the small generating facility in the event of improper installation or failure to return the certificate of completion.~~~~
  - ~~(III) — Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the small generating facility as required to ensure that it complies at all times with the interconnection standards to which it has been certified.~~

- ~~(IV) — Access. The utility shall have access to the disconnect switch and metering equipment of the small generating facility at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.~~
- ~~(V) — Disconnection. The utility may temporarily disconnect the small generating facility upon the following conditions:~~
- ~~(A) — for scheduled outages per notice requirements in the utility's tariff or Commission rules;~~
  - ~~(B) — for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or~~
  - ~~(C) — if the small generating facility does not operate in the manner consistent with these terms and conditions.~~
  - ~~(D) — The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.~~
- ~~(VI) — Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.~~
- ~~(VII) — Insurance. The interconnection customer, at its own expense, shall secure and maintain in effect during the term of this agreement, liability insurance with a combined single limit for bodily injury and property damage of not less than \$300,000 each occurrence. Such liability insurance shall not exclude coverage for any incident related to the subject generator or its operation. The utility shall be named as an additional insured under the liability policy unless the system is a solar system installed on a premise using the residential tariff and has a design capacity of ten kW or less. The policy shall include that written notice be given to the utility at least 30 days prior to any cancellation or reduction of any coverage. A copy of the liability insurance certificate must be received by the utility prior to plant operation. Certificates of insurance evidencing the requisite coverage and provision(s) shall be furnished to utility prior to date of interconnection of the generation system. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the generating customer in order to verify proper liability insurance coverage. The interconnection customer will not be allowed to commence or continue interconnected operations unless evidence is provided that satisfactory insurance coverage is in effect at all times.~~

- ~~(VIII) — Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (i)(VI) of this rule.~~
- ~~(IX) — Termination. The agreement to operate in parallel may be terminated under the following conditions.~~
- ~~(A) — By the customer by providing written notice to the utility.~~
  - ~~(B) — By the utility if the small generating facility fails to operate for any consecutive 12 month period or the customer fails to remedy a violation of these terms and conditions.~~
  - ~~(C) — Permanent disconnection. In the event this agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its small generating facility.~~
  - ~~(D) — Survival rights. This agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.~~
- ~~(X) — Assignment/Transfer of ownership of the facility. This agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of this agreement and so notifies the utility.~~

**3667. [Reserved].**

\* \* \* \*

[indicates omission of unaffected rules]

**3806. – 38949. [Reserved].**

**INTERCONNECTION PROCEDURES AND STANDARDS.**

**3850. Applicability.**

The following interconnection procedures shall apply to the interconnection of all retail renewable distributed generation and other distributed energy resources including energy storage systems that operate in parallel with and are connected to the utility, when such interconnections are not subject to the jurisdiction of FERC. Each utility shall also provide, on its web site, interconnection standards or other technical guidance not included in, but that are consistent with, these procedures and which shall be

reviewable by the Commission upon a Commission decision after the filing of an advice letter and tariff or application pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1. This rule largely tracks the 2013 FERC amended version of the FERC 2006 Small Generator Interconnection Procedures.

### **3851. Overview and Purpose.**

Infrastructure, security of electric system equipment, and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and interconnection customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

The purpose of these rules is to establish reasonable interconnection and insurance requirements for interconnection resources retail renewable distributed generation and other distributed energy resources that connect to a utility's system that operate in parallel with and are connected to the utility.

### **3852. Definitions.**

The following definitions apply only to rules 3850 to 3859.

- (a) "Business day" means Monday through Friday, excluding federal holidays.
- (b) "Distributed energy resource" or "DER" means the interconnection customer's source of electric power connected to the utility's distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. DER includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (c) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from interconnection resources or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.
- (d) "Energy storage system" means any commercially available, customer-sited system or utility-sited system, including batteries and the batteries paired with on-site generation, that does not generate energy, that is capable of retaining, storing, and delivering energy by chemical, thermal, mechanical, or other means.
- (e) "Export capacity" means the amount of alternating current (AC) electrical energy that an interconnection resource is designed intentionally to transfer to the utility's system across the point of interconnection.

- (f) “Highly seasonal circuit” means a circuit with a ratio of annual peak load to off-season peak load greater than six.
- (g) “Inadvertent export” means the potential condition in which a normally non-exporting or limited-exporting DER experiences a momentary export that does not exceed limitations specified in paragraph 3853(c).
- (h) “Interconnection agreement” means legally binding contract between the interconnection customers and the utility that formally documents terms and conditions related to the operation and maintenance of any DER in accordance with the utility’s tariffs on file with the Commission.
- (i) “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its DER with the utility’s system.
- (j) “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the DER and the point of interconnection, including any modification, additions or upgrades that are necessary physically and electrically to interconnect the DER to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.
- (k) “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing DER that is interconnected with the utility’s system.
- (l) “Interconnection resource” means the interconnection customer’s source of electric power connected to the utility’s distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, bidirectional storage, electric vehicle chargers with vehicle to grid, vehicle to home, vehicle to building or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. “Interconnection resource” includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (m) “Interconnection tariffs” are required filings from the utilities that set forth certain fees associated with interconnection. Tariff filings would accommodate utility-specific costs, while allowing for appropriate statewide standardization in the provisions set forth.
- (n) “Line section” means that portion of the utility’s electric delivery system that is connected to a Customer and bounded by automatic sectionalizing devices or the end of the distribution line.
- (o) “Material modification” means a modification that has a material impact on the cost or timing of processing an application with a later queue priority date or a change in the point of interconnection. A material modification does not include, for example: (a) a change of ownership of an interconnection resource; (b) changes to the address of the generating facility, so long as the generating facility remains on the same parcel; (c) a change or replacement of

- interconnection resource that is a like-kind substitution in size, ratings, impedances, efficiencies, or capabilities of the equipment specified in the original application; or (d) a reduction in the capacity of the interconnection resource of ten percent or less.
- (p) “Minor modifications” means modifications to the utility’s distribution system or to the interconnection facilities that do have a material impact on the cost or on the timing of an interconnection request.
- (q) “Non-exporting system” means an interconnection resource that is designed so that it does not intentionally transfer electrical energy to the utility’s distribution or transmission system across the point of common coupling. Such systems may be used to supply part or all of a customers’ load continuously or during an outage. A system can be non-exporting by virtue of inverter programming or by some other on-site limiting element. Non-exporting systems may or may not produce inadvertent exports as defined in paragraph (g) of this rule.
- (r) “Operating mode” means the mode of DER operational characteristics that determines the performance during normal and abnormal conditions. For example, an operating mode such as “export only,” “import only,” and “no exchange.”
- (s) “Parallel operation” means a DER facility that is connected to the utility’s system and can supply AC electricity to the interconnection customer simultaneously with the utility’s supply of AC electricity.
- (t) “Party” or “parties” means the utility, interconnection customer, or any combination thereof.
- (u) “Point of interconnection” means the point where the interconnection facilities connect with the utility’s system.
- (v) “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.
- (w) “System upgrades” means the additions, modifications, and upgrades to the utility’s distribution or Commission-jurisdictional transmission system at or beyond the point of interconnection to facilitate interconnection of interconnection resources and render the service necessary to effect the interconnection customer’s operation of interconnection resources. System upgrades do not include interconnection facilities.
- (x) “Transmission system” means an interconnected group of transmission lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.
- (y) “Utility system” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.
- (z) “Upgrades” means the additions and modifications to the utility’s system at or beyond the point of interconnection that are necessary to interconnect an interconnection resources. Upgrades do not include interconnection facilities.



**3853. General Interconnection Procedures.**

**(a) Pre-application procedures.**

- (I) Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.
- (II) The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's website.
- (III) In response to an informal pre-application request, the utility shall provide electric system information for specific locations, feeders, or small areas to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.
- (IV) In addition to the information described in subparagraphs 3853(a)(I) and (III), which may be provided in response to an informal request, an interconnection customer may submit a formal written request for a pre-application report on a proposed interconnection at a specific site using a form supplied by the utility, unless such confidential and cannot be provided pursuant to a confidentiality agreement. The utility may charge up to a Commission-approved fee for the pre-application report. Upon completion, each pre-application report shall be dated and publicly posted to the utility's website with any customer identifying information redacted.

  - (A) The utility shall provide the pre-application report to the interconnection customer within 20 business days of receipt of the completed request form and payment of the fee.
  - (B) The pre-application report shall be non-binding on the utility and shall not confer any rights to the interconnection customer. The provided information shall not guarantee that an interconnection may be completed. Data provided in the pre-application report may become outdated at the time of the submission of the complete interconnection request.
  - (C) The pre-application report need only include existing information. A pre-application report request does not obligate the utility to conduct a study or other analysis of the proposed DER in the event that data is not readily available.
  - (D) If the utility cannot complete all or some of a pre-application report due to lack of available data, the utility should nonetheless explain what information is not available and why it is not available, and the utility shall provide the

interconnection customer with a pre-application report that includes the data that is available.

- (E) Notwithstanding any of the provisions of this section, the utility shall, in good faith, include data in the pre-application report that represents the best available information at the time of reporting. The pre-application report will include the following information:
- (i) total capacity (in MW AC) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed point of interconnection;
  - (ii) existing aggregate generation DER capacity (in MW AC) interconnected to a substation/area bus, bank or circuit (i.e., amount of DER online) likely to serve the proposed point of interconnection;
  - (iii) aggregate queued DER capacity (in MW AC) for a substation/area bus, bank or circuit (i.e., amount of DER in the queue) likely to serve the proposed point of interconnection;
  - (iv) available capacity (in MW AC) of substation/area bus or bank and circuit likely to serve the proposed point of interconnection (i.e., total capacity less the sum of existing aggregate DER capacity and aggregate queued DER capacity);
  - (v) substation nominal distribution voltage and/or transmission nominal voltage, if applicable;
  - (vi) nominal distribution or transmission circuit voltage at the proposed point of interconnection whether the proposed DER is eligible for the Level 1, Level 2 or non-export process;
  - (vii) approximate circuit distance between the proposed point of interconnection and the substation;
  - (viii) relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load as described in the supplemental review minimum load screen in subparagraph 3855(d)(VI)(A) and absolute minimum load at the time of DER production, when available;
  - (ix) number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed point of interconnection and the substation/area. Identify whether the substation has a load tap changer;
  - (x) number of phases available at the proposed point of interconnection. If a single phase, distance from the three- phase circuit;

- (xi) whether the point of interconnection is located on a spot network, grid network, or radial supply; and
- (xii) existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks, based on the proposed point of interconnection.

(b) Capacity of the DER.

- (I) If the interconnection request is for an increase in capacity for an existing DER, the interconnection request shall be evaluated on the basis of the new total capacity of the DER, except as provided below in subparagraph 3853(c)(III).
- (II) If the interconnection request is for a DER that includes multiple components at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple components, except as provided below in subparagraph 3853(c)(III).
- (III) The interconnection request shall be evaluated using the maximum rated capacity of the DER, except as provided below in subparagraph 3853(c)(III). At the utility's discretion in accordance with subparagraph 3853(c)(III), the interconnection request may be evaluated using less than the maximum rated capacity of the DER if the utility determines that the DER is only capable of injecting less power into the utility's system.

(c) Energy storage interconnections.

- (I) Non-exporting energy storage may inadvertently export, so long as the magnitude is less than the energy storage's nameplate rating (kW-gross) and the duration of export of power from the customer's energy storage is less than 30 seconds for any single event. There are no limits to the number of events. Inadvertent export events shall not exceed thermal, service voltage, power quality or network limits defined within Commission rules or interconnection requirements. For good cause shown, the Commission may grant a variance of this section.
- (II) When a storage system is installed in conjunction with a DER facility, both shall be reviewed at the same time and be included in one interconnection agreement.
- (III) Interconnection requests are reviewed based on the combined nameplate rating of exporting systems accounting for their export capacity, and energy storage operating mode(s) configuration. The ongoing operation capacity portion of the interconnection review is based on the actual simultaneous performance AC ratings, taking into account the operational differences of load offset and export. If the contribution of the energy storage to the total contribution is limited by programming of the maximum active power output, use of a power control system, use of a power relay, or some other mutually agreeable on-site limiting element, only the capacity that is designed to inject electricity to the utility's distribution or transmission system (other than inadvertent exports and fault contribution) will be used within certain technical screens and evaluations as specified in paragraphs 3855(b) and (d).

- (IV) Failure of hardware or software system(s) intended to limit energy storage export capacity shall cause the energy storage system to enter a safe operating state. An energy storage system combined with a UL 1741 certified power control system shall be considered capable of entering a safe operating state upon failure of hardware or software system(s). When mutually agreed fail-safe provisions are not provided, at the utility's discretion, the interconnection request may be evaluated using the maximum rated capacity of the energy storage system.
- (V) When a storage system that is an exporting system is installed at the same point of interconnection location as an existing interconnected DER facility, the review level will be based upon the incremental addition of the DER rated capacity and the exporting energy storage system rated capacity for their selected operating, as provided in subparagraph 3853(c)(III) configurations.
- (VI) A storage system may be located on the same side of a production meter as a generating facility when a production meter is required by these rules provided that the storage system is either non-exporting at the service meter or is charged exclusively by the generating facility and only the production recorded by the production meter will be eligible for incentives.
- (d) Interconnection requests.
- (I) The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. Additional fees or deposits shall not be required, except as otherwise specified in these procedures. A single request to interconnect may be submitted by the interconnection customer distributed generation paired with energy storage systems and shall be subject to one interconnection agreement.
- (II) The interconnection request shall be date-stamped and time-stamped upon receipt. The original date- stamped and time-stamp applied to the interconnection request at the time of its original submission shall be the order in which the utility reviews applications to determine completeness.
- (III) The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by the IC.
- (IV) The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, with a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. The IC may re-submit the application within one year without paying an additional interconnection application fee.

- (V) An interconnection request will be deemed complete upon submission of the listed information to the utility. The interconnection request shall be date-stamped and time-stamped upon being deemed complete. This date shall be accepted as the qualifying date-stamp and time-stamp for the purposes of any timetable in subsequent procedures.
- (VI) Any modification to interconnection resource data or equipment configuration or to the interconnection site that is a material modification, may be deemed by the utility to be a withdrawal of the interconnection request, and may require submission of a new interconnection request. A new interconnection request shall not be required for minor modifications to interconnection resource data or equipment configuration or to the interconnection site. Within ten business days of receipt of a proposed modification, the utility, in consultation with an affected system owner, if applicable, shall evaluate whether a proposed modification constitutes a material modification.
- (A) If the proposed modification is determined to be a material modification, then the utility shall notify the IC in writing that the customer may: withdraw the proposed modification; or proceed with a new interconnection request for such modification. The IC shall provide its determination in writing to the utility within ten business days after the utility provides the material modification determination results. If the IC does not provide its determination, the customer's request shall be deemed withdrawn.
- (B) If the proposed modification is determined not to be a material modification, then the utility shall notify the IC in writing that the modification has been accepted and that the IC shall retain its eligibility for interconnection, including its place in the interconnection queue.
- (C) Any dispute as to the utility's determination that a modification constitutes a material modification shall proceed in accordance with the dispute resolution provisions in these procedures.
- (VII) Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:
- (A) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the interconnection resource;
- (B) an option to purchase or acquire a leasehold site for such purpose which may include a letter of intent; or
- (C) an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.
- (D) For generating facilities utilizing the Level 1 25 kW AC inverter process, proof of site control may be demonstrated by the IC's signature on the interconnection application.

(VIII) The utility shall place interconnection requests in a first come, first served order per feeder, per substation transformer, and per substation based upon the date an application is complete pursuant to subparagraph 3853(d)(V). The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.

(e) Evaluation of interconnection requests.

- (I) A request to interconnect an interconnection resource no larger than 25 kW AC, which may be paired with a non-exporting storage system no larger than 25 kW AC, shall be evaluated under the Level 1 process.
- (II) If not eligible for Level 1, a request to interconnect an interconnection resource with a combined nameplate rating larger than 25 kW AC but smaller than 2 MW AC shall be evaluated under the Level 2 process (Fast Track) in accordance with the eligibility requirements in paragraph 3855(a).
- (III) A request to interconnect an interconnection resource that does not pass the Level 1 or Level 2 process shall be evaluated under the Level 3 process.
- (IV) Non-exporting interconnection resources shall be evaluated under the simplified “non-export” interconnection processes outlined in rule 3859. The “non-export” interconnection process is also applicable to additions of new non-exporting interconnection resources paired with existing interconnection resources when the existing interconnection resources have already executed an interconnection agreement.

(f) Interconnection agreements.

- (I) Any interconnection resource operating in parallel with the utility's system is required to have an interconnection agreement with the utility to ensure safety, system reliability, and operational compatibility. References in these procedures to interconnection agreement are to the utility's interconnection agreement as provided on its website, which interconnection agreement is subject to Commission approval upon request.
- (II) Interconnection agreements shall survive transfer of ownership of the interconnection resource to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.
- (III) After receiving an interconnection agreement from the utility, the IC shall have 30 business days to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement, or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. The utility shall provide the IC a fully executed interconnection agreement within two business days after receiving a signed interconnection agreement from the IC. After the parties sign the interconnection agreement, the interconnection of the interconnection resource shall proceed under the provisions of the interconnection agreement.

- (IV) Once the interconnection resource has been authorized by the utility to commence operation in parallel with the utility system, the interconnection customer shall abide by all rules and procedures pertaining to parallel operation in the utility's tariffs and in the interconnection agreement.
- (V) The interconnection customer shall be responsible for the utility's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair and replacement of utility upgrades or utility interconnection facilities not required to serve other utility customers. Such upgrades or facilities shall be specified in the interconnection agreement unless otherwise covered by the utility's tariff or excluded by interconnection agreement. Utilities may not refuse to provide an IC with a fixed dollar amount to cover reasonable and necessary utility upgrades or utility interconnection facilities in order to facilitate an interconnection.
- (g) Reasonable efforts. The utility and IC shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility or IC cannot meet a deadline provided herein, it shall notify the IC, or the utility if the notifying party is the IC, and explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.
- (h) Disputes.
- (I) The utility and IC shall agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this subparagraph.
- (II) In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third-party dispute resolution service for assistance in resolving the dispute.
- (III) The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.
- (IV) Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs billed by and to be paid to neutral third-parties.
- (V) If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission, pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1.
- (i) Interconnection metering. Except as otherwise required by other Commission rules or by the terms of a Commission-approved program offered by the utility any metering necessitated by the use of the interconnection resource shall be installed at the IC's expense in accordance with



Commission requirements or the utility's specifications. For systems below 25 kW AC, additional metering shall not be installed for the purposes of monitoring energy storage systems.

(j) Commissioning tests. Commissioning tests of the IC's installed DER shall be performed pursuant to applicable codes and standards, including IEEE Standard 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" (2020). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202. The utility must be given at least five business days' written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.

(k) Confidentiality.

(I) Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.

(II) Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.

(A) Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.

(B) Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.

(III) Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The



party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.

- (l) Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this rule. The utility shall use the same reasonable and expeditious efforts in processing and analyzing interconnection requests from all interconnection customers, whether the interconnection resource is owned or operated by the utility, its subsidiaries or affiliates, or others.
- (m) Record retention. The utility shall maintain for three years, records, subject to audit, of all interconnection requests received under these procedures, the times required to complete each step of the interconnection request approvals and disapprovals, enumerated in these rules and justification for the actions taken on the interconnection requests.
- (n) Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in this rule. The utility will include such affected system operators in all meetings held with the IC as required by this rule. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems and shall provide to the IC any analysis and data underlying the affected system utility's determinations.
- (o) Insurance. A Utility may only require an applicant (i.e., an interconnection customer) to purchase insurance covering Utility damages, and then only in the amounts stated below. An interconnection customer, at its own expense, shall secure and maintain in effect during the term of the interconnection agreement, insurance coverage in the following amounts:

(I) For non-inverter-based generating facilities:

Nameplate Rating > 5 MW – \$3,000,000 for each occurrence

2 MW < Nameplate Rating < 5 MW – \$2,000,000 for each occurrence

500 kW < Nameplate Rating < 2 MW – \$1,000,000 for each occurrence

50 kW < Nameplate Rating < 500 kW – \$500,000 for each occurrence

Nameplate Rating < 50 kW - no additional insurance

(II) For inverter-based Generating Facilities:

Nameplate Rating > 5 MW – \$2,000,000 for each occurrence

1 MW < Nameplate Rating > 5 MW – \$1,000,000 for each occurrence

Nameplate Rating > 1 MW - no additional insurance

- (III) Colorado governmental entities that self-insure against liability in amounts above those required in paragraph (n) for interconnection resources DER up to 2 MW or to the replacement value of the interconnection resource DER for those interconnection resources above 2 MW, shall not be required to purchase additional insurance or to add the utility as an additional insured to any policy, nor shall they be obligated to indemnify the utility, though they shall be liable for any negligent or intentional act or omission of the municipality, its employees, contractors, subcontractors, or agents.
  - (IV) Certificates of Insurance evidencing the requisite coverage and provision(s) when required shall be furnished to the utility prior to the date of interconnection of the interconnection resource. Utilities shall be permitted to obtain proof of current insurance coverage periodically from the interconnection customer in order to verify proper liability insurance coverage. Customers will not be allowed to commence or continue interconnected operations unless they provide to the utility evidence that satisfactory insurance coverage is in effect at all times.
- (p) Implementation by tariff.
- (I) Each utility shall have on file with the Commission an interconnection tariff that sets forth certain fees, deadlines, and interconnection procedures. A utility's interconnection tariff shall comply with these Interconnection Rules, but when appropriate may include shorter deadlines for certain procedures.
  - (II) The interconnection tariff shall be filed along with an advice letter. Tariffs filed by cooperative electric associations shall be informational only. Tariffs filed by investor-owned electric utilities may be set for hearing and suspended in accordance with the Commission's Rules of Practice and Procedure and applicable statutes.
  - (III) The interconnection tariff shall include the following provisions:
    - (A) timelines: paragraphs 3853(a),(d),(f),(h), 3854(a), 3855(b),(c), and (d), and 3856(a),(b),(c),(d);
    - (B) fees: paragraphs 3853(a),(d),(f),(j), 3854(a) and (b), and 3856(a);
    - (C) material modification withdrawals: paragraph 3853(d); and
    - (D) maximum rated capacity: paragraphs 3853(a),(b), and (c).
- (q) Reporting.
- (I) Each utility shall submit an interconnection report to the Commission two times per year and shall make it available to the public on its website. The first interconnection report shall be due 180 days after the effective date of these interconnection rules. Upon a filing by a party with proper standing showing good cause, and when necessary and appropriate, the Commission may by order increase the frequency of such reporting on a temporary basis. The report shall contain relevant totals for both the year and the most

recent reporting period, including the following information listed in subparagraphs (g)(II) and (III) of this rule.

(II) Pre-application reports:

- (A) total number of reports requested;
- (B) total number of reports in process;
- (C) total number of reports issued;
- (D) total number of requests withdrawn;
- (E) maximum, mean, and median processing times from receipt of request to issuance of report; and
- (F) number of reports processed in more than the 20 business days allowed in subparagraph 3853(a)(IV)(A).

(III) Interconnection applications:

- (A) total number received, broken down by:
  - (i) primary fuel type (e.g., solar, wind, bio-gas, etc.); and
  - (ii) system size (e.g., <25 kW, <1 MW, <5MW, >5MW).
- (B) Level 1 review process.
  - (i) total number of applications processed; and
  - (ii) maximum, mean, and median processing times from receipt of complete application to provision of a counter-signed interconnection agreement.
- (C) Level 2 review process.
  - (i) total number of applications that passed the screens in paragraph 3855(b);
  - (ii) total number of applications that failed the screens in paragraph 3855(b); and
  - (iii) maximum, mean, and median processing times from receipt of complete application to issuance of an interconnection agreement.
- (D) Supplemental review.
  - (i) total number of applications that passed the screens in paragraph 3855(d);

(ii) total number of applications that failed the screens in paragraph 3855(d); and

(iii) maximum, mean, and median processing times from receipt of complete application to issuance of interconnection agreement.

(E) Level 3 review process:

(i) system impact studies

(ii) total number of system impact studies completed under paragraph 3856(c); and

(iii) maximum, mean, and median processing times from receipt of a signed interconnection system impact study agreement to provision of study results.

#### **3854. Level 1 Process (25 kW AC Inverter Process).**

This rule establishes the procedures for evaluating an interconnection request for a certified inverter-based DER no larger than 25 kW AC which may be paired with a non-exporting energy storage system no larger than 25 kW AC. The application process uses an all-in-one document (application) that includes a simplified interconnection request, simplified procedures, and a brief set of terms and conditions.

(a) General Level 1 procedures.

(I) The IC completes application and submits it to the utility.

(II) The utility acknowledges to the customer receipt of the application within three business days of receipt.

(III) The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.

(IV) Within ten business days, the utility shall verify whether the interconnection resource can be interconnected safely and reliability using the same screens as applied in Level 2 process as set forth in rule 3855 except for screens (V), (VI), (X) and (XI) which will not be deemed necessary for the Level 1 process (25 kW AC Inverter Process). If the interconnection fails these screens, the utility shall consider this a failure of the Level 2 process screens in rule 3855. The utility shall continue the interconnection review under the Level 2 process, starting at paragraph 3855(c), provided that the IC pays the difference in the Level 2 process application fee and deposit requirements. The utility may also review the application within the 105 business day period to evaluate issues associated with highly seasonal circuits.

(V) Provided all the criteria of this rule 3854 are met, unless the utility determines and demonstrates that the interconnection resource cannot be interconnected safely and

reliably and requires upgrades, the utility approves and executes the application and returns it to the customer within ten business days.

(VI) After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the interconnection resource for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary. The utilities should define “witness test” in their interconnection tariff.

(VII) The utility shall notify the customer that parallel operation of the interconnection resource is authorized within ten business days of the certificate of completion. If the witness test is not satisfactory, the utility has the right to disconnect the interconnection resource. The customer has no right to operate in parallel until a witness test has been performed, or previously waived in the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.

(b) Level 1 application.

(I) The customer must provide in the application the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.

(II) The application is considered complete when it provides all applicable and correct information as required below. Additional information to evaluate the application may be required.

(III) The application shall include the following information, as applicable:

(A) Processing fee. A fee of \_\_\_\_\_ must accompany this application.

(B) Interconnection customer:

\_\_\_\_\_  
Name  
\_\_\_\_\_  
Contact Person  
\_\_\_\_\_  
Address  
\_\_\_\_\_  
City State Zip  
\_\_\_\_\_  
Telephone (Day) and (Evening)  
\_\_\_\_\_  
Fax Number and E-Mail Address

(C) Engineering firm or Installer (If applicable):

\_\_\_\_\_  
Contact Person  
\_\_\_\_\_  
Address  
\_\_\_\_\_  
City State Zip  
\_\_\_\_\_  
Telephone  
\_\_\_\_\_  
Fax and E-Mail Address

(D) Contact (if different from Interconnection Customer):

\_\_\_\_\_  
Name  
\_\_\_\_\_  
Address  
\_\_\_\_\_  
City State Zip

Telephone (Day) and (Evening)  
Fax Number and E-Mail Address  
Owner of the facility (include percent ownership by any electric utility)

(E) DER information:  
Location (if different from above)  
Utility  
Account number  
DER components  
Inverter manufacturer: \_\_\_\_\_ Model  
Nameplate rating: (kW AC) (kVA) (AC Volts)  
Single phase \_\_\_\_\_ Three phase \_\_\_\_\_  
System design capacity: \_\_\_\_\_ (kW AC) \_\_\_\_\_ (kVA)  
Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other  
Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)  
Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_  
If Yyes, attach manufacturer's cut-sheet showing UL1741 listing  
Estimated installation date: \_\_\_\_\_ Estimated in-service date: \_\_\_\_\_

The ten kW AC inverter process is available only for inverter-based interconnection resources no larger than ten kW AC that satisfy the codes, standards, and certification requirements specified in certain of these interconnection rules, or the utility has reviewed the design or tested the proposed interconnection resource and is satisfied that it is safe to operate.

(F) List components of the small generating facility equipment package that are currently certified:

Equipment type certifying entity:

- 1.
- 2.
- 3.
- 4.
- 5.

(G) Limited-Export / Non-Export / Limited-Import Data:

If multiple export control systems are used, provide for each control system and use additional sheets if needed.

Is export controlled to less than the Total Aggregate Nameplate Rating? Yes:

No:

Method of export limitation: Power Control System / Reverse Power Protection / Minimum Power Protection / Other (describe):

Export controls are applied to how many generators? Multiple: One:

If Power Control System is used, open loop response time(s): \_\_\_\_\_

Power Control System output limit setting: (kW AC) (kVA)

Energy Storage System Power Control System operating mode:

Unrestricted: Export Only: Import Only: No Exchange:

Describe which Generators the export control system controls:

(H) Interconnection customer signature and certification:

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based interconnection resource No Larger than 10kW AC and return the certificate of completion when the interconnection resource has been installed.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Contingent approval to interconnect the small generating facility.

(For company use only)

Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than ten kW AC and return of the certificate of completion.

Company signature: \_\_\_\_\_

Title: Date: \_\_\_\_\_

Application ID number: \_\_\_\_\_

Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_

(c) Level 1 terms and conditions.

(I) Construction of the facility. The interconnection customer may proceed to construct the interconnection resource when the utility approves the interconnection request (the application) and returns it to the IC.

(II) Interconnection and operation. The IC may operate the interconnection resource and interconnect with the utility's electric system once all of the following have occurred:

(A) upon completing construction, the interconnection customer will cause the interconnection resource to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;

(B) the customer returns the certificate of completion to the utility; and

(C) the utility has completed its inspection of the interconnection resource. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the interconnection resource has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.

- (D) The utility has the right to disconnect the interconnection resource in the event of improper installation or failure to return the certificate of completion.
- (III) Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the interconnection resource as required to ensure that it complies at all times with the interconnection standards to which it has been certified.
- (IV) Access. The utility shall have access to the disconnect switch and metering equipment of the interconnection resource at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.
- (V) Disconnection. The utility may temporarily disconnect the interconnection resource as allowed in the interconnection agreement and upon the following conditions:
  - (A) for scheduled outages per notice requirements in the utility's tariff or Commission rules;
  - (B) for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or
  - (C) if the interconnection resource does not operate in the manner consistent with these terms and conditions.
  - (D) The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.
- (VI) Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.
- (VII) The interconnection customer is not required to provide general liability insurance coverage as part of this agreement, or through any other utility requirement.
- (VIII) Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of the interconnection agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (c)(VI) of this rule.
- (IX) Termination. The interconnection agreement to operate in parallel may be terminated under the following conditions.
  - (A) By the customer by providing written notice to the utility.



- (B) By the utility if the interconnection resource fails to operate for any consecutive 12-month period or the customer fails to remedy a violation of these terms and conditions.
- (C) Permanent disconnection. In the event the interconnection agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its interconnection resource.
- (D) Survival rights. The interconnection agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.
- (X) Assignment/Transfer of ownership of the facility. The interconnection agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.

**3855. Level 2 Process (Fast Track).**

This fast track process is available to an IC proposing to interconnect its interconnection resource with the utility's system if the interconnection resource meets the eligibility provisions in this rule 3855.

(a) Eligibility.

- (I) Eligibility for the Level 2 process is determined based upon the type and size of the interconnection resource as well as the voltage of the utility line and the location of and the type of utility line at the point of interconnection. An interconnection customer may determine whether the interconnection resource is eligible for the Level 2 process by requesting a pre-application report pursuant to subparagraph 3853(a)(IV).
- (II) For certified inverter-based systems, the size limit of the interconnection resource varies according to the voltage of the utility line at the proposed point of interconnection. Certified inverter-based interconnection resource facilities located within 2.5 electrical circuit miles of a substation and on a mainline are eligible for the Level 2 process under the higher thresholds pursuant to this rule 3855. The utilities should define "mainline" in their interconnection tariff.

<b><u>Level 2 Process Eligibility for Inverter-Based Systems kW and MW are AC</u></b>		
<b><u>Line Voltage</u></b>	<b><u>Eligibility Regardless of Location</u></b>	<b><u>Eligibility Meeting Location Requirements (Mainline and Substation)</u></b>
<u>&lt; 5 kV</u>	<u>≤ 500 kW</u>	<u>≤ 500 kW</u>
<u>≥ 5 kV and &lt; 15 kV</u>	<u>≤ 2 MW</u>	<u>≤ 3 MW</u>
<u>≥ 15 kV and &lt; 30 kV</u>	<u>≤ 3 MW</u>	<u>≤ 4 MW</u>
<u>≥ 30 kV and &lt; 69 kV</u>	<u>≤ 4 MW</u>	<u>≤ 5 MW</u>

- (III) All synchronous and induction facilities must be no larger than 2 MW AC to be eligible for the Level 2 process, regardless of location.
  - (IV) In addition to the size threshold, the DER must satisfy the codes, standards, and certification requirements specified in certain of these interconnection rules.
  - (V) The technical screens shall not preclude the utility from utilizing tools that perform screening functions using different methodology given that the analysis is aimed at preventing the same voltage, thermal and protection limitations as the initial and supplemental review screens under paragraph 3855(d).
- (b) Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the following.
- (I) The proposed interconnection resource's point of interconnection must be on a portion of the utility's distribution system that is subject to the utility's tariffs. Proposed interconnection resources on highly seasonal circuits shall also be subject to the supplemental review pursuant to paragraph 3855(d).

- (II) For interconnection of a proposed interconnection resource to a radial distribution circuit, the aggregated generation, including the proposed interconnection resource, on the line section(s) shall not exceed 15 percent of the line section’s annual peak load as most recently measured at the substation or calculated for the line section(s). A line section is that portion of a utility’s electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device. Energy storage system(s) capacity for purposes of this screen shall be based on subparagraph 3853(c)(III).
- (III) The proposed interconnection resource, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit’s maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.
- (IV) The proposed interconnection resource, in aggregate with other interconnection resources on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or interconnection customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.
- (V) The proposed interconnection resource shall meet the rapid voltage change and flicker requirements of IEEE Standard 1453 (2015) and IEEE Standard 1547 (2018) based on the appropriate test. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (VI) The type of interconnection to a primary distribution line shall be determined based on the table below, including a review of the type of electrical service provided to the interconnection customer, line configuration, and the transformer connection to limit the potential for creating over-voltages on the utility’s electric power system due to a loss of ground during the operating time of any anti-islanding function.

<u>Primary Distribution Line Type</u>	<u>Type of Interconnection to Primary Distribution Line</u>	<u>Result/Criteria</u>
<u>Three-phase, three wire</u>	<u>3-phase or single phase, phase-to-phase</u>	<u>Pass screen</u>
<u>Three-phase, four wire</u>	<u>Effectively-grounded 3 phase or Single-phase, line-to-neutral</u>	<u>Pass screen</u>

- (VII) If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the

proposed small generating facility, shall not exceed 25 kW AC. Energy storage system(s) capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).

(VIII) If the proposed interconnection resource is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.

(IX) No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.

(X) For interconnection of a proposed interconnection resource to the load side of spot network protectors serving more than a single customer, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the interconnection resource must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.

(XI) For interconnection of a proposed interconnection resource to the load side of area network protectors, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW AC.

(XII) The nameplate capacity of a proposed interconnection resource, in combination with the nameplate capacity of any previously interconnected interconnection resource, shall not exceed the capacity of the customer's existing electrical service unless there is a simultaneous request for an upgrade to the customer's electrical service, regardless of exporting or non-exporting designations for any of the interconnection resources.

(c) Customer options meeting.

(I) If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review that the interconnection resource may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting. The utility shall provide to the IC in writing with a detailed information on the reasons(s) for failure.

(II) If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; without a supplemental study or other additional studies or actions; or without significant costs to address safety, reliability, or power quality problems, the utility shall notify the IC within the five business day period after the determination and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen

analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:

- (A) offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;
- (B) offer to perform a supplemental review pursuant to paragraph 3855(d) and provide a non-binding good faith estimate of the costs and time of such review; or
- (C) obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 study process.

(d) Supplemental review.

- (I) To accept a utility's offer to conduct a supplemental review, the interconnection customer, within 15 business days of the offer, shall agree in writing to the supplemental review and submit a deposit for the estimated costs. If the written agreement and deposit have not been received by the utility within the 15 days, the interconnection request shall continue to be evaluated under the Level 3 process, unless the request is withdrawn by the IC. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.
- (II) Within 30 business days following receipt of the deposit for a supplemental review, the utility will perform a supplemental review of the proposed interconnection resource using the screens set forth below, notify the interconnection customers of the results of the screens in writing, and include with the notification copies of the analysis and data underlying the utility's determinations.
- (III) The interconnection customer may specify the order in which the utility completes the supplemental review screens.
- (IV) The utility shall notify the interconnection customer of the failure of the interconnection resource in any supplement review screen or of the utility's inability to perform any screen for the interconnection resource. Within two business days of the receipt of such notice, the interconnection customer may grant the utility permission:
  - (A) to continue evaluating the proposed interconnection under this paragraph 3855(d);
  - (B) to continue evaluating the proposed interconnection under this paragraph 3855(d) subject to the utility's determination of minor modifications;

- (C) to terminate the supplemental review and instead to continue evaluating the interconnection resource under the Level 3 process; or
- (D) to terminate the supplemental review upon withdrawal of the interconnection request by the interconnection customer.
- (V) Minimum load, minimum loading, and minimum load data shall be specific to time(s) that the interconnection resource exports active power to the utility.
- (VI) Supplemental review screens.
  - (A) Minimum load screen.
    - (i) The interconnection resource capacity on the line section(s) shall be less than 100 percent of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed interconnection resource. Energy storage system(s), proposed and aggregated capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
    - (ii) This screen shall be determined using 12 months of line section(s) minimum load data (including onsite load but not station service load served by the proposed interconnection resource), calculated minimum load data, or estimated minimum load data using existing data a power flow model. If minimum load data is not available or the minimum load data cannot be calculated estimated, the utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under subparagraph 3855(d)(IV).
    - (iii) The type of interconnection resource shall be taken into account when calculating or estimating circuit or line section(s) minimum load. The utility shall use daytime minimum load for solar photovoltaic (PV) interconnection resource with no battery storage (i.e., 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems). The utility shall use absolute minimum load for all other types of interconnection resources.
    - (iv) Only the net injection into the utility's electric system shall be considered as part of the interconnection resource when this screen is applied to an interconnection resource serving some station service load.
    - (v) The utility shall not consider as part of the interconnection resource the capacity known to be already reflected in the minimum load data.
  - (B) Voltage and power quality screen.
    - (i) In aggregate with existing interconnection resource on the circuit and line section(s), the voltage regulation on the circuit and line section(s) shall

be maintained in compliance with relevant requirements under all system conditions;

- (ii) in aggregate with existing interconnection resource on the circuit and line section(s), the voltage fluctuation shall be within acceptable limits as defined by IEEE Standard 1453 (2015) and conforming with IEEE Standard 1453 (2015), while also taking into account activated inverter functionality, and by the limits defined by IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202; and
- (iii) in aggregate with existing interconnection resource on the circuit and line section(s), the harmonic levels shall meet IEEE Standard 519 (2014) limits. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.

(C) Safety and reliability screen.

- (i) The location of the proposed interconnection resource and the aggregate interconnection resource capacity on the line section(s) shall not create impacts to safety or reliability that cannot be adequately addressed without application of the Level 3 process.
- (ii) Minimum load, minimum loading and minimum load data shall be specific to time(s) of interconnection resource export capacity.
- (iii) The utility shall consider whether the line section(s) has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).
- (iv) The utility shall consider whether the loading along the line section(s) is uniform or even given the sources of the screening data.
- (v) The utility shall consider whether the proposed interconnection resource is located in close proximity to a substation (i.e., less than 2.5 electrical circuit miles) and whether the line section(s) from the substation to the point of interconnection is a mainline rated for normal and emergency ampacity.
- (vi) The utility shall consider whether the proposed interconnection resource incorporates a time delay function to prevent reconnection of the interconnection resource to the utility's system until system voltage and frequency are within normal limits for a prescribed time.
- (vii) The utility shall consider whether operational flexibility is reduced by the proposed interconnection resource, such that transfer of the line distribution circuit/substation may trigger overloads or voltage issues.

(viii) The utility shall consider whether the proposed interconnection resource employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, and voltage quality.

(VII) If the supplemental screening meets utility determined adequacy with minor modifications, the utility shall provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system upon notification of review results.

(e) Interconnection agreements.

(I) If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.

(II) If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.

(III) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(c)(II)(A), the utility will provide the interconnection customer with an executable interconnection agreement within ten business days of the customer options meeting.

(IV) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(d)(VII), the utility will provide the interconnection customer with an executable interconnection agreement within five business days of IC agreement to pay.

**3856. Level 3 Process (Study Process).**

This study process shall be used by an interconnection customer proposing to interconnect its interconnection resource with the utility's system if the interconnection resource does not meet the size limitations for the Level 2 Process, is not certified; or, is certified but did not pass the Level 1 process or Level 2 process.

(a) Scoping meeting.

(I) A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.

(II) The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection



agreement. If the IC elects to move forward with a feasibility study, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.

- (III) The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the IC elects not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
- (IV) Feasibility studies, scoping studies, and facility studies may be combined or waived for simpler projects by mutual agreement of the utility and the IC. If all such studies are waived, the utility shall provide the IC an executable interconnection agreement within ten business days after the scoping meeting. If the scoping meeting is also omitted by mutual agreement, the utility shall provide the IC an executable interconnection agreement within ten business days after the interconnection request is deemed complete and this Level 2 process is completed.
- (V) If feasibility studies, system impact studies, and facility studies are combined, or required to be completed for a single application, a utility shall perform the combined studies within no more than 60 business days of the date upon which the IC authorizes the utility to proceed with the level 3 process.
- (VI) Utility must offer a developer the opportunity to pay full fees upfront and proceed straight to the system impact study.

(b) Feasibility study.

- (I) The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the interconnection resource. At its discretion, the utility may use the Level 2 supplemental review as described in paragraph 3855(d) as the feasibility study.
- (II) A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.
- (III) The scope of and cost responsibilities for the feasibility study are described in the feasibility study agreement.
- (IV) If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
- (V) If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).

(VI) If no system impact study is required and no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the feasibility study.

(c) System impact study.

(I) Within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth below. A system impact study shall identify and detail the electric system impacts that would result if the proposed interconnection resource were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.

(II) If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.

(III) In instances where the feasibility study or the distribution system impact study shows potential for adverse impacts on the utility's transmission system, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the transmission-supplied scope of the study and a transmission-supplied non-binding good faith estimate of the cost to perform the study, if such a study is required.

(IV) If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.

(V) If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.

(VI) In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.

(VII) A deposit of the good faith estimated costs for each system impact study may be required from the IC.

(VIII) The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.

- (IX) Where transmission systems and distribution systems have separate owners, such as is the case with transmission-dependent utilities– whether investor-owned or not – the IC may apply to the nearest utility (transmission owner, regional transmission operator, or independent utility) providing transmission service to the transmission-dependent utility to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.
- (X) If no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the system impact study.
- (d) Facilities study.
- (I) Within 45 business days of executing an appropriate agreement or contract, the utility shall perform a facilities study using the screens set forth below. Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC within five business days along with a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.
- (II) In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.
- (III) The facilities study shall include a detailed list of necessary system upgrades and an itemized cost estimate, breaking out equipment, labor, operation and maintenance and other costs, including overheads, for completing such upgrades, which may not be exceeded by 125 percent if actual upgrades are completed.
- (IV) Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement. At the option of the IC, the IC may separately arrange for the design and upgrade of some of the interconnection facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the utility, under the provisions of the facilities study agreement. If the IC separately arranges for design and construction, and provided that security and confidentiality requirements can be met, the utility shall make sufficient information available to the IC in accordance with confidentiality and critical infrastructure requirements in order to permit the IC to obtain an independent design and cost estimate for any necessary facilities.
- (V) A deposit of the good faith estimated costs for the facilities study may be required from the IC.
- (VI) The scope of and cost responsibilities for the facilities study shall be described in a facilities study agreement.

(VII) Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.

**3857. Certification Codes and Standards.**

Unless one or more of the following standards has been incorporated by reference into these interconnection rules, the Commission encourages the utilities and their interconnection customers, to whom these rules apply, to use the following standards and reference materials for guidance.

ANSI C84.1- (2016) Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

ANSI/NEMA MG 1 — (2016), Motors and Generators

IEEE Std. C37.90.1- (2012), IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std. C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std. C37.108-2002, IEEE Guide for the Protection of Network Transformers

IEEE Std. C57.12.44-2014, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std. C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text

IEEE Std. C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

IEEE Std. 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition

IEEE Std. 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std. 1453-2015 IEEE Recommended Practice for the Analysis of Fluctuating Installation on Power Systems

IEEE Std. 1547-2018, IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEEE Std. 1547.1-2020, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

NFPA 70 (2017), National Electrical Code

UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems

UL 1741 SA-2018, IEEE Standards for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

**3858. Certification of DER Packages.**

- (a) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in rule 3857; it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- (b) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- (c) Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.
- (d) If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- (e) Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of interconnection shall be required to meet the requirements of this interconnection procedure.
- (f) An equipment package does not include equipment provided by the utility.

**3859. Filing of Interconnection Manual.**

No later than 90 calendar days after the effective date of these rules, each utility subject to these rules shall file with the Commission information about its interconnection manual in an advice letter and tariff filing pursuant to rule 3108. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. The utility shall update this information within 30 days after any changes have been made to its manual.

**3860. – 3899. [Reserved]**

## COLORADO DEPARTMENT OF REGULATORY AGENCIES

### Public Utilities Commission

#### 4 CODE OF COLORADO REGULATIONS (CCR) 723-3

#### PART 3 RULES REGULATING ELECTRIC UTILITIES

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#### RENEWABLE ENERGY STANDARD

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[indicates omission of unaffected rules]

**3667. [Reserved].**

\* \* \* \*

[indicates omission of unaffected rules]

**3806. – 3849. [Reserved].**

#### INTERCONNECTION PROCEDURES AND STANDARDS.

**3850. Applicability.**

The following interconnection procedures shall apply to the interconnection of all retail renewable distributed generation and other distributed energy resources including energy storage systems that operate in parallel with and are connected to the utility, when such interconnections are not subject to the jurisdiction of FERC. Each utility shall also provide, on its web site, interconnection standards or other technical guidance not included in, but that are consistent with, these procedures and which shall be reviewable by the Commission upon a Commission decision after the filing of an advice letter and tariff or application pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1. This rule largely tracks the 2013 FERC amended version of the FERC 2006 Small Generator Interconnection Procedures.

### **3851. Overview and Purpose.**

Infrastructure, security of electric system equipment, and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and interconnection customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

The purpose of these rules is to establish reasonable interconnection and insurance requirements for interconnection resources retail renewable distributed generation and other distributed energy resources that connect to a utility's system that operate in parallel with and are connected to the utility.

### **3852. Definitions.**

The following definitions apply only to rules 3850 to 3859.

- (a) "Business day" means Monday through Friday, excluding federal holidays.
- (b) "Distributed energy resource" or "DER" means the interconnection customer's source of electric power connected to the utility's distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. DER includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (c) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from interconnection resources or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.
- (d) "Energy storage system" means any commercially available, customer-sited system or utility-sited system, including batteries and the batteries paired with on-site generation, that does not generate energy, that is capable of retaining, storing, and delivering energy by chemical, thermal, mechanical, or other means.
- (e) "Export capacity" means the amount of alternating current (AC) electrical energy that an interconnection resource is designed intentionally to transfer to the utility's system across the point of interconnection.
- (f) "Highly seasonal circuit" means a circuit with a ratio of annual peak load to off-season peak load greater than six.

- (g) “Inadvertent export” means the potential condition in which a normally non-exporting or limited-exporting DER experiences a momentary export that does not exceed limitations specified in paragraph 3853(c).
- (h) “Interconnection agreement” means legally binding contract between the interconnection customers and the utility that formally documents terms and conditions related to the operation and maintenance of any DER in accordance with the utility’s tariffs on file with the Commission.
- (i) “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its DER with the utility’s system.
- (j) “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the DER and the point of interconnection, including any modification, additions or upgrades that are necessary physically and electrically to interconnect the DER to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.
- (k) “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing DER that is interconnected with the utility’s system.
- (l) “Interconnection resource” means the interconnection customer’s source of electric power connected to the utility’s distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, bidirectional storage, electric vehicle chargers with vehicle to grid, vehicle to home, vehicle to building or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. “Interconnection resource” includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (m) “Interconnection tariffs” are required filings from the utilities that set forth certain fees associated with interconnection. Tariff filings would accommodate utility-specific costs, while allowing for appropriate statewide standardization in the provisions set forth.
- (n) “Line section” means that portion of the utility’s electric delivery system that is connected to a Customer and bounded by automatic sectionalizing devices or the end of the distribution line.
- (o) “Material modification” means a modification that has a material impact on the cost or timing of processing an application with a later queue priority date or a change in the point of interconnection. A material modification does not include, for example: (a) a change of ownership of an interconnection resource; (b) changes to the address of the generating facility, so long as the generating facility remains on the same parcel; (c) a change or replacement of interconnection resource that is a like-kind substitution in size, ratings, impedances, efficiencies, or capabilities of the equipment specified in the original application; or (d) a reduction in the capacity of the interconnection resource of ten percent or less.



- (p) “Minor modifications” means modifications to the utility’s distribution system or to the interconnection facilities that do have a material impact on the cost or on the timing of an interconnection request.
- (q) “Non-exporting system” means an interconnection resource that is designed so that it does not intentionally transfer electrical energy to the utility’s distribution or transmission system across the point of common coupling. Such systems may be used to supply part or all of a customers’ load continuously or during an outage. A system can be non-exporting by virtue of inverter programming or by some other on-site limiting element. Non-exporting systems may or may not produce inadvertent exports as defined in paragraph (g) of this rule.
- (r) “Operating mode” means the mode of DER operational characteristics that determines the performance during normal and abnormal conditions. For example, an operating mode such as “export only,” “import only,” and “no exchange.”
- (s) “Parallel operation” means a DER facility that is connected to the utility’s system and can supply AC electricity to the interconnection customer simultaneously with the utility’s supply of AC electricity.
- (t) “Party” or “parties” means the utility, interconnection customer, or any combination thereof.
- (u) “Point of interconnection” means the point where the interconnection facilities connect with the utility’s system.
- (v) “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.
- (w) “System upgrades” means the additions, modifications, and upgrades to the utility’s distribution or Commission-jurisdictional transmission system at or beyond the point of interconnection to facilitate interconnection of interconnection resources and render the service necessary to effect the interconnection customer’s operation of interconnection resources. System upgrades do not include interconnection facilities.
- (x) “Transmission system” means an interconnected group of transmission lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.
- (y) “Utility system” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.
- (z) “Upgrades” means the additions and modifications to the utility’s system at or beyond the point of interconnection that are necessary to interconnect an interconnection resources. Upgrades do not include interconnection facilities.

**3853. General Interconnection Procedures.**

- (a) Pre-application procedures.

- (I) Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.
- (II) The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's website.
- (III) In response to an informal pre-application request, the utility shall provide electric system information for specific locations, feeders, or small areas to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.
- (IV) In addition to the information described in subparagraphs 3853(a)(I) and (III), which may be provided in response to an informal request, an interconnection customer may submit a formal written request for a pre-application report on a proposed interconnection at a specific site using a form supplied by the utility, unless such confidential and cannot be provided pursuant to a confidentiality agreement. The utility may charge up to a Commission-approved fee for the pre-application report. Upon completion, each pre-application report shall be dated and publicly posted to the utility's website with any customer identifying information redacted.
  - (A) The utility shall provide the pre-application report to the interconnection customer within 20 business days of receipt of the completed request form and payment of the fee.
  - (B) The pre-application report shall be non-binding on the utility and shall not confer any rights to the interconnection customer. The provided information shall not guarantee that an interconnection may be completed. Data provided in the pre-application report may become outdated at the time of the submission of the complete interconnection request.
  - (C) The pre-application report need only include existing information. A pre-application report request does not obligate the utility to conduct a study or other analysis of the proposed DER in the event that data is not readily available.
  - (D) If the utility cannot complete all or some of a pre-application report due to lack of available data, the utility should nonetheless explain what information is not available and why it is not available, and the utility shall provide the interconnection customer with a pre-application report that includes the data that is available.

- (E) Notwithstanding any of the provisions of this section, the utility shall, in good faith, include data in the pre-application report that represents the best available information at the time of reporting. The pre-application report will include the following information:
- (i) total capacity (in MW AC) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed point of interconnection;
  - (ii) existing aggregate generation DER capacity (in MW AC) interconnected to a substation/area bus, bank or circuit (i.e., amount of DER online) likely to serve the proposed point of interconnection;
  - (iii) aggregate queued DER capacity (in MW AC) for a substation/area bus, bank or circuit (i.e., amount of DER in the queue) likely to serve the proposed point of interconnection;
  - (iv) available capacity (in MW AC) of substation/area bus or bank and circuit likely to serve the proposed point of interconnection (i.e., total capacity less the sum of existing aggregate DER capacity and aggregate queued DER capacity);
  - (v) substation nominal distribution voltage and/or transmission nominal voltage, if applicable;
  - (vi) nominal distribution or transmission circuit voltage at the proposed point of interconnection whether the proposed DER is eligible for the Level 1, Level 2 or non-export process;
  - (vii) approximate circuit distance between the proposed point of interconnection and the substation;
  - (viii) relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load as described in the supplemental review minimum load screen in subparagraph 3855(d)(VI)(A) and absolute minimum load at the time of DER production, when available;
  - (ix) number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed point of interconnection and the substation/area. Identify whether the substation has a load tap changer;
  - (x) number of phases available at the proposed point of interconnection. If a single phase, distance from the three- phase circuit;
  - (xi) whether the point of interconnection is located on a spot network, grid network, or radial supply; and

- (xii) existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks, based on the proposed point of interconnection.

(b) Capacity of the DER.

- (I) If the interconnection request is for an increase in capacity for an existing DER, the interconnection request shall be evaluated on the basis of the new total capacity of the DER, except as provided below in subparagraph 3853(c)(III).
- (II) If the interconnection request is for a DER that includes multiple components at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple components, except as provided below in subparagraph 3853(c)(III).
- (III) The interconnection request shall be evaluated using the maximum rated capacity of the DER, except as provided below in subparagraph 3853(c)(III). At the utility's discretion in accordance with subparagraph 3853(c)(III), the interconnection request may be evaluated using less than the maximum rated capacity of the DER if the utility determines that the DER is only capable of injecting less power into the utility's system.

