STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-100, SUB 101

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of	
Petition for Approval of Revisions to Generator Interconnection Standards	) ORDER APPROVING REVISED) INTERCONNECTION STANDARD AND) REQUIRING REPORTS AND) TESTIMONY

HEARD: Monday, January 28, 2019, at 2:00 p.m., in Commission Hearing Room 2115, Dobbs Building, 430 North Salisbury Street, Raleigh, North Carolina

BEFORE: Chairman Edward S. Finley, Jr.,[1] Presiding; Commissioners ToNola D. Brown-Bland, Jerry C. Dockham, James G. Patterson, Lyons Gray, Daniel G. Clodfelter, and Charlotte A. Mitchell

APPEARANCES:

For Duke Energy Progress, LLC and Duke Energy Carolinas, LLC:

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For Virginia Electric and Power Company, d/b/a Dominion Energy North Carolina:

Andrea R. Kells, McGuireWoods LLP, 434 Fayetteville Street, Suite 2600, Raleigh, North Carolina 27601

For North Carolina Sustainable Energy Association:

Peter H. Ledford, General Counsel, and Benjamin Smith, Regulatory Counsel, North Carolina Sustainable Energy Association, 4800 Six Forks Road, Suite 300, Raleigh, North Carolina 27609

[1] Chairman Edward S. Finley, Jr., resigned from the Commission effective May 31, 2019, and did not participate in this decision.

For Interstate Renewable Energy Council:

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For North Carolina Clean Energy Business Alliance:

Karen Kemerait, Fox Rothschild, LLP, 434 Fayetteville Street, Suite 2800, Raleigh, North Carolina 27601

For North Carolina Pork Council:

Kurt J. Olson, The Law Office of Kurt J. Olson, P.O. Box 10031, Raleigh, North Carolina 27605

For Cypress Creek Renewables:

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For the Attorney General:

Jennifer Harrod and Teresa Townsend, Special Deputy Attorneys General, North Carolina Department of Justice, 114 West Edenton Street, Raleigh, North Carolina 27603

For the Public Staff:

Tim R. Dodge and Layla Cummings, Staff Attorneys, Public Staff – North Carolina Utilities Commission, 4326 Mail Service Center, Raleigh, North Carolina 27699

BY THE COMMISSION: On May 15, 2015, the Commission issued an Order Approving Revised Interconnection Standard (2015 Order) in this docket approving a revised version of the North Carolina Interconnection Procedures, Forms and Agreements (collectively referred to as the NC Interconnection Standard). In ordering paragraph 3 of the 2015 Order, the Commission directed the Public Staff – North Carolina Utilities Commission (Public Staff) to convene a workgroup within two years after the 2015 Order to determine if the NC Interconnection Standard needs revising or whether it should remain unchanged, and to report to the Commission on any recommendations from the stakeholder group within four months from the first meeting of the group.

Pursuant to the directive of the 2015 Order, on May 9, 2017, the Public Staff convened an initial planning meeting for the stakeholder process and recommended Advanced Energy Corporation (Advanced Energy) be retained to facilitate the stakeholder

discussions. Advanced Energy facilitated four larger interconnection stakeholder meetings on June 1, July 14, August 8, and September 6 of 2017.

On July 27, 2017, the Governor signed into law House Bill 589, S.L. 2017-192 (HB 589). Part VII of HB 589 amended N.C. Gen. Stat. § 62-133.8(i)(4) and directed the Commission to adopt rules to provide for an expedited interconnection review process for swine and poultry waste-to-energy facilities 2 MW or less in size to help achieve the animal waste set-aside objectives in N.C. Gen. Stat. §§ 62-133.8(e) and (f).

On September 15, 2017, the Public Staff filed a motion requesting that the Commission grant an extension of time to December 15, 2017, for the filing of its report on the stakeholder process. The motion was subsequently granted by the Commission on September 28, 2017.

On December 15, 2017, the Public Staff submitted its report to the Commission together with a redlined version of the NC Interconnection Standard that had been assembled by Advanced Energy, which identified comments and proposals from various parties.

On December 20, 2017, the Commission issued an Order Requesting Comments, requesting parties to file initial and reply comments on the Working Group Recommendations on or before January 22, 2018, and February 23, 2018, respectively.

On January 18, 2018, the North Carolina Sustainable Energy Association (NCSEA) filed a Motion for Extension of Time to file initial comments. On January 22, 2018, the Commission issued an order granting NCSEA's motion and extending the date for filing of initial comments to January 23, 2018, which the Commission amended by Errata Order on January 23, 2018, to instead extend the time period for filing initial comments to January 29, 2018.

On January 29, 2018, Initial Comments were filed by the Interstate Renewable Energy Council (IREC), the North Carolina Pork Council (NC Pork Council), and NCSEA. Duke Energy Carolinas, LLC (DEC), together with Duke Energy Progress, LLC (DEP), and Dominion Energy North Carolina (DENC) also filed Joint Initial Comments on the same date.[2]

On January 30, 2018, the Utilities filed a Revised Attachment to their Joint Initial Comments.

On February 12, 2018, the North Carolina Clean Energy Business Alliance (NCCEBA) filed a Petition to Intervene, which was granted by the Commission on February 13, 2018.

[2] This Order refers to DEC and DEP jointly as "Duke" or "the Duke Utilities," and all three utilities, including DENC, jointly as "the Utilities."

On February 21, 2018, the Duke Utilities and the Public Staff filed a Joint Motion for Extension of Time, requesting that the time to file reply comments be extended to March 12, 2018, which was granted by Commission Order issued March 1, 2018.

On March 12, 2018, Reply Comments were filed by NCCEBA, IREC, and NCSEA. On the same date, the Utilities filed Joint Reply Comments. The Duke Utilities also filed Additional Reply Comments.

On May 7, 2018, Duke Energy Renewables, Inc., filed a Petition to Intervene, which was granted by the Commission on May 22, 2018.

On July 30, 2018, the Duke Utilities filed a Motion for Approval of CPRE-Related Modifications to the North Carolina Interconnection Procedures. On August 1, 2018, NCSEA and IREC filed a Joint Response to the Duke Utilities' motion.

On August 10, 2018, the Commission issued an Order Scheduling Hearing, Requesting Comments, and Extending Tranche 1 CPRE [Competitive Procurement of Renewable Energy] RFP Solicitation Response Deadline. The Order directed all parties to file initial comments on interim modifications to the NC Interconnection Standard relating to Duke Energy's CPRE Program on or before August 24, 2018, and reply comments on or before September 10, 2018, and any petitions to intervene on or before September 21, 2018. The Order also scheduled an oral argument on the interim modifications to the NC Interconnection Standard to be held on September 17, 2018. Further, the Order required direct testimony and exhibits of the Utilities to be filed on or before September 5, 2018, direct testimony and exhibits of the Public Staff and other interveners to be filed on or before September 28, 2018, and the rebuttal testimony of the Utilities to be filed on or before October 12, 2018, and scheduled an evidentiary hearing on proposed revisions to the NC Interconnection Standard for October 22, 2018.

On August 24, 2018, the Public Staff, IREC, NCCEBA, and the Duke Utilities filed Initial Comments on the interim modifications to the NC Interconnection Standard, and DENC filed a Letter in Lieu of Comments.

On August 30, 2018, the Commission rescheduled the evidentiary hearing to January 28, 2019, extended the deadline for petitions to intervene to be filed on or before November 12, 2018, and ordered all direct testimony and exhibits to be filed on or before November 19, 2018, and all rebuttal testimony to be filed on or before December 17, 2018.

On September 6, 2018, the Duke Utilities requested an extension of time for all parties to file reply comments on the interim modifications to the NC Interconnection Standard relating to Duke Energy's CPRE Program. On September 7, 2018, the Commission granted an extension of time for all parties to file reply comments from September 10, 2018, to September 12, 2018. Also on September 7, 2018, First Solar, Inc. (First Solar), filed a Petition to Intervene, which was granted by the Commission on September 28, 2018.

On September 12, 2018, the Public Staff requested an extension of time from September 12, 2018, to September 19, 2018, for all parties to file reply comments on the interim modifications to the NC Interconnection Standard. On September 13, 2018, the

Commission granted the Public Staff's motion for extension and rescheduled the oral argument on the interim modifications to the NC Interconnection Standard to September 24, 2018.

On September 19, 2018, Reply Comments on the interim modifications to the NC Interconnection Standard were filed by NCSEA, First Solar, the Public Staff, IREC, NCCEBA, and Duke. On September 20, 2018, Reply Comments were filed by the NC Pork Council.

On September 24, 2018, oral argument was held, with appearances made by the Duke Utilities, NCSEA, IREC, the NC Pork Council, NCCEBA, and the Public Staff. On September 28, 2018, Duke filed Post-Hearing Responses to Commission Questions in which it provided additional information relative to questions that had been raised during the oral argument.

Also on September 28, 2018, the Commission issued an Order entitled Request for Clarification of Statements Made During Oral Argument in which the Commission required Duke to clarify its oral argument comments by a filing due on October 1, 2018. On October 1, 2018, the Duke Utilities filed a response to the Commission's September 28 Order, as did the Public Staff.