(c) Energy storage interconnections.

- (I) Non-exporting energy storage may inadvertently export, so long as the magnitude is less than the energy storage's nameplate rating (kW-gross) and the duration of export of power from the customer's energy storage is less than 30 seconds for any single event. There are no limits to the number of events. Inadvertent export events shall not exceed thermal, service voltage, power quality or network limits defined within Commission rules or interconnection requirements. For good cause shown, the Commission may grant a variance of this section.
- (II) When a storage system is installed in conjunction with a DER facility, both shall be reviewed at the same time and be included in one interconnection agreement.
- (III) Interconnection requests are reviewed based on the combined nameplate rating of exporting systems accounting for their export capacity, and energy storage operating mode(s) configuration. The ongoing operation capacity portion of the interconnection review is based on the actual simultaneous performance AC ratings, taking into account the operational differences of load offset and export. If the contribution of the energy storage to the total contribution is limited by programming of the maximum active power output, use of a power control system, use of a power relay, or some other mutually agreeable on-site limiting element, only the capacity that is designed to inject electricity to the utility's distribution or transmission system (other than inadvertent exports and fault contribution) will be used within certain technical screens and evaluations as specified in paragraphs 3855(b) and (d).
- (IV) Failure of hardware or software system(s) intended to limit energy storage export capacity shall cause the energy storage system to enter a safe operating state. An

energy storage system combined with a UL 1741 certified power control system shall be considered capable of entering a safe operating state upon failure of hardware or software system(s). When mutually agreed fail-safe provisions are not provided, at the utility's discretion, the interconnection request may be evaluated using the maximum rated capacity of the energy storage system.

- (V) When a storage system that is an exporting system is installed at the same point of interconnection location as an existing interconnected DER facility, the review level will be based upon the incremental addition of the DER rated capacity and the exporting energy storage system rated capacity for their selected operating, as provided in subparagraph 3853(c)(III) configurations.
  - (VI) A storage system may be located on the same side of a production meter as a generating facility when a production meter is required by these rules provided that the storage system is either non-exporting at the service meter or is charged exclusively by the generating facility and only the production recorded by the production meter will be eligible for incentives.
- (d) Interconnection requests.
- (I) The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. Additional fees or deposits shall not be required, except as otherwise specified in these procedures. A single request to interconnect may be submitted by the interconnection customer distributed generation paired with energy storage systems and shall be subject to one interconnection agreement.
  - (II) The interconnection request shall be date-stamped and time-stamped upon receipt. The original date- stamped and time-stamp applied to the interconnection request at the time of its original submission shall be the order in which the utility reviews applications to determine completeness.
  - (III) The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by the IC.
  - (IV) The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, with a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. The IC may re-submit the application within one year without paying an additional interconnection application fee.

- (V) An interconnection request will be deemed complete upon submission of the listed information to the utility. The interconnection request shall be date-stamped and time-stamped upon being deemed complete. This date shall be accepted as the qualifying date-stamp and time-stamp for the purposes of any timetable in subsequent procedures.
- (VI) Any modification to interconnection resource data or equipment configuration or to the interconnection site that is a material modification, may be deemed by the utility to be a withdrawal of the interconnection request, and may require submission of a new interconnection request. A new interconnection request shall not be required for minor modifications to interconnection resource data or equipment configuration or to the interconnection site. Within ten business days of receipt of a proposed modification, the utility, in consultation with an affected system owner, if applicable, shall evaluate whether a proposed modification constitutes a material modification.
  - (A) If the proposed modification is determined to be a material modification, then the utility shall notify the IC in writing that the customer may: withdraw the proposed modification; or proceed with a new interconnection request for such modification. The IC shall provide its determination in writing to the utility within ten business days after the utility provides the material modification determination results. If the IC does not provide its determination, the customer's request shall be deemed withdrawn.
  - (B) If the proposed modification is determined not to be a material modification, then the utility shall notify the IC in writing that the modification has been accepted and that the IC shall retain its eligibility for interconnection, including its place in the interconnection queue.
  - (C) Any dispute as to the utility's determination that a modification constitutes a material modification shall proceed in accordance with the dispute resolution provisions in these procedures.
- (VII) Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:
  - (A) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the interconnection resource;
  - (B) an option to purchase or acquire a leasehold site for such purpose which may include a letter of intent; or
  - (C) an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.
  - (D) For generating facilities utilizing the Level 1 25 kW AC inverter process, proof of site control may be demonstrated by the IC's signature on the interconnection application.

- (VIII) The utility shall place interconnection requests in a first come, first served order per feeder, per substation transformer, and per substation based upon the date an application is complete pursuant to subparagraph 3853(d)(V). The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.
- (e) Evaluation of interconnection requests.
- (I) A request to interconnect an interconnection resource no larger than 25 kW AC, which may be paired with a non-exporting storage system no larger than 25 kW AC, shall be evaluated under the Level 1 process.
- (II) If not eligible for Level 1, a request to interconnect an interconnection resource with a combined nameplate rating larger than 25 kW AC but smaller than 2 MW AC shall be evaluated under the Level 2 process (Fast Track) in accordance with the eligibility requirements in paragraph 3855(a).
- (III) A request to interconnect an interconnection resource that does not pass the Level 1 or Level 2 process shall be evaluated under the Level 3 process.
- (IV) Non-exporting interconnection resources shall be evaluated under the simplified “non-export” interconnection processes outlined in rule 3859. The “non-export” interconnection process is also applicable to additions of new non-exporting interconnection resources paired with existing interconnection resources when the existing interconnection resources have already executed an interconnection agreement.
- (f) Interconnection agreements.
- (I) Any interconnection resource operating in parallel with the utility's system is required to have an interconnection agreement with the utility to ensure safety, system reliability, and operational compatibility. References in these procedures to interconnection agreement are to the utility's interconnection agreement as provided on its website, which interconnection agreement is subject to Commission approval upon request.
- (II) Interconnection agreements shall survive transfer of ownership of the interconnection resource to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.
- (III) After receiving an interconnection agreement from the utility, the IC shall have 30 business days to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement, or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. The utility shall provide the IC a fully executed interconnection agreement within two business days after receiving a signed interconnection agreement from the IC. After the parties sign the interconnection agreement, the interconnection of the interconnection resource shall proceed under the provisions of the interconnection agreement.

- (IV) Once the interconnection resource has been authorized by the utility to commence operation in parallel with the utility system, the interconnection customer shall abide by all rules and procedures pertaining to parallel operation in the utility's tariffs and in the interconnection agreement.
  - (V) The interconnection customer shall be responsible for the utility's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair and replacement of utility upgrades or utility interconnection facilities not required to serve other utility customers. Such upgrades or facilities shall be specified in the interconnection agreement unless otherwise covered by the utility's tariff or excluded by interconnection agreement. Utilities may not refuse to provide an IC with a fixed dollar amount to cover reasonable and necessary utility upgrades or utility interconnection facilities in order to facilitate an interconnection.
- (g) Reasonable efforts. The utility and IC shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility or IC cannot meet a deadline provided herein, it shall notify the IC, or the utility if the notifying party is the IC, and explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.
- (h) Disputes.
- (I) The utility and IC shall agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this subparagraph.
  - (II) In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third-party dispute resolution service for assistance in resolving the dispute.
  - (III) The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.
  - (IV) Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs billed by and to be paid to neutral third-parties.
  - (V) If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission, pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1.
- (i) Interconnection metering. Except as otherwise required by other Commission rules or by the terms of a Commission-approved program offered by the utility any metering necessitated by the use of the interconnection resource shall be installed at the IC's expense in accordance with



Commission requirements or the utility's specifications. For systems below 25 kW AC, additional metering shall not be installed for the purposes of monitoring energy storage systems.

- (j) Commissioning tests. Commissioning tests of the IC's installed DER shall be performed pursuant to applicable codes and standards, including IEEE Standard 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" (2020). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202. The utility must be given at least five business days' written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.
- (k) Confidentiality.
  - (I) Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.
  - (II) Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.
    - (A) Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.
    - (B) Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.
  - (III) Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The

party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.

- (l) Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this rule. The utility shall use the same reasonable and expeditious efforts in processing and analyzing interconnection requests from all interconnection customers, whether the interconnection resource is owned or operated by the utility, its subsidiaries or affiliates, or others.
- (m) Record retention. The utility shall maintain for three years, records, subject to audit, of all interconnection requests received under these procedures, the times required to complete each step of the interconnection request approvals and disapprovals, enumerated in these rules and justification for the actions taken on the interconnection requests.
- (n) Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in this rule. The utility will include such affected system operators in all meetings held with the IC as required by this rule. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems and shall provide to the IC any analysis and data underlying the affected system utility's determinations.
- (o) Insurance. A Utility may only require an applicant (i.e., an interconnection customer) to purchase insurance covering Utility damages, and then only in the amounts stated below. An interconnection customer, at its own expense, shall secure and maintain in effect during the term of the interconnection agreement, insurance coverage in the following amounts:

(I) For non-inverter-based generating facilities:

Nameplate Rating > 5 MW – \$3,000,000 for each occurrence

2 MW < Nameplate Rating < 5 MW – \$2,000,000 for each occurrence

500 kW < Nameplate Rating < 2 MW – \$1,000,000 for each occurrence

50 kW < Nameplate Rating < 500 kW – \$500,000 for each occurrence

Nameplate Rating < 50 kW - no additional insurance

(II) For inverter-based Generating Facilities:

Nameplate Rating > 5 MW – \$2,000,000 for each occurrence

1 MW < Nameplate Rating > 5 MW – \$1,000,000 for each occurrence

Nameplate Rating > 1 MW - no additional insurance

- (III) Colorado governmental entities that self-insure against liability in amounts above those required in paragraph (n) for interconnection resources DER up to 2 MW or to the replacement value of the interconnection resource DER for those interconnection resources above 2 MW, shall not be required to purchase additional insurance or to add the utility as an additional insured to any policy, nor shall they be obligated to indemnify the utility, though they shall be liable for any negligent or intentional act or omission of the municipality, its employees, contractors, subcontractors, or agents.
  - (IV) Certificates of Insurance evidencing the requisite coverage and provision(s) when required shall be furnished to the utility prior to the date of interconnection of the interconnection resource. Utilities shall be permitted to obtain proof of current insurance coverage periodically from the interconnection customer in order to verify proper liability insurance coverage. Customers will not be allowed to commence or continue interconnected operations unless they provide to the utility evidence that satisfactory insurance coverage is in effect at all times.
- (p) Implementation by tariff.
- (I) Each utility shall have on file with the Commission an interconnection tariff that sets forth certain fees, deadlines, and interconnection procedures. A utility's interconnection tariff shall comply with these Interconnection Rules, but when appropriate may include shorter deadlines for certain procedures.
  - (II) The interconnection tariff shall be filed along with an advice letter. Tariffs filed by cooperative electric associations shall be informational only. Tariffs filed by investor-owned electric utilities may be set for hearing and suspended in accordance with the Commission's Rules of Practice and Procedure and applicable statutes.
  - (III) The interconnection tariff shall include the following provisions:
    - (A) timelines: paragraphs 3853(a),(d),(f),(h), 3854(a), 3855(b),(c), and (d), and 3856(a),(b),(c),(d);
    - (B) fees: paragraphs 3853(a),(d),(f),(j), 3854(a) and (b), and 3856(a);
    - (C) material modification withdrawals: paragraph 3853(d); and
    - (D) maximum rated capacity: paragraphs 3853(a),(b), and (c).
- (q) Reporting.
- (I) Each utility shall submit an interconnection report to the Commission two times per year and shall make it available to the public on its website. The first interconnection report shall be due 180 days after the effective date of these interconnection rules. Upon a filing by a party with proper standing showing good cause, and when necessary and appropriate, the Commission may by order increase the frequency of such reporting on a temporary basis. The report shall contain relevant totals for both the year and the most

recent reporting period, including the following information listed in subparagraphs (q)(II) and (III) of this rule.

- (II) Pre-application reports:
  - (A) total number of reports requested;
  - (B) total number of reports in process;
  - (C) total number of reports issued;
  - (D) total number of requests withdrawn;
  - (E) maximum, mean, and median processing times from receipt of request to issuance of report; and
  - (F) number of reports processed in more than the 20 business days allowed in subparagraph 3853(a)(IV)(A).
  
- (III) Interconnection applications:
  - (A) total number received, broken down by:
    - (i) primary fuel type (e.g., solar, wind, bio-gas, etc.); and
    - (ii) system size (e.g., <25 kW, <1 MW, <5MW, >5MW).
  - (B) Level 1 review process.
    - (i) total number of applications processed; and
    - (ii) maximum, mean, and median processing times from receipt of complete application to provision of a counter-signed interconnection agreement.
  - (C) Level 2 review process.
    - (i) total number of applications that passed the screens in paragraph 3855(b);
    - (ii) total number of applications that failed the screens in paragraph 3855(b); and
    - (iii) maximum, mean, and median processing times from receipt of complete application to issuance of an interconnection agreement.
  - (D) Supplemental review.
    - (i) total number of applications that passed the screens in paragraph 3855(d);

- (ii) total number of applications that failed the screens in paragraph 3855(d); and
  - (iii) maximum, mean, and median processing times from receipt of complete application to issuance of interconnection agreement.
- (E) Level 3 review process:
- (i) system impact studies
  - (ii) total number of system impact studies completed under paragraph 3856(c); and
  - (iii) maximum, mean, and median processing times from receipt of a signed interconnection system impact study agreement to provision of study results.

**3854. Level 1 Process (25 kW AC Inverter Process).**

This rule establishes the procedures for evaluating an interconnection request for a certified inverter-based DER no larger than 25 kW AC which may be paired with a non-exporting energy storage system no larger than 25 kW AC. The application process uses an all-in-one document (application) that includes a simplified interconnection request, simplified procedures, and a brief set of terms and conditions.

- (a) General Level 1 procedures.
  - (I) The IC completes application and submits it to the utility.
  - (II) The utility acknowledges to the customer receipt of the application within three business days of receipt.
  - (III) The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.
  - (IV) Within ten business days, the utility shall verify whether the interconnection resource can be interconnected safely and reliability using the same screens as applied in Level 2 process as set forth in rule 3855 except for screens (V), (VI), (X) and (XI) which will not be deemed necessary for the Level 1 process (25 kW AC Inverter Process). If the interconnection fails these screens, the utility shall consider this a failure of the Level 2 process screens in rule 3855. The utility shall continue the interconnection review under the Level 2 process, starting at paragraph 3855(c), provided that the IC pays the difference in the Level 2 process application fee and deposit requirements. The utility may also review the application within the 105 business day period to evaluate issues associated with highly seasonal circuits.
  - (V) Provided all the criteria of this rule 3854 are met, unless the utility determines and demonstrates that the interconnection resource cannot be interconnected safely and

reliably and requires upgrades, the utility approves and executes the application and returns it to the customer within ten business days.

- (VI) After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the interconnection resource for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary. The utilities should define “witness test” in their interconnection tariff.
  - (VII) The utility shall notify the customer that parallel operation of the interconnection resource is authorized within ten business days of the certificate of completion. If the witness test is not satisfactory, the utility has the right to disconnect the interconnection resource. The customer has no right to operate in parallel until a witness test has been performed, or previously waived in the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.
- (b) Level 1 application.
- (I) The customer must provide in the application the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.
  - (II) The application is considered complete when it provides all applicable and correct information as required below. Additional information to evaluate the application may be required.
  - (III) The application shall include the following information, as applicable:
    - (A) Processing fee. A fee of \_\_\_\_\_ must accompany this application.
    - (B) Interconnection customer:
      - Name
      - Contact Person
      - Address
      - City State Zip
      - Telephone (Day) and (Evening)
      - Fax Number and E-Mail Address
    - (C) Engineering firm or Installer (If applicable):
      - Contact Person
      - Address
      - City State Zip
      - Telephone
      - Fax and E-Mail Address
    - (D) Contact (if different from Interconnection Customer):
      - Name
      - Address
      - City State Zip

Telephone (Day) and (Evening)  
Fax Number and E-Mail Address  
Owner of the facility (include percent ownership by any electric utility)

- (E) DER information:  
Location (if different from above)  
Utility  
Account number  
DER components  
Inverter manufacturer: \_\_\_\_\_ Model  
Nameplate rating: (kW AC) (kVA) (AC Volts)  
Single phase \_\_\_\_\_ Three phase \_\_\_\_\_  
System design capacity: \_\_\_\_\_ (kW AC) \_\_\_\_\_ (kVA)  
Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other  
Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)  
Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_  
If Yes, attach manufacturer's cut-sheet showing UL1741 listing  
Estimated installation date: \_\_\_\_\_ Estimated in-service date:

The ten kW AC inverter process is available only for inverter-based interconnection resources no larger than ten kW AC that satisfy the codes, standards, and certification requirements specified in certain of these interconnection rules, or the utility has reviewed the design or tested the proposed interconnection resource and is satisfied that it is safe to operate.

- (F) List components of the small generating facility equipment package that are currently certified:  
Equipment type certifying entity:  
1.  
2.  
3.  
4.  
5.
- (G) Limited-Export / Non-Export / Limited-Import Data:  
If multiple export control systems are used, provide for each control system and use additional sheets if needed.  
Is export controlled to less than the Total Aggregate Nameplate Rating? Yes:  
No:  
Method of export limitation: Power Control System / Reverse Power Protection / Minimum Power Protection / Other (describe):  
Export controls are applied to how many generators? Multiple: One:  
If Power Control System is used, open loop response time(s): \_\_\_\_\_  
Power Control System output limit setting: (kW AC) (kVA)  
Energy Storage System Power Control System operating mode:  
Unrestricted: Export Only: Import Only: No Exchange:  
Describe which Generators the export control system controls:
- (H) Interconnection customer signature and certification:

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based interconnection resource No Larger than 10kW AC and return the certificate of completion when the interconnection resource has been installed.

Signed: \_\_\_\_\_

Title:

Date:

Contingent approval to interconnect the small generating facility.

(For company use only)

Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than ten kW AC and return of the certificate of completion.

Company signature: \_\_\_\_\_

Title: Date:

Application ID number: \_\_\_\_\_

Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_

(c) Level 1 terms and conditions.

- (I) Construction of the facility. The interconnection customer may proceed to construct the interconnection resource when the utility approves the interconnection request (the application) and returns it to the IC.
- (II) Interconnection and operation. The IC may operate the interconnection resource and interconnect with the utility's electric system once all of the following have occurred:
  - (A) upon completing construction, the interconnection customer will cause the interconnection resource to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;
  - (B) the customer returns the certificate of completion to the utility; and
  - (C) the utility has completed its inspection of the interconnection resource. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the interconnection resource has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.



- (D) The utility has the right to disconnect the interconnection resource in the event of improper installation or failure to return the certificate of completion.
- (III) Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the interconnection resource as required to ensure that it complies at all times with the interconnection standards to which it has been certified.
- (IV) Access. The utility shall have access to the disconnect switch and metering equipment of the interconnection resource at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.
- (V) Disconnection. The utility may temporarily disconnect the interconnection resource as allowed in the interconnection agreement and upon the following conditions:
  - (A) for scheduled outages per notice requirements in the utility's tariff or Commission rules;
  - (B) for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or
  - (C) if the interconnection resource does not operate in the manner consistent with these terms and conditions.
  - (D) The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.
- (VI) Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.
- (VII) The interconnection customer is not required to provide general liability insurance coverage as part of this agreement, or through any other utility requirement.
- (VIII) Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of the interconnection agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (c)(VI) of this rule.
- (IX) Termination. The interconnection agreement to operate in parallel may be terminated under the following conditions.
  - (A) By the customer by providing written notice to the utility.

- (B) By the utility if the interconnection resource fails to operate for any consecutive 12-month period or the customer fails to remedy a violation of these terms and conditions.
- (C) Permanent disconnection. In the event the interconnection agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its interconnection resource.
- (D) Survival rights. The interconnection agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.
- (X) Assignment/Transfer of ownership of the facility. The interconnection agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.

**3855. Level 2 Process (Fast Track).**

This fast track process is available to an IC proposing to interconnect its interconnection resource with the utility's system if the interconnection resource meets the eligibility provisions in this rule 3855.

- (a) Eligibility.
  - (I) Eligibility for the Level 2 process is determined based upon the type and size of the interconnection resource as well as the voltage of the utility line and the location of and the type of utility line at the point of interconnection. An interconnection customer may determine whether the interconnection resource is eligible for the Level 2 process by requesting a pre-application report pursuant to subparagraph 3853(a)(IV).
  - (II) For certified inverter-based systems, the size limit of the interconnection resource varies according to the voltage of the utility line at the proposed point of interconnection. Certified inverter-based interconnection resource facilities located within 2.5 electrical circuit miles of a substation and on a mainline are eligible for the Level 2 process under the higher thresholds pursuant to this rule 3855. The utilities should define "mainline" in their interconnection tariff.

<b>Level 2 Process Eligibility for Inverter-Based Systems kW and MW are AC</b>		
<b>Line Voltage</b>	<b>Eligibility Regardless of Location</b>	<b>Eligibility Meeting Location Requirements (Mainline and Substation)</b>
< 5 kV	≤ 500 kW	≤ 500 kW
≥ 5 kV and < 15 kV	≤ 2 MW	≤ 3 MW
≥ 15 kV and < 30 kV	≤ 3 MW	≤ 4 MW
≥ 30 kV and < 69 kV	≤ 4 MW	≤ 5 MW

- (III) All synchronous and induction facilities must be no larger than 2 MW AC to be eligible for the Level 2 process, regardless of location.
  - (IV) In addition to the size threshold, the DER must satisfy the codes, standards, and certification requirements specified in certain of these interconnection rules.
  - (V) The technical screens shall not preclude the utility from utilizing tools that perform screening functions using different methodology given that the analysis is aimed at preventing the same voltage, thermal and protection limitations as the initial and supplemental review screens under paragraph 3855(d).
- (b) Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the following.
- (I) The proposed interconnection resource's point of interconnection must be on a portion of the utility's distribution system that is subject to the utility's tariffs. Proposed interconnection resources on highly seasonal circuits shall also be subject to the supplemental review pursuant to paragraph 3855(d).

- (II) For interconnection of a proposed interconnection resource to a radial distribution circuit, the aggregated generation, including the proposed interconnection resource, on the line section(s) shall not exceed 15 percent of the line section’s annual peak load as most recently measured at the substation or calculated for the line section(s). A line section is that portion of a utility’s electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device. Energy storage system(s) capacity for purposes of this screen shall be based on subparagraph 3853(c)(III).
- (III) The proposed interconnection resource, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit’s maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.
- (IV) The proposed interconnection resource, in aggregate with other interconnection resources on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or interconnection customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.
- (V) The proposed interconnection resource shall meet the rapid voltage change and flicker requirements of IEEE Standard 1453 (2015) and IEEE Standard 1547 (2018) based on the appropriate test. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (VI) The type of interconnection to a primary distribution line shall be determined based on the table below, including a review of the type of electrical service provided to the interconnection customer, line configuration, and the transformer connection to limit the potential for creating over-voltages on the utility’s electric power system due to a loss of ground during the operating time of any anti-islanding function.

<b>Primary Distribution Line Type</b>	<b>Type of Interconnection to Primary Distribution Line</b>	<b>Result/Criteria</b>
Three-phase, three wire	3-phase or single phase, phase-to-phase	Pass screen
Three-phase, four wire	Effectively-grounded 3 phase or Single-phase, line-to-neutral	Pass screen

- (VII) If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 25 kW AC. Energy storage

system(s) capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).

- (VIII) If the proposed interconnection resource is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.
  - (IX) No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.
  - (X) For interconnection of a proposed interconnection resource to the load side of spot network protectors serving more than a single customer, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the interconnection resource must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.
  - (XI) For interconnection of a proposed interconnection resource to the load side of area network protectors, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW AC.
  - (XII) The nameplate capacity of a proposed interconnection resource, in combination with the nameplate capacity of any previously interconnected interconnection resource, shall not exceed the capacity of the customer's existing electrical service unless there is a simultaneous request for an upgrade to the customer's electrical service, regardless of exporting or non-exporting designations for any of the interconnection resources.
- (c) Customer options meeting.
- (I) If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review that the interconnection resource may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting. The utility shall provide to the IC in writing with a detailed information on the reasons(s) for failure.
  - (II) If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; without a supplemental study or other additional studies or actions; or without significant costs to address safety, reliability, or power quality problems, the utility shall notify the IC within the five business day period after the determination and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen

analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:

- (A) offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;
- (B) offer to perform a supplemental review pursuant to paragraph 3855(d) and provide a non-binding good faith estimate of the costs and time of such review; or
- (C) obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 study process.

(d) Supplemental review.

- (I) To accept a utility's offer to conduct a supplemental review, the interconnection customer, within 15 business days of the offer, shall agree in writing to the supplemental review and submit a deposit for the estimated costs. If the written agreement and deposit have not been received by the utility within the 15 days, the interconnection request shall continue to be evaluated under the Level 3 process, unless the request is withdrawn by the IC. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.
- (II) Within 30 business days following receipt of the deposit for a supplemental review, the utility will perform a supplemental review of the proposed interconnection resource using the screens set forth below, notify the interconnection customers of the results of the screens in writing, and include with the notification copies of the analysis and data underlying the utility's determinations.
- (III) The interconnection customer may specify the order in which the utility completes the supplemental review screens.
- (IV) The utility shall notify the interconnection customer of the failure of the interconnection resource in any supplement review screen or of the utility's inability to perform any screen for the interconnection resource. Within two business days of the receipt of such notice, the interconnection customer may grant the utility permission:
  - (A) to continue evaluating the proposed interconnection under this paragraph 3855(d);
  - (B) to continue evaluating the proposed interconnection under this paragraph 3855(d) subject to the utility's determination of minor modifications;

- (C) to terminate the supplemental review and instead to continue evaluating the interconnection resource under the Level 3 process; or
- (D) to terminate the supplemental review upon withdrawal of the interconnection request by the interconnection customer.
- (V) Minimum load, minimum loading, and minimum load data shall be specific to time(s) that the interconnection resource exports active power to the utility.
- (VI) Supplemental review screens.
  - (A) Minimum load screen.
    - (i) The interconnection resource capacity on the line section(s) shall be less than 100 percent of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed interconnection resource. Energy storage system(s), proposed and aggregated capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
    - (ii) This screen shall be determined using 12 months of line section(s) minimum load data (including onsite load but not station service load served by the proposed interconnection resource), calculated minimum load data, or estimated minimum load data using existing data a power flow model. If minimum load data is not available or the minimum load data cannot be calculated estimated, the utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under subparagraph 3855(d)(IV).
    - (iii) The type of interconnection resource shall be taken into account when calculating or estimating circuit or line section(s) minimum load. The utility shall use daytime minimum load for solar photovoltaic (PV) interconnection resource with no battery storage (i.e., 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems). The utility shall use absolute minimum load for all other types of interconnection resources.
    - (iv) Only the net injection into the utility's electric system shall be considered as part of the interconnection resource when this screen is applied to an interconnection resource serving some station service load.
    - (v) The utility shall not consider as part of the interconnection resource the capacity known to be already reflected in the minimum load data.
  - (B) Voltage and power quality screen.
    - (i) In aggregate with existing interconnection resource on the circuit and line section(s), the voltage regulation on the circuit and line section(s) shall

be maintained in compliance with relevant requirements under all system conditions;

- (ii) in aggregate with existing interconnection resource on the circuit and line section(s), the voltage fluctuation shall be within acceptable limits as defined by IEEE Standard 1453 (2015) and conforming with IEEE Standard 1453 (2015), while also taking into account activated inverter functionality, and by the limits defined by IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202; and
- (iii) in aggregate with existing interconnection resource on the circuit and line section(s), the harmonic levels shall meet IEEE Standard 519 (2014) limits. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.

(C) Safety and reliability screen.

- (i) The location of the proposed interconnection resource and the aggregate interconnection resource capacity on the line section(s) shall not create impacts to safety or reliability that cannot be adequately addressed without application of the Level 3 process.
- (ii) Minimum load, minimum loading and minimum load data shall be specific to time(s) of interconnection resource export capacity.
- (iii) The utility shall consider whether the line section(s) has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).
- (iv) The utility shall consider whether the loading along the line section(s) is uniform or even given the sources of the screening data.
- (v) The utility shall consider whether the proposed interconnection resource is located in close proximity to a substation (i.e., less than 2.5 electrical circuit miles) and whether the line section(s) from the substation to the point of interconnection is a mainline rated for normal and emergency ampacity.
- (vi) The utility shall consider whether the proposed interconnection resource incorporates a time delay function to prevent reconnection of the interconnection resource to the utility's system until system voltage and frequency are within normal limits for a prescribed time.
- (vii) The utility shall consider whether operational flexibility is reduced by the proposed interconnection resource, such that transfer of the line distribution circuit/substation may trigger overloads or voltage issues.



- (viii) The utility shall consider whether the proposed interconnection resource employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, and voltage quality.
  - (VII) If the supplemental screening meets utility determined adequacy with minor modifications, the utility shall provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system upon notification of review results.
- (e) Interconnection agreements.
  - (I) If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.
  - (II) If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.
  - (III) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(c)(II)(A), the utility will provide the interconnection customer with an executable interconnection agreement within ten business days of the customer options meeting.
  - (IV) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(d)(VII), the utility will provide the interconnection customer with an executable interconnection agreement within five business days of IC agreement to pay.

**3856. Level 3 Process (Study Process).**

This study process shall be used by an interconnection customer proposing to interconnect its interconnection resource with the utility's system if the interconnection resource does not meet the size limitations for the Level 2 Process, is not certified; or, is certified but did not pass the Level 1 process or Level 2 process.

- (a) Scoping meeting.
  - (I) A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.
  - (II) The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection

agreement. If the IC elects to move forward with a feasibility study, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.

- (III) The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the IC elects not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (IV) Feasibility studies, scoping studies, and facility studies may be combined or waived for simpler projects by mutual agreement of the utility and the IC. If all such studies are waived, the utility shall provide the IC an executable interconnection agreement within ten business days after the scoping meeting. If the scoping meeting is also omitted by mutual agreement, the utility shall provide the IC an executable interconnection agreement within ten business days after the interconnection request is deemed complete and this Level 2 process is completed.
  - (V) If feasibility studies, system impact studies, and facility studies are combined, or required to be completed for a single application, a utility shall perform the combined studies within no more than 60 business days of the date upon which the IC authorizes the utility to proceed with the level 3 process.
  - (VI) Utility must offer a developer the opportunity to pay full fees upfront and proceed straight to the system impact study.
- (b) Feasibility study.
- (I) The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the interconnection resource. At its discretion, the utility may use the Level 2 supplemental review as described in paragraph 3855(d) as the feasibility study.
  - (II) A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.
  - (III) The scope of and cost responsibilities for the feasibility study are described in the feasibility study agreement.
  - (IV) If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (V) If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).

- (VI) If no system impact study is required and no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the feasibility study.
- (c) System impact study.
- (I) Within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth below. A system impact study shall identify and detail the electric system impacts that would result if the proposed interconnection resource were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.
  - (II) If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.
  - (III) In instances where the feasibility study or the distribution system impact study shows potential for adverse impacts on the utility's transmission system, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the transmission-supplied scope of the study and a transmission-supplied non-binding good faith estimate of the cost to perform the study, if such a study is required.
  - (IV) If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.
  - (V) If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.
  - (VI) In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.
  - (VII) A deposit of the good faith estimated costs for each system impact study may be required from the IC.
  - (VIII) The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.

- (IX) Where transmission systems and distribution systems have separate owners, such as is the case with transmission-dependent utilities– whether investor-owned or not – the IC may apply to the nearest utility (transmission owner, regional transmission operator, or independent utility) providing transmission service to the transmission-dependent utility to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.
  - (X) If no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the system impact study.
- (d) Facilities study.
- (I) Within 45 business days of executing an appropriate agreement or contract, the utility shall perform a facilities study using the screens set forth below. Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC within five business days along with a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.
  - (II) In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.
  - (III) The facilities study shall include a detailed list of necessary system upgrades and an itemized cost estimate, breaking out equipment, labor, operation and maintenance and other costs, including overheads, for completing such upgrades, which may not be exceeded by 125 percent if actual upgrades are completed.
  - (IV) Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement. At the option of the IC, the IC may separately arrange for the design and upgrade of some of the interconnection facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the utility, under the provisions of the facilities study agreement. If the IC separately arranges for design and construction, and provided that security and confidentiality requirements can be met, the utility shall make sufficient information available to the IC in accordance with confidentiality and critical infrastructure requirements in order to permit the IC to obtain an independent design and cost estimate for any necessary facilities.
  - (V) A deposit of the good faith estimated costs for the facilities study may be required from the IC.
  - (VI) The scope of and cost responsibilities for the facilities study shall be described in a facilities study agreement.

- (VII) Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.

**3857. Certification Codes and Standards.**

Unless one or more of the following standards has been incorporated by reference into these interconnection rules, the Commission encourages the utilities and their interconnection customers, to whom these rules apply, to use the following standards and reference materials for guidance.

ANSI C84.1- (2016) Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

ANSI/NEMA MG 1 — (2016), Motors and Generators

IEEE Std. C37.90.1- (2012), IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std. C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std. C37.108-2002, IEEE Guide for the Protection of Network Transformers

IEEE Std. C57.12.44-2014, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std. C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text

IEEE Std. C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

IEEE Std. 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition

IEEE Std. 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std. 1453-2015 IEEE Recommended Practice for the Analysis of Fluctuating Installation on Power Systems

IEEE Std. 1547-2018, IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEEE Std. 1547.1-2020, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

NFPA 70 (2017), National Electrical Code

UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems

UL 1741 SA-2018, IEEE Standards for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

**3858. Certification of DER Packages.**

- (a) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in rule 3857; it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- (b) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- (c) Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.
- (d) If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- (e) Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of interconnection shall be required to meet the requirements of this interconnection procedure.
- (f) An equipment package does not include equipment provided by the utility.

**3859. Filing of Interconnection Manual.**

No later than 90 calendar days after the effective date of these rules, each utility subject to these rules shall file with the Commission information about its interconnection manual in an advice letter and tariff filing pursuant to rule 3108. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. The utility shall update this information within 30 days after any changes have been made to its manual.

**3860. – 3899. [Reserved].**

Decision No. C20-0825-I

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO**

PROCEEDING NO. 19R-0654E

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IN THE MATTER OF THE PROPOSED AMENDMENTS TO RULES REGULATING  
ELECTRIC UTILITIES, 4 CODE OF COLORADO REGULATIONS 723-3, RELATING  
TO INTERCONNECTION PROCEDURES AND STANDARDS.

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**INTERIM COMMISSION DECISION  
STAYING RECOMMENDED DECISION**

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Mailed Date: December 2, 2020  
Adopted Date: November 18, 2020

**I. BY THE COMMISSION**

**A. Statement**

1. This Decision stays Recommended Decision No. R20-0773.

**B. Background**

2. On November 25, 2019, the Colorado Public Utilities Commission issued a Notice of Proposed Rulemaking (NOPR) to amend the rules governing Interconnection Standards and Procedures (Interconnection Rules) within the Commission's Rules Regulating Electric Utilities, 4 *Code of Colorado Regulations* (CCR) 723-3.<sup>1</sup> This NOPR followed the issuance of a previous NOPR in Proceeding No. 19R-0096E,<sup>2</sup> which initially included the Interconnection Rules now the subject of this rulemaking proceeding.

3. This NOPR proposed substantive changes to the Interconnection Rules. In the NOPR, the Commission noted that, "The Interconnection Rules are presently located within the

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<sup>1</sup> Decision No. C19-0951 (issued on November 25, 2019).

<sup>2</sup> See Paragraph 23 at pages 8 and 9 of Decision No. C19-0951.

Renewable Energy Standard Rules (RES Rules) at 4 CCR 723-3-3667 *et seq.* This NOPR proposes to move the Interconnection Rules to a new standalone section within 4 CCR 723-3, comprising Rules 4 CCR 723-3-3850 *et seq.*”

4. The Commission noticed the proposed rules, provided with Decision No. C19-0951 in legislative (*i.e.*, with strikeouts and underlines) format and in final format, available to the public through the Commission's Electronic Filings (E-Filings) system.

5. The NOPR adopted a schedule for filing comments and invited interested participants to file initial comments no later than January 7, 2020 and to file reply comments no later than January 21, 2020.

6. The Commission referred this matter to an Administrative Law Judge (ALJ) to preside over rulemaking hearings and for the issuance of a recommended decision.<sup>3</sup> ALJ Denman held a public comment hearing on February 3, 2020.

7. By the spring of 2020, the record in this Proceeding contained a large volume of written and oral comments, as well as extensive post-hearing comments and numerous revisions to the proposed rules. In Decision No. R20-0423-I (issued on June 5, 2020), the ALJ found that holding an additional rulemaking hearing was needed to gather additional information from Participants and to help clarify certain issues, so that the ALJ could fully evaluate and consider the arguments and revised rules proposed by the Participants. The additional rulemaking hearing was held on July 27, 2020. Oral comments were presented by representatives of Colorado Solar and Storage Association (COSSA) and Solar Energy Industries Association (SEIA), the Colorado Energy Office (CEO), Western Resource Advocates (WRA), SunShare, Public Service Company of Colorado (Public Service), and Black Hills Colorado Electric LLC (Black Hills).

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<sup>3</sup> Decision No. C19-0951, Ordering Paragraphs II.A.2 – 6 at pages 20 and 21.



8. On November 5, 2020, ALJ Denman issued Recommended Decision No. R20-0773. The Recommended Decision does not specifically address every comment or every proposed amendment to the Interconnection Rules, as some were clarifications and edits to existing language or format changes and many were not contested. The amendments propose to: 1) introduce a provision that addresses energy storage, pursuant to SB 18-009; (2) reorganize to consolidate provisions that apply generally to all interconnection requests and to separate out specific provisions that apply only to the Level 1 Process for certified inverter-based installations no larger than 10 kW; and (3) various other modifications to bring the rules up-to-date with recent FERC policies and IEEE standards.

**C. Findings and Conclusions**

9. We find that a stay of the Recommended Decision would be beneficial in helping the Commission explore the potential introduction of Performance Incentive Mechanisms (PIMs) as applied to the Interconnection of Distributed Energy Resources. This likely will entail the solicitation of additional comments focused on the implementation of PIMs through the Interconnection Rules as well as holding an additional public comment hearing prior to January 23, 2021. A hearing is likely needed to preserve the opportunity for the Commission to potentially adopt the PIMs in this rulemaking proceeding

10. This Stay of the Recommended Decision does not impact the deadlines for exceptions, or responses to exceptions, which are due November 25, 2020 and December 9, 2020 respectively.

**II. ORDER**

**A. It Is Ordered That:**

1. Recommended Decision No. R20-0773 is stayed upon our own motion.

2. This Decision is effective upon its Mailed Date.

**B. ADOPTED IN COMMISSIONERS' WEEKLY MEETING  
November 18, 2020.**

( S E A L )



ATTEST: A TRUE COPY

Doug Dean,  
Director

THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO

JEFFREY P. ACKERMANN

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JOHN GAVAN

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MEGAN GILMAN

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Commissioners

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO**

PROCEEDING NO. 19R-0654E

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IN THE MATTER OF THE PROPOSED AMENDMENTS TO RULES REGULATING  
ELECTRIC UTILITIES, 4 CODE OF COLORADO REGULATIONS 723-3, RELATING  
TO INTERCONNECTION PROCEDURES AND STANDARDS.

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**SUPPLEMENTAL NOTICE OF PROPOSED RULEMAKING**

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Mailed Date: December 11, 2020

Adopted Date: December 9, 2020

**I. BY THE COMMISSION**

**A. Statement**

1. The Commission hereby issues this Supplemental Notice of Proposed Rulemaking (Supplemental NOPR) regarding its rules governing Interconnection Standards and Procedures (Interconnection Rules) within the Commission's Rules Regulating Electric Utilities, 4 Code of Colorado Regulations (CCR) 723-3.

2. The need for this Supplemental NOPR arose from comments in this rulemaking, as well as comments in Proceeding 19M-0661EG and the resulting November 30, 2020 Report to the General Assembly on Performance Based Ratemaking.

**B. Background**

3. On November 25, 2019, the Colorado Public Utilities Commission issued a Notice of Proposed Rulemaking (NOPR) to amend the rules governing Interconnection Standards and Procedures (Interconnection Rules) within the Commission's Rules Regulating

Electric Utilities, 4 *Code of Colorado Regulations* (CCR) 723-3.<sup>1</sup> This NOPR followed the issuance of a previous NOPR in Proceeding No. 19R-0096E,<sup>2</sup> which initially included the Interconnection Rules now the subject of this rulemaking proceeding.

4. This NOPR proposed substantive changes to the Interconnection Rules. In the NOPR, the Commission noted that, “The Interconnection Rules are presently located within the Renewable Energy Standard Rules (RES Rules) at 4 CCR 723-3-3667 *et seq.* This NOPR proposes to move the Interconnection Rules to a new standalone section within 4 CCR 723-3, comprising Rules 4 CCR 723-3-3850 *et seq.*”

5. The Commission noticed the proposed rules, provided with Decision No. C19-0951 in legislative (*i.e.*, with strikeouts and underlines) format and in final format, available to the public through the Commission's Electronic Filings (E-Filings) system.

6. The NOPR adopted a schedule for filing comments and invited interested participants to file initial comments no later than January 7, 2020 and to file reply comments no later than January 21, 2020.

7. The Commission referred this matter to an Administrative Law Judge (ALJ) to preside over rulemaking hearings and for the issuance of a recommended decision.<sup>3</sup> ALJ Denman held a public rulemaking hearing on February 3, 2020.

8. By the spring of 2020, the record in this Proceeding contained a large volume of written and oral comments, as well as extensive post-hearing comments and numerous revisions to the proposed rules. In Decision No. R20-0423-I, issued on June 5, 2020, the ALJ found that holding an additional rulemaking hearing was needed to gather additional information from

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<sup>1</sup> Decision No. C19-0951, issued on November 25, 2019.

<sup>2</sup> See Decision No. C19-0951, ¶ 23 at pages 8 and 9.

Participants and to help clarify certain issues, so that the ALJ could fully evaluate and consider the arguments and revised rules proposed by the Participants. The additional rulemaking hearing was held on July 27, 2020. Oral comments were presented by representatives of the Colorado Solar and Storage Association (COSSA) and Solar Energy Industries Association (SEIA), the Colorado Energy Office (CEO), Western Resource Advocates (WRA), SunShare, LLC (Sunshare), Public Service Company of Colorado (Public Service), and Black Hills Colorado Electric, LLC (Black Hills).

9. On November 5, 2020, ALJ Denman issued Recommended Decision No. R20-0773. The Recommended Decision does not specifically address every comment or every proposed amendment to the Interconnection Rules, as some were clarifications and edits to existing language or format changes and many were not contested. The amendments propose to: 1) introduce a provision that addresses energy storage, pursuant to SB 18-009; (2) reorganize to consolidate provisions that apply generally to all interconnection requests and to separate out specific provisions that apply only to the Level 1 Process for certified inverter-based installations no larger than 10 kW; and (3) various other modifications to bring the rules up-to-date with recent FERC policies and IEEE standards.

10. On November 18, 2020, the Commission stayed Recommended Decision No. R20-0773. This decision was made to allow the Commission to explore the potential introduction of performance incentive mechanisms (PIMs) as applied to the interconnection of Distributed Energy Resources (DERs).

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<sup>3</sup> Decision No. C19-0951, Ordering ¶¶ 2 – 6 at pages 20 and 21.

**C. Findings and Conclusions**

11. The need for this Supplemental NOPR arose in light of comments provided in this rulemaking, as well as the Report to the General Assembly on Performance Based Ratemaking in Proceeding No. 19M-0661EG. The Commission believes that Interconnection Rules are critical for customer owned and third-party owned resources to connect to the electric utility's grids and are thus important to the adoption of DERs. In this rulemaking, there has been discussion of performance incentives, mostly focused on financial penalties for utilities not meeting standard timelines. The recently issued report on Performance Based Ratemaking, led by Commissioner Gavan, also makes mention of PIMs as applied to timeliness of processing interconnection request as well as increased interconnections for DERs. The report also mentions that with a change to the utility business model, interconnection may fall under a 'platform service model' where utilities can be rewarded for improved customer service.

12. The Commission is interested in public comment specifically to identify the problems a PIM would attempt to solve, especially focusing on how the currently proposed rules fail to address such problems. How should the Commission establish a baseline against which to measure performance of utilities when it comes to interconnection of DERs, including ease of process, timelines, response to issues, or outcomes such as total DER systems interconnected connected?

13. The Commission is interested in the type and level of financial incentives that should be applied to performance improvement. Is there a specific system value that can be quantified, associated with each MW of DERs? If so, what about a portion of such value being retained as an incentive by the utility?

14. The Commission notes that an additional decision will be forthcoming which will include further areas of discussion and additional questions prior to the public hearing. The public hearing and comments received on the topics outlined above will play a large role in whether the Commission promulgates rules to address PIMs as well as the content of any eventual proposed rules.

## II. **ORDER**

### A. **It Is Ordered That:**

1. This Supplemental Notice of Proposed Rulemaking shall be filed with the Colorado Secretary of State for publication in the December 25, 2020, edition of *The Colorado Register*.

2. A Hearing on Performance Incentive Mechanisms related to Interconnection Standards and Procedures shall be held before the Commission, *en banc*, as follows:

3. A hearing on the proposed rules and related matters shall be held as follows:

DATES: January 22, 2021

TIME: 9:00 a.m. until not later than 5:00 p.m.

PLACE: By video conference using GoToMeetings at a link that will be provided in a future Decision

At the time set for hearing in this matter, interested persons may submit written comments. Interested persons may also present oral comments at hearing, unless the Commission deems oral presentation unnecessary. The Commission prefers and encourages interested persons to pre-file comments in this proceeding through its E-Filings System at:

[https://www.dora.state.co.us/pls/efi/EFI.Show\\_Docket?p\\_session\\_id=&p\\_docket\\_id=19R-0654E](https://www.dora.state.co.us/pls/efi/EFI.Show_Docket?p_session_id=&p_docket_id=19R-0654E).

4. The Commission requests that initial pre-filed comments be submitted no later than January 18, 2021. The Commission will consider all submissions, whether oral or written.

5. This Decision is effective upon its Mailed Date.

**B. ADOPTED IN COMMISSIONERS' WEEKLY MEETING  
December 9, 2020.**

(S E A L)



ATTEST: A TRUE COPY

A handwritten signature in cursive script that reads "Doug Dean".

Doug Dean,  
Director

THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO

JEFFREY P. ACKERMANN

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JOHN GAVAN

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MEGAN M. GILMAN

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Commissioners



**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO**

PROCEEDING NO. 19R-0654E

---

IN THE MATTER OF THE PROPOSED AMENDMENTS TO RULES REGULATING  
ELECTRIC UTILITIES, 4 CODE OF COLORADO REGULATIONS 723-3, RELATING TO  
INTERCONNECTION PROCEDURES AND STANDARDS.

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**DECISION ADDRESSING EXCEPTIONS TO  
DECISION NO. R20-0773 AND ADOPTING RULES**

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Mailed Date: March 30, 2021  
Adopted Date: February 24, 2021

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**I. BY THE COMMISSION**

**A. Statement**

1. Through this Decision, the Commission grants, in part, and denies, in part the exceptions filed on November 25, 2020 to Decision No. R20-0773, issued November 5, 2020, by Administrative Law Judge (ALJ) Steven H. Denman (Recommended Decision). The Commission adopts revised rules governing Interconnection Rule and Procedures (Interconnection Rules), located within the Commission’s Rules Regulating Electric Utilities, 4 *Code of Colorado Regulations* (CCR) 723-3 (Electric Rules) at 4 CCR 723-3-3875 *et seq.* The

adopted Interconnection Rules are attached to this Decision in legislative format (*i.e.*, strikeout/underline) as Attachment A, and in final format as Attachment B.

## **B. Background**

2. On November 25, 2019, the Commission commenced this rulemaking through a Notice of Proposed Rulemaking (NOPR) issued as Decision No. C19-0951 in this proceeding, Proceeding No. 19R-0654E. The NOPR proposed to move the Interconnection Rules to a new standalone section within the Electric Rules of 4 CCR 723-3, comprising new Rules 4 CCR 723-3-3850 *et seq.* The NOPR also proposed substantive changes to the provisions of the Interconnection Rules.

3. Prior to this rulemaking, the Commission first proposed changes to the Interconnection Rules through a NOPR issued as Decision No. C19-0197 in Proceeding No. 19R-0096E.<sup>1</sup> In that first NOPR, the Commission proposed to amend the Electric Rules in six areas including Electric Resource Planning, the Renewable Energy Standard, Net Metering, Qualifying Facilities, and Community Solar Gardens (CSGs) as well as the Interconnection Rules. After considering the amendments to § 40-2-127, C.R.S., enacted by the 2019 Colorado General Assembly, and the participants' comments to date in Proceeding No. 19R-0096E, the Commission decided to sever the Interconnection Rules and open a new, separate rulemaking. By Decision No. C19-0951 the Commission determined it had sufficient information to issue a new set of proposed Interconnection Rules that implement the recent statutory changes and respond to participant comments to date. The Commission concluded a standalone rulemaking would allow for amended Interconnection Rules implementing the statutory changes to be implemented sooner than if they remained part of Proceeding No. 19R-0096E.

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<sup>1</sup> Proceeding No. 19R-0096E, Decision No. C19-0197 (issued February 27, 2019).

4. By Decision No. C19-0951, the Commission issued the NOPR initiating this Proceeding. The NOPR adopted a schedule for filing comments and invited interested participants to file initial comments no later than January 7, 2020 and to file reply comments no later than January 21, 2020. A public rulemaking hearing was scheduled for February 3, 2020. The Commission referred this matter to an ALJ to preside over rulemaking hearings and for the issuance of a recommended decision.

5. Joint Consensus Interconnection Rules (Consensus Rules) were filed on March 20, 2020, by Public Service Company of Colorado (Public Service or Company), Black Hills Colorado Electric, LLC (Black Hills), Colorado Solar and Storage Association and the Solar Energy Industries Association (together referred to as COSSA/SEIA), and Western Resource Advocates (WRA). The Consensus Rules included definitions for certain terms in proposed Rule 3852 and language for proposed Rules 3853, 3854, and 3855. By the spring of 2020, the record in this Proceeding contained a large volume of written and oral comments, as well as extensive post-hearing comments and numerous revisions to the proposed rules.

6. In Decision No. R20-0423-I (issued on June 5, 2020), the ALJ found that holding an additional rulemaking hearing was needed to gather additional information from Participants and to help clarify certain issues so that the ALJ could fully evaluate and consider the arguments and revised rules proposed by the Participants. The additional rulemaking hearing was held on July 27, 2020 as scheduled. Oral comments were presented by representatives of COSSA/SEIA, Colorado Energy Office (CEO), WRA, SunShare LLC, Public Service, and Black Hills.

7. On November 5, 2020, ALJ Denman issued Recommended Decision No. R20-0773, which is the subject of this Decision.

8. The Commission, on its own motion, stayed the Recommended Decision on November 18, 2020 to explore the potential introduction of performance incentive mechanisms (PIMs) as applied to the interconnection of Distributed Energy Resources (DERs).

9. On November 25, 2020, the following rulemaking participants filed exceptions to the Recommended Decision: Public Service, Black Hills, Colorado Rural Electric Association (CREA), CEO, and COSSA/SEIA.

10. On December 9, 2020, the following rulemaking participants filed responses to the exceptions: Public Service, Black Hills, WRA, CEO, and COSSA/SEIA.

11. On December 11, 2020, the Commission issued a Supplemental Notice of Proposed Rulemaking, indicating that it would explore performance incentive mechanisms in these Interconnection Rules.<sup>2</sup>

12. An additional public comment hearing on the issue of adding PIMs to these Interconnection Rules was held on January 22, 2021. The Commission now addresses the Exceptions filed to the ALJ's Recommended Decision.

**C. Exceptions to Recommended Decision**

13. Below, we address the exceptions filed to the Recommended Decision, any responses, and the Commission's findings and conclusions granting or denying the exceptions.

**1. Rule 3850 - Applicability**

14. This rule adopts current terms for "small generation" as used throughout the Commission's Electric Rules, 4 CCR 723-3, and references certain updates to Federal Regulatory Energy (FERC) policies. It clarifies which DER and interconnection resources will be subject to

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<sup>2</sup> See Decision No. C20-0880.

the Interconnection Rules and clarifies that the Commission can review utility standards and guidance for consistency when necessary.

**a. Exceptions**

15. Black Hills argues it is not appropriate to include substantive demands in the applicability section, as such requirements are better placed in the requirements sections of the Interconnection Rules. Black Hills recommends the Commission remove the redundant substantive language from Rule 3850 that addresses utility requirements concerning standards and guidance.

16. Public Service takes exception to the language within Rule 3850 and Rule 3859 that requires a utility to file an Advice Letter and Tariff or application for Commission approval of interconnection standards, technical guidance, and interconnection manuals. This is detailed in the discussion of Rule 3859.

**b. Findings and Conclusions**

17. We agree with Black Hills that substantive descriptions and requirements do not belong in the Applicability section, as consistent with similar sections throughout the Electric Rules. As discussed below regarding Rule 3859, the language both utilities recommend deleting from this section are no longer relevant to the updated rules. We note that Public Service does not take issue with such descriptions appearing in the Applicability section, however, we address their concerns regarding Rule 3850 further in Rule 3859.

**2. Rule 3852 - Definitions**

18. The Recommended Decision provides several new definitions to integrate energy storage technologies into the rules, in accordance with Senate Bill (SB) 18-009, and several revised definitions to promote clarity and effectiveness of the rules. Other revisions simplify or

update the definitions. Consensus Rule definitions were adopted for export capacity, highly seasonal circuit, inadvertent export, minor modifications, operating mode, and party or parties.

19. The ALJ adopted a new definition of Interconnection Resource in Rule 3852(l) and added language to clarify which interconnection resources fall within the definition. When appropriate throughout the adopted Interconnection Rules, the term “DER” has been changed to “interconnection resource.”