On October 5, 2018, the Commission issued its Order Approving Interim Modifications to North Carolina Interconnection Procedures for Tranche 1 of CPRE RFP, approving modifications to the NC Interconnection Standard necessary to implement the Duke Utilities' CPRE Program. The Commission issued an Errata Order correcting the Appendices of the October 5 Order on October 9, 2018.

On November 9, 2018, Cypress Creek Renewables (Cypress Creek) filed a Petition to Intervene and a Motion for Partial Stay of the Commission's October 5, 2018 Order. On that same day, the Commission granted Cypress Creek's Petition to Intervene.

On November 13, 2018, the NC Pork Council filed a Petition to Intervene, which was granted by the Commission on November 14, 2018.

On November 19, 2018, the Commission granted Cypress Creek's motion to stay the effectiveness of ordering paragraph 2 of the Commission's October 5, 2018 Order.

On November 19, 2018, the Duke Utilities filed the direct testimony of Gary R. Freeman and the direct testimony and exhibits of Jeffrey R. Riggins and John W. Gajda; DENC filed the direct testimony and exhibit of Michael J. Nester; the Public Staff filed the direct testimony and exhibits of Jay B. Lucas and Tommy C. Williamson; NCSEA filed the direct testimony and exhibits of Paul Brucke; IREC filed the direct testimony and exhibits of Sara Baldwin Auck and Brian M. Lydic; NCCEBA filed the direct testimony of Robert J. Duke; and the NC Pork Council filed the direct testimony of Angie Maier. On November 20, 2018, NCCEBA filed the direct testimony and exhibit of Christopher Norqual.

On November 21, 2018, Cypress Creek filed a Petition for Limited Waiver, or in the Alternative, For Modification to the North Carolina Interconnection Procedures.

On December 3, 2018, the Utilities and the Public Staff filed a joint motion for extension of time to file rebuttal testimony.

On December 6, 2018, the Commission granted Cypress Creek's petition for limited waiver.

On December 7, 2018, the Commission granted the joint motion for extension of time to file rebuttal testimony.

On December 18, 2018, the Duke Utilities made their compliance filing pursuant to the Commission's October 5, 2018 Order.

On January 4, 2019, IREC filed a motion to bifurcate or continue hearing.

On January 8, 2019, the Duke Utilities, DENC, the Public Staff, NCSEA, NCCEBA, and IREC filed rebuttal testimony and exhibits of their witnesses. NCCEBA also filed the rebuttal testimony of witness Norqual as well as the rebuttal testimony of Michael R. Wallace and Luke D. O'Dea.

On January 11, 2019, the Duke Utilities filed a corrected Rebuttal Exhibit JWR-4.

On January 14, 2019, IREC filed a motion to excuse witness Lydic from the hearing. Subsequently, NCCEBA and the NC Pork Council also filed motions to excuse witnesses Duke and Maier, respectively, on January 22, 2019. On January 23, 2019, the Commission granted IREC's, NCCEBA's, and the NC Pork Council's motions to excuse witnesses.

On January 25, 2019, the Duke Utilities filed an Agreement and Stipulation of Partial Settlement (Stipulation) by and between DEC, DEP, DENC, the Public Staff, and the NC Pork Council, and included a Stipulated Redline of the NC Interconnection Standard (Stipulated Redline).

On January 28, 2019, NCSEA filed a motion for postponement of hearing, and on that same day the Duke Utilities filed a response opposing that motion. The Commission orally dismissed NCSEA's motion for postponement of hearing and otherwise held the evidentiary hearing as scheduled that afternoon.

On February 26, 2019, the Duke Utilities filed responses to requests that Commissioners had made during the hearing.

On March 14, 2019, the Public Staff filed a motion for extension of time to file proposed orders and post-hearing briefs. On March 15, 2019, the Commission issued an order extending the deadline for filing proposed orders or other post-hearing filings to March 25, 2019.

On March 25, 2019, the Utilities and the Public Staff filed a Joint Proposed Order, and the Duke Utilities filed a post-hearing brief. Post-hearing briefs also were timely filed by the Attorney General's Office, IREC, NCCEBA, and NCSEA. On March 29, 2019, the Duke Utilities filed an additional version of Exhibit 1 to the Joint Proposed Order of the Utilities and the Public Staff.

Based upon the foregoing and the entire record in this proceeding, the Commission makes the following

FINDINGS OF FACT

REVISIONS TO THE NC INTERCONNECTION STANDARD

1. With the exceptions noted below, the revisions to the NC Interconnection Standard presented in the Stipulated Redline are reasonable, and it is appropriate to apply them to new and pending Interconnection Requests, as provided for in Section 1.1.3 of the NC Interconnection Standard.

2. New Section 1.8.3.4 of the Stipulated Redline is reasonable to facilitate the expedited study of Standby Generating Facilities.[3]

3. The proposed fees presented in the Stipulated Redline are a reasonable means to recover the Utilities' ongoing costs of processing generator Interconnection Requests, completing Pre-Application Reports, processing changes of control, and otherwise administering the NC Interconnection Standard. It is appropriate for the Utilities to provide a verified report by March 1 of each year detailing their annual interconnection expenses and revenues and comparing those amounts to prior years' expenses and revenues.

4. It is appropriate and necessary to modify the NC Interconnection Standard so that Interconnection Customers have 10 Business Days to cure Utility requests for information in the Facilities Study and System Impact Study processes; it is appropriate that failure to provide the requested information within 10 Business Days should result in the Interconnection Request being removed from the interconnection queue. The new policy should be effective starting July 15, 2019, and the Utilities shall inform Interconnection Customers of this new policy by mail by July 1, 2019.

5. Modifications to Section 6.5 to specifically allow the Utilities to conduct post-commissioning inspections are reasonable. It is appropriate that Interconnection Customers should reimburse the Utility for the cost of such inspections. The Utilities should be required to keep records of their inspection findings and costs.

MATERIAL MODIFICATION DEFINITION/ ADDING ENERGY STORAGE TO EXISTING SOLAR FACILITIES

6. Changes to Section 1.5 in the Stipulated Redline regarding the Material Modification standard are reasonable and appropriate to ensure that installed Generating Facilities or Interconnection Customers proposing modifications, including the addition of energy storage, are evaluated for potential impacts to the Utility's System or other

[3] Capitalized words are terms of art used and defined in the NC Interconnection Standard, which is attached as an Appendix to this Order.

customers prior to the Utility accepting for installation the modification to the Generating Facility.

7. It is appropriate for Interconnection Customers to provide hourly production profile data with their Interconnection Requests as required in the Stipulated Redline, pending the filing of additional information by the Utilities.

8. It is appropriate for the Utilities to host stakeholder meetings to discuss development of an expedited study process for energy storage being added to an existing generation site and to require the Utilities to file such a process for Commission consideration.

EXPEDITED REVIEW OF INTERCONNECTIONS FOR SMALL SWINE AND POULTRY WASTE FACILITIES

9. New Section 1.8.3.3 is reasonable to facilitate the expedited study of Small Animal Waste to Energy Facilities and implement the requirements of Part VII of HB 589, Session Law 2017-192.

FAST TRACK AND SUPPLEMENTAL REVIEW PROCESSES

10. The changes to the Section 2 and Section 3 study processes for small generator Interconnection Customers presented in the Stipulated Redline are reasonable. IREC's proposed modifications to the Fast Track and Supplemental Review processes are not warranted at this time. It is appropriate for the Duke Utilities to consult with the Electric Power Research Institute (EPRI) regarding the Section 3 Fast Track and Supplemental Review study processes and provide a report to be filed with the Commission regarding potential modifications at a Technical Standards Review Group (TSRG) meeting in the third quarter of 2019.

11. It is appropriate to require the Utilities to post information on their interconnection websites describing the technical screens and standards they apply during Supplemental Reviews. It is appropriate that the Utilities change these screens and standards as necessary to assure that new generator interconnections do not impair the safety and reliability of the electric grid.

DISPUTE RESOLUTION PROCESS

12. The Stipulated Redline's modifications to Section 6.2 of the NC Interconnection Standard result in a reasonable process to facilitate resolution of disputes between Interconnection Customers and the Utilities.

SURETY BONDS AND REFUNDS

13. It is reasonable to require the Utilities to develop a standard surety bond that is acceptable to the Utility and make it available to Interconnection Customers to use as financial security for Interconnection Facilities.

14. The Stipulated Redline's modifications to Article 6, Section 6.1.1 of the Interconnection Agreement are appropriate, with additional modifications to be made by the Commission, to provide for the refunding of unspent amounts for Interconnection Facilities if an Interconnection Customer cancels its Generating Facility.

TECHNICAL STUDY PRACTICES AND COMMUNICATIONS

15. The Duke Utilities' Method of Service Guidelines are reasonable and reflect Good Utility Practice in North Carolina. It is appropriate that these and similar DENC guidelines evolve over time with increased penetration of distributed generation in order to ensure the safety, power quality, and reliability of the power delivery system for electricity consumers. It is appropriate for the Utilities to (1) file significant new screens, studies, or major study changes in their application of the NC Interconnection Standard with the Commission for information purposes, (2) post the information on their websites, and (3) for the Duke Utilities, to present any planned changes for discussion at TSRG meetings.

16. The Duke Utilities' formation of the TSRG in 2018 is a reasonable initiative to promote transparency and technical understanding between the Duke Utilities, Interconnection Customers, and the Public Staff.

17. The TSRG shall be an information-sharing and discussion forum convened and organized by the Duke Utilities, with continued participation by the Public Staff and generation developers. At TSRG meetings, the Duke Utilities shall make reasonable efforts to continually inform the Public Staff, Interconnection Customers, and solar developer advocates of new or changing engineering and technical standards within the interconnection process.

18. It is appropriate for the Duke Utilities to continue posting agendas, presentations, detailed meeting minutes, and other details of the TSRG to its website as promptly as possible.

TIMELINE ENFORCEMENT MECHANISM

19. It is not appropriate at this time to impose a timeline enforcement mechanism in the NC Interconnection Standard.

QUEUE MANAGEMENT REPORTING

20. The Duke Utilities' commitments to enhance queue status reporting as recommended by the Public Staff are appropriate and should be approved.

21. IREC's proposed reporting requirements should not be adopted at this time.

HOSTING CAPACITY MAPS

22. It is not necessary to require the Utilities to pursue hosting capacity maps at this time.

WORKING GROUPS

23. The Duke Utilities' commitments in the Stipulation to implement a stakeholder process to develop a group study proposal are reasonable and appropriate.

24. It is appropriate for the Utilities to conduct stakeholder meetings in 2020 to consider how to address IEEE Standard 1547-2018 in the NC Interconnection Standard, including the use of software-based controls for limiting a generator's output, and to report to the Commission as to the status of this effort by August 1, 2020.

COST OF SERVICE IMPACTS OF DISTRIBUTED GENERATION

25. All users of the distribution grid, electricity customers as well as generation interconnection customers, benefit from the distribution grid and should be responsible for the costs of operating and maintaining it. It is appropriate to require Utilities to consider all grid users in their cost of service studies.

REVISIONS TO THE NC INTERCONNECTION STANDARD

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 1

The evidence supporting this finding of fact is contained in the Stipulation and the Stipulated Redline, and the testimony and exhibits of Duke witnesses Gajda and Freeman, DENC witness Nester, IREC witness Auck, and Public Staff witnesses Lucas and Williamson.

In the Stipulation, the Public Staff, DEC, DEP, DENC, and the NC Pork Council (the Stipulating Parties) stated that the Utilities in their January 29, 2018 Initial Comments included a set of proposed modifications to the NC Interconnection Standard. The Stipulating Parties developed additional modifications over the past year as a result of dialogue among the parties and additional changes identified by the Duke Utilities, and those further proposed modifications (Revised Modifications) were attached to the January 8, 2019 rebuttal testimony of Duke witness Gajda.

The Stipulation stated that in the interest of narrowing the issues in dispute, the Stipulating Parties sought to identify those portions of the Revised Modifications that were supported by the Stipulating Parties, and the resulting modified version of the NC Interconnection Standard was attached to the January 25, 2019 Agreement and Stipulation of Partial Settlement as the Stipulated Redline. The Stipulation stated that the Stipulated Redline is substantially the same as the Revised Modifications, with the following changes:

1) The Utilities agreed to the proposed modifications to Section 6.2 of the NC Interconnection Standard related to the dispute process that were included in Public Staff witness Lucas' direct testimony.

2) The Utilities agreed to the proposed changes to Section 1.5 of the NC Interconnection Standard that were included in Public Staff witness Lucas' rebuttal testimony.

3) The Utilities and the Public Staff agreed to support clarification of new Section 1.8.3.3 of the NC Interconnection Standard to provide that a Small Animal Waste Facility, upon being designated a Project B, shall be the next project B studied under Section 4.3, regardless of Queue Number.

The NC Pork Council also signed onto the Stipulation to support the revisions to Section 1.8.3.3, but did not take a position with regard to other proposed modifications to the NC Interconnection Standard.

Duke witness Freeman testified that the Stipulation reflected the Stipulating Parties' full agreement upon a set of modifications to the NC Interconnection Standard, and also included certain specific modifications requested by the NC Pork Council. Witness Freeman also testified that the Stipulation formalizes for the benefit of the Commission what was already self-evident from the hundreds of pages of filings made in this proceeding – that there was significant alignment among the Public Staff and the Utilities regarding reasonable and appropriate modifications to the existing NC Interconnection Standard.

DENC witness Nester testified that he believed the Stipulation to be an acceptable resolution of the issues it addresses.

IREC witness Auck testified that IREC agreed with the requirement in the Stipulation that Duke consult with EPRI on its Fast Track and Supplemental Review processes, but believed that the review should be done independently, with Commission oversight, and that other stakeholders should have the opportunity to review and comment on the findings of that review. Witness Auck indicated that IREC did not have a firm position on the other components of the Stipulation.

Public Staff witnesses Lucas and Williamson also supported the Stipulation. Witness Lucas testified that the Stipulation helped clarify the expedited review process for animal waste projects less than 2 MW in capacity. In addition, the Stipulation resulted in the Utilities agreeing to the Material Modification and dispute resolution revisions proposed by the Public Staff. Witness Williamson testified that as a result of the Stipulation, the Public Staff agreed to withdraw its recommendations for an independent review of the entire North Carolina interconnection process and a stakeholder discussion focused on the project A/B designation. He stated that in exchange, the Duke Utilities agreed to (1) initiate a stakeholder process in the first quarter of 2019 regarding a grouping study process, and (2) make filings regarding that process to FERC and the Commission by July 2019. Williamson stated further that Duke agreed to consult with EPRI about the Fast Track and Supplemental Review processes and to provide a summary report to the TSRG in the third quarter of 2019.

Witness Nester testified that the Utilities proposed to revise the timeframe under Section 5.2.4 for payment and financial security for an Interconnection Agreement from 60 calendar days to 45 Business Days after delivery of the Interconnection Agreement for signature: "While this revision may result in extending the timeframe for payment depending upon the applicable month and holiday schedule, the average duration provided for payment under the proposed 45 Business Days is effectively the same as the 60 calendar days…."

Discussion and Conclusions

As the Stipulation has not been adopted by all of the parties to this docket, its acceptance by the Commission is governed by the standards set out by the North Carolina Supreme Court in State ex rel. Utils. Comm'n v. Carolina Util. Customers Ass'n, Inc., 348 N.C. 452, 500 S.E.2d 693 (1998) (CUCA I), and State ex rel. Utils. Comm'n v. Carolina Util. Customers Ass'n, Inc., 351 N.C. 223, 524 S.E.2d 10 (2000) (CUCA II). In CUCA I, the Supreme Court held that

> a stipulation entered into by less than all of the parties as to any facts or issues in a contested case proceeding under Chapter 62 should be accorded full consideration and weighed by the Commission with all other evidence presented by any of the parties in the proceeding. The Commission must consider the nonunanimous stipulation along with all the evidence presented and any other facts the Commission finds relevant to the fair and just determination of the proceeding. The Commission may even adopt the recommendations or provisions of the nonunanimous stipulation as long as the Commission sets forth its reasoning and makes "its own independent conclusion" supported by substantial evidence on the record that the proposal is just and reasonable to all parties in light of all the evidence presented.

348 N.C. at 466, 500 S.E.2d at 703.

However, as the Court made clear in CUCA II, the fact that fewer than all of the parties have adopted a settlement does not permit a court to subject the Commission's order adopting the provisions of a nonunanimous stipulation to a "heightened standard" of review. CUCA II, 351 N.C. at 231, 524 S.E.2d at 16. Rather, the Court held that Commission approval of the provisions of a nonunanimous stipulation "requires only that the Commission ma[k]e an independent determination supported by substantial evidence on the record [and] satisf[y] the requirements of chapter 62 by independently considering and analyzing all the evidence and any other facts relevant to a determination that the proposal is just and reasonable to all parties." Id. at 231-32, 524 S.E.2d at 16.

The Commission gives substantial weight to the testimony of the Public Staff and the Utilities' witnesses regarding the Stipulation. The Commission concludes that the Stipulation is the product of the "give-and-take" of settlement negotiations between the Utilities and the Public Staff, as well as the NC Pork Council, in an effort to appropriately balance the Utilities' obligation to manage the interconnection process in a fair and efficient manner and to implement their obligations under HB 589. At the same time, the Stipulation provides improved transparency to the Commission, the Public Staff, Interconnection Customers, and other parties interested in the interconnection process in North Carolina.

Thus, the Stipulation generally strikes a fair balance between the interests of the Stipulating Parties and Interconnection Customers. As discussed above, and further detailed in the Commission's findings of fact and subsequent discussions and conclusions, the Commission has fully evaluated the provisions of the Stipulation and concludes, in the exercise of its independent judgment, that the provisions of the Stipulation are just and reasonable to all parties to this proceeding in light of the evidence presented and serve the public interest. The provisions of the Stipulation strike the appropriate balance between the

interests of the Utilities' customers in receiving safe, adequate, and reliable electric service at a reasonable cost, the interests of Interconnection Customers in seeking to interconnect to the grid in an efficient and transparent fashion, the legislative goals of HB 589 in allowing for an expedited process for interconnecting Small Animal Waste to Energy Facilities, and the interests of the Utilities in meeting their obligations to interconnect distributed generation in a fair, technically feasible and non-discriminatory fashion.