**a. Exceptions**

20. COSSA/SEIA argues that the Commission should amend the DER definition noting that under current rules in other jurisdictions, this standard will not be fully implemented until January 2022. COSSA cites jurisdictions where this standard will be adopted on that timeframe include Maryland and Hawaii and aligning the timeframe for applying this standard in Colorado with the implementation of this standard in other states will ensure that there are sufficient products certified under the 1547-2018 standard available on the market when implementation begins.

21. COSSA/SEIA also urge the Commission to specify in Rule 3857 that 1547-SA remains the standard for inverters that is applied until sufficient equipment compliant with the new standard, 1547-2018, becomes available.

22. Public Service recommends adding the term “electrical” within the definition in order to clarify how the definition of energy storage is applied to the interconnection rules.

23. Black Hills recommends the Commission delete the proposed definition of “Interconnection Resource,” as they argue term is redundant with the definition of a “Distributed energy resource or ‘DER’.” The revised Interconnection Rules include a new definition of DER



to address an interconnection customer's behind-the-meter facilities. Black Hills supports the DER definition and the use of DER throughout the Interconnection Rules.

**b. Responses**

24. Public Service agrees with COSSA/SEIA that the advanced inverter functionality should not be activated until such advanced functions are tested and certified as compliant to IEEE 1547-2018. The Company also agrees with COSSA/SEIA that January 2022 would be consistent with IEEE-1547 certified inverters being widely available and is a timeframe sufficient for Public Service to consider evolving research and utility best practices for implementation of utility interactive functions for DER meeting the functional requirements of IEEE 1547-2018.

25. CEO concurs with COSSA/SEIA's rationale that it is important to ensure that there are sufficient products in the market prior to implementation, and recommends that the Commission adopt COSSA/SEIA's Exception on adding the timeline regarding 1547-2018.

26. WRA argues that IEEE 1547-2018 has been in effect since early 2018. Most manufacturers have been using inverters that meet these standards for some time. WRA notes that the rules under consideration here will not be in effect until near the end of 2021 at the earliest. WRA sees no need to add language that delays the applicability of IEEE 1547-2018 until January 2022. WRA suggests that this exception be denied.

27. Public Service agrees with Black Hills that "distributed energy resource" broadly applies to all customer interconnected generation sources of electric power connected to the utility's distribution grid. Public Service states these include bidirectional storage, electric vehicle chargers, vehicle to home, vehicle to building, or a combination of any of these elements.

Public Service states that it already reviews battery systems and has reviewed several vehicle-to-building interconnection requests following current Interconnection Rules.

28. CEO responds to Black Hills and recognizes that certain redundancy exists between these definitions, however, CEO argues they are not equivalent and views both as necessary to retain in rules as determined in the Recommended Decision. CEO supports the updated terminology because it more appropriately includes resources subject to the interconnection procedures and standards, such as energy storage. CEO, COSSA/SEIA, and WRA have noted that while all small generating facilities are DERs, not all DERs are subject to the Interconnection Rules. CEO provides an example that demand response and electric vehicles with one-directional Level 1 charging are DERs but are not subject to these rules.

**c. Findings and Conclusions**

29. We agree with Public Service that adding the term “electrical” clarifies the definition of energy storage that applies to the Interconnection Rules.

30. We agree with COSSA/SEIA that establishing a timeline for implementation of advanced inverters will allow for widely available technologies, as well as taking advantage of the latest research and utility best practices for implementation of utility interactive functions for DER meeting the functional requirements of IEEE 1547-2018. We note that both CEO and Public Service agree with COSSA/SEIA that the advanced inverter functionality should not be activated until such advanced functions are tested and certified as compliant to IEEE 1547-2018.

31. We agree with CEO’s response to Black Hills, as well as previous discussions made by CEO, COSSA/SEIA, and WRA throughout this rulemaking that there are specific instances to differentiate between DER and Interconnection Resource. We agree that the updated terminology appropriately includes resources subject to the interconnection procedures and

standards, such as energy storage. While all small generating facilities are DERs, not all DERs are subject to the interconnection rules. For example, demand response and electric vehicles with one-directional Level 1 charging are DERs but not subject to these rules. We therefore deny Black Hills' request to delete the proposed definition of "Interconnection Resource".

### **3. Rule 3853(a) - General Interconnection Procedures**

32. The Recommended Decision's adopted Rule 3853(a)(IV) includes a new option for customers to request a pre-application report. The intent of the adopted language is to expedite the implementation of the formal interconnection requests by customers.

33. COSSA/SEIA argued in this Proceeding that proposed Rule 3854(a)(IV)(E) should require that the utility provide the limiting conductor's ratings and length from the proposed point of interconnection to the distribution substation. Public Service opposed this suggestion and asserted that it might require setting up and performing circuit traces within the geographical information system, which could add cost and more time to the pre-application process. The ALJ agreed with Public Service that the rule should not add cost and more time to the pre-application process, and the adopted rule will not require conductor length and ratings to be provided.

#### **a. Exceptions**

34. COSSA/SEIA recommend adding language to the Rule that requires utilities to provide conductor ratings and lengths in order to facilitate evaluation of project feasibility by developers. COSSA/SEIA argue that providing the rating together with the length of the limiting conductor enables interconnection customers to determine if the existing conductor can accommodate the DER, and if the conductor cannot accommodate the DER, this information

allows the IC to estimate the cost of replacing the wires in order to evaluate whether such replacement would prove cost-effective.

35. Public Service takes exception to a requirement within Rule 3853(a)(IV) to post all pre-application reports to its website due to site confidentiality concerns and the fluid nature of the distribution system which leads to the data lacking validity quickly as the system changes. Public Service points out that the pre-application report is a high-level snapshot of a particular feeder which does not provide any insight as to whether that particular site is in fact valid for interconnection. They also express concern that posting this information publicly could compromise site confidentiality because the feeder activity contained within the pre-application report may provide certain developers a competitive advantage with respect to sought-after sites and queue activity, as well as providing information concerning which feeders are stressed or reaching capacity limits. Public Service recommends striking this requirement from the rule.

**b. Responses**

36. Black Hills agrees with the ALJ's conclusion and recommends the Commission not grant COSSA/SEIA's exceptions to include the requested addition to the pre-application requirements. Black Hills states that determining conductor lengths and ratings would require a utility to engage in a burdensome and manual process to detail this requested information. Black Hills is concerned about the additional labor requirements and expenses associated with COSSA/SEIA's request and requests the Commission approve the ALJ's decision to exclude the conductor length and ratings information from the pre-application reports.

37. COSSA/SEIA responds to Public Service's recommendation to strike if a recent pre-application report on that feeder were publicly available, a developer contemplating siting a project in that area would be able to quickly see that they should find another site, instead of

wasting time on a feeder that is likely to cause delays and require upgrades. COSSA/SEIA believe that avoiding such applications saves time and expense for all involved and adds that a developer could find a recent pre-application report that shows there is likely lots of capacity on a particular feeder, and could then, at their own risk, file an interconnection application. COSSA/SEIA argue that if the developer's gamble pays off, they have skipped a step in getting a likely duplicative pre-application report of their own, if not, their interconnection application is denied, they have lost their application fee and no negative impacts to the utility, the system, or other customers has occurred.

38. In addition, COSSA/SEIA argue that Public Service's "site confidentiality concerns" are both misguided and inaccurate. COSSA/SEIA state that Public Service claims, without any basis or experience that "there is also concern that posting this information publicly could compromise site confidentiality because the feeder activity contained within the pre-application report may provide certain developers a competitive advantage with respect to sought-after sites and queue activity..." COSSA/SEIA's argue that its members represent the vast majority of the solar and storage industries in Colorado and are not concerned about competitive threats between developers siting projects based on the posting of pre-application reports. Instead, COSSA/SEIA argue that the public posting of these reports is a positive step towards transparency that will reward developers that exercise due diligence in siting projects and will ultimately lead to lower costs, and increased competition in the electricity sector.

### **c. Findings and Conclusions**

39. We agree with the ALJ's decision that COSSA/SEIA have not shown that the benefits of the utilities providing such information on conductor ratings and lengths outweigh the added costs and burdens upon the utility, and ultimately, costs to ratepayers. Black Hills notes in

its response to exceptions that determining conductor lengths and ratings would require a utility to engage in a burdensome and manual process to detail this requested information. Public Service made similar arguments during this proceeding. While such information may benefit solar developers, much more detail on the costs and benefits would need to be provided. The ALJ properly decided that COSSA/SEIA did not provided these details in its comments or at hearing, and we believe that there has not been adequate new information provided in exceptions.

40. We also agree with the ALJ's decision to increase transparency on interconnections by the utilities. Beginning with the initial NOPR, the ALJ found that additional transparency from utilities with regard to information on interconnections, and potential issues with new interconnections is a vital piece of updated interconnection rules. This requirement is one such tool for increased transparency, which will lead to increased accountability for the utilities. COSSA/SEIA explain that if a recent pre-application report on that feeder were publicly available, a developer contemplating siting a project in that area would be able to quickly see that they should find another site, instead of wasting time on a feeder that is likely to cause delays and require upgrades. Similarly, a developer could find a recent pre-application report that shows there is likely lots of capacity on a particular feeder, and could then, at their own risk, file an interconnection application.

41. We also agree with COSSA/SEIA that Public Service's "site confidentiality concerns" are both misguided and inaccurate. Public Service seems to claim, without any basis or experience that "there is also concern that posting this information publicly could compromise site confidentiality because the feeder activity contained within the pre-application report may provide certain developers a competitive advantage with respect to sought-after sites and queue

activity...”<sup>3</sup> We believe that public posting of these reports is an important step towards increased transparency that will reward developers by exercise of due diligence in siting projects and will ultimately lead to lower costs and increased competition.

**4. Rule 3853(c) - Energy Storage Interconnections**

42. This rule specifies that a CSG’s capacity is measured in an AC (alternating current) rating rather than a DC (direct current) rating. In the rulemaking, COSSA/SEIA advocated for this clarification and the Recommended Decision agrees with COSSA/SEIA that DC ratings are not representative of the maximum output capacity of a CSG system. The Recommended Decision concludes that capacity should be measured using the AC rating, as the AC rating is what determines how much electricity can be exported at any one time.

**a. Exceptions**

43. Public Service notes that the Recommended Decision failed to delete the term “exporting” from both Rule 3853(c)(III) and (V) as agreed to within the consensus. The Company is concerned that not following the consensus language would result in rules that exclude non-exporting systems that operate in parallel with the utility and can have grid impacts. Non-exporting systems will contribute to utility faults and have the potential to cause power quality issues. Non-exporting systems need to be certified to IEEE 1547 and meet the defined grid ride-through interactive capabilities. Public Service recommends that the Commission again review the Joint Consensus Interconnection Rules filed on March 20, 2020.

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<sup>3</sup> Public Service’s Exceptions to Decision No. R20-0773 at p. 19.

**b. Findings and Conclusions**

44. We grant Public Service's request to modify the adopted rules to meet the consensus language. We reiterate that the Commission appreciates participants working together to achieve consensus rules and want to make sure we continue to encourage that cooperation.

**5. Rule 3853(i) - Interconnection Metering**

45. The ALJ agreed with Public Service and Black Hills, who argued that the exemption of energy storage systems from additional metering requirements should be lowered from 500 kW to 25 kW AC. The revision is consistent with revisions of 20 kW to 25 kW in other adopted Interconnection Rules. Public Service recommended that the exemption of energy storage systems from additional metering requirements should be lowered from 500 kW to 20 kW, because 500 kW energy storage systems could cause significant impacts on distribution feeder circuits. Public Service argued that visibility is a critical component in grid modernization initiatives, requiring an understanding of the gross generation and load levels in order to plan and to operate a stable grid effectively and efficiently.

46. Black Hills agreed with Public Service that the additional metering exemption threshold should be lowered to 20 kW from 500 kW. Black Hills argues that the introduction of energy storage systems on its grid is a new and evolving process, necessitating a measured approach to exempting metering requirements. According to Black Hills, as more information is obtained on the impact of these systems on its grid, raising this metering over time could be appropriate.

**a. Exceptions**

47. COSSA/SEIA state the adopted rules remove specific reference to "load or production metering" and instead generically prohibit all "additional metering" for the purposes



of monitoring energy storage systems below 25 kW. COSSA/SEIA state they do not object to this change as it is consistent with SB 18-009, codified at § 40-2-130, C.R.S. However, COSSA/SEIA cite § 40-2-130, C.R.S., at subpart (3)(d) and argue utilities may not require any customer-sited meters above and beyond “a single net energy meter” if the additional meters are used to monitor energy storage systems, with the exception of large energy storage systems. COSSA/SEIA suggest the Commission should simply clarify for the avoidance of doubt that this includes load meters that are used to monitor energy storage systems, which the Commission should further clarify are disallowed for both small- and medium-sized systems.

48. COSSA/SEIA also argue that in the initial NOPR, the Commission proposed a 500 kW size threshold for when a utility could use additional metering to monitor an energy storage system. This 500 kW threshold is consistent with the Colorado Legislature’s direction that “the commission may authorize the requirement of metering for certain large energy storage systems.” However, COSSA/SEIA note the Recommended Decision adopts a 25 kW threshold based, at least in part, on Public Service’s argument that most residential and small commercial system designs will fall below the 20 kW threshold.

49. COSSA/SEIA argue that Public Service’s own Solar\*Rewards program defines small systems as those of up to 20 kW, medium systems as those sized from 20 kW to 500 kW, and large systems as those above 500 kW. Consistent with these prevailing size demarcations, COSSA/SEIA argue that the Commission should adopt a 500 kW exception to the prohibition against metering of energy storage systems, as the Commission originally proposed in the draft rules attached to the Commission’s NOPR in this proceeding and consistent with SB 18-009.

**b. Responses**

50. WRA believes that the adopted rules as currently written are clear, and comply with SB 18-009. It recommends that the Commission retain the ALJ's recommended rule language.

51. Black Hills argues the Recommended Decision did not err in Rule 3853(i) by exempting storage systems below 25 kW AC from additional metering requirements. Black Hills believes the ALJ reasonably concluded that 25 kW is an appropriate threshold at this time because energy storage systems can cause adverse reliability impacts without visibility into their operation. The ALJ also cited statements from Black Hills that over time the threshold could be raised as the impact of energy storage systems is further understood. In addition, the ALJ found that a 25 kW threshold is consistent with the 25 kW threshold adopted for the Level 1 process addressed in Rule 3853(e)(I).

52. Black Hills further argues that it does not understand what relevance one utility's (*i.e.*, Public Service) solar rewards program has on establishing a first of its kind metering threshold for storage systems in interconnection rules that are applicable to other utilities in Colorado. Black Hills argues that COSSA/SEIA's singular focus on Public Service's solar programs do not justify departing from the ALJ's establishment of a 25 kW threshold for determining additional metering requirements for storage systems.

53. Public Service believes that the requirement that meters are not required for energy storage systems of 500 kW and below is arbitrary. Public Service explains that only 3 percent of the Company's commercial and industrial customers draw more than 500 kW for their energy requirements, which provides insight into how significant the 500 kW load is on the system. Public Service believes that such a lack of visibility is not practical and anything above

25 kW should be considered “large” in order to provide the utility with the needed visibility to adequately plan and operate the system both reliably and safely. Public Service argues this strikes a reasonable balance between most small residential and commercial systems that are less than 10 kW AC and those systems that can have a much greater impact on the distributions system if there is no adequate visibility.

**c. Findings and Conclusions**

54. We deny COSSA/SEIA’s revision to Rule 3853(i), as well as their request that the Commission clarify issues surrounding additional metering. The ALJ was correct that energy storage systems may cause adverse reliability impacts without visibility into their operation. As Black Hills points out, as more experience with storage systems are developed, the threshold can be raised as the impact of energy storage systems is further understood. Public Service also makes the point that the proposed language strikes a reasonable balance between residential and commercial systems that are less than 10 kW AC and those systems that can have a much greater impact on the distributions system if there is inadequate visibility.

55. We do not agree with COSSA/SEIA that additional language by the Commission is needed to clarify that the Rules prohibit all “additional metering” for the purposes of monitoring energy storage systems below 25 kW AC. WRA notes that the Recommended Decision and the adopted rules as currently written are clear, and comply with SB 18-009.

**6. Rule 3853(o) - Insurance**

56. Adopted Rule 3853(o) derives from existing Rule 3667(e)(XI), but deletes the requirements that interconnection customers must carry liability insurance for bodily injury and that the utility be named as an additional insured, but only implies that interconnection customers pay for the insurance and that insurance coverage be for each occurrence. Under the adopted

rule, a utility could only require an applicant to purchase insurance covering “Utility Damages” and with coverage limits of less than the existing rule. Adopted Rule 3853(o) also clarifies that interconnection customers shall pay for the required insurance coverage and that the required coverages be for each occurrence.

**a. Exceptions**

57. Public Service takes exception to certain aspects of this rule, noting that it forces the utilities to assume risk for systems under 1 MW in capacity. Public Service argues that without sufficient insurance from the generator, the Company could be liable for these damages and losses due to the shared nature of the interconnection contract for the facility that failed to abide by the operating requirements. Despite contract provisions for programs and interconnections that limit Company liability, Public Service argues that utilities are often targeted for claims. Public Service emphasizes that a lack of insurance increases the potential for the Company’s self-funded insurance to be called upon to cover these costs, which then places that risk onto its customers.

58. Public Service highlights that while it is common among states and utilities to exclude Level/tier 1 systems from insurance requirements beyond a typical homeowner’s policy (often \$100,000 or higher), larger systems and commercial systems tend to require larger policy coverage, and all insurance is required to include a mutual indemnification provision except as prohibited by law.

**b. Responses**

59. WRA responds that there are tens of thousands of distributed generation systems operating in Public Service territory in Colorado, and Public Service has not provided any in-state examples of a problem requiring insurance. WRA argues the example Public Service gives

is for a very large system in another region, and that the utility provides scant details, concluding that the Company does not provide compelling evidence justifying its exceptions.

60. CEO states that in this Proceeding, it has raised concerns with the Commission's current requirements for liability insurance in multiple proceedings, specifically with regard to Level 1 systems. Prior to the NOPR in the instant proceeding, CEO conducted a 50-state analysis of liability insurance requirements for Level 1 systems and noted that Colorado had one of the strictest requirements nationally. At the time, Colorado was one of five states with the highest liability insurance requirements for systems of less than 10 kW nationally. CEO also provided observations on the practical implications for the state's Weatherization Assistance Program.

61. CEO also argues that no entity has introduced evidence of instances in Colorado or nationally that justify retaining the current liability insurance requirements for Level 1 systems, as opposed to those adopted in the Recommended Decision. Given the substantial discussion in the record, CEO recommends that the Commission reject Public Service's proposal for Rule 3853(o) that modifies the Recommended Decision.

62. COSSA/SEIA point out that neither utility acknowledges that the FERC Small Generation Interconnection Procedures (SGIP) do not require specific amounts of insurance on any sized systems. COSSA/SEIA adds that neither utility provided evidence in the record regarding any damages that have ever been caused by an onsite solar system in Colorado.

**c. Findings and Conclusions**

63. We deny Public Service's exceptions. The ALJ was correct that the updated insurance requirements are necessary and important to protect interconnection customers, the utilities, utility consumers, and the public interest. The ALJ notes that the adopted rules will also

clarify that interconnection customers shall pay for the required insurance coverage and that the required coverages be for each occurrence.

64. CEO, WRA, and COSSA/SEIA have provided evidence throughout this proceeding on the negative impacts of such stringent insurance requirements on residential customers. The utilities have not provided any relevant data or evidence on the negative impacts of these updated requirements. As many participants pointed out, Colorado's historically high and burdensome insurance requirements have practical implications that harm the development of DERs.

65. We note that COSSA/SEIA point out that neither utility acknowledges that even the FERC SGIP, which is relied upon by the utilities throughout this proceeding, does not require specific amounts of insurance on any sized systems.

**7. Rule 3853(p) - Implementation by Tariff**

66. Rule 3853(p) will establish requirements for tariff filings from the utilities that set forth certain interconnection fees and deadlines. Tariff filings will accommodate utility-specific costs and procedures, which were particular concerns for the rural cooperatives in Proceeding No. 19R-0096E, while allowing for appropriate statewide standardization in the provisions set forth in the Interconnection Rules. Specifically, the rule proposed that a tariff be required to address fees, timelines, material modifications, maximum rated capacity, and insurance.

67. The ALJ explains that in the past, the Commission has adopted rules setting forth general criteria and requirements to be included in tariffs and requiring that utilities file tariffs in compliance with the rules. For example, the Commission's rules for filing line extension tariffs and gas transportation tariffs followed this process. After the general (and less complex) line extension rules became effective, each electric and natural gas utility was required to file line

extension tariffs to comply with the rules. After the first gas transportation rules became effective, each natural gas utility filed gas transportation tariffs to comply with the rules. Thus, the ALJ stated that adopted Rule 3853(p) is not unusual or unreasonable because it sets forth the general criteria and requirements to be addressed in interconnection tariffs and requires that utilities file tariffs complying with the Interconnection Rules

**a. Exceptions**

68. CEO recommends that cost-based justification of interconnection fees be required. CEO argues that IOUs are familiar with this approach and cost-based justification should also be required of Co-ops as a result of such a revision. CEO's cost-based justification proposal specifically permits utilities to recover legitimate expenses associated with the interconnection process but does not risk unduly burdening customers with excessive fees. Therefore, CEO requests that the Commission require utility tariff sheets to include justification for the reasonableness of various interconnection fees as cost-based.

69. CEO argues its recommended change would maintain the flexibility for utility-specific costs and procedures, as requested by utilities and utility representatives in this proceeding. CEO believes this cost-based justification would be consistent with the current traditional model of Cost of Service regulation and also supports greater transparency for customers and third-party interconnection resource providers.

70. COSSA/SEIA recommends that the wording in 3853(p) be more general, *i.e.*, not every fee listed. COSSA/SEIA argues that this change is necessary because it is conceivable that not all potential fees can be anticipated.

71. COSSA/SEIA also identified an inconsistency between the consensus rules and Adopted Rule 3853(p)(III)(D), concerning implementation by tariff. This rule appears to allow a

utility to establish “maximum rated capacity” under Rules 3853(a), (b), and (c) within a utility’s Interconnection Tariff filing. If codified, COSSA/SEIA believes this could essentially allow utilities to circumvent adherence to Rule 3853(c) and would provide them the ability to calculate maximum rated capacity in a way that departs from the consensus rules.

72. COSSA/SEIA argue that Rule 3853(p)(III)(D), a similar version of which was included in the Notice of Proposed Rulemaking, was inadvertently left in the Adopted Rules and should be removed. Further, Adopted Rule 3853(p)(III)(D)’s reference to Rule 3853(a) is not appropriate. COSSA/SEIA notes that adopted Rule 3853(a) concerns pre-application reports which are available to all sizes of DERs and does not contain any reference to “maximum rated capacity.” Most importantly, allowing utilities to propose “maximum rated capacity” by tariff would defeat the purpose of statewide interconnection rules and would fail to fulfill the intent of SB 18-009.

73. CREA asserts that Co-ops should have interconnection deadlines different from those for IOUs; specifically, it proposes deadlines of up to three times longer than those for IOUs. CREA notes that Co-op resources, being less than those of IOUs, make current deadlines infeasible for Co-ops. CREA argues that these short turnarounds would pose significant challenges for cooperative electric associations, which do not have the same level of staffing for interconnection requests as Colorado’s larger utilities. As a result, CREA requests that the Commission allow exempt cooperative electric associations to vary from the deadlines in the rules by up to a factor of three.

#### **b. Responses**

74. CEO argues that CREA’s proposal would exempt cooperative electric associations from Rule 3853(p) entirely with no additional parameters, resulting in substantial variations in



interconnection timelines across utilities. CEO recommends the Commission adopt clear timelines, cost parameters, and requirements across all utilities subject to the Commission's interconnection procedures and standards. In recognition that smaller cooperative electric associations operate under a different environment than the state's largest utility, CEO believes it is reasonable if the Commission chooses to adopt alternative timelines for different-sized utilities. However, CEO believes any flexibility in costs or timelines must be explicitly stated in the Commission's rules through maximum or minimum requirements, ensuring that ICs in different utility jurisdictions would have equity with other customers of similarly-situated utilities.

75. COSSA/SEIA recommend the Commission reject CREA's proposal to allow cooperatives to vary from the deadlines in the Adopted Interconnection Rules because doing so would defeat the core purpose of having statewide interconnection rules and, as discussed above, would violate § 40-9.5-118(2)(d), C.R.S., which requires cooperatives to comply with the Commission's interconnection standards. CREA's proposal to allow cooperatives to include deadlines that are up to three times as long as those contained in the Commission's rules will lead to a patchwork of interconnection processes across the state with potentially different timelines in each cooperative's service territory.

**c. Findings and Conclusions**

76. We grant CEO's exception on Rule 3853(p)(III)(B) enabling more transparency for the Commission and stakeholders. We agree with CEO that in addition to increased transparency, the cost-based justification proposal specifically permits utilities to recover legitimate expenses associated with the interconnection process but does not risk unduly burdening customers with excessive fees. We also agree that the addition of cost-based

justification of interconnection fees in its interconnection tariffs supports greater transparency for customers and third-party interconnection resource providers.

77. We agree that COSSA/SEIA's additional language provides needed transparency that **all** potential fees (including new fees) must be listed in the tariff. Because these specific rule references ultimately may not encompass every fee that a utility may propose to charge for interconnection services, including but not limited to optional study services, all proposed fees must be included in utility tariffs. COSSA/SEIA note that such a change is consistent with § 40-3-103(1), C.R.S., which requires utilities to have tariffs for "all rates, tolls, rentals, charges, and classifications collected or enforced, or to be collected." Therefore, we grant COSSA/SEIA's exception on Rule 3853(p)(III)(B) clarifying that all potential fees will be listed.

78. We also grant in part COSSA/SEIA's language clarification surrounding 3853(p)(III)(D). We believe the adopted Rules regarding maximum rated capacity are appropriate based on the record in the rulemaking, as well as the consensus rules and deny COSSA/SEIA additional recommended changes. However, we agree with COSSA/SEIA that (III)(D) incorrectly references 3853(a).

79. We deny CREA's exception and are not convinced that these rules need to be adjusted (and in some case waived) for Co-ops. While the Commission acknowledges that Co-ops have a lower level of staffing, for potential interconnection requests, these Co-ops also have fewer IC requests from potential customers. The goals of these adopted rules to increase transparency and allow for a better process for potential customers should apply to all applicable customers, not just customers of the state's regulated utilities. We note that not only does an exception unfairly punish Co-op member owners, it creates a lead to a patchwork of

interconnection processes across the state with potentially different timelines in each cooperative's service territory, causing difficulties for solar developers and DER customers.

**8. Rule 3853(q) - Reporting**

80. In the Proceeding, CEO recommended that the Commission adopt, as proposed Rule 3853(q), the reporting framework provided in the Interstate Renewable Energy Council's (IREC) Model Interconnection Procedures with several modifications. The ALJ concluded that reporting of this interconnection data two times per year will further increase transparency and will provide beneficial background information to the Commission and Staff when they address interconnection issues. Adopted Rule 3853(q) includes most of CEO's proposed reporting requirements with certain modifications intended to promote fairness. If a utility needs more time to update systems to be able to fulfill the reporting requirements in Rule 3853(q), the ALJ explained that the utility can always file an appropriate pleading showing good cause for an extension of time.

**a. Exceptions**

81. COSSA/SEIA provides two recommendations for this rule. First, reporting should be required for missed deadlines for all stages of the interconnection process, and that not just summary statistics, *e.g.*, mean, median, be provided. Second, COSSA/SEIA recommend that both customers and the Commission be informed of such reporting semi-annually.

82. Public Service opposes these reporting requirements, arguing that they will be very expensive (\$3 million) and difficult to tie with other utility systems, *e.g.*, billing. Public Service states that in order to comply with new reporting requirements and other interconnection rule changes, the Company will have to rebuild its DER application system to create automation and workflows, as well as adding many time-stamped milestones to its system tracking to enable

to process and milestone management and reporting. The upgrades would necessarily interchange data with several systems, including the Company's billing systems and data reporting systems, which require adequate vetting so that process, data, and reporting errors do not occur.

83. Public Service also proposes reporting only summary statistics, *e.g.*, mean, median, rather than more complete statistics as recommended by COSSA/SEIA. Public Service recommends the standard offer be based on rates informed by competitive solicitations. Public Service contends this will balance the incentive with the most recent market price, rather than set an artificial incentive rate.

84. Black Hills states that it already files monthly reports in Proceeding No. 16A-0436E on interconnection matters. These reports contain information on the number of interconnection applications received, number of interconnection applications completed, the average turnaround time to complete the applications, installed capacity, number of Renewable Energy Credits, and total expenditures. Black Hills argues that Rule 3853(q) will require Black Hills to engage in duplicative reporting requirements.

85. Black Hills requests the Commission revise the reporting requirement to require one report per year, not two. They argue Rule 3853(q)'s reporting requirements will take considerable effort and labor to aggregate and report. Black Hills will need to compile the information requested by Rule 3853(q) by hand, as the Company does not have existing software to compile the requested information.

86. CREA takes exception to the interconnection reporting requirement because Co-ops are exempt utilities in Colorado. CREA also contends that Co-op resources are less than

those of IOUs and, therefore, the reporting requirement represents an unnecessary burden to Co-ops. Tracking and reporting systems would be cost-prohibitive for coops.

**b. Responses**

87. Black Hills opposes COSSA/SEIA's proposal to add more reporting requirements to Rule 3853(q). In particular, Black Hills does not believe that additional benefits would derive from the requirement for the utilities to compile and file in their reports all copies of notices of delays or missed deadlines to interconnection customers. Black Hills believes a utility's communications with its customers should not require filings with the Commission and argues that if an interconnection customer has concerns with notices of delays or missed deadlines, they have options available to them to resolve their concerns, including the dispute process in Rule 3853(h). Black Hills believes the reporting requirements in Rule 3853(q) will already require considerable effort and labor to complete. Adding to these requirements with additional items that have no established need fails to serve the public interest and infringe on the utility's communication channels with its customers.

88. Public Service states that while additional reporting functionality would still be required to be built to enable this yearly reporting, the key metrics they list will enable better tracking for the Company's objective of meeting interconnection timelines as well as establish a foundation for any PIMs that could be incorporated through separate applications made by utilities.

89. WRA believes the reporting requirements proposed by CEO and incorporated into the proposed rules are consistent with those in other states, and should be maintained.

90. CEO replies that in the instant proceeding and in Proceeding No. 19R-0096E, parties have raised concerns regarding compliance with interconnection timelines. CEO notes

that the Commission has also recently encountered proceedings related to interconnection disputes through Proceeding Nos. 20D-0148E and 20D-0262E. CEO is not certain of whether the Commission may encounter similar disputes in the future, however, the current process affords the Commission minimal transparency unless a matter appears as a formal complaint. CEO argues that the Commission and stakeholders do not know if DER interconnections occur in a timely manner or not. Both COSSA/SEIA and CEO have suggested that routine reporting would permit the Commission to understand whether interconnection timeliness and timeline compliance are concerns for one or more utilities in the state.

91. CEO states that it understands that Black Hills reports certain sets of interconnection data already to the Commission on a monthly basis and that Public Service reports interconnection data monthly in its Minnesota service territory. CEO argues the Recommended Decision builds on current requirements from Rule 3667(e)(VII), which specify utility record retention practices for interconnections. While Rule 3853(q) requires utilities to complete new analyses, utilities should already be maintaining the core data for these reporting requirements pursuant to the current rules or their own internal procedures.

92. COSSA/SEIA respond that the only recourse that developers currently have to resolve a delay is to file a complaint at the Commission. COSSA/SEIA argues that most developers can only work with the utility to resolve their issues because they are fearful of retribution if they elevate matters to regulators, particularly when utilities control competitive processes for programs such as community solar that have significant subjective components to their request for proposals scoring criteria. COSSA/SEIA argue that more importantly, complaints are also costly and often take more time than the delay itself and do not result in the award of damages to cover the legal and expert expenses or the cost of the delay. Instead,

COSSA/SEIA explain that developers simply cancel projects or try to relocate them thus driving up costs and leading to deferred or cancelled investment in distributed generation in Colorado. By creating a regular reporting process, COSSA/SEIA believes the Commission can get a better sense of issues that can be addressed through policy changes or through the establishment of PIMs.

93. COSSA/SEIA also argue the Commission should also not be persuaded that upgrades to utility data storage and software systems are a reason to dispose of the Adopted Rule's reporting requirements. They believe there is no evidence in the record of this proceeding that utilities are unable to report on interconnection metrics, using less automated techniques. In addition, as CEO also noted, Public Service has recently completed a very similar system upgrade in Minnesota.

**c. Findings and Conclusions**

94. We grant in part and deny in part COSSA/SEIA's exceptions. We agree with COSSA/SEIA's addition requiring utilities to report on missed deadlines in order to better understand when and where the utilities may not be meeting the needs of customers trying to install certain DERs. We do not agree with COSSA/SEIA's additional requirements regarding the Level III process.

95. We disagree with Black Hills that the dispute process should be the only mechanism for the Commission to learn about potential delays and missed deadlines throughout the Interconnection Process. As CEO notes in its response, the current process affords the Commission minimal transparency unless a matter appears as a formal complaint. CEO argues that the Commission and stakeholders do not know if DER interconnections occur in a timely manner or not.

96. We deny Public Service and Black Hills' exceptions. We believe the adopted reporting rules are a vital step in dealing with potential issues surrounding interconnections that have been brought to the Commission, as well as the first step in evaluating potential PIMs. We agree with WRA that the reporting requirements proposed by CEO and incorporated into the proposed rules are consistent with those in other states, and should be maintained. As the ALJ noted, if a utility needs more time to update systems to be able to fulfill the reporting requirements in Rule 3853(q), it can always file an appropriate pleading showing good cause for an extension of time.

97. We deny CREA'S exceptions and require Co-ops to file semi-annual reporting. Again, we reiterate that staffing levels of Co-ops should be acknowledged by the Commission, but that does not mean that customers in Co-op territories should have the reduced ability to interconnect DERs, or that the Co-ops should not face increased transparency in their IC processes. The Commission has the capability to reevaluate the impact to Co-ops who are required to meet these reporting guidelines.

**9. Rule 3854 – Level 1 Process**

98. Provisions governing "Level 1" interconnections are dispersed throughout existing Rule 3667. In the NOPR, these rules were consolidated under proposed Rule 3854. Proposed Rule 3854(a)(IV) replaced the components of the initial Level 1 review with the screens applied in the Level 2 process. This change allows for existing Rules 3667(f)(IV)(A) through (D) to be eliminated. Proposed Rule 3854(b) contains the same outline for a Level 1 interconnection application as found in existing Rule 3667(g) with additional information required for energy storage systems.



**a. Exceptions**

99. COSSA/SEIA recommends that Level 1 and Level 2 projects be treated identically in the event that screen(s) are failed; that is, they are not automatically relegated to detailed studies, but rather can be salvaged via other mechanisms. COSSA/SEIA argue there is no reasonable basis to limit the utility's discretion in the Level 1 review process if it is not limited in the Level 2 process, therefore the two rules should be parallel. If the utility determines that there will be no harm to safety, reliability, and power quality standards, Level 1 interconnections should also be allowed to move forward.

100. COSSA/SEIA also recommends the Commission substitute the term "export capacity" for "output limits setting" in Rule 3854(b)(III)(G). The reason for this substitution is that the term export capacity is a defined term under Rule 3852(e), whereas "output limits setting" is not defined. For purposes of clarity and consistency, the Commission should use the defined term.

101. CEO and COSSA/SEIA both note that there are several instances where "10 kW" AC remains, although the new Level 1 criterion is "25 kW" AC.

102. Public Service takes exception to power quality screens being excluded and are concerned that the increase in solar + storage projects may cause power quality issues, such as flicker and voltage fluctuations. Public Service recommends not excluding power quality screens and instead allow the industry to develop appropriate testing. Public Service recommends mitigating inadvertent exports, where non-exporting systems send energy back to the grid due to unanticipated mismatches between customer load and battery discharging, creating power quality disturbances or operational concerns for line workers during emergencies that cause local or larger area outages.

**b. Findings and Conclusions**

103. We grant COSSA/SEIA's clarification to (a)(IV), and (b)(III)(G) as well as changing all references from "10 kW" to 25 kW AC. We agree that there is no reasonable basis to limit the utility's discretion in the Level 1 review process if it is not limited in the Level 2 process, therefore the two rules should be parallel. The original NOPR, as well as the ALJ's recommended rules attempted to remove these types of inefficiencies in the rules. The utility still has the ability to determine that there will be no harm to safety, reliability, and power quality standards, therefore, the Level 1 interconnections should also be allowed to move forward.

104. We deny Public Services' exception on (a)(IV). We are concerned that Public Service's request allowing the industry to develop appropriate testing does not provide any timelines or accountability mechanisms. While we understand solar + storage is a newer technology that utilities and developers continue to gain experience with, we note that throughout this proceeding participants have provided evidence that utilities are being overly cautious when it comes to solar + storage and have been unable to cite actual issues faced by other utilities who have taken a more proactive approach with the adoption of solar + storage on their systems. We agree that following IEEE 1547-2018 and its requirement for advanced inverters should be the focus of the utilities, rather than allowing the utilities their own timeline for implementation.

**10. Rule 3855 – Level 2 Process**

105. This rule adds a provision that requires the Level 2 "supplemental review" for highly seasonal circuits. Adopted Rule 3855(b)(V) has been updated to reference the most current IEEE standards.

**a. Exceptions**

106. COSSA/SEIA state that in (b)(II), the so-called 15 percent screen, *i.e.*, 15 percent of maximal load, is recommended to be replaced by the minimum daytime (or daily) load screen as in other states. In addition, COSSA/SEIA recommends that maximal transformer capacity, not the arbitrary 20 kW criterion, be used for aggregate generation capacity as is the case in other states.

107. COSSA/SEIA also recommend that (b)(XII) be eliminated to ensure consistency with IEEE 1547-2018 and its effective requirement for advanced inverters, which will make advanced inverter solutions possible.

108. Public Service states that the plain language of Rule 3855(a)(V) appears to allow both initial and supplemental review screens, however, Rule 3855(d) only references the supplemental review process. In order to better clarify the inclusion of both the initial and supplemental screens, the Company recommends a minor modification.

**b. Responses**

109. Public Service disagrees with COSSA/SEIA and recommends that the Commission maintain the language in adopted Rule 3855(b)(II). Public Service notes that the initial screen in Rule 3855(b)(II) reviews the aggregate levels of DER on a distribution circuit where the 15 percent aggregate criteria can be exceeded by a combination of large and small DER, only large DER, or only small DER. As an initial screen, it is intended to be simplistic utilizing a much less refined approach and information.

110. Public Service also disagrees with COSSA/SEIA that Rule 3855(b)(VII) should be amended to permit a maximum aggregate generation capacity of 100 percent on a shared secondary line or transformer capacity ratings rather than a specific capacity such as 20 kW or

another specific numerical capacity level. The Company argues the shared secondary has both capacity and voltage considerations, with a voltage dependency based on the customer distance from the transformer, DER size, and impacts of other DER on the shared facilities. An aggregate limit of up to 20 kW provides for a reasonable screening limit based on secondary designs and consideration of extensive legacy secondary systems. The Company emphasizes that 20 kW is not a hard limit; it is simply an initial screen prior to moving to supplemental screening if necessary.

111. WRA generally agrees that any changes to the screening of applications should be detailed in tariffs or interconnection manuals, which must be approved by the Commission. It recommends that the Commission adopt COSSA and SEIA's proposed modifications in (a)(V).

112. In contrast, WRA disagrees with COSSA and SEIA's proposal in their part (b), which suggests changing the 15 percent screening threshold to the minimum load criteria that is used in supplemental screens. The 15 percent of maximum load screen is still in wide use, with 100 percent of minimum daytime load used as the supplemental screen. WRA argues that maintaining this screen is especially important for smaller utilities, like Black Hills, that may not have minimum load data for all feeders. WRA believes that NREL has not modified their recommendation to go beyond the 15 percent threshold for initial screens.

113. WRA notes that part (c) of COSSA/SEIA's exceptions addresses secondary transformer capacity and includes a recommendation that interconnection of up to 100 percent of capacity be allowed. WRA advocated that the interconnection rules take a percentage of the transformer capacity approach. Under this approach, WRA states it picked 75 percent as a reasonable number, giving some "headroom" for older transformers that may not have the thermal capacity of newer units. While 100 percent of transformer capacity would no doubt be

safe in most situations, WRA asks why the Commission should risk potential problems. WRA also notes that there is little data on high voltage and flicker problems that may be associated with too much distributed generation on a shared secondary transformer capacity. WRA continues to advocate for 75 percent of transformer capacity to be adopted in the rules.

114. WRA also notes that part (d) of COSSA/SEIA's exceptions suggests eliminating a safety provision that WRA feels is prudent. WRA states that customers should not install generation systems that exceed the capacity of their service and while some systems may be able to limit overall export that is less than the capacity of their electrical service, some will not, and the ones that can limit capacity may not be set correctly to do so. WRA states it is concerned that systems which exceed service limits may trip customer circuit breakers, causing customer complaints that the utility will eventually need to address, even though it would not be the utility's problem. WRA recommends that the limiting screen be retained.

115. COSSA/SEIA urges the Commission to reject Adopted Rule 3855(a)(V), which follows Public Service's proposed additions, in that it would allow utilities to deviate from the Level 2 screens. COSSA/SEIA adds that if the Commission nevertheless decides to let this grant of discretion to utilities persist, COSSA/SEIA recommends it should at least require that any proposed deviations of methodologies to perform screens is properly vetted in an interconnection advice letter filing, as noted in COSSA/SEIA's Exceptions.

116. COSSA/SEIA also believe that to the extent the Commission makes any changes to Adopted Rule 3855, it should adopt the proposed modernizations to technical screens found at Adopted Rules 3855(b)(II) and (VII) proposed by COSSA/SEIA and adopted in other jurisdictions with aggressive clean energy goals.

**c. Findings and Conclusions**

117. We grant Public Service's minor modification to the reference of 3855(d). We agree with Public Service that the plain language of Rule 3855(a)(V) appears to allow both initial and supplemental review screens, however, Rule 3855(d) only references the supplemental review process. Public Service's recommended edit clarifies the inclusion of both the initial and supplemental screens.

118. We grant in part and deny in part COSSA/SEIA's requested changes. We agree with COSSA/SEIA and WRA that any changes to the screening of applications should be detailed in tariffs or interconnection manuals, which must be approved by the Commission. Therefore, we recommend that the Commission adopt COSSA/SEIA's proposed modifications in (a)(V).

119. We believe the ALJ was correct in focusing on safety and reliability and concluded that CSSA/SEIA did not provide enough evidence to show that their proposed rules would not impact the safety and reliability. Both utilities and WRA argued in favor of the 15 percent of maximum load screen, arguing it is still in wide use, with 100 percent of minimum daytime load used as the supplemental screen. WRA argues that maintaining this screen is especially important for smaller utilities, like Black Hills, that may not have minimum load data for all feeders.

120. We believe that COSSA/SEIA did not demonstrate how the elimination of (b)(XII) ensures consistency with IEEE 1547-2018 and its effective requirement for advanced inverters.

121. We also agree with WRA and the utilities that while some systems may be able to limit overall export that is less than the capacity of their electrical service, some will not, and the

ones that can limit capacity may not be set correctly to do so. WRA states it is concerned that systems which exceed service limits may trip customer circuit breakers, causing customer complaints that the utility will eventually need to address, even though it would not be the utility's problem.

122. Therefore, we recommend denying COSSA/SEIA's recommended changes to (b)(II), (b)(VII), and (b)(VIII).

### **11. Rule 3856 - Level 3 Process**

123. This rule tracks existing Rule 3667(d) with certain changes discussed in the NOPR. The introduction to the rule is based on existing Rule 3667(d)(I), and proposes to increase the maximum size for the interconnection resource eligible for the Level 3 process from 10 MW to 20 MW. Adopted Rule 3856(a)(IV) adds a provision to existing Rule 3667(d)(II)(D), setting a deadline for the utility to provide an executable interconnection agreement if the utility and the customer were to reach a mutual agreement on the lack of need for studies related to "simpler projects." Adopted Rule 3855(b)(I) adds a provision that requires the Level 2 "supplemental review" for highly seasonal circuits. Adopted Rule 3855(b)(V) has been updated to reference the most current IEEE standards.

#### **a. Exceptions**

124. COSSA/SEIA's recommendation concerns timelines regarding the Level 3 Study Process. They believe the Adopted Rules adequately recognize the need for deadlines in Level 3 studies, but fail to include any specific deadline for a feasibility study. COSSA and SEIA recommend 15 business days (approximately three weeks) as a reasonable timeframe for completion of the initial feasibility study.

125. Public Service takes exception with Rule 3856(a)(II) which now allows the decision to move forward with a Level 3 feasibility study solely on the interconnection customer. This rule historically required that the decision to move forward was mutually agreed upon by both the utility and the interconnection customer, and the Company notes that the FERC SGIP indicates that both parties must agree to proceed to waive a feasibility study.

126. Black Hills points out Rules 3856(a)(II) and (III) deviates from FERC's SGIP. Common to both these rules are a deviation from FERC's SGIP that Black Hills opposes. Specifically, these rules vest the interconnection customer with the sole decision-making authority of whether it is appropriate to move forward with a feasibility study. Similar to other parties, it recommends a mutual, *i.e.*, interconnection customer - utility, decision on moving to either a feasibility study or a system impacts study during a scoping meeting(s).

**b. Responses**

127. Black Hills argues that should the Commission establish a new deadline for the completion of feasibility studies, they recommend the Commission adopt rules consistent with the FERC guidance. A minimum deadline for the completion of feasibility studies (if any) should be set at 45 business days. A shorter time period than 45 business days would be unreasonable and would establish unworkable processes for utilities, exacerbating potential disagreements with interconnection customers.

128. WRA supports the rule as written that interconnectors be allowed to participate, under the facilities study agreement, in the design and construction of some interconnection facilities.

129. CEO recommends the Commission deny Black Hills' and Public Service's proposed modifications and retain the rule as adopted by the Recommended Decision. CEO



argues that requiring mutual agreement permits the utility to functionally be the sole decision maker. For example, if a utility opposes proceeding with a study that a customer wishes to pursue, there will not be mutual agreement. Contrary to Black Hills' assertion, CEO does not believe that the alternative would occur, where a utility would advocate for a customer to pursue a study that the customer is uninterested in. CEO believes the rule adopted by the Recommended Decision permits an IC to undergo Level 3 studies at a cost that the IC is responsible for paying.

130. COSSA/SEIA state that the Commission should reject these exceptions and affirm the Recommended Decision's finding that "utilities should not be allowed to refuse to study the costs of upgrades to facilitate interconnection, so long as the interconnection customer is willing to pay for the necessary studies."<sup>4</sup> COSSA/SEIA argue interconnection procedures are intended to ensure that utilities can only use legitimate safety and reliability concerns to delay established timelines or increase interconnection costs and they are not intended to allow utilities to block construction of projects or even to outright deny an interconnection request if an IC is willing to pay its own way.

**c. Findings and Conclusions**

131. We disagree that 15 days is an appropriate turnaround for the initial feasibility study, and therefore deny COSSA/SEIA's exception

132. We deny Public Service's and Black Hills' exceptions. We believe the ALJ properly balanced the need for timeliness and cooperation. The ALJ specified that utilities should not be allowed to refuse to study the costs of upgrades to facilitate interconnection, so long as the interconnection customer is willing to pay for the necessary studies. WRA, CEO, and COSSA/SEIA have argued throughout this proceeding that interconnection procedures are

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<sup>4</sup> Recommended Decision at ¶ 51.

intended to ensure that utilities can only use legitimate safety and reliability concerns to delay established timelines or increase interconnection costs. They are not intended to allow utilities to block construction of projects or even to outright deny an interconnection request if an IC is willing to pay its own way. While the Company notes that the FERC SGIP indicates that both parties must agree to proceed to waive a feasibility study, we are concerned that this is a mechanism for utilities to simply block a potential interconnection of DERs.

**12. Rule 3856(a)(V) – Level 3 Combined Study**

133. The Recommended Decision adopted COSSA/SEIA's proposal to permit a single Level 3 study to be combined to include feasibility studies, scoping studies, and facilities studies.

**a. Exceptions**

134. Public Service recommends against combining feasibility, system impact, and facility studies into an aggregate 60-day timeframe. Public Service notes that results from the system impact study often determine whether the facility study is conducted, *i.e.*, if the former shows several impacts, the interconnection customer may not proceed with the latter. Public Service therefore argues for flexibility.

135. Black Hills also contends that there should be mutual agreement to move forward with a facility study, which would be consistent with FERC's SGIP. In addition to pointing out that lack of a requirement for mutual agreement to move forward deviates from the SGIP, Black Hills contends that a 60-day deadline is infeasible for it to meet. It recommends a 90-day deadline.

**b. Findings and Conclusions**

136. We grant these exceptions by Public Service and Black Hills. We note that FERC's SGIP does not include timelines in its main section, SGIP includes model agreements

for each of the Level 3 studies and each of these model agreements explicitly contain required timelines for a utility to complete each study. We are concerned that the aggregate 60-day timeframe for combined studies is too restrictive for the utilities and therefore require a 90-day timeline.

**13. Rule 3856(c) – System Impact Study**

137. This rule includes the requirement that, within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth in Rule 3856(c). Otherwise, the ALJ has adopted Rule 3856(c) as proposed in the NOPR with minor revisions for clarity. The ALJ states that ensuring certainty for both interconnection customers and the utilities is important in the Level 3 feasibility study process, and establishing reasonable timeframes will assist to accomplish this objective.

**a. Exceptions**

138. Black Hills expresses concerns with the deadline for completing a system impact study and the application of screens in this process, as required by Rule 3856(c)(I). This rule provides that the utility has 30 business days to perform a system impact study, and that this study should “apply screens set forth below.” Black Hills submits that the Commission should change the 30-business day deadline to that of one of 90 business days.

**b. Responses**

139. COSSA/SEIA argue the Commission should deny Black Hills’ Exceptions to triple the timeline for a system impacts Study from Adopted Rule 3856(c)(I)’s 30-day deadline to 90 days. Black Hills ignores the fact that a 30-day timeline for a system impact study is entirely consistent with SGIP. The SGIP “feasibility study must be completed and the feasibility study report transmitted within 30 Business Days of the Interconnection Customer's agreement to

conduct a feasibility study.” COSSA/SEIA notes that Black Hills also proposes a 90-day timeline for a combined study. COSSA/SEIA points out that this proposal is internally inconsistent in that it would provide the utility 90 days whether it is performing only a system impact study, or whether it combines all three studies. It should not take a utility the same amount of time to complete one study as it would to complete all three.

**c. Findings and Conclusions**

140. We deny the exceptions of Black Hills, as we believe the ALJ was correct in utilizing the recommended timeframes from FERC’s SGIP for Level III System Impact Studies.

**14. Rule 3856(d)(III): Cost Caps in Facilities Studies**

141. In this proceeding, CEO recommended that Rule 3856(d) establish a time limit for a facilities study to be completed and proposed that the facilities study be completed within 45 business days of the interconnection customer’s delivery of the executed facilities study agreement. According to CEO, this is consistent with the IREC Model Interconnection Procedures and industry best practices.

142. CEO also argued that Rule 3856(d)(III) should set a parameter around the accuracy of a utility when estimating the cost of equipment, engineering, procurement, and construction work (including overhead) needed to implement the conclusions of the system impact studies. CEO recommended that Rule 3856(d)(III) be modified to implement binding cost envelopes or to require careful tracking of costs that exceed a specified margin.

143. Adopted Rule 3856(d)(III) sets forth the items to be included in the facilities study and includes CEO’s recommendation that costs for completing actual upgrades may not be exceeded by 125 percent of the cost estimate, which should afford utilities with greater

flexibility. Otherwise, the ALJ adopted Rule 3856(d) as proposed in the NOPR with minor revisions for clarity.

**a. Exceptions**

144. Public Service opposes the imposition of a cost envelope, *i.e.*, 25 percent below or above the utility's initial estimate, arguing that delays due to field inspections and additional estimation time will result. Public Service notes that in order to guarantee that the Company's costs would remain within the cap, a substantial increase in field inspections and other additional estimation outside of the Company's normal process would be needed in order to warrant that the cap would not be exceeded. Public Service argues this in turn would cause delays in the interconnection process. Additionally, similar to construction projects outside the interconnection process, Public Service emphasizes that these costs currently are not subject to true up and adding this process would cause accounting issues and likely lead to an increase in sunk costs for the Company and its customers.

145. Similar to Public Service, Black Hills takes exception to a cost envelope. It provides three reasons why this envelope is inappropriate, including: 1) no consequence for not meeting the requirement is provided; 2) it is inappropriate in circumstances beyond the utility's control; and 3) it may create perverse incentives, *e.g.*, inadequate maintenance of the grid.

**b. Responses**

146. CEO believes that Public Service's and Black Hills' Exceptions raise reasonable concerns and may even result in utilities inflating costs to avoid exceeding estimates, which could be an unintended barrier to DER adoption. Therefore, CEO recommends the Commission adopt Public Service's Exceptions with a modification. CEO recommends that the Commission add language requiring utilities to indicate which itemized cost estimates are uncertain and could

be exceeded by 125 percent if actual upgrades are undertaken. This proposal will remove the binding nature of the estimate but also provide ICs with an understanding of the variability of specific costs.

147. COSSA/SEIA support Public Service's reporting requirement as a necessary first step to identifying issues.

**c. Findings and Conclusions**

148. We grant in part Public Service's and Black Hills' exceptions, using CEO's recommended language. We agree with CEO that the utilities' exceptions raise reasonable concerns and may even result in utilities inflating costs to avoid exceeding estimates, which could be an unintended barrier to DER adoption. CEO's modified language requires utilities to indicate which itemized cost estimates are uncertain and could be exceeded by 125 percent if actual upgrades are undertaken. We agree that this proposal will remove the binding nature of the estimate but also provide ICs with an understanding of the variability of specific costs and results in a suitable compromise.

**15. Rule 3856(d)(IV): Non-Utility Builds Rule**

149. In this proceeding, CEO recommended that Rule 3856(d) establish a time limit for a facilities study to be completed and proposed that the facilities study be completed within 45 business days of the interconnection customer's delivery of the executed facilities study agreement. According to CEO, this is consistent with the IREC Model Interconnection Procedures and industry best practices. The adopted rule adopts CEO's recommendation.