Therefore, the Commission approves the Stipulation and the Stipulated Redline. The changes approved in this Order will be effective upon issuance of this Order, except that they will not apply to facilities that have a fully executed Interconnection Agreement as of the date of this Order. All facilities will be subject to this Order for the processing of Material Modifications and ownership transfers. The Commission discusses major provisions of the Stipulated Redline and makes other changes to the NC Interconnection Standard as explained below.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 2

The evidence supporting this finding of fact is found in the Stipulated Redline and in the testimony of Duke witness Riggins, DENC witness Nester, and Public Staff witness Williamson.

Duke witness Riggins outlined the Utilities' proposal to add new Section 1.8.3.4 to the NC Interconnection Standard to allow for expedited study of Standby Generating Facilities, generators that operate in parallel with the grid only momentarily. Witness Riggins testified that Standby Generating Interconnection Customers – typically hospitals and other industrial retail customers with sensitive loads – only request to operate in parallel with the grid during the time their load is transitioning back to the Utility System after a test or outage. Therefore, witness Riggins explained that the Duke Utilities do not perform as robust of a System Impact Study analysis for these Interconnection Customers as compared to "full power export" Interconnection Customers. Standby Generating Facilities are designed and operated as zero export generation, are not interdependent, and, accordingly, have no adverse effect on other Interconnection Customers' queue positions. Witness Riggins further testified that the Duke Utilities receive very few Standby Generating Facility Interconnection Requests in comparison to "full power export" Interconnection Requests. Because of these differences, witness Riggins testified that the Utilities' proposal to evaluate Standby Generating Facilities on an expedited basis apart from the traditional queue is reasonable and benefits commercial and industrial customers seeking to install this type of generator at their facilities.

DENC witness Nester supported the Utilities' proposal to expedite the study process for Standby Generating Facilities by designating such facilities as Project As and studying them ahead of other Section 4 studies, and testified that the proposal would have no adverse effect on other facilities' Queue Positions.

Public Staff witness Williamson also supported the Utilities' proposed addition of Section 1.8.3.4 in the Stipulated Redline, and explained that the proposal includes adding this definition of Standby Generating Facility to the NC Interconnection Standard:

> An electric Generating Facility primarily designed for standby or backup power in the event of a loss of power supply from the Utility. Such facilities may operate in parallel with the Utility for a brief period of time when transferring load back to the Utility after an outage, or when testing the operation of the Facility and transferring load from and back to the Utility.

Witness Williamson testified that this proposal will help customers to be prepared for unexpected, emergency, or storm-related Utility outages such as those experienced during and in the aftermath of recent Hurricanes Michael and Florence. Witness Williamson stated that moving Standby Generating Facilities ahead in the study queue allows retail customers to expedite their preparedness efforts with minimal disruption to other projects in the queue, and he agreed with the Utilities that the proposal would not materially impact the Queue Position of other Interconnection Requests. He testified that Standby Generating Facilities are not interdependent and do not have an impact on the infrastructure capacity of the distribution grid.

No party opposed the addition of Section 1.8.3.4 to the NC Interconnection Standard as proposed in the Stipulation and the Stipulated Redline.

Discussion and Conclusions

The Commission is persuaded by the evidence presented by the Utilities and the Public Staff that the addition of new Section 1.8.3.4 and the related definition of Standby Generating Facility are reasonable and will enable the Utilities' commercial and industrial retail customers to more efficiently interconnect momentarily parallel standby generators to the Utilities' Systems. The Commission agrees that due to the limited number of these types of Interconnection Requests, and the practical differences between a standby generator and other generating facilities, expedited approval of Standby Generating Facility Interconnection Requests will not materially impact other Interconnection Requests. In addition, no evidence has been presented suggesting that expedited approval of Standby Generating Facility Interconnection Requests will negatively impact the interconnection queue. Further, like the Public Staff, the Commission supports the Utilities' efforts to expedite customers' preparedness efforts for unexpected, emergency, or weather-related outages. Further, no party has opposed new Section 1.8.3.4 or the related definition as proposed in the Stipulated Redline. Therefore, the Commission approves the inclusion of new Section 1.8.3.4 and the related definition of Standby Generating Facility to the NC Interconnection Standard as recommended by the Public Staff and the Utilities.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 3

The evidence supporting this finding of fact is found in the Stipulation and the Stipulated Redline, and in the testimony and exhibits of Duke witness Riggins, DENC witness Nester, Public Staff witness Lucas, and IREC witness Auck.

The Stipulated Redline shows the following proposed fee changes:

1) The fee for filing a Pre-Application Report request would increase from $300 to $500 (Section 1.3.1 of the NC Interconnection Standard).

2) Section 1.4.1.2 would be amended to specifically allow the Utility to include its overhead costs in Interconnection Request deposits, with those deposits being applied to the Utility's costs (including overheads).

3) The Interconnection Request Application Form would be amended so that for Generating Facilities that are larger than 20 kW, but not larger than 100 kW, the fee would increase from $250 to $750. The same fee for facilities larger than 100 kW, but not larger than 2 MW, would increase from $500 to $1,000.

4) On the Interconnection Request Application Form, a deposit would be charged for Supplemental Reviews, with facilities larger than 20 kW, but not larger than 100 kW, paying a $750 deposit, and facilities larger than 100 kW, but not larger than 2 MW, paying a $1,000 deposit.

5) The same Interconnection Request Application Form would be amended to establish deposits for Standby Generating Facilities, with a facility smaller than 1 MW paying a $2,500 deposit, and a facility equal to or greater than 1 MW paying a $5,000 deposit.

6) Finally, that form would be further amended to increase the non-refundable processing fee for a change in ownership from $50 to $500.

7) The Interconnection Request Application Form For Interconnecting a Certified Inverter-Based Generating Facility No Larger Than 20 kW would be amended to increase the non-refundable processing fee from $100 to $200, and to clarify that the current (and unchanged) $50 fee for processing a change of ownership is non-refundable.

Duke witness Riggins outlined the Utilities' proposal to adjust the fees charged for small generator Interconnection Request processing under Section 2 and Section 3 of the NC Interconnection Standard as well as certain other types of work under the NC Interconnection Standard. Witness Riggins explained that the increased fees are needed to more fully recover the Utilities' costs. Witness Riggins explained that in 2016 the Commission directed DEC, and later DEP, to track and more fully recover costs incurred to interconnect renewable energy generators from Interconnection Customers. As a result, DEC and DEP implemented procedures to better track and recover interconnection-related costs from Interconnection Customers.

Witness Riggins further testified that the Duke Utilities have significantly under-recovered their interconnection-related costs due to the increasing volume of Section 2 and Section 3 Interconnection Requests, coupled with the growing complexity of the Supplemental Reviews completed under Section 3 of the NC Interconnection Standard. He stated that the Duke Utilities in 2017 had under-recovered its costs for processing Section 2 and Section 3 requests by $871,674, and similar under-recoveries through October of 2018 totaled $741,529.

Witness Riggins testified that the increasing volumes of Interconnection Requests necessitate the Utilities spending increased amounts of time and monies on the actual processing of Interconnection Requests as well as processing Pre-Application Reports and

changes of ownership/control of the Generating Facility or the Interconnection Customer. In addition, witness Riggins testified that the Duke Utilities have invested in technological improvements, as well as additional staff, to more efficiently manage, track, and process Interconnection Requests.

Witness Riggins detailed the types of overhead costs that the Duke Utilities incur to support the interconnection process, including: (1) costs for personnel within Distributed Energy Technologies that indirectly support the interconnection process through accounting, technical standards, data management, and reporting; (2) processing overhead costs including costs to manage and process interconnection related calls, applications, and payments for projects not covered by fees; (3) costs for Account Management and Customer Operations, and Distribution Protection and Control to respond to Supplemental Reviews and System Impact Studies; and (4) technology costs, including Duke's Salesforce enhancement project.

DENC witness Nester testified that DENC supported the fee proposal as reflected in the Joint Utilities Redline (which was subsequently made part of the Stipulated Redline). Witness Nester agreed that developers should bear interconnection costs because they are the causers of such costs.

In his pre-filed direct testimony, Public Staff witness Lucas testified that the Commission had previously directed the Duke Utilities not to recover interconnection-related costs through the Renewable Energy and Energy Efficiency Portfolio Standard (REPS) Rider and instead to track and more fully recover interconnection-related costs through the interconnection process. Witness Lucas stated that the Public Staff had not fully audited the proposed interconnection fees, and, therefore, he took no position on them, but reiterated the Public Staff's overarching position that the costs to process Interconnection Requests should be borne by Interconnection Customers and not shifted to retail customers. Subsequent to the filing of his testimony, the Public Staff was a signatory to the Stipulation, which includes the fee changes described above.

IREC witness Auck stated that the Utilities' proposed fee adjustments are unreasonably large and that the Utilities had not met their burden to justify the requested fee increases. Witness Auck compared the proposed fees to interconnection fees charged in certain other jurisdictions, and specifically took issue with the Utilities' proposed increase in the change-in-ownership processing fee from $50 to $500, arguing that such a change violates the regulatory principle of gradualism and will cause "rate shock." Witness Auck concluded that the Commission should require the Utilities to better explain the need for the increase in fees, the efforts the Utilities are taking to ensure that they are processing applications efficiently, and why costs have not gone down despite efficiencies having been adopted. In addition, witness Auck requested the Commission specifically require the Duke Utilities to explain the overhead costs referenced in the proposed modification to Section 1.4.1.2 regarding Interconnection Request deposit costs.

On rebuttal, Duke witness Riggins provided additional support for the Utilities' proposed revisions to the interconnection fees, including a detailed breakdown of the Duke Utilities' interconnection expenses and revenues. Rebuttal Exhibit JWR-3 showed the Duke Utilities' historic under-recovery of their interconnection-related expenses recovered through fees in 2017 and 2018 and also projected the increase in fees needed to allow the Duke

Utilities to more fully recover these interconnection-related costs. Witness Riggins reiterated that the proposed fees were designed not for the Utilities to earn a profit or return, but instead only for the Utilities to recover their actually incurred interconnection-related costs.

Witness Riggins further testified that if the Commission determines it is appropriate to more closely track year-over-year changes in the Duke Utilities' interconnection-related expenses and revenues, the Duke Utilities could file a report with the Commission annually similar to his Rebuttal Exhibit JWR-3. As an alternative to establishing a new annual reporting requirement, witness Riggins stated that to the extent the Commission plans to review the NC Interconnection Standard and interconnection process again in two to three years, the Duke Utilities could instead report to the Public Staff and other stakeholders at that time whether changes in interconnection fee volumes and expenses support future adjustments to fees charged under the NC Interconnection Standard.

Witness Riggins rebutted witness Auck's contention that the Utilities' proposed fees were unnecessarily high as compared to other utilities' interconnection-related fees by providing examples of other utilities imposing similar or higher interconnection-related fees than those in the Stipulated Redline. Witness Riggins also testified that it is challenging to compare interconnection fees across states and utilities due to differing eligibility and policy considerations, including whether the fees are designed to fully recover interconnection-related costs or whether some costs are permitted to be recovered through base rates. Witness Riggins provided a detailed breakdown of the time and costs incurred to execute a change of control in support of the Utilities' proposed increase to the change-of-control fee. He rebutted witness Auck's argument that the change-of-control fee change would violate the principle of gradualism by testifying that Interconnection Customers pay a one-time fee for a particular interconnection service as opposed to fixed charges for service provided on an ongoing basis.

No other witnesses discussed the proposed fee changes. In its post-hearing brief, NCSEA stated that it opposed the proposed fee changes, asserting that the Utilities have not established why they are needed. No other party took a position on the proposed fee changes.

Discussion and Conclusions

Upon review of the evidence, the Commission concludes that it is appropriate to approve the fee changes that were provided in the Stipulated Redline, along with additional revisions in the NC Interconnection Standard in order to avoid confusion.

Based on Duke witness Riggins' testimony, the Commission finds that the Duke Utilities are not recovering their costs of administering the interconnection process from Interconnection Customers, and that the Utilities' adjusted fees are reasonably designed to allow the Utilities to recover those costs more fully from Interconnection Customers. In particular, the Commission finds persuasive Duke witness Riggins' rebuttal testimony and Rebuttal Exhibit JWR-3, which detail the Duke Utilities' under-recovery of fee-related interconnection costs over the past two years. Rebuttal Exhibit JWR-3 also shows that the Utilities' adjusted fees will allow the Duke Utilities to more fully recover their direct and indirect interconnection costs through fees under the NC Interconnection Standard. The Commission finds that the information presented by witness Riggins provides reasonable

support for the interconnection fee changes in the Stipulated Redline and reasonably addresses IREC witness Auck's concerns. The Commission also notes that the two parties that directly represent Interconnection Customers (NCSEA and NCCEBA) in this proceeding did not provide expert witness testimony in opposition to the fees.

The Commission recognizes that when establishing fixed fees to recover future costs, the amount of the fees is directly impacted by the volume of Interconnection Requests received, and the Duke Utilities have agreed to provide annual reporting on the year-over-year changes in interconnection-related expenses and revenues. The Commission finds that this additional reporting is appropriate and will require the Utilities to file a verified report by March 1 of each year on the volume of Interconnection Requests received, the amount of fees collected pursuant to the NC Interconnection Standard, and the Duke Utilities' actual expenses incurred for interconnection-related work.

The Commission also directs the Utilities, to the greatest extent possible, to continue to seek to recover from Interconnection Customers all expenses (including reasonable overhead expenses) associated with supporting the generator interconnection process under the NC Interconnection Standard.

Finally, the Commission notes that as drafted, the Stipulated Redline contains an internal inconsistency as regards deposits for Supplemental Reviews in the Section 3 Optional Fast Track Process. For Section 3.4, the Stipulated Redline (with changes accepted) would state:

> 3.4 Supplemental Review
>
> If the Interconnection Customer agrees to a supplemental review, the Interconnection Customer shall agree in writing within ten (10) Business Days of the offer, and submit a deposit for the estimated costs or the request shall be deemed to be withdrawn. The Interconnection Customer shall be responsible for the Utility's actual costs for conducting the supplemental review. … [Emphasis added.]

On the other hand, instead of basing the deposit on estimated costs the Interconnection Request Application Form in the Stipulated Redline would establish a fixed deposit of $750 for Supplemental Reviews if the Generating Facility is larger than 20 kW, but not larger than 100 kW. According to the Stipulated Redline, the deposit would be $1,000 if the Facility were larger than 100 kW, but not larger than 2 MW. The Commission will resolve this inconsistency by further amending Section 3.4 as follows:

> 3.4 Supplemental Review
>
> If the Interconnection Customer agrees to a supplemental review, the Interconnection Customer shall agree in writing within ten (10) Business Days of the offer, and submit a deposit of $750 (if the facility is larger than 20 kW but not larger than 100 kW) or $1,000 (if the facility is larger than 100 kW but not larger than 2 MW), ~~for the estimated costs~~ or the request shall be deemed to be withdrawn. The Interconnection Customer shall be responsible for the Utility's actual costs for conducting the supplemental review. …

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 4

The evidence supporting this finding of fact is found in the Stipulation and the Stipulated Redline, and in the testimony and exhibits of Duke witnesses Freeman and Riggins.

The Stipulated Redline proposes new language to be added to the System Impact Study Agreement as follows:

> RECITALS
>
> 4. A system impact study will be based upon the technical information provided by Interconnection Customer in the Interconnection Request. The Utility reserves the right to request additional technical information from the Interconnection Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the system impact study. If the information requested by the Utility is not provided by the Interconnection Customer within a reasonable timeframe to be identified by the Utility in writing, the Utility shall provide the Interconnection Customer written notice providing an opportunity to cure such failure by the close of business on the tenth (10th) Business Day following the posted date of such notice, where failure to provide the information requested within this period shall result in the study being terminated and the Interconnection Request being deemed withdrawn. The period of time for the Utility to complete the system impact study shall be tolled during any period that the Utility has requested information in writing from the Interconnection Customer necessary to complete the study and such request is outstanding.

Similarly, the Stipulated Redline proposes new language to be added to the Facilities Study Agreement as follows:

> RECITALS
>
> 7. In cases where Upgrades are required, the facilities study must be completed within 45 Business Days of the Utility's receipt of this Agreement, or completion of the Facilities Study for an Interdependent Project A whichever is later. In cases where no Upgrades are necessary, and the required facilities are limited to Interconnection Facilities, the facilities study must be completed within 30 Business Days. The Utility reserves the right to request additional technical information from the Interconnection Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the facilities study. If the information requested by the Utility is not provided by the Interconnection Customer within a reasonable timeframe to be identified by the Utility in writing, the Utility shall provide the Interconnection Customer written notice providing an opportunity to cure such failure by the close of business on the tenth (10th) Business Day following the posted date of such notice, where failure to provide the information requested within this period shall result in the study being terminated and the Interconnection Request being deemed withdrawn. The period of time for the

> Utility to complete the Facilities Study shall be tolled during any period that the Utility has requested information in writing from the Interconnection Customer necessary to complete the Study and such request is outstanding.

Duke witness Riggins introduced the Utilities' proposal to formalize within the context of the System Impact Study Agreement and Facilities Study Agreement the fact that the Utilities have a right to request information from the Interconnection Customer and to make clear the process in the event that the Interconnection Customer fails to respond to such request: namely, a single 10-day cure period followed by withdrawal of the Interconnection Request from the queue.

On rebuttal, Duke witness Freeman explained that the Duke Utilities have historically provided Interconnection Customers cure periods for missed deadlines in a number of circumstances during the System Impact Study process, even though this is not expressly required by the NC Interconnection Standard. Based on this historic practice of offering cure periods, witness Freeman testified that the Utilities were now proposing to modify the NC Interconnection Standard to memorialize a single 10-Business-Day cure period during both the Facilities Study and the System Impact Study processes in the event that an Interconnection Customer fails to respond to a request from the Utility.