**a. Exceptions**

150. Public Service recommends that customer design and upgrading of interconnection facilities not be allowed. Public Service argues that this practice will lead to

inefficiencies. For example, it will have to perform additional oversight to ensure compliance with Public Service's standard practices, and potential safety consequences may also result.

151. Public Service emphasizes that it is not safe, practical, or economical to arrange for the additional oversight now needed for this rule modification, which now includes a review to ensure consistency with approved materials, reviewing construction to ensure it meets utility standards, costs to replicate design in GIS, and costs for utility resources needed to support non-utility construction. This dynamic is particularly true for the relatively small scope of these projects.

152. Black Hills also objects to customer design and upgrading of interconnection facilities. It points out that certain words/phrases are vague, *e.g.*, "some facilities", and asserts that such an arrangement could compromise grid reliability/safety. Black Hills argues the rule does not provide any guidance. Without guidance, the rule will lead to unnecessary disputes of what "some" means between the utilities and interconnection customers. The future disputes are easily avoided by the Commission either being specific as to what types of interconnection facilities are available for this process or deletion of this new interconnection customer option.

153. Similar to Public Service's and Black Hills' positions, CREA takes exception to the option of a customer designing and upgrading an interconnection facility. Safety considerations are also raised by CREA, and it recommends deletion of this option from the rule.

154. CREA argues Rule 3856(d)(IV) would allow an interconnection customer to choose to "separately arrange" for the design and upgrade of utility interconnection facilities. CREA requests that the Commission reject this language because it believes that utilities must maintain exclusive control over the design of their own facilities. Utilities—not interconnection customers—are ultimately responsible for the safety and reliability of their systems. Allowing

interconnection customers to take significant control over the design and upgrade process for interconnection facilities potentially would compromise these important responsibilities and should be rejected.

**b. Responses**

155. Public Service reiterates that providing the interconnection customer with the level of control of design and construction that is now memorialized within the rule would jeopardize the safety and reliability of the distribution system. The Company again emphasizes that the rule does not require that the interconnection customer or its contractor follow the utility's standard work practices or its vendor risk assessment processes, nor is it safe, practical, or economical for the utility to arrange for the additional oversight now needed for this rule modification.

**c. Findings and Conclusions**

156. We grant the utilities' exceptions and delete the proposed language in (d)(IV). As no participants responded to this proposed deletion, we see no reason to deny the exceptions requested by both utilities and the organization representing cooperatives.

**16. Rule 3859: Filing of Interconnection Manual**

157. Rule 3859 requires that within 90 days after the effective date of the Interconnection Rules, each utility subject to these rules shall file with the Commission, information about its Interconnection Manual in an advice letter and tariff filing pursuant to Rule 1210 of the Rules of Practice and Procedure, 4 CCR 723-1. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. Rule 3859 also requires each utility to update the filed information about its Interconnection Manual within 30 days after changes have been made to its manual. Requiring utilities to file



their Interconnection Manuals and updates to their manuals is intended to ensure increased transparency for developers, interconnection customers, and the Commission and its Staff and should thereby provide benefits to the interconnection process in Colorado.

158. The ALJ states that the Interconnection Manual and update filings required by Rule 3859 are only informational filings. Rule 3859 does not require that the Commission approve the filed Interconnection Manuals and updates to Interconnection Manuals.

**a. Exceptions**

159. COSSA/SEIA recommend that a utility's Interconnection Manual be redlined during revision to ensure transparency for developers.

160. Public Service's exception covers language within both Rule 3850 and Rule 3859 that require a utility to file an Advice Letter and Tariff or application for Commission approval of interconnection standards, technical guidance, and interconnection manuals. Public Service points out that it has traditionally posted this information onto its website where it is readily available to the industry and stakeholders and is therefore subject to their input. In addition to being inefficient, it argues that such a process exposes Public Service to a litigation risk.

161. Public Service proposes an alternative where utilities would be required to file with the Commission a notice in the event of a material change to its manuals or standards, as well as establish an internal process for acquiring timely feedback from stakeholders on the material changes incorporated within the notice. This reasonable alternative would serve to increase transparency while affording utilities the flexibility to adequately maintain its distribution system without causing regulatory lag and inefficiencies.

162. Black Hills also takes exception to this rule, contending that an Advice Letter and Tariff are litigation-prone, and that it would be challenging to transfer contents of an

Interconnection Manual into a tariff sheet. Black Hills alternatively recommends using a Miscellaneous Proceeding, which would promote transparency. Black Hills adds that filings should be made when material changes to an Interconnection Manual are made; otherwise, annual filings should suffice.

163. Black Hills further argues that tariff sheets are not appropriate to address the information filing of lengthy interconnection manuals. The appropriate process to accomplish the Recommended Decision's informational filing intent is to require the filing of the interconnection manual in a miscellaneous proceeding. Black Hills believes the filing of the manual in such a proceeding will accomplish the transparency needs articulated in the Recommended Decision, and it will avoid the cumbersome and litigation prone advice letter with tariff sheet requirements currently adopted in Rule 3859.

164. Black Hills argues the Commission should also revise Rule 3859 to change the frequency of filing of the interconnection manual to either an annual update or, alternatively, when material revisions are undertaken. Black Hills notes that Rule 3859 currently requires the filing of the interconnection manual based on "any change." The term "any change" would appear to cover non-substantive and non-material changes to the interconnection manual.

165. CREA similarly takes exception to the requirement for filing Advice Letters to the Commission for Interconnection Manual changes. CREA asserts that, as exempt utilities, electric cooperatives should not be subject to this requirement. CREA also asserts that its customer-owners have access to Interconnection Manuals.

#### **b. Responses**

166. Public Service reiterates that if utilities are now required to file an Advice Letter and Tariff for Commission approval within 30 days after any change has been made to its

manual, frequent litigation may be the result demonstrating regulatory inefficiencies in implementing any critical updates that may impact the safety and reliability of the Company's distribution system. The Company believes that its proposed informational notice process provides both stakeholder inclusion and transparency.

167. Public Service agrees with Black Hills that the redlined rules are inconsistent with the intent of the Recommended Decision that the interconnection manual filings be informational. In its Exceptions, Black Hills points out that Rule 3859 will not accomplish this intent through "voluminous" Advice Letter filings.

168. Public Service reminds the Commission of its reasonable alternative proposal within its Exceptions where utilities would be required to file with the Commission an informational Notice in the event of a material change to its manuals or standards, as well as establish a process which will be vetted during stakeholder meetings for acquiring timely feedback on the material changes incorporated within the Notice. This reasonable alternative is consistent with the informational intent of the Recommended Decision, provides the transparency that the Commission and the industry is seeking, while affording utilities the flexibility to maintain its distribution system without causing inefficiencies.

169. WRA responds that this requirement is consistent with rules adopted in Arizona that went through five years of discussion and multiple revisions. WRA believes the requirement is necessary due to many technical details that the utilities will need to put in their interconnection standards and manuals that may be disputed by other parties. WRA provides an example regarding the requirement for certain initial settings on advanced (smart) inverters that comply with IEEE 1547-2018. This IEEE standard has options for how the inverters act and react to various situations on the grid. Some of the settings will reduce the output from

distributed solar generating units as one way to mediate voltage and other power quality issues on the grid. The requirements that Colorado utilities make for these settings should be discussed and decided among interested parties, and then approved by the Commission.

170. WRA does not believe that requiring Commission approval for interconnection manuals is a process that will cause any risk to the grid, adding that this requirement will improve safety and reliability on the grid, and also include additional voices in how standards are best set.

171. CEO believes COSSA/SEIA's recommendation to be practical, consistent with the intent of the Recommended Decision, and aligned with CEO's interest in increasing transparency. Therefore, CEO recommends that the Commission adopt COSSA/SEIA's Exception.

172. COSSA/SEIA argue that the utilities fail to acknowledge that Rule 3859 is entirely consistent with state law, which requires any utility specific rules or regulations to be contained in an approved tariff and that such a practice would align with current utility practices for non-interconnection related rules, regulations, and other policies. COSSA/SEIA further argues that allowing utilities to exercise unilateral discretion in the setting of interconnection rules and policies through their own interconnection manuals would circumvent the Commission's clear and explicit duty to regulate utility interconnection procedures and would defeat the very purpose of interconnection rules — to ensure proper oversight of utility interconnection practices. COSSA/SEIA believes it would also inject uncertainty, which translates to higher costs, on the part of interconnection customers who could be subject to different rules, and potentially ever-changing rules and restrictions created by utilities.

173. COSSA/SEIA state that Adopted Rule 3853(p)(I) will now require that utilities “have on file with the Commission an interconnection tariff that sets forth certain fees, deadlines, and interconnection procedures.”<sup>5</sup> In other words, all interconnection costs must now be filed in a tariff, and thus according to § 40-3-103(1), C.R.S., and Commission Rules relating to tariffs generally, all utility specific “rules, regulations, forms of contracts, terms, conditions, and service offerings” must also be included in tariffs. Adopted Rule 3853(p)(II) notes that “tariffs filed by cooperative electric associations shall be informational only. Tariffs filed by investor-owned electric utilities may be set for hearing and suspended in accordance with the Commission's Rules of Practice and Procedure and applicable statutes.”

174. COSSA/SEIA argue that this is the very practice employed by the utilities for almost all other policies and procedures for utility programs and services, other than interconnection. COSSA/SEIA also recommend the Commission clarify that filing interconnection manuals via interconnection tariff filings will not be “for informational purposes only” in the case of a regulated utility. COSSA/SEIA agrees with Black Hills that the Recommend Decision is confusing on this point because Rule 3859 requires that interconnection manuals be filed “in an advice letter and tariff filing pursuant to rule 3108.” According to Colorado Law and Commission Rules, “[a]ny person affected by a tariff change ... may submit a written protest to the proposed change” pursuant to Rule 1210(a)(VII) and the Commission may suspend and set for hearing any tariff of a regulated utility under Rule 1210(a)(VIII). The filing of interconnection manuals should be no different.

175. COSSA/SEIA recommend the Commission should also continue to require cooperatives to file interconnection tariffs as part of their informational only Interconnection

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<sup>5</sup> COSSA/SEIA Responses to Exceptions at p. 9.

Tariffs, required under Adopted Rule 3853(p)(II). COSSA/SEIA argue this will allow the Commission to review cooperative-specific interconnection policies and to identify any deviations from the statewide interconnection rules. COSSA/SEIA add that requiring cooperatives to file interconnection manuals is consistent with § 40-9.5-118(2)(d), C.R.S., which requires cooperatives to comply with the Commission's interconnection standards.

**c. Findings and Conclusions**

176. We grant in part Public Service's and Black Hills' requests for clarification of how the IC manuals should be filed with the Commission and modify the language on the Commission's own motion. We believe a compromise is acceptable that allows for added transparency regarding changes to Interconnection Manuals. We agree with the utilities that Advice Letters and Tariffs are litigation-prone, and that it would be challenging to transfer contents of an Interconnection Manual into a tariff sheet. The utilities also point out that frequent litigation may be the result demonstrating regulatory inefficiencies in implementing any critical updates that may impact the safety and reliability of the Company's distribution system.

177. We note that Public Service provides a reasonable alternative proposal within its Exceptions where utilities would be required to file with the Commission an informational Notice in the event of a material change to its manuals or standards, as well as establish a process which will be vetted during stakeholder meetings for acquiring timely feedback on the material changes incorporated within the Notice. We believe records of the feedback could be collected periodically by Staff through an audit which would be a helpful step in making sure the terms of the IC Manual remain fair and reasonable.

178. We also modify the language in 3859 on the Commission's own motion that enables the Commission to ensure the terms and conditions contained in the Interconnection Manual are just, reasonable, and not unduly discriminatory.

179. We grant COSSA's exception requiring redline changes to the Interconnection Manual. We agree with COSSA/SEIA that any changes to a utility's Interconnection Manual must be redlined during revision to ensure transparency for developers and the Commission.

180. We grant in part CREA's request for exemption. We agree with CREA that Co-ops are exempt from filing its Interconnection Manual in a miscellaneous proceeding, however, we do require each utility, including cooperative electric associations, to provide on its website, interconnection standards or other technical guidance not included in, but that are consistent with, these procedures.

## **17. Miscellaneous Edits and Clarifications**

181. Many of the Participants' Exceptions suggested various grammatical changes and non-substantive edits to improve readability or accuracy of the Interconnection Rules. The Commission appreciates these suggestions, and the Interconnection Rules that we adopt today reflect nearly all of those changes and edits.

## **II. ORDER**

### **A. The Commission Orders That:**

1. The exceptions to Recommended Decision No. R20-0773, filed by Public Service Company of Colorado on November 25, 2020, are granted in part, and denied in part, consistent with the discussion above.

2. The exceptions to Recommended Decision No. R20-0773, filed by Black Hills on November 25, 2020, are granted in part, and denied in part, consistent with the discussion above.

3. The exceptions to Recommended Decision No. R20-00773, filed by the Colorado Energy Office on November 25, 2020, are denied, consistent with the discussion above.

4. The exceptions to Recommended Decision No. R20-0773, filed by Colorado Rural Electric Association on November 25, 2020, are granted in part, and denied in part, consistent with the discussion above.

5. The exceptions to Recommended Decision No. R20-0773, filed by the Colorado Solar and Storage Association and the Solar Energy Industries Association on November 25, 2020, are granted in part, and denied in part, consistent with the discussion above.

6. The Rules Implementing the Interconnection Procedures within the Commission's Rules Regulating Electric Utilities, 4 *Code of Colorado Regulations* 723-3, contained in legislative (*i.e.*, strikeout/underline) format (Attachment A), and final format (Attachment B) are adopted, and are available through the Commission's Electronic Filings system at:

[https://www.dora.state.co.us/pls/efi/EFI.Show\\_Docket?p\\_session\\_id=&p\\_docket\\_id=19R-0654E](https://www.dora.state.co.us/pls/efi/EFI.Show_Docket?p_session_id=&p_docket_id=19R-0654E)

7. Subject to a filing of an application for rehearing, reargument, or reconsideration, the opinion of the Attorney General of the State of Colorado shall be obtained regarding constitutionality and legality of the rules as finally adopted. A copy of the final, adopted rules shall be filed with the Office of the Secretary of State. The rules shall be effective 20 days after publication in *The Colorado Register* by the Office of the Secretary of State.

8. The 20-day time period provided by § 40-6-114, C.R.S., to file an application for rehearing, reargument, or reconsideration shall begin on the first day after the effective date of this Decision.

9. This Decision is effective upon its Mailed Date.



**B. ADOPTED IN COMMISSIONERS' WEEKLY MEETING  
February 24, 2021.**

(S E A L)



ATTEST: A TRUE COPY

A handwritten signature in cursive script that reads "Doug Dean".

Doug Dean,  
Director

THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO

ERIC BLANK

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JOHN GAVAN

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MEGAN M. GILMAN

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Commissioners

## COLORADO DEPARTMENT OF REGULATORY AGENCIES

### Public Utilities Commission

#### 4 CODE OF COLORADO REGULATIONS (CCR) 723-3

#### PART 3 RULES REGULATING ELECTRIC UTILITIES

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#### RENEWABLE ENERGY STANDARD

\* \* \* \*

[indicates omission of unaffected rules]

#### 3665. ~~Repealed eff. 11/1/2020~~ Reserved.

\* \* \* \*

[indicates omission of unaffected rules]

#### ~~3667. Small Generation Interconnection Procedures.~~

~~The following small generator interconnection procedures (SGIP) shall apply to all small generation resources including eligible renewable energy resources connected to the utility. Each utility shall also provide, on its web site, interconnection standards not included in these procedures. This rule largely tracks FERC Order 2006.~~

~~(a) Definitions. The following definitions apply only to rule 3665.~~

~~(I) "Business day" means Monday through Friday, excluding Federal Holidays.~~

~~(II) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.~~

- ~~(III) — “Distribution upgrades” means the additions, modifications, and upgrades to the utility’s distribution system at or beyond the point of interconnection to facilitate interconnection of the small generating facility and render the service necessary to effect the interconnection customer’s operation of on-site generation. Distribution upgrades do not include interconnection facilities.~~
- ~~(IV) — “Highly seasonal circuit” means a circuit with a ratio of annual peak load to off-season peak load greater than six.~~
- ~~(V) — “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its small generating facility with the utility’s system.~~
- ~~(VI) — “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the small generating facility and the point of interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the small generating facility to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.~~
- ~~(VII) — “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing small generating facility that is interconnected with the utility’s system.~~
- ~~(VIII) — “Minimum daytime loading” means the lowest daily peak in the year on the line section.~~
- ~~(IX) — “Party” or “Parties” means the utility, interconnection customer, or any combination of the above.~~
- ~~(X) — “Point of interconnection” means the point where the Interconnection facilities connect with the utility’s system.~~
- ~~(XI) — “Small generating facility” means the interconnection customer’s device for the production of electricity identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer.~~
- ~~(XII) — “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.~~
- ~~(XIII) — “System” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.~~
- ~~(XIV) — “Upgrades” means the required additions and modifications to the utility’s system at or beyond the point of interconnection. Upgrades do not include interconnection facilities.~~

~~(b) — General overview.~~

~~(i) — Applicability.~~

~~(A) — A request to interconnect a certified small generating facility no larger than two MW shall be evaluated under the Level 2 Process. A request to interconnect a certified inverter-based small generating facility no larger than ten kW shall be evaluated under the Level 1 Process. A request to interconnect a small generating facility larger than two MW but no larger than ten MW or a small generating facility that does not pass the Level 1 or Level 2 Process, shall be evaluated under the Level 3 Process.~~

~~(B) — Defined terms used herein shall have the meanings specified in the paragraph (a) of this rule.~~

~~(C) — Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.~~

~~(D) — Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and Interconnection Customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All public utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber security practices.~~

~~(E) — References in these procedures to interconnection agreement are to the Small Generator Interconnection Agreement (SGIA).~~

~~(ii) — Pre-application. The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's Internet web site. Electric system information for specific locations, feeders, or small areas shall be provided to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.~~

- ~~(III) — Interconnection request. The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. The interconnection request shall be date- and time-stamped upon receipt. The original date- and time-stamp applied to the interconnection request at the time of its original submission shall be accepted as the qualifying date- and time-stamp for the purposes of any timetable in these procedures. The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by IC. The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. An interconnection request will be deemed complete upon submission of the listed information to the utility.~~
- ~~(IV) — Modification of the interconnection request. Any modification to machine data or equipment configuration or to the interconnection site of the small generating facility not agreed to in writing by the utility and the IC may be deemed a withdrawal of the interconnection request and may require submission of a new interconnection request, unless proper notification of each party by the other and a reasonable time to cure the problems created by the changes are undertaken.~~
- ~~(V) — Site control. Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:~~
- ~~(A) — ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the small generating facility;~~
  - ~~(B) — an option to purchase or acquire a leasehold site for such purpose; or~~
  - ~~(C) — an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.~~
- ~~(VI) — Queue position. The utility shall place interconnection requests in a first come, first served order per feeder and per substation based upon the date- and time-stamp of the interconnection request. The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.~~

~~(VII) — Assignment/Transfer of ownership of the facility. Interconnection agreements shall survive transfer of ownership of the generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.~~

~~(c) — Level 2 fast track process.~~

~~(I) — Applicability. The fast track process is available to an IC proposing to interconnect its small generating facility with the utility's system if the small generating facility is no larger than two MW and if the IC's proposed small generating facility meets the codes, standards, and certification requirements of Attachments 3 and 4 of these procedures.~~

~~(II) — Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the screens.~~

~~(A) — Screens.~~

~~(i) — The proposed small generating facility's point of interconnection must be on a portion of the utility's distribution system that is subject to the tariff.~~

~~(ii) — For interconnection of a proposed small generating facility to a radial distribution circuit, the aggregated generation, including the proposed small generating facility, on the line section shall not exceed 15 percent of the line section's annual peak load as most recently measured at the substation or calculated for the line section. For highly seasonal circuits only, the aggregate generation, including the proposed small generation facility, on the line section shall not exceed 15 percent of two times the minimum daytime loading. A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device.~~

~~(iii) — The proposed small generating facility, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit's maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.~~

~~(iv) — The proposed small generating facility, in aggregate with other generation on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.~~

- ~~(v) — The proposed small generating facility shall have a starting voltage dip less than five percent and meet the flicker requirements of IEEE 519, 1992 version. To meet this screen, the proposed generating facility must conform to the following two tests:~~
  - ~~(1) — For starting voltage dip, the utility has two options for determining whether starting voltage dip is acceptable. The option to be used is at the utility's discretion.~~
    - ~~(a) — Option 1: The utility may determine that the proposed generating facility's starting in-rush current is equal to or less than the continuous ampere rating of the Interconnection Customer's service equipment.~~
    - ~~(b) — Option 2: The utility may determine the impedances of the service distribution transformer (if present) and the secondary conductors to the Interconnection Customer's service equipment and perform a voltage dip calculation. Alternatively, the utility may use tables or nomographs to determine the voltage dip. Voltage dips caused by starting the proposed generation facility must be less than five percent when measured at the primary side (high side) of a dedicated distribution transformer serving the proposed generating facility, for primary interconnections. The five percent voltage dip limit applies to the distribution transformer low side if the low side is shared with other customers and to the high side if the transformer is dedicated to the Interconnection Customer.~~
  - ~~(2) — The second test is conformance with the relationship between voltage fluctuation and starting frequency presented in the table for flicker requirements in IEEE 519, 1992 version.~~

~~(vi) — Using the table below, determine the type of interconnection to a primary distribution line. This screen includes a review of the type of electrical service provided to the IC, including line configuration and the transformer connection to limit the potential for creating over-voltages on the utility's electric power system due to a loss of ground during the operating time of any anti-islanding function.~~

<b>Primary Distribution Line Type</b>	<b>Type of Interconnection to Primary Distribution Line</b>	<b>Result/Criteria</b>
<del>Three-phase, three-wire</del>	<del>3-phase or single phase, phase-to-phase</del>	<del>Pass screen</del>
<del>Three-phase, four-wire</del>	<del>Effectively grounded 3-phase or Single-phase, line-to-neutral</del>	<del>Pass screen</del>

~~(vii) — If the proposed small generating facility is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 20 kW.~~

~~(viii) — If the proposed small generating facility is single-phase and is to be interconnected on a center tap neutral of a 240-volt service, its addition shall not create an imbalance between the two sides of the 240-volt service of more than 20 percent of the nameplate rating of the service transformer.~~

~~(ix) — No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.~~

~~(x) — Interconnections to distribution networks.~~



- ~~(1) — For interconnection of a proposed small generating facility to the load side of spot network protectors serving more than a single customer, the proposed small generating facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the small generator facility must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.~~
- ~~(2) — For interconnection of a proposed small generating facility to the load side of area network protectors, the proposed small generating facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW.~~
- ~~(3) — Notwithstanding sub-sections (1) or (2) above, each utility may incorporate into its interconnection standards, any change in interconnection guidelines related to networks pursuant to standards developed under IEEE 1547 for interconnections to networks. To the extent the new IEEE standards conflict with these existing guidelines, the new standards shall apply. In addition, and with the consent of the utility, a small generator facility may be interconnected to a spot or area network provided the facility uses a protection scheme that will prevent any power export from the customer's site including inadvertent export under fault conditions or otherwise prevent nuisance operation of the network protectors.~~
- ~~(B) — If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.~~
- ~~(C) — If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.~~
- ~~(D) — If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting.~~

- ~~(E) — Customer options meeting. If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; or a supplemental study or other additional studies or actions; or at significant cost to address safety, reliability, or power quality problems, within the five business day period after the determination, the utility shall notify the IC and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:~~
- ~~(i) — offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;~~
  - ~~(ii) — offer to perform a supplemental review if the utility concludes that the supplemental review might determine that the small generating facility could continue to qualify for interconnection pursuant to the fast track process, and provide a non-binding good faith estimate of the costs and time of such review; or~~
  - ~~(iii) — obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 Study Process.~~
- ~~(III) — Supplemental Review. If the interconnection customer agrees to a supplemental review, the interconnection customer shall agree in writing within 15 business days of the offer, and submit a deposit for the estimated costs provided in subsection (c)(III)(A)(ii) of this rule. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.~~
- ~~(A) — Within ten business days following receipt of the deposit for a supplemental review, the utility will determine if the Small Generating Facility can be interconnected safely and reliably.~~
- ~~(i) — If so, the utility shall forward an executable interconnection agreement to the IC within five business days.~~
  - ~~(ii) — If so, and IC facility modifications are required to allow the small generating facility to be interconnected consistent with safety, reliability, and power quality standards under these procedures, the utility shall forward an executable interconnection agreement to the IC within five business days after confirmation that the interconnection customer has agreed to make the necessary changes at the interconnection customer's cost.~~

- ~~(iii) — If so, and minor modifications to the utility's electric system are required to allow the small generating facility to be interconnected consistent with safety, reliability, and power quality standards under the Level 2 Fast Track Process, the utility shall forward an executable interconnection agreement to the IC within ten business days that requires the IC to pay the costs of such system modifications prior to interconnection.~~
- ~~(iv) — If not, the interconnection request will continue to be evaluated under the Level 3 Study Process.~~

~~(d) — Level 3 – Study Process.~~

- ~~(I) — Applicability. The study process shall be used by an interconnection customer proposing to interconnect its small generating facility with the utility's system if the small generating facility is larger than two MW but no larger than ten MW; is not certified; or, is certified but did not pass the Fast Track Process or the ten kW Inverter Process.~~
- ~~(II) — Scoping meeting.~~
  - ~~(A) — A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.~~
  - ~~(B) — The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection agreement. If the parties agree that a feasibility study should be performed, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(C) — The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the parties agree not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(D) — Feasibility studies, scoping studies, and facility studies may be combined for simpler projects by mutual agreement of the utility and the parties.~~
- ~~(III) — Feasibility study.~~
  - ~~(A) — The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the small generating facility.~~

- ~~(B) — A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.~~
  - ~~(C) — The scope of and cost responsibilities for the feasibility study are described in the attached feasibility study agreement.~~
  - ~~(D) — If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(E) — If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).~~
- ~~(IV) — System impact study.~~
- ~~(A) — A system impact study shall identify and detail the electric system impacts that would result if the proposed small generating facility were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.~~
  - ~~(B) — If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.~~
  - ~~(C) — In instances where the feasibility study or the distribution system impact study shows potential for transmission system adverse system impacts, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, if such a study is required.~~
  - ~~(D) — If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.~~

- ~~(E) — If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.~~
- ~~(F) — In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.~~
- ~~(G) — A deposit of the good faith estimated costs for each system impact study may be required from the IC.~~
- ~~(H) — The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.~~
- ~~(I) — Where transmission systems and distribution systems have separate owners, such as is the case with transmission dependent utilities (TDUs) — whether investor-owned or not — the IC may apply to the nearest utility (Transmission Owner, Regional Transmission Operator, or Independent utility) providing transmission service to the TDU to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.~~
- ~~(V) — Facilities study.~~
  - ~~(A) — Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC along with a facilities study agreement within five business days, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.~~
  - ~~(B) — In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.~~
  - ~~(C) — The facilities study shall specify and estimate the cost of the equipment, engineering, procurement, and construction work (including overheads) needed to implement the conclusions of the system impact study(s).~~
  - ~~(D) — Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement. The IC and the utility may agree to allow the IC to separately arrange for the design of some of the interconnection facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the utility, under the provisions of the facilities study agreement. If the parties agree to separately~~

~~arrange for design and construction, and provided security and confidentiality requirements can be met, the utility shall make sufficient information available to the IC in accordance with confidentiality and critical infrastructure requirements to permit the IC to obtain an independent design and cost estimate for any necessary facilities.~~

- ~~(E) — A deposit of the good faith estimated costs for the facilities study may be required from the IC.~~
- ~~(F) — The scope of and cost responsibilities for the facilities study are described in a facilities study agreement.~~
- ~~(G) — Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.~~

~~(e) — Provisions that apply to all interconnection requests:~~

~~(I) — Reasonable efforts. The utility shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility cannot meet a deadline provided herein, it shall notify the IC explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.~~

~~(II) — Disputes:~~

- ~~(A) — The parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this article.~~
- ~~(B) — In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third party dispute resolution service for assistance in resolving the dispute.~~
- ~~(C) — The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.~~
- ~~(D) — Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs paid to neutral third parties.~~
- ~~(E) — If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission.~~

- ~~(III) — Interconnection metering. Except as otherwise required by rule 3664, any metering necessitated by the use of the small generating facility shall be installed at the IC's expense in accordance with Commission requirements or the utility's specifications.~~
- ~~(IV) — Commissioning tests. Commissioning tests of the IC's installed equipment shall be performed pursuant to applicable codes and standards, including IEEE1547.1 2005 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems". The utility must be given at least five business days written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing level 2 and Level 3 commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.~~
- ~~(V) — Confidentiality.~~
- ~~(A) — Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.~~
- ~~(B) — Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.~~
- ~~(i) — Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.~~
- ~~(ii) — Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.~~
- ~~(C) — Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from~~



~~public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.~~

- ~~(VI) — Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this document. The utility shall use the same reasonable efforts in processing and analyzing interconnection requests from all interconnection customers, whether the small generating facility is owned or operated by the utility, its subsidiaries or affiliates, or others.~~
- ~~(VII) — Record retention. The utility shall maintain for three years records, subject to audit, of all interconnection requests received under these procedures, the times required to complete Interconnection Request approvals and disapprovals, and justification for the actions taken on the interconnection requests.~~
- ~~(VIII) — Interconnection agreement. After receiving an interconnection agreement from the utility, the IC shall have 30 business days or another mutually agreeable time frame to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement, or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. After the interconnection agreement is signed by the parties, the interconnection of the small generating facility shall proceed under the provisions of the interconnection agreement.~~
- ~~(IX) — Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in these procedures. The utility will include such affected system operators in all meetings held with the IC as required by these procedures. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems.~~
- ~~(X) — Capacity of the small generating facility.
  - ~~(A) — If the interconnection request is for an increase in capacity for an existing small generating facility, the interconnection request shall be evaluated on the basis of the new total capacity of the small generating facility.~~
  - ~~(B) — If the interconnection request is for a small generating facility that includes multiple energy production devices at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple devices.~~~~



~~(C) — The interconnection request shall be evaluated using the maximum rated capacity of the small generating facility.~~

~~(XI) — Insurance.~~

~~(A) — For systems of ten kW or less, the customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$300,000 for each occurrence. For systems above ten kW and up to 500 kW, customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 for each occurrence. For systems above 500 kW and up to two MW, customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$2,000,000 for each occurrence. Insurance coverage for systems greater than two MW shall be determined on a case-by-case basis by the utility and shall reflect the size of the installation and the potential for system damage.~~

~~(B) — For systems over 500 kW, the utility shall be named as an additional insured by endorsement to the insurance policy and the policy shall provide that written notice be given to the utility at least 30 days prior to any cancellation or reduction of any coverage. Such liability insurance shall provide, by endorsement to the policy, that the utility shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium of such insurance. For all solar systems, the liability insurance shall not exclude coverage for any incident related to the subject generator or its operation.~~

~~(C) — Certificates of Insurance evidencing the requisite coverage and provision(s) shall be furnished to utility prior to the date of interconnection of the generation system. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the generating customer in order to verify proper liability insurance coverage. Customer will not be allowed to commence or continue interconnected operations unless evidence is provided that satisfactory insurance coverage is in effect at all times.~~

~~(f) — Level 1 ten kW inverter process. The procedure for evaluating an interconnection request for a certified inverter-based small generating facility no larger than ten kW. The application process uses an all-in-one document that includes a simplified Interconnection Request, simplified procedures, and a brief set of terms and conditions.~~

~~(I) — The interconnection customer (customer) completes the interconnection request (Application) and submits it to the utility.~~

~~(II) — The utility acknowledges to the customer receipt of the application within three business days of receipt.~~

- ~~(III) — The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.~~
- ~~(IV) — Within 15 days the utility shall conduct an initial review, which shall include the following screening criteria.~~
  - ~~(A) — For interconnection of a proposed small generating facility to a radial distribution circuit, the aggregated generation, including the proposed small generating facility, on the line section shall not exceed 15 percent of the line section annual peak load as most recently measured at the substation or calculated for the line section. For highly seasonal circuits only, the aggregate generation, including the proposed small generation facility, on the line section shall not exceed 15 percent of two times the minimum daytime loading. A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device.~~
  - ~~(B) — If the proposed small generating facility is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 20 kW.~~
  - ~~(C) — If the proposed small generating facility is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.~~
  - ~~(D) — No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.~~
  - ~~(E) — Provided all the criteria in paragraph (g) of this rule are met, unless the utility determines and demonstrates that the small generating facility cannot be interconnected safely and reliably, the utility approves and executes the application and returns it to the customer.~~
  - ~~(F) — After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the small generating facility for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary.~~
  - ~~(G) — The utility notifies the customer in writing or by fax or e-mail that interconnection of the small generating facility is authorized within five business days. If the witness test is not satisfactory, the utility has the right to disconnect the small generating facility. The customer has no right to operate in parallel until a witness test has been performed, or previously waived on the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.~~

~~(H) — Contact information. The customer must provide the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.~~

~~(g) — Level 1 10-kW Inverter Process. The following constitutes an application for interconnecting a certified inverter-based small generating facility no larger than ten kW. Application for Interconnecting a Certified Inverter-Based Small Generating Facility No Larger than 10kW~~

~~This Application is considered complete when it provides all applicable and correct information required below. Additional information to evaluate the application may be required.~~

~~Processing fee:~~

~~\_\_\_\_\_ A fee of \_\_\_\_\_ must accompany this application.~~

~~Interconnection customer~~

~~\_\_\_\_\_ Name:~~

~~\_\_\_\_\_ Contact Person:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone (Day): (Evening):~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~Engineering firm (if applicable):~~

~~\_\_\_\_\_ Contact Person:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone:~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~Contact (if different from Interconnection customer):~~

~~\_\_\_\_\_ Name:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone (Day): (Evening):~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~\_\_\_\_\_ Owner of the facility (include percent ownership by any electric utility):~~

Small generating facility information:

~~\_\_\_\_\_ Location (if different from above):~~

~~\_\_\_\_\_ Electric service company:~~

~~\_\_\_\_\_ Account number:~~

~~\_\_\_\_\_ Small generator ten kW inverter process:~~

~~\_\_\_\_\_ Inverter manufacturer: \_\_\_\_\_ Model~~

~~\_\_\_\_\_ Nameplate rating: (kW) (kVA) (AC Volts)~~

~~\_\_\_\_\_ Single phase \_\_\_\_\_ Three phase \_\_\_\_\_~~

~~\_\_\_\_\_ System design capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)~~

~~\_\_\_\_\_ Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other~~

~~\_\_\_\_\_ Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)~~

~~\_\_\_\_\_ Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_~~

~~\_\_\_\_\_ If Yes, attach manufacturer's cut-sheet showing UL1741 listing.~~

~~\_\_\_\_\_ Estimated installation date: \_\_\_\_\_ Estimated in-service date: \_\_\_\_\_~~

The ten kW inverter process is available only for inverter-based small generating facilities no larger than ten kW that meet the codes, standards, and certification requirements of paragraphs (h) and (i) of this rule, or the QRU has reviewed the design or tested the proposed small generating facility and is satisfied that it is safe to operate.

List components of the small generating facility equipment package that are currently certified:

Equipment type certifying entity:

- 1.
- 2.
- 3.

~~4.~~

~~5.~~

~~Interconnection customer signature: \_\_\_\_\_~~

~~I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter Based Small Generating Facility No Larger than 10kW and return the Certificate of Completion when the Small Generating Facility has been installed.~~

~~Signed: \_\_\_\_\_~~

~~Title: \_\_\_\_\_ Date: \_\_\_\_\_~~

~~Contingent approval to interconnect the small generating facility.~~

~~(For company use only)~~

~~Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter based small generating facility no larger than ten kW and return of the certificate of completion.~~

~~\_\_\_\_\_ Company signature: \_\_\_\_\_~~

~~\_\_\_\_\_ Title: Date: \_\_\_\_\_~~

~~\_\_\_\_\_ Application ID number: \_\_\_\_\_~~

~~\_\_\_\_\_ Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_~~

~~(h) \_\_\_\_\_ Certification codes and standards.~~

~~ANSI C84.1-2011 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)~~

~~ANSI/NEMA MG 1-2011, Motors and Generators~~

~~IEEE Std C37.90.1-2002, IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems~~

~~IEEE Std C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers~~

~~IEEE Std C37.108-2002, IEEE Guide for the Protection of Network Transformers~~

~~IEEE Std C57.12.44-2005, IEEE Standard Requirements for Secondary Network Protectors~~

~~IEEE Std C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text~~

~~IEEE Std C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low Voltage (1000V and Less) AC Power Circuits~~

~~IEEE Std 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition~~

~~IEEE Std 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems~~

~~IEEE Std 929-2000 IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems~~

~~IEEE Std 1547-2003, IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems~~

~~IEEE Std 547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems~~

~~NFPA 70 (2014), National Electrical Code~~

~~UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems~~

~~(i) Certification of small generator equipment packages.~~

~~(I) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in paragraph (h); it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.~~

~~(II) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.~~

~~(III) Certified equipment shall not require further type test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.~~

- ~~(IV) — If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.~~
- ~~(V) — Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of common coupling shall be required to meet the requirements of this interconnection procedure.~~
- ~~(VI) — An equipment package does not include equipment provided by the utility.~~
- ~~(j) — Terms and conditions for Level 1 interconnections -- small generating facility no larger than ten kW.~~
  - ~~(I) — Construction of the facility. The interconnection customer may proceed to construct the small generating facility when the utility approves the interconnection request (the application) and returns it to the IC.~~
  - ~~(II) — Interconnection and operation. The IC may operate small generating facility and interconnect with the utility's electric system once all of the following have occurred:
    - ~~(A) — upon completing construction, the interconnection customer will cause the small generating facility to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;~~
    - ~~(B) — the customer returns the certificate of completion to the utility; and~~
    - ~~(C) — the utility has completed its inspection of the small generating facility. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the small generating facility has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.~~
    - ~~(D) — The utility has the right to disconnect the small generating facility in the event of improper installation or failure to return the certificate of completion.~~~~
- ~~(III) — Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the small generating facility as required to ensure that it complies at all times with the interconnection standards to which it has been certified.~~

- ~~(IV) — Access. The utility shall have access to the disconnect switch and metering equipment of the small generating facility at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.~~
- ~~(V) — Disconnection. The utility may temporarily disconnect the small generating facility upon the following conditions:~~
- ~~(A) — for scheduled outages per notice requirements in the utility's tariff or Commission rules;~~
  - ~~(B) — for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or~~
  - ~~(C) — if the small generating facility does not operate in the manner consistent with these terms and conditions.~~
  - ~~(D) — The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.~~
- ~~(VI) — Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.~~
- ~~(VII) — Insurance. The interconnection customer, at its own expense, shall secure and maintain in effect during the term of this agreement, liability insurance with a combined single limit for bodily injury and property damage of not less than \$300,000 each occurrence. Such liability insurance shall not exclude coverage for any incident related to the subject generator or its operation. The utility shall be named as an additional insured under the liability policy unless the system is a solar system installed on a premise using the residential tariff and has a design capacity of ten kW or less. The policy shall include that written notice be given to the utility at least 30 days prior to any cancellation or reduction of any coverage. A copy of the liability insurance certificate must be received by the utility prior to plant operation. Certificates of insurance evidencing the requisite coverage and provision(s) shall be furnished to utility prior to date of interconnection of the generation system. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the generating customer in order to verify proper liability insurance coverage. The interconnection customer will not be allowed to commence or continue interconnected operations unless evidence is provided that satisfactory insurance coverage is in effect at all times.~~



- ~~(VIII) — Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (i)(VI) of this rule.~~
- ~~(IX) — Termination. The agreement to operate in parallel may be terminated under the following conditions:~~
- ~~(A) — By the customer by providing written notice to the utility.~~
  - ~~(B) — By the utility if the small generating facility fails to operate for any consecutive 12 month period or the customer fails to remedy a violation of these terms and conditions.~~
  - ~~(C) — Permanent disconnection. In the event this agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its small generating facility.~~
  - ~~(D) — Survival rights. This agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.~~
- ~~(X) — Assignment/Transfer of ownership of the facility. This agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of this agreement and so notifies the utility.~~

\* \* \* \*

[indicates omission of unaffected rules]

**3806. – 387449. [Reserved.]**

## **INTERCONNECTION PROCEDURES AND STANDARDS.**

### **3850. Applicability.**

The following interconnection procedures shall apply to the interconnection of all retail renewable distributed generation and other distributed energy resources including energy storage systems that operate in parallel with and are connected to the utility, when such interconnections are not subject to the jurisdiction of FERC. This rule largely tracks the 2013 FERC amended version of the FERC 2006 Small Generator Interconnection Procedures.

### **3851. Overview and Purpose.**

Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and Interconnection Customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

The purpose of these rules is to establish reasonable interconnection procedures and insurance requirements all utilities to adhere to when interconnecting retail renewable distributed generation, and other distributed energy resources that connect to a utility's system that operate in parallel with and are connected to the utility.

### **3852. Definitions.**

The following definitions apply only to rules 3850 to 3859.

- (a) "Business day" means Monday through Friday, excluding federal holidays.
- (b) "Distributed energy resource" or "DER" means the interconnection customer's source of electric power, connected to the utility's distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. DER includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE 1547-SA, until January 1, 2022, at which time new DERs applying for interconnection will comply with IEEE 1547 2018. This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (c) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from interconnection resources or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.
- (d) "Energy storage system" means any commercially available, customer-sited system or utility-sited system, including batteries and batteries paired with on-site generation, that does not generate energy, that is capable of retaining, storing, and delivering electrical energy by chemical, thermal, mechanical, or other means.
- (e) "Export capacity" means the amount of alternating current (AC) electrical energy that an interconnection resource is intended to transfer to the utility's system across the point of interconnection.
- (f) "Highly seasonal circuit" means a circuit with a ratio of annual peak load to off-season peak load greater than six.

- (g) “Inadvertent export” means the potential condition in which a normally non-exporting or limited-exporting DER experiences a momentary export that does not exceed limitations specified in paragraph 3853(c).
- (h) “Interconnection agreement” means a contract between the interconnection customers and the utility that formally documents terms and conditions related to the operation and maintenance of any DER in accordance with the utility’s tariffs on file with the Commission.
- (i) “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its DER with the utility’s system.
- (j) “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the DER and the point of interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the DER to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.
- (k) “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing DER that is interconnected with the utility’s system.
- (l) “Interconnection resource” means the interconnection customer’s source of electric power connected to the utility’s distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, bidirectional storage, electric vehicle chargers with vehicle to grid, vehicle to home, vehicle to building or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. “Interconnection resource” includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547-SA, until January 1, 2022, at which time new DERs applying for interconnection will comply with IEEE 1547-2018. This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (m) “Interconnection tariffs” are required filings from the utilities that set forth certain fees associated with interconnection. Tariff filings would accommodate utility-specific costs, while allowing for appropriate statewide standardization in the provisions set forth.
- (n) “Line section” means that portion of the utility’s electric delivery system that is connected to a Customer and bounded by automatic sectionalizing devices or the end of the distribution line.
- (o) “Material modification” means a modification that has a material impact on the cost or timing of processing an application with a later queue priority date or a change in the point of interconnection. A material modification does not include, for example: a change of ownership of an interconnection resource; changes to the address of the generating facility, so long as the generating facility remains on the same parcel; a change or replacement of interconnection resource that is a like-kind substitution in size, ratings, impedances, efficiencies, or capabilities of

the equipment specified in the original application; or a reduction in the capacity of the interconnection resource of ten percent or less.

- (p) “Minor modifications” means modifications to the utility’s distribution system or to the interconnection facilities that do not have a material impact on the cost or on the timing of an interconnection request.
- (q) “Non-exporting system” means an interconnection resource that is designed so that it does not intentionally transfer electrical energy to the utility’s distribution or transmission system across the point of common coupling. Such systems may be used to supply part or all of a customers’ load continuously or during an outage. A system can be non-exporting by virtue of inverter programming or by some other on-site limiting element. Non-exporting systems may or may not produce inadvertent exports as defined in paragraph (g) of this rule.
- (r) “Operating mode” means the mode of DER operational characteristics that determines the performance during normal and abnormal conditions. For example, an operating mode such as “export only,” “import only,” and “no exchange.”
- (s) “Parallel operation” means a DER facility that is connected to the utility’s system and can supply AC electricity to the interconnection customer simultaneously with the utility’s supply of AC electricity.
- (t) “Party” or “Parties” means the utility, interconnection customer, or any combination thereof.
- (u) “Point of interconnection” means the point where the interconnection facilities connect with the utility’s system.
- (v) “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.
- (w) “System upgrades” means the additions, modifications, and upgrades to the utility’s distribution or Commission-jurisdictional transmission system at or beyond the point of interconnection to facilitate interconnection of interconnection resources and render the service necessary to effect the interconnection customer’s operation of interconnection resources. System upgrades do not include interconnection facilities.
- (x) “Transmission system” means an interconnected group of transmission lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.
- (y) “Utility system” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.
- (z) “Upgrades” means the additions and modifications to the utility’s system at or beyond the point of interconnection that are necessary to interconnect an interconnection resource. Upgrades do not include interconnection facilities.

**3853. General Interconnection Procedures.**

**(a) Pre-application procedures.**

- (I) Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.
- (II) The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's web site.
- (III) In response to an informal pre-application request, the utility shall provide electric system information for specific locations, feeders, or small areas to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.
- (IV) In addition to the information described in subparagraphs 3853(a)(I) and (III), which may be provided in response to an informal request, an interconnection customer may submit a formal written request for a pre-application report on a proposed interconnection at a specific site using a form supplied by the utility, unless such information is confidential and cannot be provided pursuant to a confidentiality agreement. The utility may charge up to a Commission-approved fee for the pre-application report. Upon completion, each pre-application report shall be dated and publicly posted to the utility's website with any customer identifying information redacted.

  - (A) The utility shall provide the pre-application report to the interconnection customer within 20 business days of receipt of the completed request form and payment of the fee.
  - (B) The pre-application report shall be non-binding on the utility and shall not confer any rights to the interconnection customer. The provided information does not guarantee that an interconnection may be completed. Data provided in the pre-application report may become outdated at the time of the submission of the complete interconnection request.
  - (C) The pre-application report need only include existing information. A pre-application report request does not obligate the utility to conduct a study or other analysis of the proposed interconnection resource in the event that data is not readily available.
  - (D) If the utility cannot complete all or some of a pre-application report due to lack of available data, the utility should nonetheless explain what information is not

available and why it is not available, and the utility shall provide the interconnection customer with a pre- application report that includes the data that is available.

- (E) The utility shall, in good faith, include data in the pre- application report that represents the best available information at the time of reporting. The pre- application report will include the following information:
- (i) total capacity (in MW) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed point of interconnection;
  - (ii) existing aggregate generation DER capacity (in MW AC) interconnected to a substation/area bus, bank or circuit (i.e., amount of DER online) likely to serve the proposed point of interconnection;
  - (iii) aggregate queued DER capacity (in MW AC) for a substation/area bus, bank or circuit (i.e., amount of DER in the queue) likely to serve the proposed point of interconnection;
  - (iv) available capacity (in MW AC) of substation/area bus or bank and circuit likely to serve the proposed point of interconnection (i.e., total capacity less the sum of existing aggregate DER capacity and aggregate queued DER capacity);
  - (v) substation nominal distribution voltage and/or transmission nominal voltage, if applicable;
  - (vi) nominal distribution or transmission circuit voltage at the proposed point of interconnection whether the proposed DER is eligible for the Level 1, Level 2 or non-export process;
  - (vii) approximate circuit distance between the proposed point of interconnection and the substation;
  - (viii) relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load as described in the supplemental review minimum load screen in subparagraph 3855(d)(VI)(A) and absolute minimum load at the time of DER production, when available;
  - (ix) number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed point of interconnection and the substation/area. Identify whether the substation has a load tap changer;
  - (x) number of phases available at the proposed point of interconnection. If a single phase, distance from the three-phase circuit;

- (xi) whether the point of interconnection is located on a spot network, grid network, or radial supply; and
- (xii) existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks, based on the proposed point of interconnection.

(b) Capacity of the DER.

- (I) If the interconnection request is for an increase in capacity for an existing DER, the interconnection request shall be evaluated on the basis of the new total capacity of the DER, except as provided below in subparagraph 3853(c)(III).
- (II) If the interconnection request is for a DER that includes multiple components at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple components, except as provided below in subparagraph 3853(c)(III).
- (III) The interconnection request shall be evaluated using the maximum rated capacity of the DER, except as provided below in subparagraph 3853(c)(III). At the utility's discretion in accordance with subparagraph 3853(c)(III), the interconnection request may be evaluated using less than the maximum rated capacity of the DER if the utility determines that the DER is only capable of injecting less power into the utility's system.

(c) Energy storage interconnections.

- (I) Non-exporting energy storage may inadvertently export, so long as the magnitude is less than the energy storage's nameplate rating (kW-gross) and the duration of export of power from the customer's energy storage is less than 30 seconds for any single event. There are no limits to the number of events. Inadvertent export events shall not exceed thermal, service voltage, power quality or network limits defined within Commission rules or interconnection requirements. For good cause shown, the Commission may grant a variance of this section.
- (II) When a storage system is installed in conjunction with a DER facility, both shall be reviewed at the same time and be included in one interconnection agreement.
- (III) Interconnection requests are reviewed based on the combined nameplate ratings of systems accounting for their export capacity, and energy storage operating mode. The ongoing operation capacity portion of the interconnection review is based on the actual simultaneous performance AC ratings, taking into account the operational differences of load offset and export. If the contribution of the energy storage to the total contribution is limited by programming of the maximum active power output, use of a power control system, use of a power relay, or some other mutually agreeable, on-site limiting element, only the capacity that is designed to inject electricity to the utility's distribution or transmission system (other than inadvertent exports and fault contribution) will be used within certain technical screens and evaluations as specified in paragraphs 3855(b) and (d).



- (IV) Failure of hardware or software system(s) intended to limit energy storage export capacity shall cause the energy storage system to enter a safe operating state. An energy storage system combined with a UL 1741 certified power control system shall be considered capable of entering a safe operating state upon failure of hardware or software system(s). When mutually agreed fail-safe provisions are not provided, at the utility's discretion, the interconnection request may be evaluated using the maximum rated capacity of the energy storage system.
- (#IV) When a storage system is installed at the same point of interconnection location as an existing interconnected DER facility, the review level will be based upon the incremental addition of the DER rated capacity and the exporting storage system rated capacity as provided in subparagraph 3853(c)(III).
- (IV) A storage system may be located on the same side of a production meter as a generating facility when a production meter is required by these rules provided that the storage system is either non-exporting at the service meter or is charged exclusively by the generating facility and only the production recorded by the production meter will be eligible for incentives.
- (d) Interconnection requests.
- (I) The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. Additional fees or deposits shall not be required, except as otherwise specified in these procedures. A single request to interconnect may be submitted by the interconnection customer distributed generation paired with energy storage systems and shall be subject to one interconnection agreement.
- (II) The interconnection request shall be date-stamped and time-stamped upon receipt. The original date-stamped and time-stamp applied to the interconnection request at the time of its original submission shall be the order in which the utility reviews applications to determine completeness.
- (III) The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by the IC.
- (IV) The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. The IC may re-submit the application within one year without paying an additional interconnection application fee.



- (V) An interconnection request will be deemed complete upon submission of the listed information to the utility. The interconnection request shall be date-stamped and time-stamped upon being deemed complete. This date shall be accepted as the qualifying date-stamp and time-stamp for the purposes of any timetable in subsequent procedures.
- (VI) Any modification to interconnection resource data or equipment configuration or to the interconnection site that is a material modification, may be deemed by the utility to be a withdrawal of the interconnection request and may require submission of a new interconnection request. A new interconnection request shall not be required for minor modifications to interconnection resource data or equipment configuration or to the interconnection site. Within ten business days of receipt of a proposed modification, the utility, in consultation with an affected system owner, if applicable, shall evaluate whether a proposed modification constitutes a material modification.
- (A) If the proposed modification is determined to be a material modification, then the utility shall notify the IC in writing that the customer may: withdraw the proposed modification; or proceed with a new interconnection request for such modification. The IC shall provide its determination in writing to the utility within ten business days after the utility provides the material modification determination results. If the IC does not provide its determination, the customer's request shall be deemed withdrawn.
- (B) If the proposed modification is determined not to be a material modification, then the utility shall notify the IC in writing that the modification has been accepted and that the IC shall retain its eligibility for interconnection, including its place in the interconnection queue.
- (C) Any dispute as to the utility's determination that a modification constitutes a material modification shall proceed in accordance with the dispute resolution provisions in these procedures.
- (VII) Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:
- (A) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the interconnection resource;
- (B) an option to purchase or acquire a leasehold site for such purpose which may include a letter of intent; -or
- (C) an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.
- (D) For generating facilities utilizing the Level 1 25 kW AC inverter process, proof of site control may be demonstrated by the IC's signature on the interconnection application.

(VIII) The utility shall place interconnection requests in a first come, first served order per feeder, per substation transformer, and per substation based upon the date an application is complete pursuant to subparagraph 3853(d)(V). The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.

(e) Evaluation of interconnection requests.

- (I) A request to interconnect an interconnection resource no larger than 25 kW AC, which may be paired with a non-exporting storage system no larger than 25 kW AC, shall be evaluated under the Level 1 Process.
- (II) If not eligible for Level 1, a request to interconnect an interconnection resource with a combined nameplate rating larger than 25 kW AC shall be evaluated under the Level 2 Process (Fast Track) in accordance with the eligibility requirements in paragraph 3855(a).
- (III) A request to interconnect an interconnection resource that does not pass the Level 1 or Level 2 Process shall be evaluated under the Level 3 Process.
- (IV) Non-exporting interconnection resources shall be evaluated under the simplified “non-export” interconnection processes outlined in rule 3859. The “non-export” interconnection process is also applicable to additions of new non-exporting interconnection resources paired with existing interconnection resources when the existing interconnection resources have already executed an interconnection agreement.

(f) Interconnection agreements.

- (I) Any interconnection resource operating in parallel with the utility's system is required to have an interconnection agreement with the utility to ensure safety, system reliability, and operational compatibility. References in these procedures to interconnection agreement are to the utility's interconnection agreement as provided on its website, which interconnection agreement is subject to Commission approval upon request.
- (II) Interconnection agreements shall survive transfer of ownership of the- interconnection resource to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.
- (III) After receiving an interconnection agreement from the utility, the IC shall have 30 business days to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. The utility shall provide the IC a fully executed interconnection agreement within two business days after receiving a signed interconnection agreement from the IC. After the parties sign the interconnection agreement, the interconnection of the interconnection resource shall proceed under the provisions of the interconnection agreement.

- (IV) Once the interconnection resource has been authorized by the utility to commence operation in parallel with the utility system, the interconnection customer shall abide by all rules and procedures pertaining to parallel operation in the utility's tariffs and in the interconnection agreement.
- (V) The interconnection customer shall be responsible for the utility's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair and replacement of utility upgrades or utility interconnection facilities not required to serve other utility customers. Such upgrades or facilities shall be specified in the interconnection agreement unless otherwise covered by the utility's tariff or excluded by interconnection agreement. Utilities may not refuse to provide an IC with a fixed dollar amount to cover reasonable and necessary utility upgrades or utility interconnection facilities in order to facilitate an interconnection.
- (g) Reasonable efforts. The utility and IC shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility or IC cannot meet a deadline provided herein, it shall notify the IC or the utility if the notifying party is the IC, and explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.
- (h) Disputes.
- (I) The utility and IC shall agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this subparagraph.
- (II) In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third party dispute resolution service for assistance in resolving the dispute.
- (III) The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.
- (IV) Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs paid to neutral third-parties.
- (V) If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission, pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1.7
- (i) Interconnection metering. Except as otherwise required by other Commission's rules or by the terms of a Commission-approved program offered by the utility, any metering necessitated by the use of the interconnection resource shall be installed at the IC's expense in accordance with

Commission requirements or the utility's specifications. For systems below 25 kW AC, additional metering shall not be installed for the purposes of monitoring energy storage systems.

(j) Commissioning tests. Commissioning tests of the IC's installed interconnection resource shall be performed pursuant to applicable codes and standards, including IEEE 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" (2205). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202. The utility must be given at least five business days' written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing Level 2 and Level 3 commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.

(k) Confidentiality.

(I) Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.

(II) Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.

(A) Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.

(B) Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.

(III) Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The

party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.

- (l) Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this rule. The utility shall use the same reasonable and expeditious efforts in processing and analyzing interconnection requests from all interconnection customers, whether the interconnection resource is owned or operated by the utility, its subsidiaries or affiliates, or others.
- (m) Record retention. The utility shall maintain for three years, records, subject to audit, of all interconnection requests received under these procedures, the times required to complete each step of the interconnection request approvals and disapprovals, enumerated in these rules and justification for the actions taken on the interconnection requests.
- (n) Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in this rule. The utility will include such affected system operators in all meetings held with the IC as required by this rule. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems and shall provide to the IC any analysis and data underlying the affected system utility's determinations.-
- (o) Insurance. A Utility may only require an applicant (i.e., an interconnection customer) to purchase insurance covering Utility damages, and then only in amounts stated below. An interconnection customer, at its own expense, shall secure and maintain in effect during the term of the interconnection agreement, insurance coverage in the following amounts:

(I) For non-inverter-based Generating Facilities:

Nameplate Rating > 5 MW \$3,000,000 for each occurrence

2 MW < Nameplate Rating < 5 MW \$2,000,000 for each occurrence

500 kW < Nameplate Rating < 2 MW \$1,000,000 for each occurrence

50 kW < Nameplate Rating < 500 kW \$500,000 for each occurrence

Nameplate Rating < 50 kW - no additional insurance

(II) For inverter-based Generating Facilities:

Nameplate Rating > 5 MW \$2,000,000 for each occurrence

1 MW < Nameplate Rating > 5 MW \$1,000,000 for each occurrence

Nameplate Rating < 1 MW no insurance

(III) Colorado governmental entities that self-insure against liability in amounts above those required in paragraph (o) for interconnection resources up to 2 MW or to the replacement value of the interconnection resource for those interconnection resource above 2 MW, shall not be required to purchase additional insurance or to add the utility as an additional insured to any policy, nor shall they be obligated to indemnify the utility, though they shall be liable for any negligent or intentional act or omission of the municipality, its employees, contractors, subcontractors, or agents.

(IV) Certificates of Insurance evidencing the requisite coverage and provision(s) when required shall be furnished to utility prior to the date of interconnection of the interconnection resource. Utilities shall be permitted to periodically obtain proof of current insurance coverage form the interconnection customer in order to verify proper liability insurance coverage. Customers will not be allowed to commence or continue interconnected operations unless they provide to the utility evidence that satisfactory insurance coverage is in effect at all times.

(p) Implementation by tariff.

(I) Each utility shall have on file with the Commission an interconnection tariff that sets forth certain fees, deadlines and interconnection procedures. A utility's interconnection tariff shall comply with these Interconnection Rules, but when appropriate may include shorter deadlines for certain procedures.

(II) The interconnection tariff shall be filed along with an advice letter. Tariffs filed by cooperative electric associations shall be informational only. Tariffs filed by investor-owned electric utilities may be set for hearing and suspended in accordance with the Commission Rules of Practice and Procedure and applicable statutes.

(III) The tariff shall include the following provisions:

(A) timelines: paragraphs 3853(a),(d),(f), 3854(a), 3855(b),(c),(d), 3856(a),(b),(c),(d)

(B) any fees: including but not limited to those referenced at -paragraphs 3853(a),(d),(f),(j), 3854(a) and (b), and 3856(a);

(i) The utility shall demonstrate that any fee established in tariff is cost-based.

(C) material modification withdrawals: paragraph 3853(d); and

(D) maximum rated capacity: paragraph 3853(b), and (c)

(q) Reporting.

(I) Each utility shall submit an interconnection report to the Commission two times per year and shall make it available to the public on its website. A cooperative electric association that has voted to exempt itself from regulation pursuant to C.R.S. § 40-9.5-103 shall submit an interconnection report to the Commission once per year. The first

interconnection report shall be due 180 days after the effective date of these interconnection rules. Upon a filing by a party with proper standing showing good cause, and when necessary and appropriate, the Commission may by order increase the frequency of such reporting on a temporary basis. The report shall contain relevant totals for both the year and the most recent reporting period, including the following information listed in subparagraphs (q)(II) and (III) of this rule. The report shall also contain the total number of missed deadlines contained in these rules in the reporting period as well as copies of any notices of delay or missed deadlines issued by the utility to an interconnection customer pursuant to paragraph 3853(g).

(II) Pre-application reports:

- (A) total number of reports requested;
- (B) total number of reports in process;
- (C) total number of reports issued;
- (D) total number of requests withdrawn;
- (E) maximum, mean, and median processing times from receipt of request to issuance of report; and
- (F) number of reports processed in more than the 20 business days allowed in subparagraph 3853(a)(IV)(A).

(III) Interconnection applications:

- (A) total number received, broken down by:
  - (i) primary fuel type (e.g., solar, wind, bio-gas, etc.); and
  - (ii) system size (e.g., <25 kW, <1 MW, <5MW, >5MW).
- (B) Level 1 review process.
  - (i) total number of applications processed; and
  - (ii) maximum, mean, and median processing times from receipt of complete application to provision of a counter-signed interconnection agreement.
- (C) Level 2 review process.
  - (i) total number of applications that passed the screens in paragraph 3855(b);
  - (ii) total number of applications that failed the screens in paragraph 3855(b); and



(iii) maximum, mean, and median processing times from receipt of complete application to issuance of an interconnection agreement.

(D) Supplemental review.

(i) total number of applications that passed the screens in paragraph 3855(d);

(ii) total number of applications that failed the screens in paragraph 3855(d); and

(iii) maximum, mean, and median processing times from receipt of complete application to issuance of interconnection agreement.

(E) Level 3 review process:

(i) system impact studies

(ii) total number of system impact studies completed under paragraph 3856(c); and

(iii) maximum, mean, and median processing times from receipt of a signed interconnection system impact study agreement to provision of study results.

#### **3854. Level 1 Process (25 kW Inverter Process).**

This rule establishes the procedures for evaluating an interconnection request for a certified inverter-based interconnection resource no larger than 25 kW AC which may be paired with a non-exporting energy storage system no larger than 25 kW AC. The application process uses an all-in-one document (application) that includes a simplified interconnection request, simplified procedures, and a brief set of terms and conditions.

(a) General Level 1 procedures.

(I) The IC completes application and submits it to the utility.

(II) The utility acknowledges to the customer receipt of the application within three business days of receipt.

(III) The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.

(IV) Within ten business days, the utility shall verify whether the interconnection resource can be interconnected safely and reliability using the same screens as applied in Level 2 Process as set forth in rule 3855 except for screens (V), (VI), (X) and (XI) which will not be deemed necessary for the Level 1 Process (25 kW AC Inverter Process). If the interconnection fails these screens, the utility shall generally consider this a failure of the



Level 2 Process screens in rule 3855. The utility shall continue the interconnection review under the Level 2 Process, starting at paragraph 3855(c), provided that the IC pays the difference in the Level 2 Pprocess application fee and deposit requirements. The utility may also review the application within the ten business day period to evaluate issues associated with highly seasonal circuits. However, if the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.

- (V) Provided all the criteria of this rule 3854 are met, unless the utility determines and demonstrates that the interconnection resource cannot be interconnected safely and reliably and requires upgrades, the utility approves and executes the application and returns it to the customer within ten business days.;
- (VI) After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the interconnection resource for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary. The utilities should define “witness test” in their interconnection tariff.
- (VII) The utility shall notify the customer that parallel operation of the interconnection resource is authorized within ten business days of the certificate of completion. If the witness test is not satisfactory, the utility has the right to disconnect the interconnection resource. The customer has no right to operate in parallel until a witness test has been performed, or previously waived on the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.

(b) Level 1 application.

- (I) The customer must provide in the application the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.
- (II) The application is considered complete when it provides all applicable and correct information as required below. Additional information to evaluate the application may be required.
- (III) The application shall include the following information, as applicable:
  - (A) Processing fee. A fee of \_\_\_\_\_ must accompany this application.
  - (B) Interconnection customer:
    - \_\_\_\_\_ Name
    - \_\_\_\_\_ Contact Person
    - \_\_\_\_\_ Address
    - \_\_\_\_\_ City State Zip
    - \_\_\_\_\_ Telephone (Day) and (Evening)
    - \_\_\_\_\_ Fax Number and E-Mail Address

(C) Engineering firm or Installer (If applicable):

Contact Person  
Address  
City State Zip  
Telephone  
Fax and E-Mail Address

(D) Contact (if different from Interconnection Customer):

Name  
Address  
City State Zip  
Telephone (Day) and (Evening)  
Fax Number and E-Mail Address  
Owner of the facility (include percent ownership by any electric utility)

(E) DER information:

Location (if different from above)  
Utility  
Account number  
DER components  
Inverter manufacturer: \_\_\_\_\_ Model  
Nameplate rating: (kW AC) (kVA) (AC Volts)  
Single phase \_\_\_\_\_ Three phase \_\_\_\_\_  
System design capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)  
Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other  
Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)  
Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes, attach manufacturer's cut-sheet showing UL1741 listing  
Estimated installation date: \_\_\_\_\_ Estimated in-service date: \_\_\_\_\_

The 25 kW AC inverter process is available only for inverter-based interconnection resources no larger than 25 kW AC that meet the codes, standards, and certification requirements of specified in certain of these interconnection rules, or the utility has reviewed the design or tested the proposed interconnection resources and is satisfied that it is safe to operate.

(F) List components of the small generating facility equipment package that are currently certified:

Equipment type certifying entity:

- 1.
- 2.
- 3.
- 4.
- 5.

(G) Limited-Export / Non-Export / Limited-Import Data:

If multiple export control systems are used, provide for each control system and use additional sheets if needed.

Is export controlled to less than the Total Aggregate Nameplate Rating? Yes: No:

Method of export limitation: Power Control System / Reverse Power Protection / Minimum Power Protection / Other (describe):  
Export controls are applied to how many generators? Multiple: One:  
If Power Control System is used, open loop response time(s):  
Power Control System export capacity: (kW AC) (kVA)  
Energy Storage System Power Control System operating mode:  
Unrestricted: Export Only: Import Only: No Exchange:  
Describe which Generators the export control system controls:

(H) Interconnection customer signature and certification:

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based interconnection resource No Larger than 25kW and return the Certificate of Completion when the interconnection resource has been installed.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Contingent approval to interconnect the small generating facility.

(For company use only)

Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than 25 kW and return of the certificate of completion.

Company signature: \_\_\_\_\_

Title: Date:

Application ID number: \_\_\_\_\_

Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_

(c) Level 1 terms and conditions.

(I) Construction of the facility. The interconnection customer may proceed to construct the interconnection resource when the utility approves the interconnection request (the application) and returns it to the IC.

(II) Interconnection and operation. The IC may operate the interconnection resource and interconnect with the utility's electric system once all of the following have occurred:

(A) upon completing construction, the interconnection customer will cause the interconnection resource to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;

- (B) the customer returns the certificate of completion to the utility; and
- (C) the utility has completed its inspection of the interconnection resource. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the interconnection resource has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.
- (D) The utility has the right to disconnect the interconnection resource in the event of improper installation or failure to return the certificate of completion.
- (III) Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the interconnection resource as required to ensure that it complies at all times with the interconnection standards to which it has been certified.
- (IV) Access. The utility shall have access to the disconnect switch and metering equipment of the interconnection resource at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.
- (V) Disconnection. The utility may temporarily disconnect the interconnection resource as allowed in the interconnection agreement and upon the following conditions:

  - (A) for scheduled outages per notice requirements in the utility's tariff or Commission rules;
  - (B) for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or
  - (C) if the interconnection resource does not operate in the manner consistent with these terms and conditions.
  - (D) The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.
- (VI) Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.
- (VII) The interconnection customer is not required to provide general liability insurance coverage as part of this agreement, or through any other utility requirement.

- (VIII) Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of the interconnection agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (c)(VI) of this rule.
- (IX) Termination. The interconnection agreement to operate in parallel may be terminated under the following conditions.
- (A) By the customer by providing written notice to the utility.
- (B) By the utility if the interconnection resource fails to operate for any consecutive 12-month period or the customer fails to remedy a violation of these terms and conditions.
- (C) Permanent disconnection. In the event the interconnection agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its interconnection resource.
- (D) Survival rights. The interconnection agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.
- (X) Assignment/Transfer of ownership of the facility. The interconnection agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.

**3855. Level 2 Process (Fast Track).**

This fast track process is available to an IC proposing to interconnect its interconnection resource with the utility's system if the interconnection resource meets the eligibility provisions in this rule 3855.

- (a) Eligibility.
- (I) Eligibility for the Level 2 Process is determined based upon the type and size of the interconnection resource as well as the voltage of the utility line and the location of and the type of utility line at the point of interconnection. An interconnection customer may determine whether the interconnection resource is eligible for the Level 2 Process by requesting a pre-application report pursuant to subparagraph 3853(a)(IV).
- (II) For certified inverter-based systems, the size limit of the interconnection resource varies according to the voltage of the utility line at the proposed point of interconnection. Certified inverter-based interconnection resource facilities located within 2.5 electrical circuit miles of a substation and on a mainline are eligible for the Level 2 Process under the higher thresholds pursuant to this rule 3856. The utilities should define "mainline" in their interconnection tariff.

<u><b>Level 2 Process Eligibility for Inverter-Based Systems</b></u>		
<u><b>Line Voltage</b></u>	<u><b>Eligibility Regardless of Location</b></u>	<u><b>Eligibility Meeting Location Requirements (Mainline and Substation)</b></u>
<u><b>&lt; 5 kV</b></u>	<u><b>≤ 500 kW</b></u>	<u><b>≤ 500 kW</b></u>
<u><b>≥ 5 kV and &lt; 15 kV</b></u>	<u><b>≤ 2 MW</b></u>	<u><b>≤ 3 MW</b></u>
<u><b>≥ 15 kV and &lt; 30 kV</b></u>	<u><b>≤ 3 MW</b></u>	<u><b>≤ 4 MW</b></u>
<u><b>≥ 30 kV and &lt; 69 kV</b></u>	<u><b>≤ 4 MW</b></u>	<u><b>≤ 5 MW</b></u>

(III) All synchronous and induction facilities must be no larger than 2 MW AC to be eligible for the Level 2 Pprocess, regardless of location.

(IV) In addition to the size threshold, the interconnection resource must meet the codes, standards, and certification requirements specified in certain of these interconnection rules.

(V) Subject to approval via the tariff amendment process, a utility may utilize tools that perform screening functions using different methodology from that set out in paragraph 3855(d) as long as the analysis is aimed at preventing the same voltage, thermal and protection limitations specified under rule 3855 and otherwise complies with these rules.

(b) Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the following:

(I) The proposed interconnection resource's point of interconnection must be on a portion of the utility's distribution system that is subject to the utility's tariffs. Proposed

interconnection resources on highly seasonal circuits shall also be subject to the supplemental review pursuant to paragraph 3855(d).

- (II) For interconnection of a proposed interconnection resources to a radial distribution circuit, the aggregated generation, including the proposed interconnection resources, on the line section(s) shall not exceed 15 percent of the line section's annual peak load as most recently measured at the substation or calculated for the line section(s). A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device. Energy storage system(s) capacity for purposes of this screen shall be based on subparagraph 3853(c)(III).
- (III) The proposed interconnection resource, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit's maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.
- (IV) The proposed interconnection resource, in aggregate with other interconnection resource on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or interconnection customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.
- (V) The proposed interconnection resource shall meet the rapid voltage change and flicker requirements of IEEE Standard 1453 (2015) and IEEE Standard 1547-SA, until January 1, 2022, at which time new DERs applying for interconnection will comply with IEEE 1547- 2018 based on the appropriate test. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (VI) The type of interconnection to a primary distribution line shall be determined based on the table below, including a review of the type of electrical service provided to the interconnection customer, line configuration, and the transformer connection to limit the potential for creating over-voltages on the utility's electric power system due to a loss of ground during the operating time of any anti-islanding function.

<u>Primary Distribution Line Type</u>	<u>Type of Interconnection to Primary Distribution Line</u>	<u>Result/Criteria</u>
<u>Three-phase, three wire</u>	<u>3-phase or single phase, phase-to-phase</u>	<u>Pass screen</u>
<u>Three-phase, four wire</u>	<u>Effectively-grounded 3 phase or Single-phase, line-to-neutral</u>	<u>Pass screen</u>

- (VII) If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 25 kW. Energy storage system(s) capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
- (VIII) If the proposed interconnection resource is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.
- (IX) No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.
- (X) For interconnection of a proposed interconnection resource to the load side of spot network protectors serving more than a single customer, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the interconnection resource must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.
- (XI) For interconnection of a proposed interconnection resource to the load side of area network protectors, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW AC.
- (XII) The nameplate capacity of a proposed interconnection resource, in combination with the nameplate capacity of any previously interconnected interconnection resource, shall not exceed the capacity of the customer's existing electrical service unless there is a simultaneous request for an upgrade to the customer's electrical service, regardless of exporting or non-exporting designations for any of the interconnection resources.



(c) Customer options meeting.

- (I) If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review whether the interconnection resource may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting. The utility shall provide to the IC in writing with a detailed information on the reasons(s) for failure.
- (II) If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; without a supplemental study or other additional studies or actions; or without significant costs to address safety, reliability, or power quality problems, the utility shall notify the IC within the five business day period after the determination and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:
  - (A) offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;
  - (B) offer to perform a supplemental review pursuant to paragraph 3855(d) and provide a non-binding good faith estimate of the costs and time of such review; or
  - (C) obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 study process.

(d) Supplemental review.

- (I) To accept a utility's offer to conduct a supplemental review, the interconnection customer, within 15 business days of the offer, shall agree in writing to the supplemental review and submit a deposit for the estimated costs. If the written agreement and deposit have not been received by the utility within the 15 days, the interconnection request shall continue to be evaluated under the Level 3 process, unless the request is withdrawn by the IC. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.
- (II) Within 30 business days following receipt of the deposit for a supplemental review, the utility will perform a supplemental review of the proposed interconnection resource using the screens set forth below, notify the interconnection customers of the results of the screens in writing, and include with the notification copies of the analysis and data underlying the utility's determinations.

- (III) The interconnection customer may specify the order in which the utility completes the supplemental review screens.
- (IV) The utility shall notify the interconnection customer of the failure of the interconnection resource in any supplement review screen or of the utility's inability to perform any screen for the interconnection resource. Within two business days of the receipt of such notice, the interconnection customer may grant the utility permission:
- (A) to continue evaluating the proposed interconnection under this paragraph 3855(d);
- (B) to continue evaluating the proposed interconnection under this paragraph 3855(d) subject to the utility's determination of minor modifications;
- (C) to terminate the supplemental review and instead to continue evaluating the interconnection resource under the Level 3 Process; or
- (D) to terminate the supplemental review upon withdrawal of the interconnection request by the interconnection customer.
- (V) Minimum load, minimum loading, and minimum load data shall be specific to time(s) that the interconnection resource exports active power to the utility.
- (VI) Supplemental review screens.
- (A) Minimum load screen.
- (i) The interconnection resource capacity on the line section(s) shall be less than 100 percent of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed interconnection resource. Energy storage system(s), proposed and aggregated capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
- (ii) This screen shall be determined using 12 months of line section(s) minimum load data (including onsite load but not station service load served by the proposed interconnection resource), calculated minimum load data, or estimated minimum load data using existing data a power flow model. If minimum load data is not available or the minimum load data cannot be calculated or estimated, the utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under subparagraph 3855(d)(IV).
- (iii) The type of interconnection resource shall be taken into account when calculating or estimating circuit or line section(s) minimum load. The utility shall use daytime minimum load for solar photovoltaic (PV) interconnection resource with no battery storage (i.e., 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing

tracking systems). The utility shall use absolute minimum load for all other types of interconnection resource.

- (iv) Only the net injection into the utility's electric system shall be considered as part of the interconnection resource when this screen is applied to interconnection resource serving some station service load.
- (v) The utility shall not consider as part of the interconnection resource the capacity known to be already reflected in the minimum load data.

(B) Voltage and power quality screen.

- (i) In aggregate with existing interconnection resource on the circuit and line section(s), the voltage regulation on the circuit and line section(s) shall be maintained in compliance with relevant requirements under all system conditions;
- (ii) in aggregate with existing interconnection resource on the circuit and line section(s), the voltage fluctuation shall be within acceptable limits as defined by IEEE Standard 1453 (2015) and conforming with IEEE Standard 1453 (2015), while also taking into account activated inverter functionality, and by the limits defined by IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202; and
- (iii) in aggregate with existing interconnection resource on the circuit and line section(s), the harmonic levels shall meet IEEE Standard 519 (2014) limits. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.

(C) Safety and reliability screen.

- (i) The location of the proposed interconnection resource and the aggregate interconnection resource capacity on the line section(s) shall not create impacts to safety or reliability that cannot be adequately addressed without application of the Level 3 Process.
- (ii) Minimum load, minimum loading and minimum load data shall be specific to time(s) of interconnection resource export capacity.
- (iii) The utility shall consider whether the line section(s) has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).
- (iv) The utility shall consider whether the loading along the line section(s) is uniform or even given the sources of the screening data.

- (v) The utility shall consider whether the proposed interconnection resource is located in close proximity to a substation (i.e., less than 2.5 electrical circuit miles) and whether the line section(s) from the substation to the point of interconnection is a mainline rated for normal and emergency ampacity.
- (vi) The utility shall consider whether the proposed interconnection resource incorporates a time delay function to prevent reconnection of the interconnection resource to the utility's system until system voltage and frequency are within normal limits for a prescribed time.
- (vii) The utility shall consider whether operational flexibility is reduced by the proposed interconnection resource, such that transfer of the line distribution circuit/substation may trigger overloads or voltage issues.
- (viii) The utility shall consider whether the proposed interconnection resource employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, and voltage quality.
- (VII) If the supplemental screening meets utility determined adequacy with minor modifications, the utility shall provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system upon notification of review results.
- (e) Interconnection agreements.

  - (I) If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.
  - (II) If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.
  - (III) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(c)(II)(A), the utility will provide the interconnection customer with an executable interconnection agreement within ten business days of the customer options meeting.
  - (IV) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(d)(VII), the utility will provide the interconnection customer with an executable interconnection agreement within five business days of IC agreement to pay.

**3856. Level 3 Process (Study Process).**

This study process shall be used by an interconnection customer proposing to interconnect its interconnection resource with the utility's system if the interconnection resource does not meet the size limitations for the Level 2 Process, is not certified; or, is certified but did not pass the Level 1 Process or Level 2 Process.

(a) Scoping meeting.

- (I) A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.
- (II) The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection agreement. If the parties agree that a feasibility study should be performed, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
- (III) The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the IC elects not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
- (IV) Feasibility studies, scoping studies, and facility studies may be combined or waived for simpler projects by mutual agreement of the utility and the IC. If all such studies are waived, the utility shall provide the IC an executable interconnection agreement within ten business days after the scoping meeting. If the scoping meeting is also omitted by mutual agreement, the utility shall provide the IC an executable interconnection agreement within ten business days after the interconnection request is deemed complete and this Level 2 Process is completed.
- (V) If feasibility studies, system impact studies, and facility studies are combined, or required to be completed for a single application, a utility shall perform the combined studies within no more than 90 business days of the date upon which the IC authorizes the utility to proceed with the Level 3 Process.
- (VI) Utility must offer a developer the opportunity to pay full fees upfront and proceed straight to the system impact study.

(b) Feasibility study.

- (I) The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the interconnection resource. At its discretion, the utility may use the Level 2 supplemental review as described in paragraph 3855(d) as the feasibility study.
  - (II) A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.
  - (III) The scope of and cost responsibilities for the feasibility study are described in the feasibility study agreement.
  - (IV) If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (V) If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).
  - (VI) If no system impact study is required and no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the feasibility study.
- (c) System impact study.
- (I) Within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth below. A system impact study shall identify and detail the electric system impacts that would result if the proposed interconnection resource were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.
  - (II) If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.
  - (III) In instances where the feasibility study or the distribution system impact study shows potential for adverse impacts on the utility's transmission system, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the transmission-supplied scope of the study and a transmission-supplied non-binding good faith estimate of the cost to perform the study, if such a study is required.

- (IV) If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.
  - (V) If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.
  - (VI) In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.
  - (VII) A deposit of the good faith estimated costs for each system impact study may be required from the IC.
  - (VIII) The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.
  - (IX) Where transmission systems and distribution systems have separate owners, such as is the case with transmission-dependent utilities whether investor-owned or not – the IC may apply to the nearest utility (transmission owner, regional transmission operator, or independent utility) providing transmission service to the transmission-dependent utility to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.
  - (X) If no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the system impact study.
- (d) Facilities study.
- (I) Within 45 business days of executing an appropriate agreement or contract, the utility shall perform a facilities study. Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC along with a facilities study agreement within five business days, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.
  - (II) In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.
  - (III) The facilities study shall include a detailed list of necessary system upgrades and an overall cost estimate, with the detailed list to indicate types of equipment, labor, operation and maintenance and other evaluated item costs, within the estimate for completing such upgrades, and identify which itemized cost estimates are uncertain and could be exceed by 125 percent if actual upgrades are completed.



- (IV) Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement.
- (V) A deposit of the good faith estimated costs for the facilities study may be required from the IC.
- (VI) The scope of and cost responsibilities for the facilities study are described in a facilities study agreement.
- (VII) Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.

### **3857. Certification Codes and Standards.**

Unless one or more of the following standards has been incorporated by reference into these interconnection rules, the Commission encourages the utilities and their interconnection customers, to whom these rules apply, to use the following standards and reference materials for guidance.

ANSI C84.1-2016 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

ANSI/NEMA MG 1--2016, Motors and Generators

IEEE Std C37.90.1-2012, IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std C37.108-2002, IEEE Guide for the Protection of Network Transformers

IEEE Std C57.12.44-2014, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text

IEEE Std C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

IEEE Std 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition

IEEE Std 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std 1453-2015 IEEE Recommended Practice for the Analysis of Fluctuating Installation on Power Systems



IEEE Std 1547-2018, IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEEE Std 1547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

NFPA 70 (2017), National Electrical Code

UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems

UL 1741 SA, until January 1, 2022, at which time new DERs applying for interconnection will comply with IEEE 1547-2018, IEEE Standards for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

**3858. Certification of DER Packages.**

- (a) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in rule 3857; it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- (b) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- (c) Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.
- (d) If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- (e) Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of interconnection shall be required to meet the requirements of this interconnection procedure.

(f) An equipment package does not include equipment provided by the utility.

**3859. Filing of Interconnection Manual.**

No later than 90 calendar days after the effective date of these rules, each utility subject to these rules, except a cooperative electric association that has voted to exempt itself from regulation pursuant to C.R.S. § 40-9.5-103, shall file its Interconnection Manual with the Commission in a miscellaneous proceeding opened by the Commission for that purpose. This filing enables the Commission to ensure the terms and conditions contained in the Interconnection Manual are just, reasonable, and not unduly discriminatory. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. The utility shall update this information within 30 days after any material changes have been made to its manual. Utilities shall establish an internal process of acquiring timely feedback from stakeholders regarding the material changes provided within the Notice. Each time the utility updates the Interconnection Manual, the utility shall make available a redline highlighting the changes.

Each utility, including cooperative electric associations, shall also provide, on its web site, interconnection standards or other technical guidance not included in, but that are consistent with, these procedures.

**3860. – 3874. [Reserved.]**

# COLORADO DEPARTMENT OF REGULATORY AGENCIES

## Public Utilities Commission

### 4 CODE OF COLORADO REGULATIONS (CCR) 723-3

#### PART 3 RULES REGULATING ELECTRIC UTILITIES

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#### RENEWABLE ENERGY STANDARD

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[indicates omission of unaffected rules]

**3665. [Reserved.]**

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[indicates omission of unaffected rules]

**3806. – 3849. [Reserved.]**

#### INTERCONNECTION PROCEDURES AND STANDARDS.

##### **3850. Applicability.**

The following interconnection procedures shall apply to the interconnection of all retail renewable distributed generation and other distributed energy resources including energy storage systems that operate in parallel with and are connected to the utility, when such interconnections are not subject to the jurisdiction of FERC. This rule largely tracks the 2013 FERC amended version of the FERC 2006 Small Generator Interconnection Procedures.

##### **3851. Overview and Purpose.**

Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities,

market participants, and Interconnection Customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

The purpose of these rules is to establish reasonable interconnection procedures and insurance requirements all utilities to adhere to when interconnecting retail renewable distributed generation, and other distributed energy resources that connect to a utility's system that operate in parallel with and are connected to the utility.

### **3852. Definitions.**

The following definitions apply only to rules 3850 to 3859.

- (a) "Business day" means Monday through Friday, excluding federal holidays.
- (b) "Distributed energy resource" or "DER" means the interconnection customer's source of electric power connected to the utility's distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. DER includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE 1547-SA, until January 1, 2022, at which time new DERs applying for interconnection will comply with IEEE 1547 2018. This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (c) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from interconnection resources or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.
- (d) "Energy storage system" means any commercially available, customer-sited system or utility-sited system, including batteries and batteries paired with on-site generation, that does not generate energy, that is capable of retaining, storing, and delivering electrical energy by chemical, thermal, mechanical, or other means.
- (e) "Export capacity" means the amount of alternating current (AC) electrical energy that an interconnection resource is intended to transfer to the utility's system across the point of interconnection.
- (f) "Highly seasonal circuit" means a circuit with a ratio of annual peak load to off-season peak load greater than six.
- (g) "Inadvertent export" means the potential condition in which a normally non-exporting or limited-exporting DER experiences a momentary export that does not exceed limitations specified in paragraph 3853(c).

- (h) “Interconnection agreement” means a contract between the interconnection customers and the utility that formally documents terms and conditions related to the operation and maintenance of any DER in accordance with the utility’s tariffs on file with the Commission.
- (i) “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its DER with the utility’s system.
- (j) “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the DER and the point of interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the DER to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.
- (k) “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing DER that is interconnected with the utility’s system.
- (l) “Interconnection resource” means the interconnection customer’s source of electric power connected to the utility’s distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, bidirectional storage, electric vehicle chargers with vehicle to grid, vehicle to home, vehicle to building or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. “Interconnection resource” includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547-SA, until January 1, 2022, at which time new DERs applying for interconnection will comply with IEEE 1547-2018. This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (m) “Interconnection tariffs” are required filings from the utilities that set forth certain fees associated with interconnection. Tariff filings would accommodate utility-specific costs, while allowing for appropriate statewide standardization in the provisions set forth.
- (n) “Line section” means that portion of the utility’s electric delivery system that is connected to a Customer and bounded by automatic sectionalizing devices or the end of the distribution line.
- (o) “Material modification” means a modification that has a material impact on the cost or timing of processing an application with a later queue priority date or a change in the point of interconnection. A material modification does not include, for example: a change of ownership of an interconnection resource; changes to the address of the generating facility, so long as the generating facility remains on the same parcel; a change or replacement of interconnection resource that is a like-kind substitution in size, ratings, impedances, efficiencies, or capabilities of the equipment specified in the original application; or a reduction in the capacity of the interconnection resource of ten percent or less.

- (p) “Minor modifications” means modifications to the utility’s distribution system or to the interconnection facilities that do not have a material impact on the cost or on the timing of an interconnection request.
- (q) “Non-exporting system” means an interconnection resource that is designed so that it does not intentionally transfer electrical energy to the utility’s distribution or transmission system across the point of common coupling. Such systems may be used to supply part or all of a customer’s load continuously or during an outage. A system can be non-exporting by virtue of inverter programming or by some other on-site limiting element. Non-exporting systems may or may not produce inadvertent exports as defined in paragraph (g) of this rule.
- (r) “Operating mode” means the mode of DER operational characteristics that determines the performance during normal and abnormal conditions. For example, an operating mode such as “export only,” “import only,” and “no exchange.”
- (s) “Parallel operation” means a DER facility that is connected to the utility’s system and can supply AC electricity to the interconnection customer simultaneously with the utility’s supply of AC electricity.
- (t) “Party” or “Parties” means the utility, interconnection customer, or any combination thereof.
- (u) “Point of interconnection” means the point where the interconnection facilities connect with the utility’s system.
- (v) “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.
- (w) “System upgrades” means the additions, modifications, and upgrades to the utility’s distribution or Commission-jurisdictional transmission system at or beyond the point of interconnection to facilitate interconnection of interconnection resources and render the service necessary to effect the interconnection customer’s operation of interconnection resources. System upgrades do not include interconnection facilities.
- (x) “Transmission system” means an interconnected group of transmission lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.
- (y) “Utility system” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.
- (z) “Upgrades” means the additions and modifications to the utility’s system at or beyond the point of interconnection that are necessary to interconnect an interconnection resource. Upgrades do not include interconnection facilities.

**3853. General Interconnection Procedures.**

- (a) Pre-application procedures.

- (I) Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.
- (II) The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's web site.
- (III) In response to an informal pre-application request, the utility shall provide electric system information for specific locations, feeders, or small areas to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.
- (IV) In addition to the information described in subparagraphs 3853(a)(I) and (III), which may be provided in response to an informal request, an interconnection customer may submit a formal written request for a pre-application report on a proposed interconnection at a specific site using a form supplied by the utility, unless such information is confidential and cannot be provided pursuant to a confidentiality agreement. The utility may charge up to a Commission-approved fee for the pre-application report. Upon completion, each pre-application report shall be dated and publicly posted to the utility's website with any customer identifying information redacted.
  - (A) The utility shall provide the pre-application report to the interconnection customer within 20 business days of receipt of the completed request form and payment of the fee.
  - (B) The pre-application report shall be non-binding on the utility and shall not confer any rights to the interconnection customer. The provided information does not guarantee that an interconnection may be completed. Data provided in the pre-application report may become outdated at the time of the submission of the complete interconnection request.
  - (C) The pre-application report need only include existing information. A pre-application report request does not obligate the utility to conduct a study or other analysis of the proposed interconnection resource in the event that data is not readily available.
  - (D) If the utility cannot complete all or some of a pre- application report due to lack of available data, the utility should nonetheless explain what information is not available and why it is not available, and the utility shall provide the interconnection customer with a pre- application report that includes the data that is available.

- (E) The utility shall, in good faith, include data in the pre- application report that represents the best available information at the time of reporting. The pre-application report will include the following information:
- (i) total capacity (in MW) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed point of interconnection;
  - (ii) existing aggregate generation DER capacity (in MW AC) interconnected to a substation/area bus, bank or circuit (i.e., amount of DER online) likely to serve the proposed point of interconnection;
  - (iii) aggregate queued DER capacity (in MW AC) for a substation/area bus, bank or circuit (i.e., amount of DER in the queue) likely to serve the proposed point of interconnection;
  - (iv) available capacity (in MW AC) of substation/area bus or bank and circuit likely to serve the proposed point of interconnection (i.e., total capacity less the sum of existing aggregate DER capacity and aggregate queued DER capacity);
  - (v) substation nominal distribution voltage and/or transmission nominal voltage, if applicable;
  - (vi) nominal distribution or transmission circuit voltage at the proposed point of interconnection whether the proposed DER is eligible for the Level 1, Level 2 or non-export process;
  - (vii) approximate circuit distance between the proposed point of interconnection and the substation;
  - (viii) relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load as described in the supplemental review minimum load screen in subparagraph 3855(d)(VI)(A) and absolute minimum load at the time of DER production, when available;
  - (ix) number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed point of interconnection and the substation/area. Identify whether the substation has a load tap changer;
  - (x) number of phases available at the proposed point of interconnection. If a single phase, distance from the three-phase circuit;
  - (xi) whether the point of interconnection is located on a spot network, grid network, or radial supply; and
  - (xii) existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues,



power quality or stability issues on the circuit, capacity constraints, or secondary networks, based on the proposed point of interconnection.

(b) Capacity of the DER.

- (I) If the interconnection request is for an increase in capacity for an existing DER, the interconnection request shall be evaluated on the basis of the new total capacity of the DER, except as provided below in subparagraph 3853(c)(III).
- (II) If the interconnection request is for a DER that includes multiple components at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple components, except as provided below in subparagraph 3853(c)(III).
- (III) The interconnection request shall be evaluated using the maximum rated capacity of the DER, except as provided below in subparagraph 3853(c)(III). At the utility's discretion in accordance with subparagraph 3853(c)(III), the interconnection request may be evaluated using less than the maximum rated capacity of the DER if the utility determines that the DER is only capable of injecting less power into the utility's system.

(c) Energy storage interconnections.

- (I) Non-exporting energy storage may inadvertently export, so long as the magnitude is less than the energy storage's nameplate rating (kW-gross) and the duration of export of power from the customer's energy storage is less than 30 seconds for any single event. There are no limits to the number of events. Inadvertent export events shall not exceed thermal, service voltage, power quality or network limits defined within Commission rules or interconnection requirements. For good cause shown, the Commission may grant a variance of this section.
- (II) When a storage system is installed in conjunction with a DER facility, both shall be reviewed at the same time and be included in one interconnection agreement.
- (III) Interconnection requests are reviewed based on the combined nameplate ratings of systems accounting for their export capacity, and energy storage operating mode. The ongoing operation capacity portion of the interconnection review is based on the actual simultaneous performance AC ratings, taking into account the operational differences of load offset and export. If the contribution of the energy storage to the total contribution is limited by programming of the maximum active power output, use of a power control system, use of a power relay, or some other mutually agreeable, on-site limiting element, only the capacity that is designed to inject electricity to the utility's distribution or transmission system (other than inadvertent exports and fault contribution) will be used within certain technical screens and evaluations as specified in paragraphs 3855(b) and (d).
- (IV) Failure of hardware or software system(s) intended to limit energy storage export capacity shall cause the energy storage system to enter a safe operating state. An energy storage system combined with a UL 1741 certified power control system shall be considered capable of entering a safe operating state upon failure of hardware or

software system(s). When mutually agreed fail-safe provisions are not provided, at the utility's discretion, the interconnection request may be evaluated using the maximum rated capacity of the energy storage system.

- (V) When a storage system is installed at the same point of interconnection location as an existing interconnected DER facility, the review level will be based upon the incremental addition of the DER rated capacity and the exporting storage system rated capacity as provided in subparagraph 3853(c)(III).
  - (IV) A storage system may be located on the same side of a production meter as a generating facility when a production meter is required by these rules provided that the storage system is either non-exporting at the service meter or is charged exclusively by the generating facility and only the production recorded by the production meter will be eligible for incentives.
- (d) Interconnection requests.
- (I) The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. Additional fees or deposits shall not be required, except as otherwise specified in these procedures. A single request to interconnect may be submitted by the interconnection customer distributed generation paired with energy storage systems and shall be subject to one interconnection agreement.
  - (II) The interconnection request shall be date-stamped and time-stamped upon receipt. The original date-stamped and time-stamp applied to the interconnection request at the time of its original submission shall be the order in which the utility reviews applications to determine completeness.
  - (III) The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by the IC.
  - (IV) The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. The IC may re-submit the application within one year without paying an additional interconnection application fee.
  - (V) An interconnection request will be deemed complete upon submission of the listed information to the utility. The interconnection request shall be date-stamped and time-stamped upon being deemed complete. This date shall be accepted as the qualifying date-stamp and time-stamp for the purposes of any timetable in subsequent procedures.

- (VI) Any modification to interconnection resource data or equipment configuration or to the interconnection site that is a material modification, may be deemed by the utility to be a withdrawal of the interconnection request and may require submission of a new interconnection request. A new interconnection request shall not be required for minor modifications to interconnection resource data or equipment configuration or to the interconnection site. Within ten business days of receipt of a proposed modification, the utility, in consultation with an affected system owner, if applicable, shall evaluate whether a proposed modification constitutes a material modification.
- (A) If the proposed modification is determined to be a material modification, then the utility shall notify the IC in writing that the customer may: withdraw the proposed modification; or proceed with a new interconnection request for such modification. The IC shall provide its determination in writing to the utility within ten business days after the utility provides the material modification determination results. If the IC does not provide its determination, the customer's request shall be deemed withdrawn.
- (B) If the proposed modification is determined not to be a material modification, then the utility shall notify the IC in writing that the modification has been accepted and that the IC shall retain its eligibility for interconnection, including its place in the interconnection queue.
- (C) Any dispute as to the utility's determination that a modification constitutes a material modification shall proceed in accordance with the dispute resolution provisions in these procedures.
- (VII) Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:
- (A) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the interconnection resource;
- (B) an option to purchase or acquire a leasehold site for such purpose which may include a letter of intent; or
- (C) an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.
- (D) For generating facilities utilizing the Level 1 25 kW AC inverter process, proof of site control may be demonstrated by the IC's signature on the interconnection application.
- (VIII) The utility shall place interconnection requests in a first come, first served order per feeder, per substation transformer, and per substation based upon the date an application is complete pursuant to subparagraph 3853(d)(V). The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection

requests may be studied serially or in clusters for the purpose of the system impact study.

- (e) Evaluation of interconnection requests.
  - (I) A request to interconnect an interconnection resource no larger than 25 kW AC, which may be paired with a non-exporting storage system no larger than 25 kW AC, shall be evaluated under the Level 1 Process.
  - (II) If not eligible for Level 1, a request to interconnect an interconnection resource with a combined nameplate rating larger than 25 kW AC shall be evaluated under the Level 2 Process (Fast Track) in accordance with the eligibility requirements in paragraph 3855(a).
  - (III) A request to interconnect an interconnection resource that does not pass the Level 1 or Level 2 Process shall be evaluated under the Level 3 Process.
  - (IV) Non-exporting interconnection resources shall be evaluated under the simplified “non-export” interconnection processes outlined in rule 3859. The “non-export” interconnection process is also applicable to additions of new non-exporting interconnection resources paired with existing interconnection resources when the existing interconnection resources have already executed an interconnection agreement.
- (f) Interconnection agreements.
  - (I) Any interconnection resource operating in parallel with the utility’s system is required to have an interconnection agreement with the utility to ensure safety, system reliability, and operational compatibility. References in these procedures to interconnection agreement are to the utility’s interconnection agreement as provided on its website, which interconnection agreement is subject to Commission approval upon request.
  - (II) Interconnection agreements shall survive transfer of ownership of the interconnection resource to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.
  - (III) After receiving an interconnection agreement from the utility, the IC shall have 30 business days to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. The utility shall provide the IC a fully executed interconnection agreement within two business days after receiving a signed interconnection agreement from the IC. After the parties sign the interconnection agreement, the interconnection of the interconnection resource shall proceed under the provisions of the interconnection agreement.
  - (IV) Once the interconnection resource has been authorized by the utility to commence operation in parallel with the utility system, the interconnection customer shall abide by all rules and procedures pertaining to parallel operation in the utility’s tariffs and in the interconnection agreement.

- (V) The interconnection customer shall be responsible for the utility's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair and replacement of utility upgrades or utility interconnection facilities not required to serve other utility customers. Such upgrades or facilities shall be specified in the interconnection agreement unless otherwise covered by the utility's tariff or excluded by interconnection agreement. Utilities may not refuse to provide an IC with a fixed dollar amount to cover reasonable and necessary utility upgrades or utility interconnection facilities in order to facilitate an interconnection.
- (g) Reasonable efforts. The utility and IC shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility or IC cannot meet a deadline provided herein, it shall notify the IC or the utility if the notifying party is the IC, and explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.
- (h) Disputes.
  - (I) The utility and IC shall agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this subparagraph.
  - (II) In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third party dispute resolution service for assistance in resolving the dispute.
  - (III) The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.
  - (IV) Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs paid to neutral third-parties.
  - (V) If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission, pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1.
- (i) Interconnection metering. Except as otherwise required by other Commission's rules or by the terms of a Commission-approved program offered by the utility, any metering necessitated by the use of the interconnection resource shall be installed at the IC's expense in accordance with Commission requirements or the utility's specifications. For systems below 25 kW AC, additional metering shall not be installed for the purposes of monitoring energy storage systems.
- (j) Commissioning tests. Commissioning tests of the IC's installed interconnection resource shall be performed pursuant to applicable codes and standards, including IEEE 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric

Power Systems” (2205). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202. The utility must be given at least five business days’ written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing Level 2 and Level 3 commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.

- (k) Confidentiality.
- (I) Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.
  - (II) Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.
    - (A) Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.
    - (B) Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.
  - (III) Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.
- (l) Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this rule. The utility shall use the same reasonable and expeditious

efforts in processing and analyzing interconnection requests from all interconnection customers, whether the interconnection resource is owned or operated by the utility, its subsidiaries or affiliates, or others.

- (m) Record retention. The utility shall maintain for three years, records, subject to audit, of all interconnection requests received under these procedures, the times required to complete each step of the interconnection request approvals and disapprovals, enumerated in these rules and justification for the actions taken on the interconnection requests.
- (n) Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in this rule. The utility will include such affected system operators in all meetings held with the IC as required by this rule. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems and shall provide to the IC any analysis and data underlying the affected system utility's determinations.
- (o) Insurance. A Utility may only require an applicant (i.e., an interconnection customer) to purchase insurance covering Utility damages, and then only in amounts stated below. An interconnection customer, at its own expense, shall secure and maintain in effect during the term of the interconnection agreement, insurance coverage in the following amounts:

- (I) For non-inverter-based Generating Facilities:

Nameplate Rating > 5 MW \$3,000,000 for each occurrence

2 MW < Nameplate Rating < 5 MW \$2,000,000 for each occurrence

500 kW < Nameplate Rating < 2 MW \$1,000,000 for each occurrence

50 kW < Nameplate Rating < 500 kW \$500,000 for each occurrence

Nameplate Rating < 50 kW - no additional insurance

- (II) For inverter-based Generating Facilities:

Nameplate Rating > 5 MW \$2,000,000 for each occurrence

1 MW < Nameplate Rating > 5 MW \$1,000,000 for each occurrence

Nameplate Rating < 1 MW no insurance

- (III) Colorado governmental entities that self-insure against liability in amounts above those required in paragraph (o) for interconnection resources up to 2 MW or to the replacement value of the interconnection resource for those interconnection resource above 2 MW, shall not be required to purchase additional insurance or to add the utility as an additional

insured to any policy, nor shall they be obligated to indemnify the utility, though they shall be liable for any negligent or intentional act or omission of the municipality, its employees, contractors, subcontractors, or agents.

- (IV) Certificates of Insurance evidencing the requisite coverage and provision(s) when required shall be furnished to utility prior to the date of interconnection of the interconnection resource. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the interconnection customer in order to verify proper liability insurance coverage. Customers will not be allowed to commence or continue interconnected operations unless they provide to the utility evidence that satisfactory insurance coverage is in effect at all times.
- (p) Implementation by tariff.
- (I) Each utility shall have on file with the Commission an interconnection tariff that sets forth certain fees, deadlines and interconnection procedures. A utility's interconnection tariff shall comply with these Interconnection Rules, but when appropriate may include shorter deadlines for certain procedures.
  - (II) The interconnection tariff shall be filed along with an advice letter. Tariffs filed by cooperative electric associations shall be informational only. Tariffs filed by investor-owned electric utilities may be set for hearing and suspended in accordance with the Commission Rules of Practice and Procedure and applicable statutes.
  - (III) The tariff shall include the following provisions:
    - (A) timelines: paragraphs 3853(a),(d),(f), 3854(a), 3855(b),(c),(d), 3856(a),(b),(c),(d)
    - (B) any fees: including but not limited to those referenced at paragraphs 3853(a),(d),(f),(j), 3854(a) and (b), and 3856(a);
      - (i) The utility shall demonstrate that any fee established in tariff is cost-based.
    - (C) material modification withdrawals: paragraph 3853(d); and
    - (D) maximum rated capacity: paragraph 3853(b), and (c)
- (q) Reporting.
- (I) Each utility shall submit an interconnection report to the Commission two times per year and shall make it available to the public on its website. A cooperative electric association that has voted to exempt itself from regulation pursuant to C.R.S. § 40-9.5-103 shall submit an interconnection report to the Commission once per year. The first interconnection report shall be due 180 days after the effective date of these interconnection rules. Upon a filing by a party with proper standing showing good cause, and when necessary and appropriate, the Commission may by order increase the frequency of such reporting on a temporary basis. The report shall contain relevant totals for both the year and the most recent reporting period, including the following information listed in subparagraphs (q)(II) and (III) of this rule. The report shall also contain the total



number of missed deadlines contained in these rules in the reporting period as well as copies of any notices of delay or missed deadlines issued by the utility to an interconnection customer pursuant to paragraph 3853(g).

- (II) Pre-application reports:
  - (A) total number of reports requested;
  - (B) total number of reports in process;
  - (C) total number of reports issued;
  - (D) total number of requests withdrawn;
  - (E) maximum, mean, and median processing times from receipt of request to issuance of report; and
  - (F) number of reports processed in more than the 20 business days allowed in subparagraph 3853(a)(IV)(A).
  
- (III) Interconnection applications:
  - (A) total number received, broken down by:
    - (i) primary fuel type (e.g., solar, wind, bio-gas, etc.); and
    - (ii) system size (e.g., <25 kW, <1 MW, <5MW, >5MW).
  - (B) Level 1 review process.
    - (i) total number of applications processed; and
    - (ii) maximum, mean, and median processing times from receipt of complete application to provision of a counter-signed interconnection agreement.
  - (C) Level 2 review process.
    - (i) total number of applications that passed the screens in paragraph 3855(b);
    - (ii) total number of applications that failed the screens in paragraph 3855(b); and
    - (iii) maximum, mean, and median processing times from receipt of complete application to issuance of an interconnection agreement.
  - (D) Supplemental review.

- (i) total number of applications that passed the screens in paragraph 3855(d);
  - (ii) total number of applications that failed the screens in paragraph 3855(d); and
  - (iii) maximum, mean, and median processing times from receipt of complete application to issuance of interconnection agreement.
- (E) Level 3 review process:
- (i) system impact studies
  - (ii) total number of system impact studies completed under paragraph 3856(c); and
  - (iii) maximum, mean, and median processing times from receipt of a signed interconnection system impact study agreement to provision of study results.

**3854. Level 1 Process (25 kW Inverter Process).**

This rule establishes the procedures for evaluating an interconnection request for a certified inverter-based interconnection resource no larger than 25 kW AC which may be paired with a non-exporting energy storage system no larger than 25 kW AC. The application process uses an all-in-one document (application) that includes a simplified interconnection request, simplified procedures, and a brief set of terms and conditions.

- (a) General Level 1 procedures.
- (I) The IC completes application and submits it to the utility.
  - (II) The utility acknowledges to the customer receipt of the application within three business days of receipt.
  - (III) The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.
  - (IV) Within ten business days, the utility shall verify whether the interconnection resource can be interconnected safely and reliability using the same screens as applied in Level 2 Process as set forth in rule 3855 except for screens (V), (VI), (X) and (XI) which will not be deemed necessary for the Level 1 Process (25 kW AC Inverter Process). If the interconnection fails these screens, the utility shall generally consider this a failure of the Level 2 Process screens in rule 3855. The utility shall continue the interconnection review under the Level 2 Process, starting at paragraph 3855(c), provided that the IC pays the difference in the Level 2 Process application fee and deposit requirements. The utility may also review the application within the ten business day period to evaluate issues associated with highly seasonal circuits. However, if the proposed interconnection

fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.