No party opposed the Utilities' proposal to formalize a 10-Business-Day cure period in the Facilities Study and System Impact Study processes.

Discussion and Conclusions

The Commission finds persuasive the testimony of Duke witness Freeman, which details how the Duke Utilities have, in good faith, allowed cure periods for Interconnection Customers. The Commission also finds persuasive the fact that no party opposes the formalization of cure periods in the NC Interconnection Standard as provided for in the Stipulated Redline. Therefore, the Commission concludes that it is reasonable to approve formalizing the Interconnection Customer's obligation to respond to information requests, along with a standardized 10-Business-Day cure period and withdrawal right, in the System Impact Study Agreement and the Facilities Study Agreement, as presented in the Stipulated Redline.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 5

The evidence supporting this finding of fact is found in the Stipulated Redline, and in the testimony and exhibits of Duke witness Gajda and DENC witness Nester.

Duke witness Gajda explained that the Utilities realized that a rigorous inspection process is needed to ensure each generator's Interconnection Facilities have been constructed consistent with the Duke Utilities' generally applicable construction and design standards. While the NC Interconnection Standard already permits such inspections under certain circumstances, witness Gajda explained that the modifications proposed in the Stipulated Redline would expressly establish a process for ongoing inspections of Generating Facilities. Today, Section 6.5 of the NC Interconnection Standard allows the Utilities to inspect the Interconnection Customer's equipment as part of the commissioning process. With the proposed amendments to Section 6.5 (as well as parallel changes to

Sections 2.1.3, 2.3, and 2.3.2 of the Interconnection Agreement), the NC Interconnection Standard would also allow the Utilities to inspect an Interconnection Customer's equipment: (1) if the Utility had not done so prior to the facility commencing operations; (2) periodically, as the Utility is inspecting its own facilities; and (3) in the event the Utility becomes aware of any condition that could cause disruption or deterioration of service to other customers or is imminently likely to endanger life or property. In all of these situations, the amendments would provide that the Interconnection Customer is to pay the Utility the actual cost of the inspection within 30 Business Days of being invoiced by the Utility.

DENC witness Nester stated that DENC supports the Duke Utilities' proposal to modify Section 6.5 to establish post-commissioning inspections.

In its post-hearing brief, NCSEA stated that it opposed the proposed changes to Sections 2.1.3 and 2.3 of the Interconnection Agreement because "neither the Utilities nor the Public Staff has provided any justification" for the changes.

Discussion and Conclusions

The Commission finds Duke witness Gajda's testimony persuasive regarding the need to modify the NC Interconnection Standard to provide for post-commissioning inspections. It is critical that the Utilities be in a position to ensure the safety and integrity of the grid, and the Commission supports the proposed periodic inspections. The Commission notes that amendments to the Interconnection Agreement will now provide a three-day window for the Utility to perform its commissioning inspection; the Commission strongly supports the Utilities availing themselves of that opportunity to the maximum extent possible. Further, it is appropriate that Interconnection Customers reimburse the Utilities for periodic inspection costs, so long as those costs are reasonable. To that end, the Commission will require the Utilities to include information regarding the number of inspections conducted each year and their costs in the March 1 fee report required by Ordering Paragraph No. 3 of this Order. In addition, the Utilities shall keep records of their inspection findings as that information could be useful in adjusting the NC Interconnection Standard in the future.

MATERIAL MODIFICATION DEFINITION/ ADDING ENERGY STORAGE TO EXISTING SOLAR FACILITIES

EVIDENCE AND CONCLUSIONS FOR FINDINGS OF FACT NOS. 6-8

The evidence supporting these findings of fact is found in the Stipulated Redline and in the testimony and exhibits of Duke witnesses Freeman and Gajda; DENC witness Nester; NCSEA witness Brucke; NCCEBA witnesses Norqual, O'Dea, and Wallace; and Public Staff witness Lucas.

The Stipulated Redline refines the definition of Material Modification via several lists of potential changed circumstances. If the Interconnection Customer made one of the changes listed in Section 1.5.1.1 before the System Impact Study Agreement is signed, that change would trigger a Material Modification, and the Interconnection Request would have to re-enter the queue. If the Interconnection Customer made one of the changes listed in Section 1.5.1.2 after the System Impact Study Agreement is signed, such a change would

also trigger a Material Modification, and again, the Interconnection Request would have to re-enter the queue. Section 1.5.2.2 lists changes that would not be Material Modifications regardless of when they were made. That list would include this new provision:

> 1.5.2.2.5 A change in the DC system configuration to include additional equipment that does not impact the Maximum Generating Capacity, daily production profile, or the proposed AC configuration of the Generating Facility including: DC optimizers, DC-DC converters, DC charge controllers, power plant controllers, and energy storage devices such that the output is delivered during the same periods and with the same profile considered during the System Impact Study.

Similarly, this new section describes changes that would not be Material Modifications if they are made before the System Impact Study Agreement is signed:

> 1.5.2.1 The following are not indicia of a Material Modification before the System Impact Study Agreement has been executed by the Interconnection Customer:
>
> > 1.5.2.1.1 A change in the DC system configuration to include additional equipment including: DC optimizers, DC-DC converters, DC charge controllers, power plant controllers, and energy storage devices, so long as the proposed change does not violate any of the provisions laid out in Section 1.5.1.1.

Several witnesses testified that the various lists refining the definition of Material Modification were the topic of much conversation among the stakeholders, and that many of the changes were reached by consensus. However, the two provisions cited above that address energy storage were the subject of controversy.

In addition, Duke witness Gajda noted that using the System Impact Study Agreement execution date as the decision point for many Material Modification determinations was not agreed to among the Working Group 2 stakeholders.

Witness Gajda explained that any changes to the Generating Facility's production profile that are made after the System Impact Study Agreement has been executed may result in incorrect study results that do not accurately capture how the Generating Facility will operate when it is interconnected with the Utility's System.

Witness Gajda explained that the Duke Utilities support new technologies such as storage. However, for any Interconnection Requests where Duke has already begun the System Impact Study, the Utility must have assurance that the assumptions related to the production profile of the Generating Facility are not invalidated by modifications. Only where the key elements of the original Generating Facility remain unchanged, such as the facility's daily production profile, would the Duke Utilities allow the addition of equipment (such as energy storage) on the direct current (DC) portion of the facility after initiating System Impact Study and without considering the addition to be a Material Modification. Witness Gajda explained that under the Stipulated Redline, if an Interconnection Customer chose to add battery storage to an already-submitted Interconnection Request, any change to the

production profile would constitute a Material Modification if the Utility had already begun the System Impact Study. Further, the Customer's execution of the System Impact Study Agreement would mark the beginning of the study. Witness Gajda testified:

> The production profile of a Generating Facility has become a more crucial component going forward as independent generators seek more flexibility on how the[y] operate their facilities. … [F]ailing to account for generation export at 6 AM or at 8 PM, which might occur where battery storage has been added to a solar facility, would produce incorrect study results since interconnection studies for solar facilities typically do not account for operation at those times. Interconnection studies also typically do not account for large loads (such as battery charging).

He testified further that the proposed changes within the Interconnection Request Form and the Material Modifications changes described above are "designed to better accommodate energy storage technologies, while ensuring future safe and reliable interconnection operation…."

In addition to the fee changes described earlier in this Order, the Stipulated Redline version of the Interconnection Request Application Form would include a new requirement for an Interconnection Customer to provide an hourly production profile for the Generating Facility. The Form would require the Interconnection Customer to specify, for each hour of the day, the Facility's maximum import and export in that hour, expressed as a percent of the Maximum Generating Capacity[4] being requested for the Facility. Additional Stipulated Redline revisions to the Interconnection Request Application Form state: "Power flow in excess of these [production profile] levels during the corresponding hour shall be considered an Adverse Operating Effect per Section 3.4.4 of the Interconnection Agreement." Section 3.4.4 states: "If, after notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time, the Utility may disconnect the Generating Facility."

DENC witness Nester testified to DENC's support for the Stipulated Redline, which includes the revisions described above.

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[4] The Stipulated Redline provides the following new definition in the NC Interconnection Standard's Glossary of Terms:

> Maximum Generating Capacity – The term shall mean the maximum continuous electrical output of the Generating Facility at any time as measured at the Point of Interconnection and the maximum kW delivered to the Utility during any metering period. Requested Maximum Generating Capacity will be specified by the Interconnection Customer in the Interconnection Request and an approved Maximum Generating Capacity will subsequently be included as a limitation in the Interconnection Agreement.

The revised Interconnection Request Application Form instructs the Customer: "Production profile: provide below the maximum import and export levels (as a percentage of the Maximum Physical Export Capability Requested) for each hour of the day…" Since the Stipulated Redline deletes the current term (and its definition) for Maximum Physical Export Capability, the Commission finds the reference to Maximum Physical Export Capability to be an error and will substitute the new term, Maximum Generating Capacity.