- (V) Provided all the criteria of this rule 3854 are met, unless the utility determines and demonstrates that the interconnection resource cannot be interconnected safely and reliably and requires upgrades, the utility approves and executes the application and returns it to the customer within ten business days.
  - (VI) After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the interconnection resource for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary. The utilities should define “witness test” in their interconnection tariff.
  - (VII) The utility shall notify the customer that parallel operation of the interconnection resource is authorized within ten business days of the certificate of completion. If the witness test is not satisfactory, the utility has the right to disconnect the interconnection resource. The customer has no right to operate in parallel until a witness test has been performed, or previously waived on the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.
- (b) Level 1 application.
- (I) The customer must provide in the application the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.
  - (II) The application is considered complete when it provides all applicable and correct information as required below. Additional information to evaluate the application may be required.
  - (III) The application shall include the following information, as applicable:
    - (A) Processing fee. A fee of \_\_\_\_\_ must accompany this application.
    - (B) Interconnection customer:
      - Name
      - Contact Person
      - Address
      - City State Zip
      - Telephone (Day) and (Evening)
      - Fax Number and E-Mail Address
    - (C) Engineering firm or Installer (If applicable):
      - Contact Person
      - Address
      - City State Zip

Telephone  
Fax and E-Mail Address

- (D) Contact (if different from Interconnection Customer):  
Name  
Address  
City State Zip  
Telephone (Day) and (Evening)  
Fax Number and E-Mail Address  
Owner of the facility (include percent ownership by any electric utility)
- (E) DER information:  
Location (if different from above)  
Utility  
Account number  
DER components  
Inverter manufacturer: \_\_\_\_\_ Model  
Nameplate rating: (kW AC) (kVA) (AC Volts)  
Single phase \_\_\_\_\_ Three phase \_\_\_\_\_  
System design capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)  
Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other  
Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)  
Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_  
If yes, attach manufacturer's cut-sheet showing UL1741 listing  
Estimated installation date: \_\_\_\_\_ Estimated in-service date:

The 25 kW AC inverter process is available only for inverter-based interconnection resources no larger than 25 kW AC that meet the codes, standards, and certification requirements of specified in certain of these interconnection rules, or the utility has reviewed the design or tested the proposed interconnection resources and is satisfied that it is safe to operate.

- (F) List components of the small generating facility equipment package that are currently certified:  
Equipment type certifying entity:  
1.  
2.  
3.  
4.  
5.
- (G) Limited-Export / Non-Export / Limited-Import Data:  
If multiple export control systems are used, provide for each control system and use additional sheets if needed.  
Is export controlled to less than the Total Aggregate Nameplate Rating? Yes: No:  
Method of export limitation: Power Control System / Reverse Power Protection / Minimum Power Protection / Other (describe):  
Export controls are applied to how many generators? Multiple: One:  
If Power Control System is used, open loop response time(s): \_\_\_\_\_  
Power Control System export capacity: (kW AC) (kVA)

Energy Storage System Power Control System operating mode:  
Unrestricted: Export Only: Import Only: No Exchange:  
Describe which Generators the export control system controls:

(H) Interconnection customer signature and certification:

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based interconnection resource No Larger than 25kW and return the Certificate of Completion when the interconnection resource has been installed.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Contingent approval to interconnect the small generating facility.

(For company use only)

Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than 25 kW and return of the certificate of completion.

Company signature: \_\_\_\_\_

Title: Date: \_\_\_\_\_

Application ID number: \_\_\_\_\_

Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_

(c) Level 1 terms and conditions.

(I) Construction of the facility. The interconnection customer may proceed to construct the interconnection resource when the utility approves the interconnection request (the application) and returns it to the IC.

(II) Interconnection and operation. The IC may operate the interconnection resource and interconnect with the utility's electric system once all of the following have occurred:

(A) upon completing construction, the interconnection customer will cause the interconnection resource to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;

(B) the customer returns the certificate of completion to the utility; and

- (C) the utility has completed its inspection of the interconnection resource. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the interconnection resource has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.
  - (D) The utility has the right to disconnect the interconnection resource in the event of improper installation or failure to return the certificate of completion.
- (III) Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the interconnection resource as required to ensure that it complies at all times with the interconnection standards to which it has been certified.
- (IV) Access. The utility shall have access to the disconnect switch and metering equipment of the interconnection resource at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.
- (V) Disconnection. The utility may temporarily disconnect the interconnection resource as allowed in the interconnection agreement and upon the following conditions:
- (A) for scheduled outages per notice requirements in the utility's tariff or Commission rules;
  - (B) for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or
  - (C) if the interconnection resource does not operate in the manner consistent with these terms and conditions.
  - (D) The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.
- (VI) Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.
- (VII) The interconnection customer is not required to provide general liability insurance coverage as part of this agreement, or through any other utility requirement.

- (VIII) Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of the interconnection agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (c)(VI) of this rule.
- (IX) Termination. The interconnection agreement to operate in parallel may be terminated under the following conditions.
  - (A) By the customer by providing written notice to the utility.
  - (B) By the utility if the interconnection resource fails to operate for any consecutive 12-month period or the customer fails to remedy a violation of these terms and conditions.
  - (C) Permanent disconnection. In the event the interconnection agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its interconnection resource.
  - (D) Survival rights. The interconnection agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.
- (X) Assignment/Transfer of ownership of the facility. The interconnection agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.

**3855. Level 2 Process (Fast Track).**

This fast track process is available to an IC proposing to interconnect its interconnection resource with the utility's system if the interconnection resource meets the eligibility provisions in this rule 3855.

- (a) Eligibility.
  - (I) Eligibility for the Level 2 Process is determined based upon the type and size of the interconnection resource as well as the voltage of the utility line and the location of and the type of utility line at the point of interconnection. An interconnection customer may determine whether the interconnection resource is eligible for the Level 2 Process by requesting a pre-application report pursuant to subparagraph 3853(a)(IV).
  - (II) For certified inverter-based systems, the size limit of the interconnection resource varies according to the voltage of the utility line at the proposed point of interconnection. Certified inverter-based interconnection resource facilities located within 2.5 electrical circuit miles of a substation and on a mainline are eligible for the Level 2 Process under the higher thresholds pursuant to this rule 3856. The utilities should define "mainline" in their interconnection tariff.

<b>Level 2 Process Eligibility for Inverter-Based Systems</b>		
<b>Line Voltage</b>	<b>Eligibility Regardless of Location</b>	<b>Eligibility Meeting Location Requirements (Mainline and Substation)</b>
< 5 kV	≤ 500 kW	≤ 500 kW
≥ 5 kV and < 15 kV	≤ 2 MW	≤ 3 MW
≥ 15 kV and < 30 kV	≤ 3 MW	≤ 4 MW
≥ 30 kV and < 69 kV	≤ 4 MW	≤ 5 MW

- (III) All synchronous and induction facilities must be no larger than 2 MW AC to be eligible for the Level 2 Process, regardless of location.
  - (IV) In addition to the size threshold, the interconnection resource must meet the codes, standards, and certification requirements specified in certain of these interconnection rules.
  - (V) Subject to approval via the tariff amendment process, a utility may utilize tools that perform screening functions using different methodology from that set out in paragraph 3855(d) as long as the analysis is aimed at preventing the same voltage, thermal and protection limitations specified under rule 3855 and otherwise complies with these rules.
- (b) Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the following:
- (I) The proposed interconnection resource's point of interconnection must be on a portion of the utility's distribution system that is subject to the utility's tariffs. Proposed



interconnection resources on highly seasonal circuits shall also be subject to the supplemental review pursuant to paragraph 3855(d).

- (II) For interconnection of a proposed interconnection resources to a radial distribution circuit, the aggregated generation, including the proposed interconnection resources, on the line section(s) shall not exceed 15 percent of the line section's annual peak load as most recently measured at the substation or calculated for the line section(s). A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device. Energy storage system(s) capacity for purposes of this screen shall be based on subparagraph 3853(c)(III).
- (III) The proposed interconnection resource, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit's maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.
- (IV) The proposed interconnection resource, in aggregate with other interconnection resource on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or interconnection customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.
- (V) The proposed interconnection resource shall meet the rapid voltage change and flicker requirements of IEEE Standard 1453 (2015) and IEEE Standard 1547-SA, until January 1, 2022, at which time new DERs applying for interconnection will comply with IEEE 1547- 2018 based on the appropriate test. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (VI) The type of interconnection to a primary distribution line shall be determined based on the table below, including a review of the type of electrical service provided to the interconnection customer, line configuration, and the transformer connection to limit the potential for creating over-voltages on the utility's electric power system due to a loss of ground during the operating time of any anti-islanding function.

Primary Distribution Line Type	Type of Interconnection to Primary Distribution Line	Result/Criteria
Three-phase, three wire	3-phase or single phase, phase-to-phase	Pass screen
Three-phase, four wire	Effectively-grounded 3 phase or Single-phase, line-to-neutral	Pass screen

- (VII) If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 25 kW. Energy storage system(s) capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
- (VIII) If the proposed interconnection resource is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.
- (IX) No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.
- (X) For interconnection of a proposed interconnection resource to the load side of spot network protectors serving more than a single customer, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the interconnection resource must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.
- (XI) For interconnection of a proposed interconnection resource to the load side of area network protectors, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW AC.
- (XII) The nameplate capacity of a proposed interconnection resource, in combination with the nameplate capacity of any previously interconnected interconnection resource, shall not exceed the capacity of the customer's existing electrical service unless there is a simultaneous request for an upgrade to the customer's electrical service, regardless of exporting or non-exporting designations for any of the interconnection resources.

- (c) Customer options meeting.
  - (I) If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review whether the interconnection resource may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting. The utility shall provide to the IC in writing with a detailed information on the reasons(s) for failure.
  - (II) If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; without a supplemental study or other additional studies or actions; or without significant costs to address safety, reliability, or power quality problems, the utility shall notify the IC within the five business day period after the determination and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:
    - (A) offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;
    - (B) offer to perform a supplemental review pursuant to paragraph 3855(d) and provide a non-binding good faith estimate of the costs and time of such review; or
    - (C) obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 study process.
- (d) Supplemental review.
  - (I) To accept a utility's offer to conduct a supplemental review, the interconnection customer, within 15 business days of the offer, shall agree in writing to the supplemental review and submit a deposit for the estimated costs. If the written agreement and deposit have not been received by the utility within the 15 days, the interconnection request shall continue to be evaluated under the Level 3 Process, unless the request is withdrawn by the IC. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.
  - (II) Within 30 business days following receipt of the deposit for a supplemental review, the utility will perform a supplemental review of the proposed interconnection resource using the screens set forth below, notify the interconnection customers of the results of the screens in writing, and include with the notification copies of the analysis and data underlying the utility's determinations.

- (III) The interconnection customer may specify the order in which the utility completes the supplemental review screens.
- (IV) The utility shall notify the interconnection customer of the failure of the interconnection resource in any supplement review screen or of the utility's inability to perform any screen for the interconnection resource. Within two business days of the receipt of such notice, the interconnection customer may grant the utility permission:
  - (A) to continue evaluating the proposed interconnection under this paragraph 3855(d);
  - (B) to continue evaluating the proposed interconnection under this paragraph 3855(d) subject to the utility's determination of minor modifications;
  - (C) to terminate the supplemental review and instead to continue evaluating the interconnection resource under the Level 3 Process; or
  - (D) to terminate the supplemental review upon withdrawal of the interconnection request by the interconnection customer.
- (V) Minimum load, minimum loading, and minimum load data shall be specific to time(s) that the interconnection resource exports active power to the utility.
- (VI) Supplemental review screens.
  - (A) Minimum load screen.
    - (i) The interconnection resource capacity on the line section(s) shall be less than 100 percent of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed interconnection resource. Energy storage system(s), proposed and aggregated capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
    - (ii) This screen shall be determined using 12 months of line section(s) minimum load data (including onsite load but not station service load served by the proposed interconnection resource), calculated minimum load data, or estimated minimum load data using existing data a power flow model. If minimum load data is not available or the minimum load data cannot be calculated or estimated, the utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under subparagraph 3855(d)(IV).
    - (iii) The type of interconnection resource shall be taken into account when calculating or estimating circuit or line section(s) minimum load. The utility shall use daytime minimum load for solar photovoltaic (PV) interconnection resource with no battery storage (i.e., 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing

tracking systems). The utility shall use absolute minimum load for all other types of interconnection resource.

- (iv) Only the net injection into the utility's electric system shall be considered as part of the interconnection resource when this screen is applied to interconnection resource serving some station service load.
- (v) The utility shall not consider as part of the interconnection resource the capacity known to be already reflected in the minimum load data.

(B) Voltage and power quality screen.

- (i) In aggregate with existing interconnection resource on the circuit and line section(s), the voltage regulation on the circuit and line section(s) shall be maintained in compliance with relevant requirements under all system conditions;
- (ii) in aggregate with existing interconnection resource on the circuit and line section(s), the voltage fluctuation shall be within acceptable limits as defined by IEEE Standard 1453 (2015) and conforming with IEEE Standard 1453 (2015), while also taking into account activated inverter functionality, and by the limits defined by IEEE Standard 1547 (2018). This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202; and
- (iii) in aggregate with existing interconnection resource on the circuit and line section(s), the harmonic levels shall meet IEEE Standard 519 (2014) limits. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.

(C) Safety and reliability screen.

- (i) The location of the proposed interconnection resource and the aggregate interconnection resource capacity on the line section(s) shall not create impacts to safety or reliability that cannot be adequately addressed without application of the Level 3 Process.
- (ii) Minimum load, minimum loading and minimum load data shall be specific to time(s) of interconnection resource export capacity.
- (iii) The utility shall consider whether the line section(s) has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).
- (iv) The utility shall consider whether the loading along the line section(s) is uniform or even given the sources of the screening data.

- (v) The utility shall consider whether the proposed interconnection resource is located in close proximity to a substation (i.e., less than 2.5 electrical circuit miles) and whether the line section(s) from the substation to the point of interconnection is a mainline rated for normal and emergency ampacity.
  - (vi) The utility shall consider whether the proposed interconnection resource incorporates a time delay function to prevent reconnection of the interconnection resource to the utility's system until system voltage and frequency are within normal limits for a prescribed time.
  - (vii) The utility shall consider whether operational flexibility is reduced by the proposed interconnection resource, such that transfer of the line distribution circuit/substation may trigger overloads or voltage issues.
  - (viii) The utility shall consider whether the proposed interconnection resource employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, and voltage quality.
- (VII) If the supplemental screening meets utility determined adequacy with minor modifications, the utility shall provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system upon notification of review results.
- (e) Interconnection agreements.
- (I) If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.
  - (II) If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.
  - (III) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(c)(II)(A), the utility will provide the interconnection customer with an executable interconnection agreement within ten business days of the customer options meeting.
  - (IV) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(d)(VII), the utility will provide the interconnection customer with an executable interconnection agreement within five business days of IC agreement to pay.

**3856. Level 3 Process (Study Process).**

This study process shall be used by an interconnection customer proposing to interconnect its interconnection resource with the utility's system if the interconnection resource does not meet the size limitations for the Level 2 Process, is not certified; or, is certified but did not pass the Level 1 Process or Level 2 Process.

- (a) Scoping meeting.
  - (I) A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.
  - (II) The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection agreement. If the parties agree that a feasibility study should be performed, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (III) The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the IC elects not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (IV) Feasibility studies, scoping studies, and facility studies may be combined or waived for simpler projects by mutual agreement of the utility and the IC. If all such studies are waived, the utility shall provide the IC an executable interconnection agreement within ten business days after the scoping meeting. If the scoping meeting is also omitted by mutual agreement, the utility shall provide the IC an executable interconnection agreement within ten business days after the interconnection request is deemed complete and this Level 2 Process is completed.
  - (V) If feasibility studies, system impact studies, and facility studies are combined, or required to be completed for a single application, a utility shall perform the combined studies within no more than 90 business days of the date upon which the IC authorizes the utility to proceed with the Level 3 Process.
  - (VI) Utility must offer a developer the opportunity to pay full fees upfront and proceed straight to the system impact study.
- (b) Feasibility study.

- (I) The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the interconnection resource. At its discretion, the utility may use the Level 2 supplemental review as described in paragraph 3855(d) as the feasibility study.
  - (II) A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.
  - (III) The scope of and cost responsibilities for the feasibility study are described in the feasibility study agreement.
  - (IV) If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (V) If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).
  - (VI) If no system impact study is required and no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the feasibility study.
- (c) System impact study.
- (I) Within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth below. A system impact study shall identify and detail the electric system impacts that would result if the proposed interconnection resource were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.
  - (II) If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.
  - (III) In instances where the feasibility study or the distribution system impact study shows potential for adverse impacts on the utility's transmission system, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the transmission-supplied scope of the study and a transmission-supplied non-binding good faith estimate of the cost to perform the study, if such a study is required.



- (IV) If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.
  - (V) If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.
  - (VI) In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.
  - (VII) A deposit of the good faith estimated costs for each system impact study may be required from the IC.
  - (VIII) The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.
  - (IX) Where transmission systems and distribution systems have separate owners, such as is the case with transmission-dependent utilities whether investor-owned or not – the IC may apply to the nearest utility (transmission owner, regional transmission operator, or independent utility) providing transmission service to the transmission-dependent utility to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.
  - (X) If no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the system impact study.
- (d) Facilities study.
- (I) Within 45 business days of executing an appropriate agreement or contract, the utility shall perform a facilities study. Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC along with a facilities study agreement within five business days, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.
  - (II) In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.
  - (III) The facilities study shall include a detailed list of necessary system upgrades and an overall cost estimate, with the detailed list to indicate types of equipment, labor, operation and maintenance and other evaluated item costs, within the estimate for completing such upgrades, and identify which itemized cost estimates are uncertain and could be exceed by 125 percent if actual upgrades are completed.

- (IV) Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement.
- (V) A deposit of the good faith estimated costs for the facilities study may be required from the IC.
- (VI) The scope of and cost responsibilities for the facilities study are described in a facilities study agreement.
- (VII) Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.

**3857. Certification Codes and Standards.**

Unless one or more of the following standards has been incorporated by reference into these interconnection rules, the Commission encourages the utilities and their interconnection customers, to whom these rules apply, to use the following standards and reference materials for guidance.

ANSI C84.1-2016 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

ANSI/NEMA MG 1--2016, Motors and Generators

IEEE Std C37.90.1-2012, IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std C37.108-2002, IEEE Guide for the Protection of Network Transformers

IEEE Std C57.12.44-2014, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text

IEEE Std C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

IEEE Std 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition

IEEE Std 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std 1453-2015 IEEE Recommended Practice for the Analysis of Fluctuating Installation on Power Systems

IEEE Std 1547-2018, IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEEE Std 1547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

NFPA 70 (2017), National Electrical Code

UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems

UL 1741 SA, until January 1, 2022, at which time new DERs applying for interconnection will comply with IEEE 1547-2018, IEEE Standards for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

**3858. Certification of DER Packages.**

- (a) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in rule 3857; it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- (b) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- (c) Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.
- (d) If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- (e) Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of interconnection shall be required to meet the requirements of this interconnection procedure.

(f) An equipment package does not include equipment provided by the utility.

**3859. Filing of Interconnection Manual.**

No later than 90 calendar days after the effective date of these rules, each utility subject to these rules, except a cooperative electric association that has voted to exempt itself from regulation pursuant to C.R.S. § 40-9.5-103, shall file its Interconnection Manual with the Commission in a miscellaneous proceeding opened by the Commission for that purpose. This filing enables the Commission to ensure the terms and conditions contained in the Interconnection Manual are just, reasonable, and not unduly discriminatory. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. The utility shall update this information within 30 days after any material changes have been made to its manual. Utilities shall establish an internal process of acquiring timely feedback from stakeholders regarding the material changes provided within the Notice. Each time the utility updates the Interconnection Manual, the utility shall make available a redline highlighting the changes.

Each utility, including cooperative electric associations, shall also provide, on its web site, interconnection standards or other technical guidance not included in, but that are consistent with, these procedures.

**3860. – 3874. [Reserved.]**

**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF COLORADO**

PROCEEDING NO. 19R-0654E

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IN THE MATTER OF THE PROPOSED AMENDMENTS TO RULES REGULATING  
ELECTRIC UTILITIES, 4 CODE OF COLORADO REGULATIONS 723-3, RELATING  
TO INTERCONNECTION PROCEDURES AND STANDARDS.

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**DECISION GRANTING, IN PART, AND DENYING,  
IN PART, APPLICATIONS FOR REHEARING,  
REARGUMENT, OR RECONSIDERATION**

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Mailed Date: May 17, 2021  
Adopted Date: May 12, 2021

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**I. BY THE COMMISSION****A. Statement**

1. Through this Decision, the Commission addresses two Applications for Rehearing, Reargument, or Reconsideration (RRR) of Decision No. C21-0183. Both Applications were filed on April 19, 2021 — the first by Public Service Company of Colorado (Public Service or Company), and the second (jointly) by the Colorado Solar and Storage Association and the Solar Energy Industry Association (COSSA/SEIA).

2. The RRRs request the Commission reconsider or clarify certain aspects of Decision No. C21-0183, issued in this rulemaking proceeding on March 30, 2021. That Decision addressed exceptions filed by several rulemaking participants to Recommended Decision No. R20-0773, which was issued by Administrative Law Judge (ALJ) Steve Denman in this rulemaking on November 5, 2020. By Decision No. C21-0183, the Commission granted, in part, and denied, in part, the exceptions to the ALJ's recommended decision and adopted revised rules governing Interconnection Rules and Procedure (Interconnection Rules). The adopted revised Interconnection Rules will be located within the Commission's Rules Regulating Electric Utilities, 4 *Code of Colorado Regulations* (CCR) 723-3, at 4 CCR 723-3-3875 *et seq.*

3. By this Decision, the Commission grants, in part, and denies, in part, the RRRs filed by Public Service and COSSA/SEIA. The final adopted Interconnection Rules are attached to this Decision in legislative format (*i.e.*, ~~strikeout~~/underline) as Attachment A, and in final format as Attachment B.

**B. Applications for RRR****1. Public Service****a. Rule 3855(a)(V)**

4. In its RRR, Public Service requests the Commission reconsider the modified language contained within Rule 3855(a)(V) that requires a tariff amendment process for utility tools used to perform screening functions. Public Service states that Decision No. C21-0183 addresses the Exceptions filed concerning Rule 3855(a), however, the Company states there is no discussion within the decision that addresses the newly-modified language of Rule 3855(a)(V). The Company explains that common utility tools include, but are not limited to, load flow software, fault analysis software, and the use of software performing standard and verified engineering calculations. The Company emphasizes that where such tools can be used in effective and efficient safety and reliability screening, they should not be unduly burdened by requiring approval via the tariff amendment process.

5. Public Service argues that the modified language contradicts the spirit and intent of the Commission's finding concerning Rule 3859 where the Commission agreed with Public Service and recommended changes to 3855(a)(V). As Public Service notes in its RRR, Decision C21-0183 states that:

We agree with the utilities that Advice Letters and Tariffs are litigation-prone, and that it would be challenging to transfer contents of an Interconnection Manual into a tariff sheet. The utilities also point out that frequent litigation may be the result demonstrating regulatory inefficiencies in implementing any critical updates that may impact the safety and reliability of the Company's distribution system.<sup>1</sup>

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<sup>1</sup> Public Service's RRR at p. 3. (footnote omitted)

6. The Commission grants Public Service's RRR on this issue. We agree that by subjecting utility tools to the tariff amendment process, the Commission would unduly burden the utilities. We agree that material modifications to utility tools and Interconnection Manuals will be treated in the same manner as its Informational Notice finding within Rule 3959.

**b. Miscellaneous Edits and Clarifications**

7. Public Service suggested various grammatical changes and non-substantive edits to improve readability or accuracy of the Interconnection Rules. The Commission appreciates these suggestions, and the Interconnection Rules that we adopt today will reflect these changes and edits.

**2. Public Service and COSSA/SEIA**

**a. Rules 3852(b), 3852(l), 3855(b)(V), and 3857 (IEEE 1547-2018 Standard)**

8. In its RRR, both Public Service and COSSA/SEIA state they have recently learned through Underwriters Laboratories (UL), that there will be a delay in the inverter certification IEEE 1547-2018 standard. UL presented to parties at California's Smart Inverter Working Group on April 15, 2021, that UL identified numerous omissions, errors, and conflicts that can negatively impact interpretations and resulting Nationally Recognized Testing Laboratory (NRTL) certifications testing to IEEE 1547-2018 and IEEE 1547.1-2020. As a result, a new UL 1741-SB task group has been created to resolve open issues, which will be followed by a ballot to approve, with a best case scenario that by September there will be a standard method to certify IEEE 1547-2018 inverters by an NRTL.

9. Both Public Service and COSSA/SEIA note that several Adopted Rules, including Rules 3852(b), 3852(l), 3855(b)(V), and 3857 include provisions that state that after January 1,



2022, DERs must comply with IEEE 1547 (2018) and/or UL 1741-SA. Public Service notes that Hawaiian Electric Company is requesting that regulators extend this deadline to April 2022 in lieu of January 2022, which is currently the deadline established in this rulemaking.

10. In its RRR filing, COSSA/SEIA urges the Commission to clarify that implementation of certain codes and standards would ensure that there are sufficient products certified and available on the market when implementation begins. COSSA/SEIA note that in Public Service's response to exceptions, the Company agreed with COSSA/SEIA that "advanced inverter functionality should not be turned on within inverters until such advanced functions are tested and certified as compliant to IEEE 1547-2018."<sup>2</sup>

11. The Commission grants the RRR of both Public Service and COSSA/SEIA that facilitate flexibility and apply to the following Interconnection Rules: Rule 3852(b); Rule 3852(l); Rule 3855(b)(V); and Rule 3857. We agree with Public Service and COSSA/SEIA regarding the need for flexibility in implementing codes and standards requirements that are actually achievable from a commercial perspective. We agree that given the uncertainty concerning the certification timeline, flexibility should be placed within the Interconnection Rules to avoid any unnecessary variances to this effect.

### **3. COSSA/SEIA**

#### **a. Rule 3853(i)**

12. COSSA/SEIA raise a new issue on RRR to resolve what they believe is a previously unnoticed ambiguity in Adopted Rule 3853(i). Adopted Rule 3853(i) sets the threshold for monitoring energy storage systems at 25kW, but COSSA/SEIA argues this seems to

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<sup>2</sup> COSSA/SEIA's RRR at p. 10.

imply that the 25kW threshold is tied to the total system size of the interconnection resource rather than the size of the energy storage system itself. The Adopted Rule states, “[f]or *systems* below 25 kW AC, additional metering shall not be installed for the purposes of monitoring energy storage systems” (emphasis added).

13. COSSA/SEIA suggest a revision that in their view better complies with Colorado law and is consistent with the newly adopted Level 1 process thresholds for solar + storage (S+S) interconnections, which allow 25 kW of generation to be paired with up to 25 kW of energy storage.

14. We agree with COSSA/SEIA, who point out that § 40-2-130(3)(d), C.R.S., requires the Commission to set a threshold, which limits additional metering requirements for monitoring energy storage only to “large *energy storage* systems” – not large “systems.” COSSA/SEIA points out that under Adopted Rule 3853(i) a customer with a 25 kW solar system and 1 kW energy storage system could still be subject to additional metering because the overall “system” size would be 26 kW on a nameplate basis. The Commission’s intent is to avoid additional metering requirements for small Level 1 eligible interconnection resources, and therefore we set the 25 kW threshold based on the size of the energy storage system.

**b. Rule 3853(q)**

15. In their RRR, COSSA/SEIA recommend changes to Rule 3853(q)(III)(E), regarding more reporting requirements for the entire Level 3 review process (beyond the system impact study). COSSA/SEIA argue that given the Commission’s interest in investigating delays in Public Service’s Level 3 process and given that the Level 3 process is the primary process used for Community Solar Gardens (CSGs), COSSA/SEIA ask the Commission to reconsider adopting reporting requirements that would cover the entire Level 3 process. COSSA/ SEIA state

that as written, the Adopted Rules only require utilities to report on system impact studies, which are only one of three potential studies in the Level 3 process.

16. We deny COSSA/SEIA's request for reporting requirements for the Level 3 process. We acknowledge that CSG developers typically use the Level 3 interconnection process and did so for the projects at issue in Proceeding No. 20D-0262E. However, the RRR filing has not provided new information or persuasive arguments that convince us to reverse our previous decision. We note that Proceeding No. 20D-0262E demonstrated that there are certain issues with Level 3 interconnections under the currently-effective Rules. However, more transparency and accountability are needed for the Commission's long-term understanding of Level 3 interconnections and any needed policy fixes that may prove necessary in the future. COSSA/SEIA argue that delays in obtaining interconnection studies were some of the issues raised in the Petition for Declaratory Order filed on June 17, 2020, by SunShare, LLC, however, they did not point specifically to Feasibility or Facility studies. After Commission Trial Staff conducts its investigation of the Interconnection processes, the Commission should better understand whether additional reporting requirements would be reasonable.

**(1) Rule 3856(b)(I)**

17. Finally, COSSA/SEIA note that the Adopted Rules do not have any deadline by which utilities must complete a Feasibility Study, which is often the first study in the Level 3 process. COSSA/SEIA believe this may be an oversight, as the ALJ's Recommended Decision explicitly states that "[e]nsuring certainty for both interconnection customers and the utilities is important in the Level 3 feasibility study process, and establishing reasonable timeframes will assist to accomplish this objective."<sup>3</sup>

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<sup>3</sup> COSSA/SEIA RRR at p. 2. (emphasis omitted)

18. COSSA/SEIA argue that a 30-day Feasibility Study timeframe is reasonable because it is consistent with the Federal Energy Regulatory Commission (FERC) Small Generation Interconnection Procedures (SGIP) and therefore consistent with the study deadlines established in Rules 3856(c) and (d). COSSA/SEIA argue that having specific timeframes for when the utilities must provide various Level 3 studies also comports with procedures in other states, many of which also include model study agreements. COSSA/SEIA add that including study deadlines is also consistent with the Interstate Renewable Energy Council's (IREC) Model Interconnection Procedures.

19. We grant COSSA/SEIA's RRR to adopt a 30-day timeframe for utilities to complete a Feasibility Study. As Public Service pointed out in its Exceptions, COSSA/SEIA's recommendation on Exceptions to adopt a 15-day deadline for Feasibility Studies in its exceptions is misaligned with the FERC SGIP timeline of 30 days. Public Service requested in that filing that the Commission ensure that Level 3 studies, including Feasibility Studies align with FERC SGIP. We agree that establishing a Feasibility Study timeline that meets FERC's SGIP, as well as IREC's model IC procedures is an important tool to ensure timely completion of larger distributed resources, such as CSGs.

## **II. ORDER**

### **A. The Commission Orders That:**

1. The Application for Rehearing, Reargument, or Reconsideration of Decision No. C21-0183 filed by Public Service Company of Colorado on April 19, 2021, is granted consistent with the discussion above.

2. The Application for Rehearing, Reargument, or Reconsideration of Decision No. C21-0183 filed by Colorado Solar and Storage Association and the Solar Energy Industry

Association on April 19, 2021, is granted, in part, and denied, in part, consistent with the discussion above.

3. Rules implementing the Interconnection Procedures within the Commission's Rules Regulating Electric Utilities, 4 *Code of Colorado Regulations* 723-3, contained in legislative (*i.e.*, strikeout/underline) format (Attachment A), and final format (Attachment B) are adopted, and are available through the Commission's Electronic Filings system at:

[https://www.dora.state.co.us/pls/efi/EFI.Show\\_Docket?p\\_session\\_id=&p\\_docket\\_id=19R-0654E](https://www.dora.state.co.us/pls/efi/EFI.Show_Docket?p_session_id=&p_docket_id=19R-0654E)

4. The 20-day time period provided by § 40-6-114, C.R.S., to file an application for rehearing, reargument, or reconsideration shall begin on the first day after the effective date of this Decision.

5. This Decision is effective upon its Mailed Date.

**B. ADOPTED IN COMMISSIONERS' WEEKLY MEETING  
May 12, 2021.**

(S E A L)



ATTEST: A TRUE COPY

A handwritten signature in cursive script that reads "Doug Dean".

Doug Dean,  
Director

THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF COLORADO

ERIC BLANK

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JOHN GAVAN

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MEGAN M. GILMAN

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Commissioners

## COLORADO DEPARTMENT OF REGULATORY AGENCIES

### Public Utilities Commission

#### 4 CODE OF COLORADO REGULATIONS (CCR) 723-3

#### PART 3 RULES REGULATING ELECTRIC UTILITIES

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#### RENEWABLE ENERGY STANDARD

\* \* \* \*

[indicates omission of unaffected rules]

#### 3665. ~~Repealed eff. 11/1/2020~~Reserved.

\* \* \* \*

[indicates omission of unaffected rules]

#### ~~3667. Small Generation Interconnection Procedures.~~

~~The following small generator interconnection procedures (SGIP) shall apply to all small generation resources including eligible renewable energy resources connected to the utility. Each utility shall also provide, on its web site, interconnection standards not included in these procedures. This rule largely tracks FERC Order 2006.~~

~~(a) Definitions. The following definitions apply only to rule 3665.~~

~~(I) "Business day" means Monday through Friday, excluding Federal Holidays.~~

~~(II) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.~~

~~(III) "Distribution upgrades" means the additions, modifications, and upgrades to the utility's distribution system at or beyond the point of interconnection to facilitate interconnection of the small generating facility and render the service necessary to effect the~~

~~interconnection customer's operation of on-site generation. Distribution upgrades do not include interconnection facilities.~~

- (IV) ~~“Highly seasonal circuit” means a circuit with a ratio of annual peak load to off-season peak load greater than six.~~
  - (V) ~~“Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its small generating facility with the utility's system.~~
  - (VI) ~~“Interconnection facilities” means the utility's interconnection facilities and the interconnection customer's interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the small generating facility and the point of interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the small generating facility to the utility's system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.~~
  - (VII) ~~“Interconnection request” means the interconnection customer's request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing small generating facility that is interconnected with the utility's system.~~
  - (VIII) ~~“Minimum daytime loading” means the lowest daily peak in the year on the line section.~~
  - (IX) ~~“Party” or “Parties” means the utility, interconnection customer, or any combination of the above.~~
  - (X) ~~“Point of interconnection” means the point where the Interconnection facilities connect with the utility's system.~~
  - (XI) ~~“Small generating facility” means the interconnection customer's device for the production of electricity identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer.~~
  - (XII) ~~“Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.~~
  - (XIII) ~~“System” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.~~
  - (XIV) ~~“Upgrades” means the required additions and modifications to the utility's system at or beyond the point of interconnection. Upgrades do not include interconnection facilities.~~
- (b) ~~General overview.~~
- (I) ~~Applicability.~~



- ~~(A) — A request to interconnect a certified small generating facility no larger than two MW shall be evaluated under the Level 2 Process. A request to interconnect a certified inverter-based small generating facility no larger than ten kW shall be evaluated under the Level 1 Process. A request to interconnect a small generating facility larger than two MW but no larger than ten MW or a small generating facility that does not pass the Level 1 or Level 2 Process, shall be evaluated under the Level 3 Process.~~
- ~~(B) — Defined terms used herein shall have the meanings specified in the paragraph (a) of this rule.~~
- ~~(C) — Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.~~
- ~~(D) — Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and Interconnection Customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All public utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber security practices.~~
- ~~(E) — References in these procedures to interconnection agreement are to the Small Generator Interconnection Agreement (SGIA).~~
- ~~(H) — Pre-application. The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's Internet web site. Electric system information for specific locations, feeders, or small areas shall be provided to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.~~

- ~~(III) — Interconnection request. The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. The interconnection request shall be date- and time-stamped upon receipt. The original date- and time-stamp applied to the interconnection request at the time of its original submission shall be accepted as the qualifying date- and time-stamp for the purposes of any timetable in these procedures. The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by IC. The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. An interconnection request will be deemed complete upon submission of the listed information to the utility.~~
- ~~(IV) — Modification of the interconnection request. Any modification to machine data or equipment configuration or to the interconnection site of the small generating facility not agreed to in writing by the utility and the IC may be deemed a withdrawal of the interconnection request and may require submission of a new interconnection request, unless proper notification of each party by the other and a reasonable time to cure the problems created by the changes are undertaken.~~
- ~~(V) — Site control. Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:~~
- ~~(A) — ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the small generating facility;~~
  - ~~(B) — an option to purchase or acquire a leasehold site for such purpose; or~~
  - ~~(C) — an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.~~
- ~~(VI) — Queue position. The utility shall place interconnection requests in a first come, first served order per feeder and per substation based upon the date- and time-stamp of the interconnection request. The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.~~

~~(VII) — Assignment/Transfer of ownership of the facility. Interconnection agreements shall survive transfer of ownership of the generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.~~

~~(c) — Level 2 fast track process.~~

~~(I) — Applicability. The fast track process is available to an IC proposing to interconnect its small generating facility with the utility's system if the small generating facility is no larger than two MW and if the IC's proposed small generating facility meets the codes, standards, and certification requirements of Attachments 3 and 4 of these procedures.~~

~~(II) — Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the screens.~~

~~(A) — Screens.~~

~~(i) — The proposed small generating facility's point of interconnection must be on a portion of the utility's distribution system that is subject to the tariff.~~

~~(ii) — For interconnection of a proposed small generating facility to a radial distribution circuit, the aggregated generation, including the proposed small generating facility, on the line section shall not exceed 15 percent of the line section's annual peak load as most recently measured at the substation or calculated for the line section. For highly seasonal circuits only, the aggregate generation, including the proposed small generation facility, on the line section shall not exceed 15 percent of two times the minimum daytime loading. A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device.~~

~~(iii) — The proposed small generating facility, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit's maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.~~

~~(iv) — The proposed small generating facility, in aggregate with other generation on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or Interconnection Customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.~~

~~(v) — The proposed small generating facility shall have a starting voltage dip less than five percent and meet the flicker requirements of IEEE 519, 1992 version. To meet this screen, the proposed generating facility must conform to the following two tests:~~

~~(1) — For starting voltage dip, the utility has two options for determining whether starting voltage dip is acceptable. The option to be used is at the utility's discretion.~~

~~(a) — Option 1: The utility may determine that the proposed generating facility's starting in-rush current is equal to or less than the continuous ampere rating of the Interconnection Customer's service equipment.~~

~~(b) — Option 2: The utility may determine the impedances of the service distribution transformer (if present) and the secondary conductors to the Interconnection Customer's service equipment and perform a voltage dip calculation. Alternatively, the utility may use tables or nomographs to determine the voltage dip. Voltage dips caused by starting the proposed generation facility must be less than five percent when measured at the primary side (high side) of a dedicated distribution transformer serving the proposed generating facility, for primary interconnections. The five percent voltage dip limit applies to the distribution transformer low side if the low side is shared with other customers and to the high side if the transformer is dedicated to the Interconnection Customer.~~

~~(2) — The second test is conformance with the relationship between voltage fluctuation and starting frequency presented in the table for flicker requirements in IEEE 519, 1992 version.~~

~~(vi) — Using the table below, determine the type of interconnection to a primary distribution line. This screen includes a review of the type of electrical service provided to the IC, including line configuration and the transformer connection to limit the potential for creating over-voltages on the utility's electric power system due to a loss of ground during the operating time of any anti-islanding function.~~

<del>Primary Distribution Line Type</del>	<del>Type of Interconnection to Primary Distribution Line</del>	<del>Result/Criteria</del>
<del>Three-phase, three-wire</del>	<del>3-phase or single phase, phase-to-phase</del>	<del>Pass screen</del>
<del>Three-phase, four-wire</del>	<del>Effectively grounded 3-phase or Single-phase, line-to-neutral</del>	<del>Pass screen</del>

~~(vii) — If the proposed small generating facility is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 20 kW.~~

~~(viii) — If the proposed small generating facility is single-phase and is to be interconnected on a center tap neutral of a 240-volt service, its addition shall not create an imbalance between the two sides of the 240-volt service of more than 20 percent of the nameplate rating of the service transformer.~~

~~(ix) — No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.~~

~~(x) — Interconnections to distribution networks.~~

- ~~(1) — For interconnection of a proposed small generating facility to the load side of spot network protectors serving more than a single customer, the proposed small generating facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the small generator facility must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.~~
- ~~(2) — For interconnection of a proposed small generating facility to the load side of area network protectors, the proposed small generating facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW.~~
- ~~(3) — Notwithstanding sub-sections (1) or (2) above, each utility may incorporate into its interconnection standards, any change in interconnection guidelines related to networks pursuant to standards developed under IEEE 1547 for interconnections to networks. To the extent the new IEEE standards conflict with these existing guidelines, the new standards shall apply. In addition, and with the consent of the utility, a small generator facility may be interconnected to a spot or area network provided the facility uses a protection scheme that will prevent any power export from the customer's site including inadvertent export under fault conditions or otherwise prevent nuisance operation of the network protectors.~~
- ~~(B) — If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.~~
- ~~(C) — If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.~~
- ~~(D) — If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting.~~

- ~~(E) — Customer options meeting. If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; or a supplemental study or other additional studies or actions; or at significant cost to address safety, reliability, or power quality problems, within the five business day period after the determination, the utility shall notify the IC and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:~~
- ~~(i) — offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;~~
  - ~~(ii) — offer to perform a supplemental review if the utility concludes that the supplemental review might determine that the small generating facility could continue to qualify for interconnection pursuant to the fast track process, and provide a non-binding good faith estimate of the costs and time of such review; or~~
  - ~~(iii) — obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 Study Process.~~
- ~~(III) — Supplemental Review. If the interconnection customer agrees to a supplemental review, the interconnection customer shall agree in writing within 15 business days of the offer, and submit a deposit for the estimated costs provided in subsection (c)(III)(A)(ii) of this rule. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.~~
- ~~(A) — Within ten business days following receipt of the deposit for a supplemental review, the utility will determine if the Small Generating Facility can be interconnected safely and reliably.~~
- ~~(i) — If so, the utility shall forward an executable interconnection agreement to the IC within five business days.~~
  - ~~(ii) — If so, and IC facility modifications are required to allow the small generating facility to be interconnected consistent with safety, reliability, and power quality standards under these procedures, the utility shall forward an executable interconnection agreement to the IC within five business days after confirmation that the interconnection customer has agreed to make the necessary changes at the interconnection customer's cost.~~

- ~~(iii) — If so, and minor modifications to the utility's electric system are required to allow the small generating facility to be interconnected consistent with safety, reliability, and power quality standards under the Level 2 Fast Track Process, the utility shall forward an executable interconnection agreement to the IC within ten business days that requires the IC to pay the costs of such system modifications prior to interconnection.~~
- ~~(iv) — If not, the interconnection request will continue to be evaluated under the Level 3 Study Process.~~

~~(d) — Level 3 – Study Process.~~

- ~~(I) — Applicability. The study process shall be used by an interconnection customer proposing to interconnect its small generating facility with the utility's system if the small generating facility is larger than two MW but no larger than ten MW; is not certified; or, is certified but did not pass the Fast Track Process or the ten kW Inverter Process.~~
- ~~(II) — Scoping meeting.~~
  - ~~(A) — A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.~~
  - ~~(B) — The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection agreement. If the parties agree that a feasibility study should be performed, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(C) — The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the parties agree not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(D) — Feasibility studies, scoping studies, and facility studies may be combined for simpler projects by mutual agreement of the utility and the parties.~~
- ~~(III) — Feasibility study.~~
  - ~~(A) — The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the small generating facility.~~



- ~~(B) — A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.~~
  - ~~(C) — The scope of and cost responsibilities for the feasibility study are described in the attached feasibility study agreement.~~
  - ~~(D) — If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.~~
  - ~~(E) — If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).~~
- ~~(IV) — System impact study.~~
- ~~(A) — A system impact study shall identify and detail the electric system impacts that would result if the proposed small generating facility were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.~~
  - ~~(B) — If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.~~
  - ~~(C) — In instances where the feasibility study or the distribution system impact study shows potential for transmission system adverse system impacts, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, if such a study is required.~~
  - ~~(D) — If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.~~

- ~~(E) — If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.~~
  - ~~(F) — In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.~~
  - ~~(G) — A deposit of the good faith estimated costs for each system impact study may be required from the IC.~~
  - ~~(H) — The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.~~
  - ~~(I) — Where transmission systems and distribution systems have separate owners, such as is the case with transmission dependent utilities (TDUs) — whether investor-owned or not — the IC may apply to the nearest utility (Transmission Owner, Regional Transmission Operator, or Independent utility) providing transmission service to the TDU to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.~~
- ~~(V) — Facilities study.~~
- ~~(A) — Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC along with a facilities study agreement within five business days, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.~~
  - ~~(B) — In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.~~
  - ~~(C) — The facilities study shall specify and estimate the cost of the equipment, engineering, procurement, and construction work (including overheads) needed to implement the conclusions of the system impact study(s).~~
  - ~~(D) — Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement. The IC and the utility may agree to allow the IC to separately arrange for the design of some of the interconnection facilities. In such cases, facilities design will be reviewed and/or modified prior to acceptance by the utility, under the provisions of the facilities study agreement. If the parties agree to separately~~

~~arrange for design and construction, and provided security and confidentiality requirements can be met, the utility shall make sufficient information available to the IC in accordance with confidentiality and critical infrastructure requirements to permit the IC to obtain an independent design and cost estimate for any necessary facilities.~~

~~(E) — A deposit of the good faith estimated costs for the facilities study may be required from the IC.~~

~~(F) — The scope of and cost responsibilities for the facilities study are described in a facilities study agreement.~~

~~(G) — Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.~~

~~(e) — Provisions that apply to all interconnection requests:~~

~~(I) — Reasonable efforts. The utility shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility cannot meet a deadline provided herein, it shall notify the IC explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.~~

~~(II) — Disputes:~~

~~(A) — The parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this article.~~

~~(B) — In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third party dispute resolution service for assistance in resolving the dispute.~~

~~(C) — The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.~~

~~(D) — Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs paid to neutral third parties.~~

~~(E) — If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission.~~

- ~~(III) — Interconnection metering. Except as otherwise required by rule 3664, any metering necessitated by the use of the small generating facility shall be installed at the IC's expense in accordance with Commission requirements or the utility's specifications.~~
- ~~(IV) — Commissioning tests. Commissioning tests of the IC's installed equipment shall be performed pursuant to applicable codes and standards, including IEEE1547.1 2005 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems". The utility must be given at least five business days written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing level 2 and Level 3 commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.~~
- ~~(V) — Confidentiality.~~
- ~~(A) — Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.~~
- ~~(B) — Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.~~
- ~~(i) — Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.~~
- ~~(ii) — Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.~~
- ~~(C) — Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from~~

~~public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.~~

- ~~(VI) — Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this document. The utility shall use the same reasonable efforts in processing and analyzing interconnection requests from all interconnection customers, whether the small generating facility is owned or operated by the utility, its subsidiaries or affiliates, or others.~~
- ~~(VII) — Record retention. The utility shall maintain for three years records, subject to audit, of all interconnection requests received under these procedures, the times required to complete Interconnection Request approvals and disapprovals, and justification for the actions taken on the interconnection requests.~~
- ~~(VIII) — Interconnection agreement. After receiving an interconnection agreement from the utility, the IC shall have 30 business days or another mutually agreeable time frame to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement, or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. After the interconnection agreement is signed by the parties, the interconnection of the small generating facility shall proceed under the provisions of the interconnection agreement.~~
- ~~(IX) — Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in these procedures. The utility will include such affected system operators in all meetings held with the IC as required by these procedures. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems.~~
- ~~(X) — Capacity of the small generating facility.
  - ~~(A) — If the interconnection request is for an increase in capacity for an existing small generating facility, the interconnection request shall be evaluated on the basis of the new total capacity of the small generating facility.~~
  - ~~(B) — If the interconnection request is for a small generating facility that includes multiple energy production devices at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple devices.~~~~

~~(C) — The interconnection request shall be evaluated using the maximum rated capacity of the small generating facility.~~

~~(XI) — Insurance.~~

~~(A) — For systems of ten kW or less, the customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$300,000 for each occurrence. For systems above ten kW and up to 500 kW, customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$1,000,000 for each occurrence. For systems above 500 kW and up to two MW, customer, at its own expense, shall secure and maintain in effect during the term of the agreement liability insurance with a combined single limit for bodily injury and property damage of not less than \$2,000,000 for each occurrence. Insurance coverage for systems greater than two MW shall be determined on a case-by-case basis by the utility and shall reflect the size of the installation and the potential for system damage.~~

~~(B) — For systems over 500 kW, the utility shall be named as an additional insured by endorsement to the insurance policy and the policy shall provide that written notice be given to the utility at least 30 days prior to any cancellation or reduction of any coverage. Such liability insurance shall provide, by endorsement to the policy, that the utility shall not by reason of its inclusion as an additional insured incur liability to the insurance carrier for the payment of premium of such insurance. For all solar systems, the liability insurance shall not exclude coverage for any incident related to the subject generator or its operation.~~

~~(C) — Certificates of Insurance evidencing the requisite coverage and provision(s) shall be furnished to utility prior to the date of interconnection of the generation system. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the generating customer in order to verify proper liability insurance coverage. Customer will not be allowed to commence or continue interconnected operations unless evidence is provided that satisfactory insurance coverage is in effect at all times.~~

~~(f) — Level 1 ten kW inverter process. The procedure for evaluating an interconnection request for a certified inverter-based small generating facility no larger than ten kW. The application process uses an all-in-one document that includes a simplified Interconnection Request, simplified procedures, and a brief set of terms and conditions.~~

~~(I) — The interconnection customer (customer) completes the interconnection request (Application) and submits it to the utility.~~

~~(II) — The utility acknowledges to the customer receipt of the application within three business days of receipt.~~

- ~~(III) — The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.~~
- ~~(IV) — Within 15 days the utility shall conduct an initial review, which shall include the following screening criteria.
  - ~~(A) — For interconnection of a proposed small generating facility to a radial distribution circuit, the aggregated generation, including the proposed small generating facility, on the line section shall not exceed 15 percent of the line section annual peak load as most recently measured at the substation or calculated for the line section. For highly seasonal circuits only, the aggregate generation, including the proposed small generation facility, on the line section shall not exceed 15 percent of two times the minimum daytime loading. A line section is that portion of a utility's electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device.~~
  - ~~(B) — If the proposed small generating facility is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the proposed small generating facility, shall not exceed 20 kW.~~
  - ~~(C) — If the proposed small generating facility is single-phase and is to be interconnected on a center tap neutral of a 240-volt service, its addition shall not create an imbalance between the two sides of the 240-volt service of more than 20 percent of the nameplate rating of the service transformer.~~
  - ~~(D) — No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.~~
  - ~~(E) — Provided all the criteria in paragraph (g) of this rule are met, unless the utility determines and demonstrates that the small generating facility cannot be interconnected safely and reliably, the utility approves and executes the application and returns it to the customer.~~
  - ~~(F) — After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the small generating facility for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary.~~
  - ~~(G) — The utility notifies the customer in writing or by fax or e-mail that interconnection of the small generating facility is authorized within five business days. If the witness test is not satisfactory, the utility has the right to disconnect the small generating facility. The customer has no right to operate in parallel until a witness test has been performed, or previously waived on the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.~~~~

~~(H) — Contact information. The customer must provide the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.~~

~~(g) — Level 1 10 kW Inverter Process. The following constitutes an application for interconnecting a certified inverter-based small generating facility no larger than ten KW. Application for Interconnecting a Certified Inverter-Based Small Generating Facility No Larger than 10kW~~

~~This Application is considered complete when it provides all applicable and correct information required below. Additional information to evaluate the application may be required.~~

~~Processing fee:~~

~~\_\_\_\_\_ A fee of \_\_\_\_\_ must accompany this application.~~

~~Interconnection customer~~

~~\_\_\_\_\_ Name:~~

~~\_\_\_\_\_ Contact Person:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone (Day): (Evening):~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~Engineering firm (if applicable):~~

~~\_\_\_\_\_ Contact Person:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~

~~\_\_\_\_\_ Telephone:~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~Contact (if different from Interconnection customer):~~

~~\_\_\_\_\_ Name:~~

~~\_\_\_\_\_ Address:~~

~~\_\_\_\_\_ City: State: Zip:~~



~~\_\_\_\_\_ Telephone (Day): (Evening):~~

~~\_\_\_\_\_ Fax: E-Mail Address:~~

~~\_\_\_\_\_ Owner of the facility (include percent ownership by any electric utility):~~

Small generating facility information:

~~\_\_\_\_\_ Location (if different from above):~~

~~\_\_\_\_\_ Electric service company:~~

~~\_\_\_\_\_ Account number:~~

~~\_\_\_\_\_ Small generator ten kW inverter process:~~

~~\_\_\_\_\_ Inverter manufacturer: \_\_\_\_\_ Model~~

~~\_\_\_\_\_ Nameplate rating: (kW) (kVA) (AC Volts)~~

~~\_\_\_\_\_ Single phase \_\_\_\_\_ Three phase \_\_\_\_\_~~

~~\_\_\_\_\_ System design capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)~~

~~\_\_\_\_\_ Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other~~

~~\_\_\_\_\_ Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)~~

~~\_\_\_\_\_ Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_~~

~~\_\_\_\_\_ If Yes, attach manufacturer's cut-sheet showing UL1741 listing.~~

~~\_\_\_\_\_ Estimated installation date: \_\_\_\_\_ Estimated in-service date: \_\_\_\_\_~~

The ten kW inverter process is available only for inverter-based small generating facilities no larger than ten kW that meet the codes, standards, and certification requirements of paragraphs (h) and (i) of this rule, or the QRU has reviewed the design or tested the proposed small generating facility and is satisfied that it is safe to operate.

List components of the small generating facility equipment package that are currently certified:

Equipment type certifying entity:

- 1.
- 2.
- 3.