NCCEBA witness Norqual disagreed with the addition of the phrase "and with the same output profile" to the indicia of changes to a Generating Facility that would not constitute a Material Modification after System Impact Study had begun. Witness Norqual testified that the addition of this phrase largely excludes energy storage from being added to a solar facility without triggering a Material Modification. Witness Norqual stated that based on his knowledge of the study process, there does not appear to be technical merit for the addition of the phrase as proposed by the Duke Utilities. He argued that energy storage provides benefits to ratepayers, and that therefore, Interconnection Customers should be allowed to add energy storage to their Interconnection Request and quickly be restudied without the Utility deeming the change to be a Material Modification, so long as the addition would not increase the Facility's overall output. Thus, he testified in support of a substitute provision, which he stated had been approved by Stakeholder Working Group 2, which would be in the list of items "not indicia of a Material Modification":

> A change in the DC system configuration to include additional equipment that does not impact the Maximum Generating Capacity or the proposed AC configuration of the Generating Facility including: DC optimizers, DC-DC converters, DC charge controllers, power plant controllers, and energy storage devices such that the output is delivered during the same periods considered during the System Impact Study.

NCCEBA witness Wallace testified that he had attended many of the stakeholder meetings, and that the stakeholders did not agree that changes to the DC portion of a facility would be allowed "only if all elements of the production profile are considered because the production profile is not a typical element of the System Impact Study…." In his opinion, changes to the daily production profile of a Generating Facility do not necessitate further study of the Facility to prevent inaccurate study results for the short-circuit study, stability analysis, voltage drop and flicker analysis, and production and set point coordination studies. He further testified that even where the Duke Utilities are required to consider the power flow analysis again due to a change in production profile from the addition of energy storage, a Material Modification should not be triggered. He reasoned that since the addition of energy storage would not impact the vast majority of the System Impact Study results, and because the power flow analysis requires only a minimal time commitment of about 8 to 16 hours by the Utilities, even if the addition of DC-coupled energy storage alters the daily production profile it should not trigger a Material Modification. At the hearing, however, witness Wallace acknowledged that adding energy storage to a Facility could impact the stability analysis results of a System Impact Study.

NCSEA witness Brucke testified that the Duke Utilities' policy regarding the addition of energy storage to a solar facility is unreasonable since the Duke Utilities consider any addition of energy storage to be a Material Modification despite potential circumstances where the addition of energy storage has no impact on the cost, timing, or design of the Interconnection Facilities or Upgrades:

> For an interconnection customer to proceed with a Material Modification, they must resubmit their project and move to the back of the queue. Considering the length of the queue, the slow speed of processing projects thought [sic] the queue, and the loss of queue-priority, this is not a practical option for most projects.

Witness Brucke recommended that the Utilities evaluate whether the addition of energy storage is a Material Modification or not on a project-by-project basis, or, instead, establish a set of guidelines to define additions that would specifically not be considered Material Modifications. He recommended that the addition of DC-coupled energy storage to a solar PV project that does not increase the AC capacity of the project or generate outside the time of day considered in the project's System Impact Study be considered a non-Material Modification under the NC Interconnection Standard.

NCSEA stated in its post-hearing brief that the Commission should approve the consensus language regarding Material Modification that was developed during the 2017 stakeholder process and reject the version in the Stipulated Redline.

NCCEBA witness O'Dea testified that Duke's proposed changes to the Interconnection Request Application Form indicated "that a production profile is necessary even for new interconnection requests for an energy storage facility." He stated that this is inconsistent with Section 7 of the System Impact Study Agreement which states:

> The System Impact Study shall model the impact of the Generating Facility regardless of purpose in order to avoid the further expense and interruption of operation for reexamination of feasibility and impacts if the Interconnection Customer later changes the purpose for which the Generating Facility is being installed.

Witness O'Dea testified that a key value of energy storage is the flexibility and multiple use cases that storage can provide, and stated that limiting the operation to a production profile submitted at an early stage in the development of a facility is not supported with a technical justification, and is in conflict with the NC Interconnection Standard. He further testified that modifications to the DC system of a solar array do not modify the output profile, and that those changes are not indicia of a Material Modification. Witness O'Dea testified that NCCEBA supported the Working Group 2 language (as quoted above by witness Norqual) "with the understanding that the output of the facility should not be restricted to a specific profile and that the Maximum Physical Export Capability can be delivered at any time of day at which the studied load cases are applicable."

In rebuttal, Duke witness Gajda testified that the proposed modification to Section 1.5.2.2.5 was necessary to avoid a latent ambiguity as to whether an Interconnection Customer could generate the originally requested full output at any time between sunrise and sunset. Witness Gajda stated that the assessment of exactly what hours of the day, and to what levels, energy storage production might be a permissible modification without performing additional study would be "subjective at best." Witness Gajda emphasized that the complexity presented by Interconnection Requests is growing, not diminishing, and that an uncontrolled storage device could be in a charge state, discharge state, or neutral state at any time, which adds to this complexity. As a result, witness Gajda stated that the Duke Utilities' addition of language to Section 1.5.2.2.5 was out of an abundance of caution and to ensure that any study fully accounts for what will truly happen. Witness Gajda noted that while the NC Interconnection Standard allows some changes to DC configurations without concern for the production profile, changes that impact production profiles must be treated as material and require re-study.

Duke witness Freeman testified that battery storage introduces additional complexity because batteries "can go from instantaneous off to almost instantaneous on," with more of a spike than the intermittency experienced with solar facilities. He testified that this "has huge implications on ramping. It has huge implications on the equipment that's on the distribution circuit … it does add a significant amount of complexity that does need to be studied in more detail."

Witness Gajda testified that, in his professional opinion, the addition of storage to a solar-only facility should only be permitted after it is fully studied, and that given the amount of "unknowns" about how batteries will be operated, it would be irresponsible of the Utilities to allow the addition of storage without further study. During the hearing, witness Gajda agreed that if DC-coupled energy were added to an existing solar facility, several of the System Impact Study analyses would not be impacted, specifically the short circuit study and the protection study. On the other hand, the thermal/voltage review and the stability study could be impacted by the addition, and would need to be studied, according to witness Gajda.

Public Staff witness Lucas testified that the Utilities currently do not request a production profile from Interconnection Customers, but that Duke uses a "standard self-generated production profile during the System Impact Study that is developed from an equipment list that the Interconnection Customer submits." He testified further, "however, Duke Energy has stated that with the addition of energy storage, production profiles can vary greatly." He stated that "changes to the direct current or DC portion of the facility, including energy storage, should not automatically constitute a material modification if the changes are requested prior to the execution of the System Impact Study Agreement." He testified that the Utilities had agreed to the Public Staff's amendments to Section 1.5.1, and that they had been included in the Stipulated Redline.

In its post-hearing brief, IREC asserted that there should be an expedited process for energy storage that is added outside the time periods already studied, arguing that storage could provide power at 8 a.m. or 6 p.m. "when Duke's system experiences its highest loading and power is needed most."

In its post-hearing brief, NCSEA stated that it opposed the Stipulated Redline's addition of production profile information on the Interconnection Request Application Form, saying it is unnecessary.

Discussion and Conclusions

Several parties noted that this issue, the appropriate way to process requests to add energy storage to existing solar generation facilities, is the most important issue in this proceeding. It is certainly the most complex.

From a technical perspective, the Commission finds persuasive the testimony of witnesses who stated that energy storage has the ability to charge, discharge, or simply be in a neutral state; these three states make energy storage fundamentally different from a generator, which typically does not act as a load (or at least, not as a large load). In addition, storage has the ability to ramp up and down extremely quickly, almost instantly, presenting new challenges for the distribution grid. The Commission finds that it is appropriate that the

Utilities charged with providing a reliable system for all customers be given the opportunity to fully study all energy storage devices before interconnecting them to the grid. Therefore, the Commission will approve the Stipulated Redline's provisions regarding Material Modifications. The Commission will also approve the proposal to use the signing of the System Impact Study Agreement as the trigger date for defining Material Modifications. While it is true that there might be a delay between the signature date and actual start of the study process, the Commission finds that this milestone is straightforward and under the Interconnection Customer's control.

The Commission notes that only one witness, NCCEBA witness O'Dea, opposed the proposed new requirement in the Stipulated Redline that Interconnection Customers provide hourly production profile data in the Interconnection Request Application Form. He stated that this new requirement would be inconsistent with Section 7 of the System Impact Study Agreement which states:

> The System Impact Study shall model the impact of the Generating Facility regardless of purpose in order to avoid the further expense and interruption of operation for reexamination of feasibility and impacts if the Interconnection Customer later changes the purpose for which the Generating Facility is being installed. [Emphasis added.]