~~4.~~

~~5.~~

~~Interconnection customer signature: \_\_\_\_\_~~

~~I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter Based Small Generating Facility No Larger than 10kW and return the Certificate of Completion when the Small Generating Facility has been installed.~~

~~Signed: \_\_\_\_\_~~

~~Title: \_\_\_\_\_ Date: \_\_\_\_\_~~

~~Contingent approval to interconnect the small generating facility.~~

~~(For company use only)~~

~~Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter based small generating facility no larger than ten kW and return of the certificate of completion.~~

~~\_\_\_\_\_ Company signature: \_\_\_\_\_~~

~~\_\_\_\_\_ Title: Date: \_\_\_\_\_~~

~~\_\_\_\_\_ Application ID number: \_\_\_\_\_~~

~~\_\_\_\_\_ Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_~~

~~(h) \_\_\_\_\_ Certification codes and standards.~~

~~ANSI C84.1-2011 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)~~

~~ANSI/NEMA MG 1-2011, Motors and Generators~~

~~IEEE Std C37.90.1-2002, IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems~~

~~IEEE Std C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers~~

~~IEEE Std C37.108-2002, IEEE Guide for the Protection of Network Transformers~~

~~IEEE Std C57.12.44-2005, IEEE Standard Requirements for Secondary Network Protectors~~

~~IEEE Std C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text~~

~~IEEE Std C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low Voltage (1000V and Less) AC Power Circuits~~

~~IEEE Std 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition~~

~~IEEE Std 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems~~

~~IEEE Std 929-2000 IEEE Recommended Practice for Utility Interface of Photovoltaic (PV) Systems~~

~~IEEE Std 1547-2003, IEEE Standard for Interconnecting Distributed Resources with Electric Power Systems~~

~~IEEE Std 547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems~~

~~NFPA 70 (2014), National Electrical Code~~

~~UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems~~

~~(i) Certification of small generator equipment packages.~~

~~(I) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in paragraph (h); it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.~~

~~(II) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.~~

~~(III) Certified equipment shall not require further type test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.~~

- ~~(IV) — If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.~~
- ~~(V) — Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of common coupling shall be required to meet the requirements of this interconnection procedure.~~
- ~~(VI) — An equipment package does not include equipment provided by the utility.~~
- ~~(j) — Terms and conditions for Level 1 interconnections -- small generating facility no larger than ten kW.~~
  - ~~(I) — Construction of the facility. The interconnection customer may proceed to construct the small generating facility when the utility approves the interconnection request (the application) and returns it to the IC.~~
  - ~~(II) — Interconnection and operation. The IC may operate small generating facility and interconnect with the utility's electric system once all of the following have occurred:
    - ~~(A) — upon completing construction, the interconnection customer will cause the small generating facility to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;~~
    - ~~(B) — the customer returns the certificate of completion to the utility; and~~
    - ~~(C) — the utility has completed its inspection of the small generating facility. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that the small generating facility has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.~~
    - ~~(D) — The utility has the right to disconnect the small generating facility in the event of improper installation or failure to return the certificate of completion.~~~~
  - ~~(III) — Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the small generating facility as required to ensure that it complies at all times with the interconnection standards to which it has been certified.~~

- ~~(IV) — Access. The utility shall have access to the disconnect switch and metering equipment of the small generating facility at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.~~
- ~~(V) — Disconnection. The utility may temporarily disconnect the small generating facility upon the following conditions:~~
- ~~(A) — for scheduled outages per notice requirements in the utility's tariff or Commission rules;~~
  - ~~(B) — for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or~~
  - ~~(C) — if the small generating facility does not operate in the manner consistent with these terms and conditions.~~
  - ~~(D) — The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.~~
- ~~(VI) — Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.~~
- ~~(VII) — Insurance. The interconnection customer, at its own expense, shall secure and maintain in effect during the term of this agreement, liability insurance with a combined single limit for bodily injury and property damage of not less than \$300,000 each occurrence. Such liability insurance shall not exclude coverage for any incident related to the subject generator or its operation. The utility shall be named as an additional insured under the liability policy unless the system is a solar system installed on a premise using the residential tariff and has a design capacity of ten kW or less. The policy shall include that written notice be given to the utility at least 30 days prior to any cancellation or reduction of any coverage. A copy of the liability insurance certificate must be received by the utility prior to plant operation. Certificates of insurance evidencing the requisite coverage and provision(s) shall be furnished to utility prior to date of interconnection of the generation system. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the generating customer in order to verify proper liability insurance coverage. The interconnection customer will not be allowed to commence or continue interconnected operations unless evidence is provided that satisfactory insurance coverage is in effect at all times.~~

- ~~(VIII) — Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (i)(VI) of this rule.~~
- ~~(IX) — Termination. The agreement to operate in parallel may be terminated under the following conditions:~~
- ~~(A) — By the customer by providing written notice to the utility.~~
  - ~~(B) — By the utility if the small generating facility fails to operate for any consecutive 12 month period or the customer fails to remedy a violation of these terms and conditions.~~
  - ~~(C) — Permanent disconnection. In the event this agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its small generating facility.~~
  - ~~(D) — Survival rights. This agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.~~
- ~~(X) — Assignment/Transfer of ownership of the facility. This agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of this agreement and so notifies the utility.~~

**3667. [Reserved.]**

\* \* \* \*

[indicates omission of unaffected rules]

**3806. – 387449. [Reserved.]**

**INTERCONNECTION PROCEDURES AND STANDARDS.**

**3850. Applicability.**

The following interconnection procedures shall apply to the interconnection of all retail renewable distributed generation and other distributed energy resources including energy storage systems that operate in parallel with and are connected to the utility, when such interconnections are not subject to the jurisdiction of FERC. This rule largely tracks the 2013 FERC amended version of the FERC 2006 Small Generator Interconnection Procedures.

### **3851. Overview and Purpose.**

Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and Interconnection Customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

The purpose of these rules is to establish reasonable interconnection procedures and insurance requirements all utilities to adhere to when interconnecting retail renewable distributed generation, and other distributed energy resources that connect to a utility's system that operate in parallel with and are connected to the utility.

### **3852. Definitions.**

The following definitions apply only to rules 3850 to 3859.

- (a) "Business day" means Monday through Friday, excluding federal holidays.
- (b) "Distributed energy resource" or "DER" means the interconnection customer's source of electric power connected to the utility's distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. DER includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE 1547-2018, until January 1, 2022, or until such time new DERs applying for interconnection will comply with IEEE 1547 2018. This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (c) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from interconnection resources or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.
- (d) "Energy storage system" means any commercially available, customer-sited system or utility-sited system, including batteries and batteries paired with on-site generation, that does not generate energy, that is capable of retaining, storing, and delivering electrical energy by chemical, thermal, mechanical, or other means.
- (e) "Export capacity" means the amount of alternating current (AC) electrical energy that an interconnection resource is intended to transfer to the utility's system across the point of interconnection.
- (f) "Highly seasonal circuit" means a circuit with a ratio of annual peak load to off-season peak load greater than six.

- (g) “Inadvertent export” means the potential condition in which a normally non-exporting or limited-exporting DER experiences a momentary export that does not exceed limitations specified in paragraph 3853(c).
- (h) “Interconnection agreement” means a contract between the interconnection customer and the utility that formally documents terms and conditions related to the operation and maintenance of any DER in accordance with the utility’s tariffs on file with the Commission.
- (i) “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its DER with the utility’s system.
- (j) “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the DER and the point of interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the DER to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.
- (k) “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing DER that is interconnected with the utility’s system.
- (l) “Interconnection resource” means the interconnection customer’s source of electric power connected to the utility’s distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, bidirectional storage, electric vehicle chargers with vehicle to grid, vehicle to home, vehicle to building or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. “Interconnection resource” includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547-2018, until January 1, 2022, or until such time new DERs applying for interconnection will comply with IEEE 1547-2018. This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (m) “Interconnection tariffs” are required filings from the utilities that set forth fees associated with interconnection. Tariff filings would accommodate utility-specific costs, while allowing for appropriate statewide standardization in the provisions set forth.
- (n) “Line section” means that portion of the utility’s electric delivery system that is connected to a Customer and bounded by automatic sectionalizing devices or the end of the distribution line.
- (o) “Material modification” means a modification that has a material impact on the cost or timing of processing an application with a later queue priority date or a change in the point of interconnection. A material modification does not include, for example: a change of ownership of an interconnection resource; changes to the address of the generating facility, so long as the generating facility remains on the same parcel; a change or replacement of interconnection resource that is a like-kind substitution in size, ratings, impedances, efficiencies, or capabilities of



the equipment specified in the original application; or a reduction in the capacity of the interconnection resource of ten percent or less.

- (p) “Minor modifications” means modifications to the utility’s distribution system or to the interconnection facilities that do not have a material impact on the cost or on the timing of an interconnection request.
- (q) “Non-exporting system” means an interconnection resource that is designed so that it does not intentionally transfer electrical energy to the utility’s distribution or transmission system across the point of common coupling. Such systems may be used to supply part or all of a customer’s load continuously or during an outage. A system can be non-exporting by virtue of inverter programming or by some other on-site limiting element. Non-exporting systems may or may not produce inadvertent exports as defined in paragraph (g) of this rule.
- (r) “Operating mode” means the mode of DER operational characteristics that determines the performance during normal and abnormal conditions. For example, an operating mode such as “export only,” “import only,” and “no exchange.”
- (s) “Parallel operation” means a DER facility that is connected to the utility’s system and can supply AC electricity to the interconnection customer simultaneously with the utility’s supply of AC electricity.
- (t) “Party” or “Parties” means the utility, interconnection customer, or any combination thereof.
- (u) “Point of interconnection” means the point where the interconnection facilities connect with the utility’s system.
- (v) “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.
- (w) “System upgrades” means the additions, modifications, and upgrades to the utility’s distribution or Commission-jurisdictional transmission system at or beyond the point of interconnection to facilitate interconnection of interconnection resources and render the service necessary to effect the interconnection customer’s operation of interconnection resources. System upgrades do not include interconnection facilities.
- (x) “Transmission system” means an interconnected group of transmission lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.
- (y) “Utility system” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.
- (z) “Upgrades” means the additions and modifications to the utility’s system at or beyond the point of interconnection that are necessary to interconnect an interconnection resource. Upgrades do not include interconnection facilities.

**3853. General Interconnection Procedures.**

**(a) Pre-application procedures.**

- (I) Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.
- (II) The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's web site.
- (III) In response to an informal pre-application request, the utility shall provide electric system information for specific locations, feeders, or small areas to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.
- (IV) In addition to the information described in subparagraphs 3853(a)(I) and (III), which may be provided in response to an informal request, an interconnection customer may submit a formal written request for a pre-application report on a proposed interconnection at a specific site using a form supplied by the utility, unless such information is confidential and cannot be provided pursuant to a confidentiality agreement. The utility may charge up to a Commission-approved fee for the pre-application report. Upon completion, each pre-application report shall be dated and publicly posted to the utility's website with any customer identifying information redacted.

  - (A) The utility shall provide the pre-application report to the interconnection customer within 20 business days of receipt of the completed request form and payment of the fee.
  - (B) The pre-application report shall be non-binding on the utility and shall not confer any rights to the interconnection customer. The provided information does not guarantee that an interconnection may be completed. Data provided in the pre-application report may become outdated at the time of the submission of the complete interconnection request.
  - (C) The pre-application report need only include existing information. A pre-application report request does not obligate the utility to conduct a study or other analysis of the proposed interconnection resource in the event that data is not readily available.
  - (D) If the utility cannot complete all or some of a pre-application report due to lack of available data, the utility should nonetheless explain what information is not

available and why it is not available, and the utility shall provide the interconnection customer with a pre- application report that includes the data that is available.

- (E) The utility shall, in good faith, include data in the pre- application report that represents the best available information at the time of reporting. The pre- application report will include the following information:
- (i) total capacity (in MVA) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed point of interconnection;
  - (ii) existing aggregate generation DER capacity (in MW AC) interconnected to a substation/area bus, bank or circuit (i.e., amount of DER online) likely to serve the proposed point of interconnection;
  - (iii) aggregate queued DER capacity (in MW AC) for a substation/area bus, bank or circuit (i.e., amount of DER in the queue) likely to serve the proposed point of interconnection;
  - (iv) available capacity (in MW AC) of substation/area bus or bank and circuit likely to serve the proposed point of interconnection (i.e., total capacity less the sum of existing aggregate DER capacity and aggregate queued DER capacity);
  - (v) substation nominal distribution voltage and/or transmission nominal voltage, if applicable;
  - (vi) nominal distribution or transmission circuit voltage at the proposed point of interconnection whether the proposed DER is eligible for the Level 1, Level 2 or non-export process;
  - (vii) approximate circuit distance between the proposed point of interconnection and the substation;
  - (viii) relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load as described in the supplemental review minimum load screen in subparagraph 3855(d)(VI)(A) and absolute minimum load at the time of DER production, when available;
  - (ix) number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed point of interconnection and the substation/area. Identify whether the substation has a load tap changer;
  - (x) number of phases available at the proposed point of interconnection. If a single phase, distance from the three-phase circuit;

- (xi) whether the point of interconnection is located on a spot network, grid network, or radial supply; and
- (xii) existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks, based on the proposed point of interconnection.

(b) Capacity of the DER.

- (I) If the interconnection request is for an increase in capacity for an existing DER, the interconnection request shall be evaluated on the basis of the new total capacity of the DER, except as provided below in subparagraph 3853(c)(III).
- (II) If the interconnection request is for a DER that includes multiple components at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple components, except as provided below in subparagraph 3853(c)(III).
- (III) The interconnection request shall be evaluated using the maximum rated capacity of the DER, except as provided below in subparagraph 3853(c)(III). At the utility's discretion in accordance with subparagraph 3853(c)(III), the interconnection request may be evaluated using less than the maximum rated capacity of the DER if the utility determines that the DER is only capable of injecting less power into the utility's system.

(c) Energy storage interconnections.

- (I) Non-exporting energy storage may inadvertently export, so long as the magnitude is less than the energy storage's nameplate rating (kW-gross) and the duration of export of power from the customer's energy storage is less than 30 seconds for any single event. There are no limits to the number of events. Inadvertent export events shall not exceed thermal, service voltage, power quality or network limits defined within Commission rules or interconnection requirements. For good cause shown, the Commission may grant a variance of this section.
- (II) When a storage system is installed in conjunction with a DER facility, both shall be reviewed at the same time and be included in one interconnection agreement.
- (III) Interconnection requests are reviewed based on the combined nameplate ratings of systems accounting for their export capacity, and energy storage operating mode. The ongoing operation capacity portion of the interconnection review is based on the actual simultaneous performance AC ratings, taking into account the operational differences of load offset and export. If the contribution of the energy storage to the total contribution is limited by programming of the maximum active power output, use of a power control system, use of a power relay, or some other mutually agreeable, on-site limiting element, only the capacity that is designed to inject electricity to the utility's distribution or transmission system (other than inadvertent exports and fault contribution) will be used within certain technical screens and evaluations as specified in paragraphs 3855(b) and (d).

- (IV) Failure of hardware or software system(s) intended to limit energy storage export capacity shall cause the energy storage system to enter a safe operating state. An energy storage system combined with a UL 1741 certified power control system shall be considered capable of entering a safe operating state upon failure of hardware or software system(s). When mutually agreed fail-safe provisions are not provided, at the utility's discretion, the interconnection request may be evaluated using the maximum rated capacity of the energy storage system.
- (V) When a storage system is installed at the same point of interconnection location as an existing interconnected DER facility, the review level will be based upon the incremental addition of the DER rated capacity and the exporting storage system rated capacity as provided in subparagraph 3853(c)(III).
- (IV) A storage system may be located on the same side of a production meter as a generating facility when a production meter is required by these rules provided that the storage system is either non-exporting at the service meter or is charged exclusively by the generating facility and only the production recorded by the production meter will be eligible for incentives.
- (d) Interconnection requests.
- (I) The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. Additional fees or deposits shall not be required, except as otherwise specified in these procedures. A single request to interconnect may be submitted by the interconnection customer distributed generation paired with energy storage systems and shall be subject to one interconnection agreement.
- (II) The interconnection request shall be date-stamped and time-stamped upon receipt. The original date-stamp and time-stamp applied to the interconnection request at the time of its original submission shall be the order in which the utility reviews applications to determine completeness.
- (III) The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by the IC.
- (IV) The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. The IC may re-submit the application within one year without paying an additional interconnection application fee.

- (V) An interconnection request will be deemed complete upon submission of the listed information to the utility. The interconnection request shall be date-stamped and time-stamped upon being deemed complete. This date shall be accepted as the qualifying date-stamp and time-stamp for the purposes of any timetable in subsequent procedures.
- (VI) Any modification to interconnection resource data or equipment configuration or to the interconnection site that is a material modification, may be deemed by the utility to be a withdrawal of the interconnection request and may require submission of a new interconnection request. A new interconnection request shall not be required for minor modifications to interconnection resource data or equipment configuration or to the interconnection site. Within ten business days of receipt of a proposed modification, the utility, in consultation with an affected system owner, if applicable, shall evaluate whether a proposed modification constitutes a material modification.
- (A) If the proposed modification is determined to be a material modification, then the utility shall notify the IC in writing that the customer may: withdraw the proposed modification; or proceed with a new interconnection request for such modification. The IC shall provide its determination in writing to the utility within ten business days after the utility provides the material modification determination results. If the IC does not provide its determination, the customer's request shall be deemed withdrawn.
- (B) If the proposed modification is determined not to be a material modification, then the utility shall notify the IC in writing that the modification has been accepted and that the IC shall retain its eligibility for interconnection, including its place in the interconnection queue.
- (C) Any dispute as to the utility's determination that a modification constitutes a material modification shall proceed in accordance with the dispute resolution provisions in these procedures.
- (VII) Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:
- (A) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the interconnection resource;
- (B) an option to purchase or acquire a leasehold site for such purpose which may include a letter of intent; or
- (C) an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.
- (D) For generating facilities utilizing the Level 1 25 kW AC inverter process, proof of site control may be demonstrated by the IC's signature on the interconnection application.

(VIII) The utility shall place interconnection requests in a first come, first served order per feeder, per substation transformer, and per substation based upon the date an application is complete pursuant to subparagraph 3853(d)(V). The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.

(e) Evaluation of interconnection requests.

- (I) A request to interconnect an interconnection resource no larger than 25 kW AC, which may be paired with a non-exporting storage system no larger than 25 kW AC, shall be evaluated under the Level 1 Process.
- (II) If not eligible for Level 1, a request to interconnect an interconnection resource with a combined nameplate rating larger than 25 kW AC shall be evaluated under the Level 2 Process (Fast Track) in accordance with the eligibility requirements in paragraph 3855(a).
- (III) A request to interconnect an interconnection resource that does not pass the Level 1 or Level 2 Process shall be evaluated under the Level 3 Process.
- (IV) Non-exporting interconnection resources shall be evaluated under the “non-export” interconnection process. The “non-export” interconnection process is also applicable to additions of new non-exporting interconnection resources paired with existing interconnection resources when the existing interconnection resources have already executed an interconnection agreement.

(f) Interconnection agreements.

- (I) Any interconnection resource operating in parallel with the utility's system is required to have an interconnection agreement with the utility to ensure safety, system reliability, and operational compatibility. References in these procedures to interconnection agreement are to the utility's interconnection agreement as provided on its website, which interconnection agreement is subject to Commission approval upon request.
- (II) Interconnection agreements shall survive transfer of ownership of the interconnection resource to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.
- (III) After receiving an interconnection agreement from the utility, the IC shall have 30 business days to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. The utility shall provide the IC a fully executed interconnection agreement within two business days after receiving a signed interconnection agreement from the IC. After the parties sign the interconnection agreement, the interconnection of the interconnection resource shall proceed under the provisions of the interconnection agreement.



- (IV) Once the interconnection resource has been authorized by the utility to commence operation in parallel with the utility system, the interconnection customer shall abide by all rules and procedures pertaining to parallel operation in the utility's tariffs and in the interconnection agreement.
- (V) The interconnection customer shall be responsible for the utility's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair and replacement of utility upgrades or utility interconnection facilities not required to serve other utility customers. Such upgrades or facilities shall be specified in the interconnection agreement unless otherwise covered by the utility's tariff or excluded by interconnection agreement. Utilities may not refuse to provide an IC with a fixed dollar amount to cover reasonable and necessary utility upgrades or utility interconnection facilities in order to facilitate an interconnection.
- (g) Reasonable efforts. The utility and IC shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility or IC cannot meet a deadline provided herein, it shall notify the IC or the utility if the notifying party is the IC, and explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.
- (h) Disputes.
- (I) The utility and IC shall agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this subparagraph.
- (II) In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third party dispute resolution service for assistance in resolving the dispute.
- (III) The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.
- (IV) Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs paid to neutral third-parties.
- (V) If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission, pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1.
- (i) Interconnection metering. Except as otherwise required by other Commission's rules or by the terms of a Commission-approved program offered by the utility, any metering necessitated by the use of the interconnection resource shall be installed at the IC's expense in accordance with Commission requirements or the utility's specifications. For energy storage systems below 25



kW AC, additional metering shall not be required by the utility for the purposes of monitoring energy storage systems.

(j) Commissioning tests. Commissioning tests of the IC's installed interconnection resource shall be performed pursuant to applicable codes and standards, including IEEE 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" (2020). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202. The utility must be given at least five business days' written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing Level 2 and Level 3 commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.

(k) Confidentiality.

(I) Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.

(II) Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.

(A) Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.

(B) Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.

(III) Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The

party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.

- (l) Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this rule. The utility shall use the same reasonable and expeditious efforts in processing and analyzing interconnection requests from all interconnection customers, whether the interconnection resource is owned or operated by the utility, its subsidiaries or affiliates, or others.
- (m) Record retention. The utility shall maintain for three years, records, subject to audit, of all interconnection requests received under these procedures, the times required to complete each step of the interconnection request approvals and disapprovals, enumerated in these rules and justification for the actions taken on the interconnection requests.
- (n) Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in this rule. The utility will include such affected system operators in all meetings held with the IC as required by this rule. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems and shall provide to the IC any analysis and data underlying the affected system utility's determinations.
- (o) Insurance. A Utility may only require an applicant (i.e., an interconnection customer) to purchase insurance covering Utility damages, and then only in amounts stated below. An interconnection customer, at its own expense, shall secure and maintain in effect during the term of the interconnection agreement, insurance coverage in the following amounts:

(I) For non-inverter-based Generating Facilities:

Nameplate Rating > 5 MW \$3,000,000 for each occurrence

2 MW < Nameplate Rating < 5 MW \$2,000,000 for each occurrence

500 kW < Nameplate Rating < 2 MW \$1,000,000 for each occurrence

50 kW < Nameplate Rating < 500 kW \$500,000 for each occurrence

Nameplate Rating < 50 kW - no additional insurance

(II) For inverter-based Generating Facilities:

Nameplate Rating > 5 MW \$2,000,000 for each occurrence

1 MW < Nameplate Rating < 5 MW \$1,000,000 for each occurrence

Nameplate Rating < 1 MW no insurance

(III) Colorado governmental entities that self-insure against liability in amounts above those required in paragraph (o) for interconnection resources up to 2 MW or to the replacement value of the interconnection resource for those interconnection resource above 2 MW, shall not be required to purchase additional insurance or to add the utility as an additional insured to any policy, nor shall they be obligated to indemnify the utility, though they shall be liable for any negligent or intentional act or omission of the municipality, its employees, contractors, subcontractors, or agents.

(IV) Certificates of Insurance evidencing the requisite coverage and provision(s) when required shall be furnished to utility prior to the date of interconnection of the interconnection resource. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the interconnection customer in order to verify proper liability insurance coverage. Customers will not be allowed to commence or continue interconnected operations unless they provide to the utility evidence that satisfactory insurance coverage is in effect at all times.

(p) Implementation by tariff.

(I) Each utility shall have on file with the Commission an interconnection tariff that sets forth fees, deadlines and interconnection procedures. A utility's interconnection tariff shall comply with these Interconnection Rules, but when appropriate may include shorter deadlines for certain procedures.

(II) The interconnection tariff shall be filed along with an advice letter. Tariffs filed by cooperative electric associations shall be informational only. Tariffs filed by investor-owned electric utilities may be set for hearing and suspended in accordance with the Commission Rules of Practice and Procedure and applicable statutes.

(III) The tariff shall include the following provisions:

(A) timelines: paragraphs 3853(a),(d),(f), 3854(a), 3855(b),(c),(d), 3856(a),(b),(c),(d);

(B) any fees: including but not limited to those referenced at paragraphs 3853(a),(d),(f),(j), 3854(a) and (b), and 3856(a);

(i) the utility shall demonstrate that any fee established in tariff is cost-based;

(C) material modification withdrawals: paragraph 3853(d); and

(D) maximum rated capacity: paragraph 3853(b), and (c).

(q) Reporting.

(I) Each utility shall submit an interconnection report to the Commission two times per year and shall make it available to the public on its website. A cooperative electric association that has voted to exempt itself from regulation pursuant to C.R.S. § 40-9.5-103 shall submit an interconnection report to the Commission once per year. The first

interconnection report shall be due 180 days after the effective date of these interconnection rules. Upon a filing by a party with proper standing showing good cause, and when necessary and appropriate, the Commission may by order increase the frequency of such reporting on a temporary basis. The report shall contain relevant totals for both the year and the most recent reporting period, including the following information listed in subparagraphs (q)(II) and (III) of this rule. The report shall also contain the total number of missed deadlines contained in these rules in the reporting period as well as copies of any notices of delay or missed deadlines issued by the utility to an interconnection customer pursuant to paragraph 3853(g).

(II) Pre-application reports:

- (A) total number of reports requested;
- (B) total number of reports in process;
- (C) total number of reports issued;
- (D) total number of requests withdrawn;
- (E) maximum, mean, and median processing times from receipt of request to issuance of report; and
- (F) number of reports processed in more than the 20 business days allowed in subparagraph 3853(a)(IV)(A).

(III) Interconnection applications:

- (A) total number received, broken down by:
  - (i) primary fuel type (e.g., solar, wind, bio-gas, etc.); and
  - (ii) system size (e.g., <25 kW, <1 MW, <5MW, >5MW).
- (B) Level 1 review process.
  - (i) total number of applications processed; and
  - (ii) maximum, mean, and median processing times from receipt of complete application to provision of a counter-signed interconnection agreement.
- (C) Level 2 review process.
  - (i) total number of applications that passed the screens in paragraph 3855(b);
  - (ii) total number of applications that failed the screens in paragraph 3855(b); and

(iii) maximum, mean, and median processing times from receipt of complete application to issuance of an interconnection agreement.

(D) Supplemental review.

(i) total number of applications that passed the screens in paragraph 3855(d);

(ii) total number of applications that failed the screens in paragraph 3855(d); and

(iii) maximum, mean, and median processing times from receipt of complete application to issuance of interconnection agreement.

(E) Level 3 review process:

(i) system impact studies

(ii) total number of system impact studies completed under paragraph 3856(c); and

(iii) maximum, mean, and median processing times from receipt of a signed interconnection system impact study agreement to provision of study results.

#### **3854. Level 1 Process (25 kW Inverter Process).**

This rule establishes the procedures for evaluating an interconnection request for a certified inverter-based interconnection resource no larger than 25 kW AC which may be paired with a non-exporting energy storage system no larger than 25 kW AC. The application process uses an all-in-one document (application) that includes a simplified interconnection request, simplified procedures, and a brief set of terms and conditions.

(a) General Level 1 procedures.

(I) The IC completes application and submits it to the utility.

(II) The utility acknowledges to the customer receipt of the application within three business days of receipt.

(III) The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.

(IV) Within ten business days, the utility shall verify whether the interconnection resource can be interconnected safely and reliability using the same screens as applied in Level 2 Process as set forth in rule 3855 except for screens (V), (VI), (X) and (XI) which will not be deemed necessary for the Level 1 Process (25 kW AC Inverter Process). If the interconnection fails these screens, the utility shall generally consider this a failure of the

Level 2 Process screens in rule 3855. The utility shall continue the interconnection review under the Level 2 Process, starting at paragraph 3855(c), provided that the IC pays the difference in the Level 2 Process application fee and deposit requirements. The utility may also review the application within the ten-business day period to evaluate issues associated with highly seasonal circuits. However, if the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.

- (V) Provided all the criteria of this rule 3854 are met, unless the utility determines and demonstrates that the interconnection resource cannot be interconnected safely and reliably and requires upgrades, the utility approves and executes the application and returns it to the customer within ten business days.
- (VI) After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the interconnection resource for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary. The utilities should define “witness test” in their interconnection tariff.
- (VII) The utility shall notify the customer that parallel operation of the interconnection resource is authorized within ten business days of the certificate of completion. If the witness test is not satisfactory, the utility has the right to disconnect the interconnection resource. The customer has no right to operate in parallel until a witness test has been performed, or previously waived on the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.

(b) Level 1 application.

- (I) The customer must provide in the application the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.
- (II) The application is considered complete when it provides all applicable and correct information as required below. Additional information to evaluate the application may be required.
- (III) The application shall include the following information, as applicable:

(A) Processing fee. A fee of \_\_\_\_\_ must accompany this application.

(B) Interconnection customer:

Name

Contact Person

Address

City State Zip

Telephone (Day) and (Evening)

Fax Number and E-Mail Address

(C) Engineering firm or Installer (If applicable):

Contact Person

Address

City State Zip

Telephone

Fax and E-Mail Address

(D) Contact (if different from Interconnection Customer):

Name

Address

City State Zip

Telephone (Day) and (Evening)

Fax Number and E-Mail Address

Owner of the facility (include percent ownership by any electric utility)

(E) DER information:

Location (if different from above)

Utility

Account number

DER components

Inverter manufacturer: \_\_\_\_\_ Model

Nameplate rating: (kW AC) (kVA) (AC Volts)

Single phase \_\_\_\_\_ Three phase \_\_\_\_\_

System design capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)

Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other

Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)

Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, attach manufacturer's cut-sheet showing UL1741 listing

Estimated installation date: \_\_\_\_\_ Estimated in-service date: \_\_\_\_\_

The 25 kW AC inverter process is available only for inverter-based interconnection resources no larger than 25 kW AC that meet the codes, standards, and certification requirements of specified in certain of these interconnection rules, or the utility has reviewed the design or tested the proposed interconnection resources and is satisfied that it is safe to operate.

(F) List components of the small generating facility equipment package that are currently certified:

Equipment type certifying entity:

1.

2.

3.

4.

5.

(G) Limited-Export / Non-Export / Limited-Import Data:

If multiple export control systems are used, provide for each control system and use additional sheets if needed.

Is export controlled to less than the Total Aggregate Nameplate Rating? Yes: No:

Method of export limitation: Power Control System / Reverse Power Protection / Minimum Power Protection / Other (describe):

Export controls are applied to how many generators? Multiple: One:

If Power Control System is used, open loop response time(s): \_\_\_\_\_

Power Control System export capacity: (kW AC) (kVA)

Energy Storage System Power Control System operating mode:

Unrestricted: Export Only: Import Only: No Exchange:



Describe which Generators the export control system controls:

(H) Interconnection customer signature and certification:

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based interconnection resource No Larger than 25kW and return the Certificate of Completion when the interconnection resource has been installed.

Signed:

\_\_\_\_\_  
Title: \_\_\_\_\_ Date: \_\_\_\_\_

Contingent approval to interconnect the small generating facility.

(For company use only)

Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than 25 kW and return of the certificate of completion.

Company signature: \_\_\_\_\_

Title: Date: \_\_\_\_\_

Application ID number: \_\_\_\_\_

Company waives inspection/witness test? Yes \_\_\_\_\_ No \_\_\_\_\_

(c) Level 1 terms and conditions.

(I) Construction of the facility. The interconnection customer may proceed to construct the interconnection resource when the utility approves the interconnection request (the application) and returns it to the IC.

(II) Interconnection and operation. The IC may operate the interconnection resource and interconnect with the utility's electric system once all of the following have occurred:

(A) upon completing construction, the interconnection customer will cause the interconnection resource to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;

(B) the customer returns the certificate of completion to the utility; and

(C) the utility has completed its inspection of the interconnection resource. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that

- the interconnection resource has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.
- (D) The utility has the right to disconnect the interconnection resource in the event of improper installation or failure to return the certificate of completion.
- (III) Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the interconnection resource as required to ensure that it complies at all times with the interconnection standards to which it has been certified.
- (IV) Access. The utility shall have access to the disconnect switch and metering equipment of the interconnection resource at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.
- (V) Disconnection. The utility may temporarily disconnect the interconnection resource as allowed in the interconnection agreement and upon the following conditions:
- (A) for scheduled outages per notice requirements in the utility's tariff or Commission rules;
- (B) for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or
- (C) if the interconnection resource does not operate in the manner consistent with these terms and conditions.
- (D) The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.
- (VI) Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.
- (VII) The interconnection customer is not required to provide general liability insurance coverage as part of this agreement, or through any other utility requirement.
- (VIII) Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of the interconnection agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (c)(VI) of this rule.

- (IX) Termination. The interconnection agreement to operate in parallel may be terminated under the following conditions.
  - (A) By the customer by providing written notice to the utility.
  - (B) By the utility if the interconnection resource fails to operate for any consecutive 12-month period or the customer fails to remedy a violation of these terms and conditions.
  - (C) Permanent disconnection. In the event the interconnection agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its interconnection resource.
  - (D) Survival rights. The interconnection agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.
- (X) Assignment/Transfer of ownership of the facility. The interconnection agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.

**3855. Level 2 Process (Fast Track).**

This fast track process is available to an IC proposing to interconnect its interconnection resource with the utility's system if the interconnection resource meets the eligibility provisions in this rule 3855.

- (a) Eligibility.
  - (I) Eligibility for the Level 2 Process is determined based upon the type and size of the interconnection resource as well as the voltage of the utility line and the location of and the type of utility line at the point of interconnection. An interconnection customer may determine whether the interconnection resource is eligible for the Level 2 Process by requesting a pre-application report pursuant to subparagraph 3853(a)(IV).
  - (II) For certified inverter-based systems, the size limit of the interconnection resource varies according to the voltage of the utility line at the proposed point of interconnection. Certified inverter-based interconnection resource facilities located within 2.5 electrical circuit miles of a substation and on a mainline are eligible for the Level 2 Process under the higher thresholds pursuant to this rule 3855. The utilities should define "mainline" in their interconnection tariff.

<u>Level 2 Process Eligibility for Inverter-Based Systems</u>		
<u>Line Voltage</u>	<u>Eligibility Regardless of Location</u>	<u>Eligibility Meeting Location Requirements (Mainline and Substation)</u>
<u>&lt; 5 kV</u>	<u>≤ 500 kW</u>	<u>≤ 500 kW</u>
<u>≥ 5 kV and &lt; 15 kV</u>	<u>≤ 2 MW</u>	<u>≤ 3 MW</u>
<u>≥ 15 kV and &lt; 30 kV</u>	<u>≤ 3 MW</u>	<u>≤ 4 MW</u>
<u>≥ 30 kV and &lt; 69 kV</u>	<u>≤ 4 MW</u>	<u>≤ 5 MW</u>

(III) All synchronous and induction facilities must be no larger than 2 MW AC to be eligible for the Level 2 Process, regardless of location.

(IV) In addition to the size threshold, the interconnection resource must meet the codes, standards, and certification requirements specified in certain of these interconnection rules.

(V) A utility may utilize tools that perform screening functions using different methodology from that set out in paragraph 3855(d) as long as the analysis is aimed at preventing the same voltage, thermal and protection limitations specified under rule 3855 and otherwise complies with these rules.

(b) Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the following:

(I) The proposed interconnection resource's point of interconnection must be on a portion of the utility's distribution system that is subject to the utility's tariffs. Proposed interconnection resources on highly seasonal circuits shall also be subject to the supplemental review pursuant to paragraph 3855(d).

- (II) For interconnection of a proposed interconnection resources to a radial distribution circuit, the aggregated generation, including the proposed interconnection resources, on the line section(s) shall not exceed 15 percent of the line section’s annual peak load as most recently measured at the substation or calculated for the line section(s). A line section is that portion of a utility’s electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device. Energy storage system(s) capacity for purposes of this screen shall be based on subparagraph 3853(c)(III).
- (III) The proposed interconnection resource, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit’s maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.
- (IV) The proposed interconnection resource, in aggregate with other interconnection resource on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or interconnection customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.
- (V) The proposed interconnection resource shall meet the rapid voltage change and flicker requirements of IEEE Standard 1453 (2015) and IEEE Standard 1547-2018, until January 1, 2022, or until such time new DERs applying for interconnection will comply with IEEE 1547- 2018 based on the appropriate test. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (VI) The type of interconnection to a primary distribution line shall be determined based on the table below, including a review of the type of electrical service provided to the interconnection customer, line configuration, and the transformer connection to limit the potential for creating over-voltages on the utility’s electric power system due to a loss of ground during the operating time of any anti-islanding function.

<u>Primary Distribution Line Type</u>	<u>Type of Interconnection to Primary Distribution Line</u>	<u>Result/Criteria</u>
<u>Three-phase, three wire</u>	<u>3-phase or single phase, phase-to-phase</u>	<u>Pass screen</u>
<u>Three-phase, four wire</u>	<u>Effectively-grounded 3 phase or Single-phase, line-to-neutral</u>	<u>Pass screen</u>

- (VII) If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the

proposed small generating facility, shall not exceed 25 kW. Energy storage system(s) capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).

- (VIII) If the proposed interconnection resource is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.
  - (IX) No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.
  - (X) For interconnection of a proposed interconnection resource to the load side of spot network protectors serving more than a single customer, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the interconnection resource must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.
  - (XI) For interconnection of a proposed interconnection resource to the load side of area network protectors, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW AC.
  - (XII) The nameplate capacity of a proposed interconnection resource, in combination with the nameplate capacity of any previously interconnected interconnection resource, shall not exceed the capacity of the customer's existing electrical service unless there is a simultaneous request for an upgrade to the customer's electrical service, regardless of exporting or non-exporting designations for any of the interconnection resources.
- (c) Customer options meeting.
- (I) If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review whether the interconnection resource may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting. The utility shall provide to the IC in writing with a detailed information on the reasons(s) for failure.
  - (II) If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; without a supplemental study or other additional studies or actions; or without significant costs to address safety, reliability, or power quality problems, the utility shall notify the IC within the five business day period after the determination and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen

analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:

- (A) offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;
- (B) offer to perform a supplemental review pursuant to paragraph 3855(d) and provide a non-binding good faith estimate of the costs and time of such review; or
- (C) obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 study process.

(d) Supplemental review.

- (I) To accept a utility's offer to conduct a supplemental review, the interconnection customer, within 15 business days of the offer, shall agree in writing to the supplemental review and submit a deposit for the estimated costs. If the written agreement and deposit have not been received by the utility within the 15 days, the interconnection request shall continue to be evaluated under the Level 3 Process, unless the request is withdrawn by the IC. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.
- (II) Within 30 business days following receipt of the deposit for a supplemental review, the utility will perform a supplemental review of the proposed interconnection resource using the screens set forth below, notify the interconnection customer of the results of the screens in writing, and include with the notification copies of the analysis and data underlying the utility's determinations.
- (III) The interconnection customer may specify the order in which the utility completes the supplemental review screens.
- (IV) The utility shall notify the interconnection customer of the failure of the interconnection resource in any supplement review screen or of the utility's inability to perform any screen for the interconnection resource. Within two business days of the receipt of such notice, the interconnection customer may grant the utility permission:
  - (A) to continue evaluating the proposed interconnection under this paragraph 3855(d);
  - (B) to continue evaluating the proposed interconnection under this paragraph 3855(d) subject to the utility's determination of minor modifications;

- (C) to terminate the supplemental review and instead to continue evaluating the interconnection resource under the Level 3 Process; or
- (D) to terminate the supplemental review upon withdrawal of the interconnection request by the interconnection customer.
- (V) Minimum load, minimum loading, and minimum load data shall be specific to time(s) that the interconnection resource exports active power to the utility.
- (VI) Supplemental review screens.
  - (A) Minimum load screen.
    - (i) The interconnection resource capacity on the line section(s) shall be less than 100 percent of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed interconnection resource. Energy storage system(s), proposed and aggregated capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
    - (ii) This screen shall be determined using 12 months of line section(s) minimum load data (including onsite load but not station service load served by the proposed interconnection resource), calculated minimum load data, or estimated minimum load data using existing data a power flow model. If minimum load data is not available or the minimum load data cannot be calculated or estimated, the utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under subparagraph 3855(d)(IV).
    - (iii) The type of interconnection resource shall be taken into account when calculating or estimating circuit or line section(s) minimum load. The utility shall use daytime minimum load for solar photovoltaic (PV) interconnection resource with no battery storage (i.e., 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems). The utility shall use absolute minimum load for all other types of interconnection resource.
    - (iv) Only the net injection into the utility's electric system shall be considered as part of the interconnection resource when this screen is applied to interconnection resource serving some station service load.
    - (v) The utility shall not consider as part of the interconnection resource the capacity known to be already reflected in the minimum load data.
  - (B) Voltage and power quality screen.
    - (i) In aggregate with existing interconnection resource on the circuit and line section(s), the voltage regulation on the circuit and line section(s) shall



be maintained in compliance with relevant requirements under all system conditions;

- (ii) in aggregate with existing interconnection resource on the circuit and line section(s), the voltage fluctuation shall be within acceptable limits as defined by IEEE Standard 1453-2015 and conforming with IEEE Standard 1453-2015, while also taking into account activated inverter functionality, and by the limits defined by IEEE Standard 1547-2018. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202; and
- (iii) in aggregate with existing interconnection resource on the circuit and line section(s), the harmonic levels shall meet IEEE Standard 519 (2014) limits. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.

(C) Safety and reliability screen.

- (i) The location of the proposed interconnection resource and the aggregate interconnection resource capacity on the line section(s) shall not create impacts to safety or reliability that cannot be adequately addressed without application of the Level 3 Process.
- (ii) Minimum load, minimum loading and minimum load data shall be specific to time(s) of interconnection resource export capacity.
- (iii) The utility shall consider whether the line section(s) has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).
- (iv) The utility shall consider whether the loading along the line section(s) is uniform or even given the sources of the screening data.
- (v) The utility shall consider whether the proposed interconnection resource is located in close proximity to a substation (i.e., less than 2.5 electrical circuit miles) and whether the line section(s) from the substation to the point of interconnection is a mainline rated for normal and emergency ampacity.
- (vi) The utility shall consider whether the proposed interconnection resource incorporates a time delay function to prevent reconnection of the interconnection resource to the utility's system until system voltage and frequency are within normal limits for a prescribed time.
- (vii) The utility shall consider whether operational flexibility is reduced by the proposed interconnection resource, such that transfer of the line distribution circuit/substation may trigger overloads or voltage issues.

(viii) The utility shall consider whether the proposed interconnection resource employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, and voltage quality.

(VII) If the supplemental screening meets utility determined adequacy with minor modifications, the utility shall provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system upon notification of review results.

(e) Interconnection agreements.

(I) If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.

(II) If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.

(III) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(c)(II)(A), the utility will provide the interconnection customer with an executable interconnection agreement within ten business days of the customer options meeting.

(IV) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(d)(VII), the utility will provide the interconnection customer with an executable interconnection agreement within five business days of IC agreement to pay.

**3856. Level 3 Process (Study Process).**

This study process shall be used by an interconnection customer proposing to interconnect its interconnection resource with the utility's system if the interconnection resource does not meet the size limitations for the Level 2 Process, is not certified; or, is certified but did not pass the Level 1 Process or Level 2 Process.

(a) Scoping meeting.

(I) A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.

(II) The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection

agreement. If the parties agree that a feasibility study should be performed, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.

- (III) The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the IC elects not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
- (IV) Feasibility studies, scoping studies, and facility studies may be combined or waived for simpler projects by mutual agreement of the utility and the IC. If all such studies are waived, the utility shall provide the IC an executable interconnection agreement within ten business days after the scoping meeting. If the scoping meeting is also omitted by mutual agreement, the utility shall provide the IC an executable interconnection agreement within ten business days after the interconnection request is deemed complete and this Level 2 Process is completed.
- (V) If feasibility studies, system impact studies, and facility studies are combined, or required to be completed for a single application, a utility shall perform the combined studies within no more than 90 business days of the date upon which the IC authorizes the utility to proceed with the Level 3 Process.
- (VI) Utility must offer a developer the opportunity to pay full fees upfront and proceed straight to the system impact study.

(b) Feasibility study.

- (I) Within 30 business days of executing a feasibility study agreement, the utility shall perform a feasibility study. The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the interconnection resource. At its discretion, the utility may use the Level 2 supplemental review as described in paragraph 3855(d) as the feasibility study.
- (II) A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.
- (III) The scope of and cost responsibilities for the feasibility study are described in the feasibility study agreement.
- (IV) If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
- (V) If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).

(VI) If no system impact study is required and no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the feasibility study.

(c) System impact study.

(I) Within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth below. A system impact study shall identify and detail the electric system impacts that would result if the proposed interconnection resource were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.

(II) If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.

(III) In instances where the feasibility study or the distribution system impact study shows potential for adverse impacts on the utility's transmission system, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the transmission-supplied scope of the study and a transmission-supplied non-binding good faith estimate of the cost to perform the study, if such a study is required.

(IV) If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.

(V) If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.

(VI) In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.

(VII) A deposit of the good faith estimated costs for each system impact study may be required from the IC.

(VIII) The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.

- (IX) Where transmission systems and distribution systems have separate owners, such as is the case with transmission-dependent utilities whether investor-owned or not – the IC may apply to the nearest utility (transmission owner, regional transmission operator, or independent utility) providing transmission service to the transmission-dependent utility to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.
- (X) If no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the system impact study.
- (d) Facilities study.

  - (I) Within 45 business days of executing an appropriate agreement or contract, the utility shall perform a facilities study. Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC along with a facilities study agreement within five business days, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.
  - (II) In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.
  - (III) The facilities study shall include a detailed list of necessary system upgrades and an overall cost estimate, with the detailed list to indicate types of equipment, labor, operation and maintenance and other evaluated item costs, within the estimate for completing such upgrades, and identify which itemized cost estimates are uncertain and could be exceed by 125 percent if actual upgrades are completed.
  - (IV) Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement.
  - (V) A deposit of the good faith estimated costs for the facilities study may be required from the IC.
  - (VI) The scope of and cost responsibilities for the facilities study are described in a facilities study agreement.
  - (VII) Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.

**3857. Certification Codes and Standards.**

Unless one or more of the following standards has been incorporated by reference into these interconnection rules, the Commission encourages the utilities and their interconnection customers, to whom these rules apply, to use the following standards and reference materials for guidance.

ANSI C84.1-2016 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

ANSI/NEMA MG 1--2016, Motors and Generators

IEEE Std C37.90.1-2012, IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std C37.108-2002, IEEE Guide for the Protection of Network Transformers

IEEE Std C57.12.44-2014, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text

IEEE Std C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

IEEE Std 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition

IEEE Std 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std 1453-2015 IEEE Recommended Practice for the Analysis of Fluctuating Installation on Power Systems

IEEE Std 1547-2018, IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEEE Std 1547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

NFPA 70 (2017), National Electrical Code

UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems

UL 1741 SA, until January 1, 2022, or until such time new DERs applying for interconnection will comply with IEEE 1547-2018, IEEE Standards for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

**3858. Certification of DER Packages.**

- (a) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in rule 3857; it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- (b) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- (c) Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.
- (d) If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- (e) Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of interconnection shall be required to meet the requirements of this interconnection procedure.
- (f) An equipment package does not include equipment provided by the utility.

**3859. Filing of Interconnection Manual.**

No later than 90 calendar days after the effective date of these rules, each utility subject to these rules, except a cooperative electric association that has voted to exempt itself from regulation pursuant to C.R.S. § 40-9.5-103, shall file its Interconnection Manual with the Commission in a miscellaneous proceeding opened by the Commission for that purpose. This filing enables the Commission to ensure the terms and conditions contained in the Interconnection Manual are just, reasonable, and not unduly discriminatory. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. The utility shall update this information within 30 days after any material changes have been made to its manual. Utilities shall establish an internal process of acquiring timely feedback from stakeholders regarding the material changes provided within the Notice. Each time the

utility updates the Interconnection Manual, the utility shall make available a redline highlighting the changes.

Each utility, including cooperative electric associations, shall also provide, on its web site, interconnection standards or other technical guidance not included in, but that are consistent with, these procedures.

**3860. – 3874. [Reserved.]**



## COLORADO DEPARTMENT OF REGULATORY AGENCIES

### Public Utilities Commission

#### 4 CODE OF COLORADO REGULATIONS (CCR) 723-3

#### PART 3 RULES REGULATING ELECTRIC UTILITIES

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#### RENEWABLE ENERGY STANDARD

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[indicates omission of unaffected rules]

**3665. [Reserved.]**

\* \* \* \*

[indicates omission of unaffected rules]

**3667. [Reserved.]**

\* \* \* \*

[indicates omission of unaffected rules]

**3806. – 3849. [Reserved.]**

#### INTERCONNECTION PROCEDURES AND STANDARDS.

**3850. Applicability.**

The following interconnection procedures shall apply to the interconnection of all retail renewable distributed generation and other distributed energy resources including energy storage systems that operate in parallel with and are connected to the utility, when such interconnections are not subject to the jurisdiction of FERC. This rule largely tracks the 2013 FERC amended version of the FERC 2006 Small Generator Interconnection Procedures.

### **3851. Overview and Purpose.**

Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. The Commission expects all utilities, market participants, and Interconnection Customers interconnected with electric systems to comply with the recommendations offered by the President's Critical Infrastructure Protection Board and best practice recommendations from the electric reliability authority. All utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

The purpose of these rules is to establish reasonable interconnection procedures and insurance requirements all utilities to adhere to when interconnecting retail renewable distributed generation, and other distributed energy resources that connect to a utility's system that operate in parallel with and are connected to the utility.

### **3852. Definitions.**

The following definitions apply only to rules 3850 to 3859.

- (a) "Business day" means Monday through Friday, excluding federal holidays.
- (b) "Distributed energy resource" or "DER" means the interconnection customer's source of electric power connected to the utility's distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. DER includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE 1547-2018, until January 1, 2022, or until such time new DERs applying for interconnection will comply with IEEE 1547 2018. This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (c) "Distribution system" means the utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from interconnection resources or from interchanges with higher voltage transmission networks which transport bulk power over longer distances. The voltage levels at which distribution systems operate differ among areas.
- (d) "Energy storage system" means any commercially available, customer-sited system or utility-sited system, including batteries and batteries paired with on-site generation, that does not generate energy, that is capable of retaining, storing, and delivering electrical energy by chemical, thermal, mechanical, or other means.
- (e) "Export capacity" means the amount of alternating current (AC) electrical energy that an interconnection resource is intended to transfer to the utility's system across the point of interconnection.
- (f) "Highly seasonal circuit" means a circuit with a ratio of annual peak load to off-season peak load greater than six.

- (g) “Inadvertent export” means the potential condition in which a normally non-exporting or limited-exporting DER experiences a momentary export that does not exceed limitations specified in paragraph 3853(c).
- (h) “Interconnection agreement” means a contract between the interconnection customer and the utility that formally documents terms and conditions related to the operation and maintenance of any DER in accordance with the utility’s tariffs on file with the Commission.
- (i) “Interconnection customer” or “IC” means any entity, including the utility, any affiliates or subsidiaries of either, that proposes to interconnect its DER with the utility’s system.
- (j) “Interconnection facilities” means the utility’s interconnection facilities and the interconnection customer’s interconnection facilities. Collectively, interconnection facilities include all facilities and equipment between the DER and the point of interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the DER to the utility’s system. Interconnection facilities are sole use facilities and shall not include distribution upgrades.
- (k) “Interconnection request” means the interconnection customer’s request, in accordance with any applicable utility tariff, to interconnect a new small generating facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing DER that is interconnected with the utility’s system.
- (l) “Interconnection resource” means the interconnection customer’s source of electric power connected to the utility’s distribution grid, including retail renewable distributed generation, other small generation facilities for the production of electricity, energy storage systems, bidirectional storage, electric vehicle chargers with vehicle to grid, vehicle to home, vehicle to building or combination of any of these elements, as identified in the interconnection request, but shall not include the interconnection facilities not owned by the interconnection customer. “Interconnection resource” includes an interconnection system or a supplemental DER device that is necessary for compliance with IEEE Standard 1547-2018, until January 1, 2022, or until such time new DERs applying for interconnection will comply with IEEE 1547-2018. This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (m) “Interconnection tariffs” are required filings from the utilities that set forth fees associated with interconnection. Tariff filings would accommodate utility-specific costs, while allowing for appropriate statewide standardization in the provisions set forth.
- (n) “Line section” means that portion of the utility’s electric delivery system that is connected to a Customer and bounded by automatic sectionalizing devices or the end of the distribution line.
- (o) “Material modification” means a modification that has a material impact on the cost or timing of processing an application with a later queue priority date or a change in the point of interconnection. A material modification does not include, for example: a change of ownership of an interconnection resource; changes to the address of the generating facility, so long as the generating facility remains on the same parcel; a change or replacement of interconnection resource that is a like-kind substitution in size, ratings, impedances, efficiencies, or capabilities of

the equipment specified in the original application; or a reduction in the capacity of the interconnection resource of ten percent or less.

- (p) “Minor modifications” means modifications to the utility’s distribution system or to the interconnection facilities that do not have a material impact on the cost or on the timing of an interconnection request.
- (q) “Non-exporting system” means an interconnection resource that is designed so that it does not intentionally transfer electrical energy to the utility’s distribution or transmission system across the point of common coupling. Such systems may be used to supply part or all of a customer’s load continuously or during an outage. A system can be non-exporting by virtue of inverter programming or by some other on-site limiting element. Non-exporting systems may or may not produce inadvertent exports as defined in paragraph (g) of this rule.
- (r) “Operating mode” means the mode of DER operational characteristics that determines the performance during normal and abnormal conditions. For example, an operating mode such as “export only,” “import only,” and “no exchange.”
- (s) “Parallel operation” means a DER facility that is connected to the utility’s system and can supply AC electricity to the interconnection customer simultaneously with the utility’s supply of AC electricity.
- (t) “Party” or “Parties” means the utility, interconnection customer, or any combination thereof.
- (u) “Point of interconnection” means the point where the interconnection facilities connect with the utility’s system.
- (v) “Study process” means the procedure for evaluating an interconnection request that includes the Level 3 scoping meeting, feasibility study, system impact study, and facilities study.
- (w) “System upgrades” means the additions, modifications, and upgrades to the utility’s distribution or Commission-jurisdictional transmission system at or beyond the point of interconnection to facilitate interconnection of interconnection resources and render the service necessary to effect the interconnection customer’s operation of interconnection resources. System upgrades do not include interconnection facilities.
- (x) “Transmission system” means an interconnected group of transmission lines and associated equipment for the movement or transfer of electric energy between points of supply and points at which it is transformed for delivery to customers or is delivered to other electric systems.
- (y) “Utility system” means the facilities owned, controlled, or operated by the utility that are used to provide electric service under the tariff.
- (z) “Upgrades” means the additions and modifications to the utility’s system at or beyond the point of interconnection that are necessary to interconnect an interconnection resource. Upgrades do not include interconnection facilities.

**3853. General Interconnection Procedures.**

- (a) Pre-application procedures.
- (I) Prior to submitting its interconnection request, the interconnection customer may ask the utility interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The utility shall respond within 15 business days.
  - (II) The utility shall designate an employee or office from which information on the application process and on an affected system can be obtained through informal requests from the interconnection customer presenting a proposed project for a specific site. The name, telephone number, and e-mail address of such contact employee or office shall be made available on the utility's web site.
  - (III) In response to an informal pre-application request, the utility shall provide electric system information for specific locations, feeders, or small areas to the interconnection customer upon request and may include relevant system studies, interconnection studies, and other materials useful to an understanding of an interconnection at a particular point on the utility's system, to the extent such provision does not violate confidentiality provisions of prior agreements or critical infrastructure requirements. The utility shall comply with reasonable requests for such information unless such information is proprietary or confidential and cannot be provided pursuant to a confidentiality agreement.
  - (IV) In addition to the information described in subparagraphs 3853(a)(I) and (III), which may be provided in response to an informal request, an interconnection customer may submit a formal written request for a pre-application report on a proposed interconnection at a specific site using a form supplied by the utility, unless such information is confidential and cannot be provided pursuant to a confidentiality agreement. The utility may charge up to a Commission-approved fee for the pre-application report. Upon completion, each pre-application report shall be dated and publicly posted to the utility's website with any customer identifying information redacted.
    - (A) The utility shall provide the pre-application report to the interconnection customer within 20 business days of receipt of the completed request form and payment of the fee.
    - (B) The pre-application report shall be non-binding on the utility and shall not confer any rights to the interconnection customer. The provided information does not guarantee that an interconnection may be completed. Data provided in the pre-application report may become outdated at the time of the submission of the complete interconnection request.
    - (C) The pre-application report need only include existing information. A pre-application report request does not obligate the utility to conduct a study or other analysis of the proposed interconnection resource in the event that data is not readily available.
    - (D) If the utility cannot complete all or some of a pre-application report due to lack of available data, the utility should nonetheless explain what information is not

available and why it is not available, and the utility shall provide the interconnection customer with a pre- application report that includes the data that is available.

- (E) The utility shall, in good faith, include data in the pre- application report that represents the best available information at the time of reporting. The pre- application report will include the following information:
- (i) total capacity (in MVA) of substation/area bus, bank or circuit based on normal or operating ratings likely to serve the proposed point of interconnection;
  - (ii) existing aggregate generation DER capacity (in MW AC) interconnected to a substation/area bus, bank or circuit (i.e., amount of DER online) likely to serve the proposed point of interconnection;
  - (iii) aggregate queued DER capacity (in MW AC) for a substation/area bus, bank or circuit (i.e., amount of DER in the queue) likely to serve the proposed point of interconnection;
  - (iv) available capacity (in MW AC) of substation/area bus or bank and circuit likely to serve the proposed point of interconnection (i.e., total capacity less the sum of existing aggregate DER capacity and aggregate queued DER capacity);
  - (v) substation nominal distribution voltage and/or transmission nominal voltage, if applicable;
  - (vi) nominal distribution or transmission circuit voltage at the proposed point of interconnection whether the proposed DER is eligible for the Level 1, Level 2 or non-export process;
  - (vii) approximate circuit distance between the proposed point of interconnection and the substation;
  - (viii) relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load as described in the supplemental review minimum load screen in subparagraph 3855(d)(VI)(A) and absolute minimum load at the time of DER production, when available;
  - (ix) number and rating of protective devices and number and type (standard, bi-directional) of voltage regulating devices between the proposed point of interconnection and the substation/area. Identify whether the substation has a load tap changer;
  - (x) number of phases available at the proposed point of interconnection. If a single phase, distance from the three-phase circuit;

- (xi) whether the point of interconnection is located on a spot network, grid network, or radial supply; and
  - (xii) existing or known constraints such as, but not limited to, electrical dependencies at that location, short circuit interrupting capacity issues, power quality or stability issues on the circuit, capacity constraints, or secondary networks, based on the proposed point of interconnection.
- (b) Capacity of the DER.
  - (I) If the interconnection request is for an increase in capacity for an existing DER, the interconnection request shall be evaluated on the basis of the new total capacity of the DER, except as provided below in subparagraph 3853(c)(III).
  - (II) If the interconnection request is for a DER that includes multiple components at a site for which the interconnection customer seeks a single point of interconnection, the interconnection request shall be evaluated on the basis of the aggregate capacity of the multiple components, except as provided below in subparagraph 3853(c)(III).
  - (III) The interconnection request shall be evaluated using the maximum rated capacity of the DER, except as provided below in subparagraph 3853(c)(III). At the utility's discretion in accordance with subparagraph 3853(c)(III), the interconnection request may be evaluated using less than the maximum rated capacity of the DER if the utility determines that the DER is only capable of injecting less power into the utility's system.
- (c) Energy storage interconnections.
  - (I) Non-exporting energy storage may inadvertently export, so long as the magnitude is less than the energy storage's nameplate rating (kW-gross) and the duration of export of power from the customer's energy storage is less than 30 seconds for any single event. There are no limits to the number of events. Inadvertent export events shall not exceed thermal, service voltage, power quality or network limits defined within Commission rules or interconnection requirements. For good cause shown, the Commission may grant a variance of this section.
  - (II) When a storage system is installed in conjunction with a DER facility, both shall be reviewed at the same time and be included in one interconnection agreement.
  - (III) Interconnection requests are reviewed based on the combined nameplate ratings of systems accounting for their export capacity, and energy storage operating mode. The ongoing operation capacity portion of the interconnection review is based on the actual simultaneous performance AC ratings, taking into account the operational differences of load offset and export. If the contribution of the energy storage to the total contribution is limited by programming of the maximum active power output, use of a power control system, use of a power relay, or some other mutually agreeable, on-site limiting element, only the capacity that is designed to inject electricity to the utility's distribution or transmission system (other than inadvertent exports and fault contribution) will be used within certain technical screens and evaluations as specified in paragraphs 3855(b) and (d).

- (IV) Failure of hardware or software system(s) intended to limit energy storage export capacity shall cause the energy storage system to enter a safe operating state. An energy storage system combined with a UL 1741 certified power control system shall be considered capable of entering a safe operating state upon failure of hardware or software system(s). When mutually agreed fail-safe provisions are not provided, at the utility's discretion, the interconnection request may be evaluated using the maximum rated capacity of the energy storage system.
  - (V) When a storage system is installed at the same point of interconnection location as an existing interconnected DER facility, the review level will be based upon the incremental addition of the DER rated capacity and the exporting storage system rated capacity as provided in subparagraph 3853(c)(III).
  - (IV) A storage system may be located on the same side of a production meter as a generating facility when a production meter is required by these rules provided that the storage system is either non-exporting at the service meter or is charged exclusively by the generating facility and only the production recorded by the production meter will be eligible for incentives.
- (d) Interconnection requests.
- (I) The interconnection customer shall submit its interconnection request to the utility, together with the processing fee or deposit specified in the interconnection request. Additional fees or deposits shall not be required, except as otherwise specified in these procedures. A single request to interconnect may be submitted by the interconnection customer distributed generation paired with energy storage systems and shall be subject to one interconnection agreement.
  - (II) The interconnection request shall be date-stamped and time-stamped upon receipt. The original date-stamp and time-stamp applied to the interconnection request at the time of its original submission shall be the order in which the utility reviews applications to determine completeness.
  - (III) The interconnection customer shall be notified of receipt by the utility within three business days of receiving the interconnection request which notification may be to an e-mail address or fax number provided by the IC.
  - (IV) The utility shall notify the interconnection customer within ten business days of the receipt of the interconnection request as to whether the interconnection request is complete or incomplete. If the interconnection request is incomplete, the utility shall provide, along with the notice that the interconnection request is incomplete, a written list detailing all information that must be provided to complete the interconnection request. The interconnection customer will have ten business days after receipt of the notice to submit the listed information or to request an extension of time to provide such information. If the IC does not provide the listed information or a request for an extension of time within the deadline, the interconnection request will be deemed withdrawn. The IC may re-submit the application within one year without paying an additional interconnection application fee.



- (V) An interconnection request will be deemed complete upon submission of the listed information to the utility. The interconnection request shall be date-stamped and time-stamped upon being deemed complete. This date shall be accepted as the qualifying date-stamp and time-stamp for the purposes of any timetable in subsequent procedures.
  
- (VI) Any modification to interconnection resource data or equipment configuration or to the interconnection site that is a material modification, may be deemed by the utility to be a withdrawal of the interconnection request and may require submission of a new interconnection request. A new interconnection request shall not be required for minor modifications to interconnection resource data or equipment configuration or to the interconnection site. Within ten business days of receipt of a proposed modification, the utility, in consultation with an affected system owner, if applicable, shall evaluate whether a proposed modification constitutes a material modification.
  - (A) If the proposed modification is determined to be a material modification, then the utility shall notify the IC in writing that the customer may: withdraw the proposed modification; or proceed with a new interconnection request for such modification. The IC shall provide its determination in writing to the utility within ten business days after the utility provides the material modification determination results. If the IC does not provide its determination, the customer's request shall be deemed withdrawn.
  - (B) If the proposed modification is determined not to be a material modification, then the utility shall notify the IC in writing that the modification has been accepted and that the IC shall retain its eligibility for interconnection, including its place in the interconnection queue.
  - (C) Any dispute as to the utility's determination that a modification constitutes a material modification shall proceed in accordance with the dispute resolution provisions in these procedures.
  
- (VII) Documentation of site control must be submitted with the interconnection request. Site control may be demonstrated through:
  - (A) ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the interconnection resource;
  - (B) an option to purchase or acquire a leasehold site for such purpose which may include a letter of intent; or
  - (C) an exclusivity or other business relationship between the IC and the entity having the right to sell, lease, or grant the IC the right to possess or occupy a site for such purpose.
  - (D) For generating facilities utilizing the Level 1 25 kW AC inverter process, proof of site control may be demonstrated by the IC's signature on the interconnection application.

- (VIII) The utility shall place interconnection requests in a first come, first served order per feeder, per substation transformer, and per substation based upon the date an application is complete pursuant to subparagraph 3853(d)(V). The order of each interconnection request will be used to determine the cost responsibility for the upgrades necessary to accommodate the interconnection. At the utility's option, interconnection requests may be studied serially or in clusters for the purpose of the system impact study.
- (e) Evaluation of interconnection requests.
- (I) A request to interconnect an interconnection resource no larger than 25 kW AC, which may be paired with a non-exporting storage system no larger than 25 kW AC, shall be evaluated under the Level 1 Process.
- (II) If not eligible for Level 1, a request to interconnect an interconnection resource with a combined nameplate rating larger than 25 kW AC shall be evaluated under the Level 2 Process (Fast Track) in accordance with the eligibility requirements in paragraph 3855(a).
- (III) A request to interconnect an interconnection resource that does not pass the Level 1 or Level 2 Process shall be evaluated under the Level 3 Process.
- (IV) Non-exporting interconnection resources shall be evaluated under the “non-export” interconnection process. The “non-export” interconnection process is also applicable to additions of new non-exporting interconnection resources paired with existing interconnection resources when the existing interconnection resources have already executed an interconnection agreement.
- (f) Interconnection agreements.
- (I) Any interconnection resource operating in parallel with the utility's system is required to have an interconnection agreement with the utility to ensure safety, system reliability, and operational compatibility. References in these procedures to interconnection agreement are to the utility's interconnection agreement as provided on its website, which interconnection agreement is subject to Commission approval upon request.
- (II) Interconnection agreements shall survive transfer of ownership of the interconnection resource to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.
- (III) After receiving an interconnection agreement from the utility, the IC shall have 30 business days to sign and return the interconnection agreement, or request that the utility file an unexecuted interconnection agreement with the Commission. If the IC does not sign the interconnection agreement or ask that it be filed unexecuted by the utility within 30 business days, the interconnection request shall be deemed withdrawn. The utility shall provide the IC a fully executed interconnection agreement within two business days after receiving a signed interconnection agreement from the IC. After the parties sign the interconnection agreement, the interconnection of the interconnection resource shall proceed under the provisions of the interconnection agreement.

- (IV) Once the interconnection resource has been authorized by the utility to commence operation in parallel with the utility system, the interconnection customer shall abide by all rules and procedures pertaining to parallel operation in the utility's tariffs and in the interconnection agreement.
  - (V) The interconnection customer shall be responsible for the utility's reasonable and necessary cost for the purchase, installation, operation, maintenance, testing, repair and replacement of utility upgrades or utility interconnection facilities not required to serve other utility customers. Such upgrades or facilities shall be specified in the interconnection agreement unless otherwise covered by the utility's tariff or excluded by interconnection agreement. Utilities may not refuse to provide an IC with a fixed dollar amount to cover reasonable and necessary utility upgrades or utility interconnection facilities in order to facilitate an interconnection.
- (g) Reasonable efforts. The utility and IC shall make reasonable efforts to meet all time frames provided in these procedures unless the utility and the IC agree to a different schedule. If the utility or IC cannot meet a deadline provided herein, it shall notify the IC or the utility if the notifying party is the IC, and explain the reason for the failure to meet the deadline, and provide an estimated time by which it will complete the applicable interconnection procedure in the process.
- (h) Disputes.
- (I) The utility and IC shall agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this subparagraph.
  - (II) In the event of a dispute, either party shall provide the other party with a written notice of dispute. Such notice shall describe in detail the nature of the dispute. If the dispute has not been resolved within five business days after receipt of the notice, either party may contact a mutually agreed upon third party dispute resolution service for assistance in resolving the dispute.
  - (III) The dispute resolution service will assist the parties in either resolving their dispute or in selecting an appropriate dispute resolution venue (e.g., mediation, settlement judge, early neutral evaluation, or technical expert) to assist the parties in resolving their dispute.
  - (IV) Each party agrees to conduct all negotiations in good faith and will be responsible for one-half of any costs paid to neutral third-parties.
  - (V) If neither party elects to seek assistance from the dispute resolution service, or if the attempted dispute resolution fails, then either party may exercise whatever rights and remedies it may have in equity or law consistent with the terms of the agreements between the parties or it may seek resolution at the Commission, pursuant to the Rules of Practice and Procedure, 4 Code of Colorado Regulations 723-1.
- (i) Interconnection metering. Except as otherwise required by other Commission's rules or by the terms of a Commission-approved program offered by the utility, any metering necessitated by the use of the interconnection resource shall be installed at the IC's expense in accordance with Commission requirements or the utility's specifications. For energy storage systems below 25

kW AC, additional metering shall not be required by the utility for the purposes of monitoring energy storage systems.

- (j) Commissioning tests. Commissioning tests of the IC's installed interconnection resource shall be performed pursuant to applicable codes and standards, including IEEE 1547.1 "IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems" (2020). This rule does not include any later amendments or editions of this standard. This standard is available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202. The utility must be given at least five business days' written notice, or as otherwise mutually agreed to by the parties, of the tests and may be present to witness the commissioning tests. The utility shall be compensated by the IC for its expense in witnessing Level 2 and Level 3 commissioning tests. The utility shall provide to the IC an operational approval letter within three business days after notification that the commissioning test has been successfully completed. Such letter may be provided via e-mail.
- (k) Confidentiality.
  - (I) Confidential information shall mean any confidential and/or proprietary information provided by one party to the other party that is clearly marked or otherwise designated "Confidential." All design, operating specifications, and metering data provided by the IC shall be deemed confidential information regardless of whether it is clearly marked or otherwise designated as such.
  - (II) Confidential information does not include information previously in the public domain, required to be publicly submitted or divulged by governmental authorities (after notice to the other party and after exhausting any opportunity to oppose such publication or release), or necessary to be divulged in an action to enforce an agreement between the parties. Each party receiving confidential information shall hold such information in confidence and shall not disclose it to any third party nor to the public without the prior written authorization from the party providing that information, except to fulfill obligations under agreements between the parties, or to fulfill legal or regulatory requirements.
    - (A) Each party shall employ at least the same standard of care to protect confidential information obtained from the other party as it employs to protect its own confidential information.
    - (B) Each party is entitled to equitable relief, by injunction or otherwise, to enforce its rights under this provision to prevent the release of confidential information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.
  - (III) Notwithstanding anything in this article to the contrary, if the Commission, during the course of an investigation or otherwise, requests information from one of the parties that is otherwise required to be maintained in confidence, the party shall provide the requested information to the Commission, within the time provided for in the request for information. In providing the information to the Commission, the party may request that the information be treated as confidential and non-public by the Commission and that the information be withheld from public disclosure. Parties are prohibited from notifying the other party prior to the release of the confidential information to the Commission. The

party shall notify the other party when it is notified by the Commission that a request to release confidential information has been received by the Commission, at which time either of the parties may respond before such information would be made public.

- (l) Comparability. The utility shall receive, process, and analyze all interconnection requests in a timely manner as set forth in this rule. The utility shall use the same reasonable and expeditious efforts in processing and analyzing interconnection requests from all interconnection customers, whether the interconnection resource is owned or operated by the utility, its subsidiaries or affiliates, or others.
- (m) Record retention. The utility shall maintain for three years, records, subject to audit, of all interconnection requests received under these procedures, the times required to complete each step of the interconnection request approvals and disapprovals, enumerated in these rules and justification for the actions taken on the interconnection requests.
- (n) Coordination with affected systems. The utility shall coordinate the conduct of any studies required to determine the impact of the interconnection request on affected systems with affected system operators and, if possible, include those results (if available) in its applicable interconnection study within the time frame specified in this rule. The utility will include such affected system operators in all meetings held with the IC as required by this rule. The IC will cooperate with the utility in all matters related to the conduct of studies and the determination of modifications to affected systems. A utility which may be an affected system shall cooperate with the utility with which interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to affected systems and shall provide to the IC any analysis and data underlying the affected system utility's determinations.
- (o) Insurance. A Utility may only require an applicant (i.e., an interconnection customer) to purchase insurance covering Utility damages, and then only in amounts stated below. An interconnection customer, at its own expense, shall secure and maintain in effect during the term of the interconnection agreement, insurance coverage in the following amounts:

- (l) For non-inverter-based Generating Facilities:

Nameplate Rating > 5 MW \$3,000,000 for each occurrence

2 MW < Nameplate Rating < 5 MW \$2,000,000 for each occurrence

500 kW < Nameplate Rating < 2 MW \$1,000,000 for each occurrence

50 kW < Nameplate Rating < 500 kW \$500,000 for each occurrence

Nameplate Rating < 50 kW - no additional insurance

- (II) For inverter-based Generating Facilities:

Nameplate Rating > 5 MW \$2,000,000 for each occurrence

1 MW < Nameplate Rating < 5 MW \$1,000,000 for each occurrence

Nameplate Rating < 1 MW no insurance

- (III) Colorado governmental entities that self-insure against liability in amounts above those required in paragraph (o) for interconnection resources up to 2 MW or to the replacement value of the interconnection resource for those interconnection resource above 2 MW, shall not be required to purchase additional insurance or to add the utility as an additional insured to any policy, nor shall they be obligated to indemnify the utility, though they shall be liable for any negligent or intentional act or omission of the municipality, its employees, contractors, subcontractors, or agents.
  - (IV) Certificates of Insurance evidencing the requisite coverage and provision(s) when required shall be furnished to utility prior to the date of interconnection of the interconnection resource. Utilities shall be permitted to periodically obtain proof of current insurance coverage from the interconnection customer in order to verify proper liability insurance coverage. Customers will not be allowed to commence or continue interconnected operations unless they provide to the utility evidence that satisfactory insurance coverage is in effect at all times.
- (p) Implementation by tariff.
- (I) Each utility shall have on file with the Commission an interconnection tariff that sets forth fees, deadlines and interconnection procedures. A utility's interconnection tariff shall comply with these Interconnection Rules, but when appropriate may include shorter deadlines for certain procedures.
  - (II) The interconnection tariff shall be filed along with an advice letter. Tariffs filed by cooperative electric associations shall be informational only. Tariffs filed by investor-owned electric utilities may be set for hearing and suspended in accordance with the Commission Rules of Practice and Procedure and applicable statutes.
  - (III) The tariff shall include the following provisions:
    - (A) timelines: paragraphs 3853(a),(d),(f), 3854(a), 3855(b),(c),(d), 3856(a),(b),(c),(d);
    - (B) any fees: including but not limited to those referenced at paragraphs 3853(a),(d),(f),(j), 3854(a) and (b), and 3856(a);
      - (i) the utility shall demonstrate that any fee established in tariff is cost-based;
    - (C) material modification withdrawals: paragraph 3853(d); and
    - (D) maximum rated capacity: paragraph 3853(b), and (c).
- (q) Reporting.
- (I) Each utility shall submit an interconnection report to the Commission two times per year and shall make it available to the public on its website. A cooperative electric association that has voted to exempt itself from regulation pursuant to C.R.S. § 40-9.5-103 shall submit an interconnection report to the Commission once per year. The first

interconnection report shall be due 180 days after the effective date of these interconnection rules. Upon a filing by a party with proper standing showing good cause, and when necessary and appropriate, the Commission may by order increase the frequency of such reporting on a temporary basis. The report shall contain relevant totals for both the year and the most recent reporting period, including the following information listed in subparagraphs (q)(II) and (III) of this rule. The report shall also contain the total number of missed deadlines contained in these rules in the reporting period as well as copies of any notices of delay or missed deadlines issued by the utility to an interconnection customer pursuant to paragraph 3853(g).

- (II) Pre-application reports:
  - (A) total number of reports requested;
  - (B) total number of reports in process;
  - (C) total number of reports issued;
  - (D) total number of requests withdrawn;
  - (E) maximum, mean, and median processing times from receipt of request to issuance of report; and
  - (F) number of reports processed in more than the 20 business days allowed in subparagraph 3853(a)(IV)(A).
  
- (III) Interconnection applications:
  - (A) total number received, broken down by:
    - (i) primary fuel type (e.g., solar, wind, bio-gas, etc.); and
    - (ii) system size (e.g., <25 kW, <1 MW, <5MW, >5MW).
  - (B) Level 1 review process.
    - (i) total number of applications processed; and
    - (ii) maximum, mean, and median processing times from receipt of complete application to provision of a counter-signed interconnection agreement.
  - (C) Level 2 review process.
    - (i) total number of applications that passed the screens in paragraph 3855(b);
    - (ii) total number of applications that failed the screens in paragraph 3855(b); and

- (iii) maximum, mean, and median processing times from receipt of complete application to issuance of an interconnection agreement.
- (D) Supplemental review.
  - (i) total number of applications that passed the screens in paragraph 3855(d);
  - (ii) total number of applications that failed the screens in paragraph 3855(d); and
  - (iii) maximum, mean, and median processing times from receipt of complete application to issuance of interconnection agreement.
- (E) Level 3 review process:
  - (i) system impact studies
  - (ii) total number of system impact studies completed under paragraph 3856(c); and
  - (iii) maximum, mean, and median processing times from receipt of a signed interconnection system impact study agreement to provision of study results.

**3854. Level 1 Process (25 kW Inverter Process).**

This rule establishes the procedures for evaluating an interconnection request for a certified inverter-based interconnection resource no larger than 25 kW AC which may be paired with a non-exporting energy storage system no larger than 25 kW AC. The application process uses an all-in-one document (application) that includes a simplified interconnection request, simplified procedures, and a brief set of terms and conditions.

- (a) General Level 1 procedures.
  - (I) The IC completes application and submits it to the utility.
  - (II) The utility acknowledges to the customer receipt of the application within three business days of receipt.
  - (III) The utility evaluates the application for completeness and notifies the customer within ten business days of receipt that the application is or is not complete and, if not, advises what material is missing.
  - (IV) Within ten business days, the utility shall verify whether the interconnection resource can be interconnected safely and reliability using the same screens as applied in Level 2 Process as set forth in rule 3855 except for screens (V), (VI), (X) and (XI) which will not be deemed necessary for the Level 1 Process (25 kW AC Inverter Process). If the interconnection fails these screens, the utility shall generally consider this a failure of the



Level 2 Process screens in rule 3855. The utility shall continue the interconnection review under the Level 2 Process, starting at paragraph 3855(c), provided that the IC pays the difference in the Level 2 Process application fee and deposit requirements. The utility may also review the application within the ten-business day period to evaluate issues associated with highly seasonal circuits. However, if the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.

- (V) Provided all the criteria of this rule 3854 are met, unless the utility determines and demonstrates that the interconnection resource cannot be interconnected safely and reliably and requires upgrades, the utility approves and executes the application and returns it to the customer within ten business days.
  - (VI) After installation, the customer returns the certificate of completion to the utility. Prior to parallel operation, the utility may inspect the interconnection resource for compliance with standards, which may include a witness test, and may schedule appropriate metering replacement, if necessary. The utilities should define “witness test” in their interconnection tariff.
  - (VII) The utility shall notify the customer that parallel operation of the interconnection resource is authorized within ten business days of the certificate of completion. If the witness test is not satisfactory, the utility has the right to disconnect the interconnection resource. The customer has no right to operate in parallel until a witness test has been performed, or previously waived on the application. The utility is obligated to complete this witness test within ten business days of the receipt of the certificate of completion.
- (b) Level 1 application.
- (I) The customer must provide in the application the contact information for the legal applicant (i.e., the interconnection customer). If another entity is responsible for interfacing with the utility, that contact information must be provided on the application.
  - (II) The application is considered complete when it provides all applicable and correct information as required below. Additional information to evaluate the application may be required.
  - (III) The application shall include the following information, as applicable:
    - (A) Processing fee. A fee of \_\_\_\_\_ must accompany this application.
    - (B) Interconnection customer:
      - Name
      - Contact Person
      - Address

City State Zip

Telephone (Day) and (Evening)

Fax Number and E-Mail Address

(C) Engineering firm or Installer (If applicable):

Contact Person

Address

City State Zip

Telephone

Fax and E-Mail Address

(D) Contact (if different from Interconnection Customer):

Name

Address

City State Zip

Telephone (Day) and (Evening)

Fax Number and E-Mail Address

Owner of the facility (include percent ownership by any electric utility)

(E) DER information:

Location (if different from above)

Utility

Account number

DER components

Inverter manufacturer: \_\_\_\_\_ Model

Nameplate rating: (kW AC) (kVA) (AC Volts)

Single phase \_\_\_\_\_ Three phase \_\_\_\_\_

System design capacity: \_\_\_\_\_ (kW) \_\_\_\_\_ (kVA)

Prime mover: Photovoltaic Reciprocating Engine Fuel Cell Turbine Other

Energy source: Solar Wind Hydro Diesel Natural Gas Fuel Oil Other (describe)

Is the equipment UL1741 Listed? Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, attach manufacturer's cut-sheet showing UL1741 listing

Estimated installation date: \_\_\_\_\_ Estimated in-service date:

The 25 kW AC inverter process is available only for inverter-based interconnection resources no larger than 25 kW AC that meet the codes, standards, and certification requirements of specified in certain of these interconnection rules, or the utility has reviewed the design or tested the proposed interconnection resources and is satisfied that it is safe to operate.

(F) List components of the small generating facility equipment package that are currently certified:

Equipment type certifying entity:

- 1.
- 2.
- 3.
- 4.
- 5.

(G) Limited-Export / Non-Export / Limited-Import Data:

If multiple export control systems are used, provide for each control system and use additional sheets if needed.

Is export controlled to less than the Total Aggregate Nameplate Rating? Yes: No:

Method of export limitation: Power Control System / Reverse Power Protection / Minimum Power Protection / Other (describe):

Export controls are applied to how many generators? Multiple: One:

If Power Control System is used, open loop response time(s): \_\_\_\_\_

Power Control System export capacity: (kW AC) (kVA)

Energy Storage System Power Control System operating mode:

Unrestricted: Export Only: Import Only: No Exchange:

Describe which Generators the export control system controls:

(H) Interconnection customer signature and certification:

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to abide by the Terms and Conditions for Interconnecting an Inverter-Based interconnection resource No Larger than 25kW and return the Certificate of Completion when the interconnection resource has been installed.

Signed:

\_\_\_\_\_

Title:

Date:

Contingent approval to interconnect the small generating facility.

(For company use only)

Interconnection of the small generating facility is approved contingent upon the terms and conditions for interconnecting an inverter-based small generating facility no larger than 25 kW and return of the certificate of completion.

Company signature: \_\_\_\_\_

Title: Date:

Application ID number: \_\_\_\_\_

Company waives inspection/witness test? Yes \_\_\_\_ No \_\_\_\_

(c) Level 1 terms and conditions.

- (I) Construction of the facility. The interconnection customer may proceed to construct the interconnection resource when the utility approves the interconnection request (the application) and returns it to the IC.
- (II) Interconnection and operation. The IC may operate the interconnection resource and interconnect with the utility's electric system once all of the following have occurred:
  - (A) upon completing construction, the interconnection customer will cause the interconnection resource to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction;
  - (B) the customer returns the certificate of completion to the utility; and
  - (C) the utility has completed its inspection of the interconnection resource. All inspections must be conducted by the utility, at its own expense, within ten business days after receipt of the certificate of completion and shall take place at a time agreeable to the parties. The utility shall provide a written statement that

the interconnection resource has passed inspection or shall notify the customer of what steps it must take to pass inspection as soon as practicable after the inspection takes place.

- (D) The utility has the right to disconnect the interconnection resource in the event of improper installation or failure to return the certificate of completion.
- (III) Safe operations and maintenance. The interconnection customer shall be fully responsible to operate, maintain, and repair the interconnection resource as required to ensure that it complies at all times with the interconnection standards to which it has been certified.
- (IV) Access. The utility shall have access to the disconnect switch and metering equipment of the interconnection resource at all times. The utility shall provide reasonable notice to the customer when possible prior to using its right of access.
- (V) Disconnection. The utility may temporarily disconnect the interconnection resource as allowed in the interconnection agreement and upon the following conditions:
  - (A) for scheduled outages per notice requirements in the utility's tariff or Commission rules;
  - (B) for unscheduled outages or emergency conditions pursuant to the utility's tariff or Commission rules; or
  - (C) if the interconnection resource does not operate in the manner consistent with these terms and conditions.
  - (D) The utility shall inform the interconnection customer in advance of any scheduled disconnection, or as is reasonable after an unscheduled disconnection.
- (VI) Indemnification. The parties shall at all times indemnify, defend, and save the other party harmless from, any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's action or inactions of its obligations under this agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.
- (VII) The interconnection customer is not required to provide general liability insurance coverage as part of this agreement, or through any other utility requirement.
- (VIII) Limitation of liability. Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of the interconnection agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever, except as allowed under subparagraph (c)(VI) of this rule.

- (IX) Termination. The interconnection agreement to operate in parallel may be terminated under the following conditions.
  - (A) By the customer by providing written notice to the utility.
  - (B) By the utility if the interconnection resource fails to operate for any consecutive 12-month period or the customer fails to remedy a violation of these terms and conditions.
  - (C) Permanent disconnection. In the event the interconnection agreement is terminated, the utility shall have the right to disconnect its facilities or direct the customer to disconnect its interconnection resource.
  - (D) Survival rights. The interconnection agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the agreement.
- (X) Assignment/Transfer of ownership of the facility. The interconnection agreement shall survive the transfer of ownership of the small generating facility to a new owner when the new owner agrees in writing to comply with the terms of the agreement and so notifies the utility.

**3855. Level 2 Process (Fast Track).**

This fast track process is available to an IC proposing to interconnect its interconnection resource with the utility's system if the interconnection resource meets the eligibility provisions in this rule 3855.

- (a) Eligibility.
  - (I) Eligibility for the Level 2 Process is determined based upon the type and size of the interconnection resource as well as the voltage of the utility line and the location of and the type of utility line at the point of interconnection. An interconnection customer may determine whether the interconnection resource is eligible for the Level 2 Process by requesting a pre-application report pursuant to subparagraph 3853(a)(IV).
  - (II) For certified inverter-based systems, the size limit of the interconnection resource varies according to the voltage of the utility line at the proposed point of interconnection. Certified inverter-based interconnection resource facilities located within 2.5 electrical circuit miles of a substation and on a mainline are eligible for the Level 2 Process under the higher thresholds pursuant to this rule 3855. The utilities should define "mainline" in their interconnection tariff.

<b>Level 2 Process Eligibility for Inverter-Based Systems</b>		
<b>Line Voltage</b>	<b>Eligibility Regardless of Location</b>	<b>Eligibility Meeting Location Requirements (Mainline and Substation)</b>
< 5 kV	≤ 500 kW	≤ 500 kW
≥ 5 kV and < 15 kV	≤ 2 MW	≤ 3 MW
≥ 15 kV and < 30 kV	≤ 3 MW	≤ 4 MW
≥ 30 kV and < 69 kV	≤ 4 MW	≤ 5 MW

- (III) All synchronous and induction facilities must be no larger than 2 MW AC to be eligible for the Level 2 Process, regardless of location.
  - (IV) In addition to the size threshold, the interconnection resource must meet the codes, standards, and certification requirements specified in certain of these interconnection rules.
  - (V) A utility may utilize tools that perform screening functions using different methodology from that set out in paragraph 3855(d) as long as the analysis is aimed at preventing the same voltage, thermal and protection limitations specified under rule 3855 and otherwise complies with these rules.
- (b) Initial review. Within 15 business days after the utility notifies the interconnection customer it has received a complete interconnection request, the utility shall perform an initial review using the screens set forth below, shall notify the interconnection customer of the results, and include with the notification copies of the analysis and data underlying the utility's determinations under the following:
- (I) The proposed interconnection resource's point of interconnection must be on a portion of the utility's distribution system that is subject to the utility's tariffs. Proposed interconnection resources on highly seasonal circuits shall also be subject to the supplemental review pursuant to paragraph 3855(d).

- (II) For interconnection of a proposed interconnection resources to a radial distribution circuit, the aggregated generation, including the proposed interconnection resources, on the line section(s) shall not exceed 15 percent of the line section’s annual peak load as most recently measured at the substation or calculated for the line section(s). A line section is that portion of a utility’s electric system connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line. A fuse is not an automatic sectionalizing device. Energy storage system(s) capacity for purposes of this screen shall be based on subparagraph 3853(c)(III).
- (III) The proposed interconnection resource, in aggregation with other generation on the distribution circuit, shall not contribute more than ten percent to the distribution circuit’s maximum fault current at the point on the distribution feeder voltage (primary) level nearest the proposed point of change of ownership.
- (IV) The proposed interconnection resource, in aggregate with other interconnection resource on the distribution circuit, shall not cause any distribution protective devices and equipment (including, but not limited to, substation breakers, fuse cutouts, and line reclosers), or interconnection customer equipment on the system to exceed 87.5 percent of the short circuit interrupting capability; nor shall the interconnection be proposed for a circuit that already exceeds 87.5 percent of the short circuit interrupting capability.
- (V) The proposed interconnection resource shall meet the rapid voltage change and flicker requirements of IEEE Standard 1453 (2015) and IEEE Standard 1547-2018, until January 1, 2022, or until such time new DERs applying for interconnection will comply with IEEE 1547- 2018 based on the appropriate test. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission’s office, 1560 Broadway, Suite 250, Denver, CO 80202.
- (VI) The type of interconnection to a primary distribution line shall be determined based on the table below, including a review of the type of electrical service provided to the interconnection customer, line configuration, and the transformer connection to limit the potential for creating over-voltages on the utility’s electric power system due to a loss of ground during the operating time of any anti-islanding function.

<b>Primary Distribution Line Type</b>	<b>Type of Interconnection to Primary Distribution Line</b>	<b>Result/Criteria</b>
Three-phase, three wire	3-phase or single phase, phase-to-phase	Pass screen
Three-phase, four wire	Effectively-grounded 3 phase or Single-phase, line-to-neutral	Pass screen

- (VII) If the proposed interconnection resource is to be interconnected on single-phase shared secondary, the aggregate generation capacity on the shared secondary, including the



proposed small generating facility, shall not exceed 25 kW. Energy storage system(s) capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).

- (VIII) If the proposed interconnection resource is single-phase and is to be interconnected on a center tap neutral of a 240 volt service, its addition shall not create an imbalance between the two sides of the 240 volt service of more than 20 percent of the nameplate rating of the service transformer.
  - (IX) No construction of facilities by the utility on its own system shall be required to accommodate the small generating facility.
  - (X) For interconnection of a proposed interconnection resource to the load side of spot network protectors serving more than a single customer, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of five percent of a spot network's maximum load or 300 kW. For spot networks serving a single customer, the interconnection resource must use inverter-based equipment package and either meet the requirements above or shall use a protection scheme or operate the generator so as not to exceed on-site load or otherwise prevent nuisance operation of the spot network protectors.
  - (XI) For interconnection of a proposed interconnection resource to the load side of area network protectors, the proposed interconnection resource must utilize an inverter-based equipment package and, together with the aggregated other inverter-based interconnection resource, shall not exceed the smaller of ten percent of an area network's minimum load or 500 kW AC.
  - (XII) The nameplate capacity of a proposed interconnection resource, in combination with the nameplate capacity of any previously interconnected interconnection resource, shall not exceed the capacity of the customer's existing electrical service unless there is a simultaneous request for an upgrade to the customer's electrical service, regardless of exporting or non-exporting designations for any of the interconnection resources.
- (c) Customer options meeting.
- (I) If the proposed interconnection fails the screens, but the utility does not or cannot determine from the initial review whether the interconnection resource may nevertheless be interconnected consistent with safety, reliability, and power quality standards unless the IC is willing to consider minor modifications or further study, the utility shall provide the IC with the opportunity to attend a customer options meeting. The utility shall provide to the IC in writing with a detailed information on the reasons(s) for failure.
  - (II) If the utility determines the interconnection request cannot be approved without minor modifications at minimal cost; without a supplemental study or other additional studies or actions; or without significant costs to address safety, reliability, or power quality problems, the utility shall notify the IC within the five business day period after the determination and provide the data and analyses underlying its conclusion. Within ten business days of the utility's determination, the utility shall offer to convene a customer options meeting with the utility to review possible IC facility modifications or the screen

analysis and related results, to determine what further steps are needed to permit the small generating facility to be connected safely and reliably. At the time of notification of the utility's determination, or at the customer options meeting, the utility shall:

- (A) offer to perform facility modifications or minor modifications to the utility's electric system (e.g., changing meters, fuses, relay settings) and provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system;
- (B) offer to perform a supplemental review pursuant to paragraph 3855(d) and provide a non-binding good faith estimate of the costs and time of such review; or
- (C) obtain the interconnection customer's agreement to continue evaluating the interconnection request under the Level 3 study process.

(d) Supplemental review.

- (I) To accept a utility's offer to conduct a supplemental review, the interconnection customer, within 15 business days of the offer, shall agree in writing to the supplemental review and submit a deposit for the estimated costs. If the written agreement and deposit have not been received by the utility within the 15 days, the interconnection request shall continue to be evaluated under the Level 3 Process, unless the request is withdrawn by the IC. The IC shall be responsible for the utility's actual costs for conducting the supplemental review. The IC must pay any review costs that exceed the deposit within 20 business days of receipt of the invoice or resolution of any dispute. If the deposit exceeds the invoiced costs, the utility will return such excess within 20 business days of the invoice without interest.
- (II) Within 30 business days following receipt of the deposit for a supplemental review, the utility will perform a supplemental review of the proposed interconnection resource using the screens set forth below, notify the interconnection customer of the results of the screens in writing, and include with the notification copies of the analysis and data underlying the utility's determinations.
- (III) The interconnection customer may specify the order in which the utility completes the supplemental review screens.
- (IV) The utility shall notify the interconnection customer of the failure of the interconnection resource in any supplement review screen or of the utility's inability to perform any screen for the interconnection resource. Within two business days of the receipt of such notice, the interconnection customer may grant the utility permission:
  - (A) to continue evaluating the proposed interconnection under this paragraph 3855(d);
  - (B) to continue evaluating the proposed interconnection under this paragraph 3855(d) subject to the utility's determination of minor modifications;

- (C) to terminate the supplemental review and instead to continue evaluating the interconnection resource under the Level 3 Process; or
- (D) to terminate the supplemental review upon withdrawal of the interconnection request by the interconnection customer.
- (V) Minimum load, minimum loading, and minimum load data shall be specific to time(s) that the interconnection resource exports active power to the utility.
- (VI) Supplemental review screens.
  - (A) Minimum load screen.
    - (i) The interconnection resource capacity on the line section(s) shall be less than 100 percent of the minimum load for all line sections bounded by automatic sectionalizing devices upstream of the proposed interconnection resource. Energy storage system(s), proposed and aggregated capacity for purposes of this screen, shall be based on subparagraph 3853(c)(III).
    - (ii) This screen shall be determined using 12 months of line section(s) minimum load data (including onsite load but not station service load served by the proposed interconnection resource), calculated minimum load data, or estimated minimum load data using existing data a power flow model. If minimum load data is not available or the minimum load data cannot be calculated or estimated, the utility shall include the reason(s) that it is unable to calculate, estimate or determine minimum load in its supplemental review results notification under subparagraph 3855(d)(IV).
    - (iii) The type of interconnection resource shall be taken into account when calculating or estimating circuit or line section(s) minimum load. The utility shall use daytime minimum load for solar photovoltaic (PV) interconnection resource with no battery storage (i.e., 10 a.m. to 4 p.m. for fixed panel systems and 8 a.m. to 6 p.m. for PV systems utilizing tracking systems). The utility shall use absolute minimum load for all other types of interconnection resource.
    - (iv) Only the net injection into the utility's electric system shall be considered as part of the interconnection resource when this screen is applied to interconnection resource serving some station service load.
    - (v) The utility shall not consider as part of the interconnection resource the capacity known to be already reflected in the minimum load data.
  - (B) Voltage and power quality screen.
    - (i) In aggregate with existing interconnection resource on the circuit and line section(s), the voltage regulation on the circuit and line section(s) shall

be maintained in compliance with relevant requirements under all system conditions;

- (ii) in aggregate with existing interconnection resource on the circuit and line section(s), the voltage fluctuation shall be within acceptable limits as defined by IEEE Standard 1453-2015 and conforming with IEEE Standard 1453-2015, while also taking into account activated inverter functionality, and by the limits defined by IEEE Standard 1547-2018. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202; and
- (iii) in aggregate with existing interconnection resource on the circuit and line section(s), the harmonic levels shall meet IEEE Standard 519 (2014) limits. This rule does not include any later amendments or editions of these standards. These standards are available for public inspection at the Commission's office, 1560 Broadway, Suite 250, Denver, CO 80202.

(C) Safety and reliability screen.

- (i) The location of the proposed interconnection resource and the aggregate interconnection resource capacity on the line section(s) shall not create impacts to safety or reliability that cannot be adequately addressed without application of the Level 3 Process.
- (ii) Minimum load, minimum loading and minimum load data shall be specific to time(s) of interconnection resource export capacity.
- (iii) The utility shall consider whether the line section(s) has significant minimum loading levels dominated by a small number of customers (e.g., several large commercial customers).
- (iv) The utility shall consider whether the loading along the line section(s) is uniform or even given the sources of the screening data.
- (v) The utility shall consider whether the proposed interconnection resource is located in close proximity to a substation (i.e., less than 2.5 electrical circuit miles) and whether the line section(s) from the substation to the point of interconnection is a mainline rated for normal and emergency ampacity.
- (vi) The utility shall consider whether the proposed interconnection resource incorporates a time delay function to prevent reconnection of the interconnection resource to the utility's system until system voltage and frequency are within normal limits for a prescribed time.
- (vii) The utility shall consider whether operational flexibility is reduced by the proposed interconnection resource, such that transfer of the line distribution circuit/substation may trigger overloads or voltage issues.

- (viii) The utility shall consider whether the proposed interconnection resource employs equipment or systems certified by a recognized standards organization to address technical issues such as, but not limited to, islanding, reverse power flow, and voltage quality.
  - (VII) If the supplemental screening meets utility determined adequacy with minor modifications, the utility shall provide a non-binding good faith estimate of the limited cost to make such modifications to the utility's electric system upon notification of review results.
- (e) Interconnection agreements.
  - (I) If the proposed interconnection passes the screens, the interconnection request shall be approved and the utility will provide the IC an executable interconnection agreement within five business days after the determination.
  - (II) If the proposed interconnection fails the screens, but the utility determines that the small generating facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, the utility shall provide the IC an executable interconnection agreement within five business days after the determination.
  - (III) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(c)(II)(A), the utility will provide the interconnection customer with an executable interconnection agreement within ten business days of the customer options meeting.
  - (IV) If the interconnection customer agrees to pay for the modifications to the utility's electric system as identified by the utility pursuant to subparagraph 3855(d)(VII), the utility will provide the interconnection customer with an executable interconnection agreement within five business days of IC agreement to pay.

**3856. Level 3 Process (Study Process).**

This study process shall be used by an interconnection customer proposing to interconnect its interconnection resource with the utility's system if the interconnection resource does not meet the size limitations for the Level 2 Process, is not certified; or, is certified but did not pass the Level 1 Process or Level 2 Process.

- (a) Scoping meeting.
  - (I) A scoping meeting will be held within ten business days after the interconnection request is deemed complete, or as otherwise mutually agreed to by the parties. The utility and the interconnection customer will bring to the meeting personnel, including system engineers and other resources as may be reasonably required to accomplish the purpose of the meeting.
  - (II) The purpose of the scoping meeting is to discuss the interconnection request. The parties shall further discuss whether the utility should perform a feasibility study or proceed directly to a system impact study, or a facilities study, or an interconnection

agreement. If the parties agree that a feasibility study should be performed, the utility shall provide the IC, as soon as possible, but not later than five business days after the scoping meeting, a feasibility study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.

- (III) The scoping meeting may be omitted by mutual agreement. In order to remain in consideration for interconnection, an IC who has requested a feasibility study must return the executed feasibility study agreement within 15 business days. If the IC elects not to perform a feasibility study, the utility shall provide the IC, no later than five business days after the scoping meeting, a system impact study agreement including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (IV) Feasibility studies, scoping studies, and facility studies may be combined or waived for simpler projects by mutual agreement of the utility and the IC. If all such studies are waived, the utility shall provide the IC an executable interconnection agreement within ten business days after the scoping meeting. If the scoping meeting is also omitted by mutual agreement, the utility shall provide the IC an executable interconnection agreement within ten business days after the interconnection request is deemed complete and this Level 2 Process is completed.
  - (V) If feasibility studies, system impact studies, and facility studies are combined, or required to be completed for a single application, a utility shall perform the combined studies within no more than 90 business days of the date upon which the IC authorizes the utility to proceed with the Level 3 Process.
  - (VI) Utility must offer a developer the opportunity to pay full fees upfront and proceed straight to the system impact study.
- (b) Feasibility study.
- (I) Within 30 business days of executing a feasibility study agreement, the utility shall perform a feasibility study. The feasibility study shall identify any potential adverse system impacts that would result from the interconnection of the interconnection resource. At its discretion, the utility may use the Level 2 supplemental review as described in paragraph 3855(d) as the feasibility study.
  - (II) A deposit of the lesser of 50 percent of the good faith estimated feasibility study costs or earnest money of \$1,000 may be required from the interconnection customer.
  - (III) The scope of and cost responsibilities for the feasibility study are described in the feasibility study agreement.
  - (IV) If the feasibility study shows no potential for adverse system impacts, the utility shall send the Interconnection Customer a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study.
  - (V) If the feasibility study shows the potential for adverse system impacts, the review process shall proceed to the appropriate system impact study(s).

- (VI) If no system impact study is required and no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the feasibility study.
- (c) System impact study.
- (I) Within 30 business days of executing a system impact study agreement, the utility shall perform a system impact study using the screens set forth below. A system impact study shall identify and detail the electric system impacts that would result if the proposed interconnection resource were interconnected without project modifications or electric system modifications, focusing on the adverse system impacts identified in the feasibility study, or to study potential impacts, including but not limited to those identified in the scoping meeting. A system impact study shall evaluate the impact of the proposed interconnection on the reliability of the electric system.
  - (II) If no transmission system impact study is required, but potential electric power distribution system adverse system impacts are identified in the scoping meeting or shown in the feasibility study, a distribution system impact study must be performed. The utility shall send the IC a distribution system impact study agreement within 15 business days of transmittal of the feasibility study report, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or following the scoping meeting if no feasibility study is to be performed.
  - (III) In instances where the feasibility study or the distribution system impact study shows potential for adverse impacts on the utility's transmission system, within five business days following transmittal of the feasibility study report, the utility shall send the IC a transmission system impact study agreement, including an outline of the transmission-supplied scope of the study and a transmission-supplied non-binding good faith estimate of the cost to perform the study, if such a study is required.
  - (IV) If a transmission system impact study is not required, but electric power distribution system adverse system impacts are shown by the feasibility study to be possible and no distribution system impact study has been conducted, the utility shall send the IC a distribution system impact study agreement.
  - (V) If the feasibility study shows no potential for transmission system or distribution system adverse system impacts, the utility shall send the IC either a facilities study agreement, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the study, or an executable interconnection agreement, as applicable.
  - (VI) In order to remain under consideration for interconnection, the IC must return executed system impact study agreements, if applicable, within 30 business days.
  - (VII) A deposit of the good faith estimated costs for each system impact study may be required from the IC.
  - (VIII) The scope of and cost responsibilities for a system impact study are described in the system impact study agreement.

- (IX) Where transmission systems and distribution systems have separate owners, such as is the case with transmission-dependent utilities whether investor-owned or not – the IC may apply to the nearest utility (transmission owner, regional transmission operator, or independent utility) providing transmission service to the transmission-dependent utility to request project coordination. Affected systems shall participate in the study and provide all information necessary to prepare the study.
  - (X) If no facilities study is required for the interconnection resource, the utility shall provide the IC an executable interconnection agreement within five business days after the completion of the system impact study.
- (d) Facilities study.
- (I) Within 45 business days of executing an appropriate agreement or contract, the utility shall perform a facilities study. Once the required system impact study(s) is completed, a system impact study report shall be prepared and transmitted to the IC along with a facilities study agreement within five business days, including an outline of the scope of the study and a non-binding good faith estimate of the cost to perform the facilities study. In the case where one or both impact studies are determined to be unnecessary, a notice of the fact shall be transmitted to the IC within the same timeframe.
  - (II) In order to remain under consideration for interconnection, or, as appropriate, in the utility's interconnection queue, the IC must return the executed facilities study agreement or a request for an extension of time within 30 business days.
  - (III) The facilities study shall include a detailed list of necessary system upgrades and an overall cost estimate, with the detailed list to indicate types of equipment, labor, operation and maintenance and other evaluated item costs, within the estimate for completing such upgrades, and identify which itemized cost estimates are uncertain and could be exceed by 125 percent if actual upgrades are completed.
  - (IV) Design for any required interconnection facilities and/or upgrades shall be performed under the facilities study agreement. The utility may contract with consultants to perform activities required under the facilities study agreement.
  - (V) A deposit of the good faith estimated costs for the facilities study may be required from the IC.
  - (VI) The scope of and cost responsibilities for the facilities study are described in a facilities study agreement.
  - (VII) Upon completion of the facilities study, and with the agreement of the IC to pay for interconnection facilities and upgrades identified in the facilities study, the utility shall provide the IC an executable interconnection agreement within five business days.



**3857. Certification Codes and Standards.**

Unless one or more of the following standards has been incorporated by reference into these interconnection rules, the Commission encourages the utilities and their interconnection customers, to whom these rules apply, to use the following standards and reference materials for guidance.

ANSI C84.1-2016 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

ANSI/NEMA MG 1--2016, Motors and Generators

IEEE Std C37.90.1-2012, IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std C37.90.2-2004, IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std C37.108-2002, IEEE Guide for the Protection of Network Transformers

IEEE Std C57.12.44-2014, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std C62.41.2-2002/Cor 1-2012, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits Corrigendum 1: Deletion of Table A.2 and Associated Text

IEEE Std C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

IEEE Std 100-2000, The Authoritative Dictionary of IEEE Standards Terms, Seventh Edition

IEEE Std 519-2014, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std 1453-2015 IEEE Recommended Practice for the Analysis of Fluctuating Installation on Power Systems

IEEE Std 1547-2018, IEEE Standard for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces

IEEE Std 1547.1-2005, IEEE Standard Conformance Test Procedures for Equipment Interconnecting Distributed Resources with Electric Power Systems

NFPA 70 (2017), National Electrical Code

UL 1741 Inverters, Converters, and Controllers for Use in Independent Power Systems

UL 1741 SA, until January 1, 2022, or until such time new DERs applying for interconnection will comply with IEEE 1547-2018, IEEE Standards for Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources

**3858. Certification of DER Packages.**

- (a) Small generating facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if it has been tested in accordance with industry standards for continuous utility interactive operation in compliance with the appropriate codes and standards referenced below by any Nationally Recognized Testing Laboratory (NRTL) recognized by the United States Occupational Safety and Health Administration to test and certify interconnection equipment pursuant to the relevant codes and standards listed in rule 3857; it has been labeled and is publicly listed by such NRTL at the time of the interconnection application; and, such NRTL makes readily available for verification all test standards and procedures it utilized in performing such equipment certification, and, with consumer approval, the test data itself. The NRTL may make such information available on its website and by encouraging such information to be included in the manufacturer's literature accompanying the equipment.
- (b) The interconnection customer must verify that the intended use of the equipment falls within the use or uses for which the equipment was tested, labeled, and listed by the NRTL.
- (c) Certified equipment shall not require further type-test review, testing, or additional equipment to meet the requirements of this interconnection procedure; however, nothing herein shall preclude the need for an on-site commissioning test by the parties to the interconnection nor follow-up production testing by the NRTL.
- (d) If the certified equipment package includes only interface components (switchgear, inverters, or other interface devices), then an Interconnection Customer must show that the generator or other electric source being utilized with the equipment package is compatible with the equipment package and is consistent with the testing and listing specified for this type of interconnection equipment.
- (e) Provided the generator or electric source, when combined with the equipment package, is within the range of capabilities for which it was tested by the NRTL, and does not violate the interface components' labeling and listing performed by the NRTL, no further design review, testing or additional equipment on the customer side of the point of interconnection shall be required to meet the requirements of this interconnection procedure.
- (f) An equipment package does not include equipment provided by the utility.

**3859. Filing of Interconnection Manual.**

No later than 90 calendar days after the effective date of these rules, each utility subject to these rules, except a cooperative electric association that has voted to exempt itself from regulation pursuant to C.R.S. § 40-9.5-103, shall file its Interconnection Manual with the Commission in a miscellaneous proceeding opened by the Commission for that purpose. This filing enables the Commission to ensure the terms and conditions contained in the Interconnection Manual are just, reasonable, and not unduly discriminatory. This information should include an electronic link to the utility's filing, along with the date on which it was last updated. The utility shall update this information within 30 days after any material changes have been made to its manual. Utilities shall establish an internal process of acquiring timely feedback from stakeholders regarding the material changes provided within the Notice. Each time the

utility updates the Interconnection Manual, the utility shall make available a redline highlighting the changes.

Each utility, including cooperative electric associations, shall also provide, on its web site, interconnection standards or other technical guidance not included in, but that are consistent with, these procedures.

**3860. – 3874. [Reserved.]**