The Commission finds persuasive testimony that, as increasing numbers and types of distributed resources seek to interconnect to the grid, it will be necessary to study them in new and different ways. However, the Commission agrees with witness O'Dea that this existing Section 7 in the System Impact Study Agreement is in tension with the Stipulated Redline's proposed changes, specifically the requirement to provide hourly production profiles. In addition, in its post-hearing brief, NCSEA argued that Interconnection Customers should not be required to submit production profile information because "the Utilities have not said that they would begin using Generation Facility-specific production profiles in the study process." The Commission agrees that it is not clear from the record how the Utilities will use the production profile information in the interconnection studies. The Commission is inclined to approve the provision of the Stipulated Redline requiring the hourly production profile data. However, given the record on this issue, it is appropriate to require that the Utilities file with the Commission, within 20 business days of the date of this Order, an explanation of the purposes for which that data will be used in studying Interconnection Requests, including the anticipated impact in terms of time and dollars, on studying Interconnection Requests, as well as the anticipated results or outcomes of including these data in the study process. The Commission shall make a final decision on this issue following such filing. Further, the Commission seeks comment from the Utilities on whether Section 7 of the System Impact Study Agreement requires amendment.

Some of the testimony in this case, including from Utility witnesses, suggested that the process for re-studying an existing Generating Facility for the addition of energy storage could be less resource- and time-intensive than the initial interconnection studies, especially if the site's maximum output remains unchanged. Because there could be System and retail customer benefits if existing solar facilities were able to use energy storage to shift their output away from those times when the sun is shining, or to smooth the delivery of energy during times of sporadic sunshine, the Commission will require Duke to host stakeholder and TSRG meetings dedicated to this question and report back to the Commission by

September 3, 2019. Further, the Commission will require that the report include: (1) a streamlined process for efficiently studying the addition of storage at existing generation sites and that builds upon the grouping study approach that is already under development as required by the Stipulation; and (2) details of how the addition of storage to the direct current side of an existing generator would impact the facility's original System Impact Study results.

The addition of storage at an existing qualifying facility (QF) site raises additional issues unrelated to the provision of interconnection service. The Commission will, therefore, issue a separate concurrent order in Docket No. E-100, Sub 158, Biennial Determination of Avoided Cost Rates for Electric Utility Purchases from Qualifying Facilities – 2018, requiring the Utilities to file testimony on those related issues, to the extent that they have not already done so. Testimony by the Public Staff and other Parties is encouraged.

EXPEDITED REVIEW OF INTERCONNECTIONS FOR SMALL SWINE AND POULTRY WASTE FACILITIES

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 9

The evidence supporting this finding of fact is found in the Stipulation and the Stipulated Redline, and in the testimony and exhibits of Duke witness Riggins, DENC witness Nester, Public Staff witness Lucas, and NC Pork Council witness Maier.

Duke witness Riggins explained that Part VII of HB 589 amended N.C. Gen. Stat. § 62-133.8(i)(4) to require an expedited interconnection review process for swine and poultry waste-to-energy projects of 2 MW or less. Section 62-133.8(i)(4), as rewritten, requires the Commission to:

> Establish standards for interconnection of renewable energy facilities and other nonutility-owned generation with a generation capacity of 10 megawatts or less to an electric public utility's distribution system; provided, however, that the Commission shall adopt, if appropriate, federal interconnection standards. The standards adopted pursuant to this subdivision shall include an expedited review process for swine and poultry waste to energy projects of two megawatts (MW) or less and other measures necessary and appropriate to achieve the objectives of subsections (e) and (f) of this section.

Duke witness Riggins testified that in light of this mandate, the Duke Utilities worked with the Public Staff, the NC Pork Council, the North Carolina Poultry Federation, and other interested parties to develop an expedited study process that is similar to the relief approved by the Commission on August 16, 2016, in Docket No. E-100, Sub 101 for certain swine and poultry Interconnection Requests in DEP's service territory. The stakeholders developed a new Section 1.8.3.3 that would make Small Animal Waste Facilities eligible for expedited study under Section 4 and place them behind only those earlier queued projects that are already being studied or have signed a System Impact Study Agreement.

NC Pork Council witness Maier testified that the new proposed Section 1.8.3.3 would provide that a swine or poultry waste-to-energy facility is to be studied prior to all other non-swine or poultry waste-to-energy facilities on a system-wide basis. She stated that that

is the result required by Part VII of HB 589. In addition, she noted that Part VII of HB 589 also requires the NC Interconnection Standard to include "other measures necessary and appropriate to achieve the objectives" of the REPS swine and poultry waste set-asides. She testified that the Public Staff recommended that the Utilities be required to designate a "technical interconnection specialist" to assist animal waste-to-energy facility developers, and to publish their contact information on the Utility's website. She stated that the NC Pork Council supports these recommendations.

The parties to the Stipulation agreed to support the NC Pork Council's clarification to the section providing that a Small Animal Waste to Energy Facility, upon being designated a Project B, shall be the next Project B studied under Section 4.3, regardless of Queue Number.

Public Staff witness Lucas noted the Public Staff's agreement with the revisions to Section 1.8.3.3, as worded in the Stipulated Redline, as did Dominion witness Nester. No other party filed testimony regarding the addition of Section 1.8.3.3 to the NC Interconnection Standard.

Discussion and Conclusions

Part VII of House Bill 589 amended N.C.G.S. § 62-133.8(i)(4) to require an expedited review process for swine and poultry waste-to-energy projects of 2 MW or less. As evidenced by the Stipulation, the Utilities, Public Staff, and NC Pork Council agree that new Section 1.8.3.3, as presented in the Stipulated Redline, appropriately meets the objectives of House Bill 589. Further, no party has opposed new Section 1.8.3.3 as proposed in the Stipulated Redline. Therefore, the Commission approves new Section 1.8.3.3 to the NC Interconnection Standard as a reasonable procedure to expedite the interconnection processing of small swine and poultry waste-to-energy projects and appropriate to meet the directives of Part VII of House Bill 589.

FAST TRACK PROCESS, INCLUDING SUPPLEMENTAL REVIEW

EVIDENCE AND CONCLUSIONS FOR FINDINGS OF FACT NOS. 10-11

The evidence supporting these findings of fact is found in the Stipulation and the Stipulated Redline, and in the testimony and exhibits of Duke witness Gajda, DENC witness Nester, IREC witnesses Auck and Lydic, and Public Staff witness Williamson.

The Section 3 Fast Track Process for Certified Generating Facilities allows for an expedited review of Interconnection Requests for Generating Facilities no larger than 2 MW. If the Facility is eligible for Fast Track review,[5] the Utility first uses technical screens to assess whether the Generating Facility can safely interconnect to the System. If the Facility passes the Fast Track screens, the Utility provides an Interconnection Agreement to the Interconnection Customer for execution. If the facility fails the Fast Track screens, the Interconnection Customer is offered a customer options meeting where they may

[5] Eligibility limits are listed in the table in Section 3.1 of the NC Interconnection Standard, and they are based on the facility's size, the voltage of the line to which it would connect, whether that line is a mainline, and the facility's distance from the substation that would serve it.

choose whether to proceed to a Supplemental Review or move instead into the full Section 4 study process.10

Duke witness Gajda initially testified that the Duke Utilities proposed only limited changes to the Section 3 Fast Track process. He described those changes, which were included in the Stipulated Redline, as follows:

1) Changes to Section 3.1 would allow the Utility and the Interconnection Customer to mutually agree to use the Fast Track process, even if the Facility does not otherwise qualify by virtue of connecting to a line larger than 35 kV.

2) Changes to Section 3.2 would clarify that the interdependency provisions of Section 1.8 apply to Fast Track requests.

3) Changes to Section 3.4.1.3 would clarify that a Facilities Study might be required for projects approved in Supplemental Review.

In his rebuttal testimony, DENC witness Nester described additional changes to the Fast Track process that were included in the Stipulated Redline:

4) Changes to Section 3.1.1 would allow an Interconnection Customer to select both the Fast Track and Supplemental Review processes when completing the Interconnection Request Application Form. The Customer would pay both the Fast Track fee and the Supplemental Review deposit at the time they enter the Fast Track process. Thus, if the Interconnection Request fails the Fast Track review, it can move quickly into Supplemental Review.

5) Elimination of Section 3.2.1.4. This provision requires all synchronous and induction machines to be connected to a distribution circuit where the local minimum load-to-generation ratio is larger than 3 to 1. The Utilities proposed to eliminate this provision due to limited occurrence of synchronous and induction machines pursuing Fast Track interconnections.

6) Changes in Section 3.4 would reduce from 15 to 10 Business Days the timeframe during which an Interconnection Customer must agree in writing to pursue a Supplemental Review or else the Interconnection Request is deemed to be withdrawn.

7) Changes in Section 3.4.1.2 would give the Interconnection Customer 10 Business Days to agree to make facility modifications. This would avoid the unnecessary preparation of an Interconnection Agreement if the Customer is not willing to make changes to their facility design to accommodate an interconnection.

8) The Utilities would no longer automatically provide the Interconnection Customer with copies of all data and analyses used to determine that the Interconnection Request cannot be approved. Rather, the Utility would provide that information to the Interconnection Customer only upon request.

DENC witness Nester stated that based on its evaluation of the Fast Track and Supplemental Review processes, DENC agreed that only the minimal revisions depicted in the Stipulated Redline are needed.

IREC witnesses Auck and Lydic recommended several significant modifications to Fast Track process, including changes to the Supplemental Review process. IREC witness Auck raised concerns with how the Fast Track screens are applied to eligible projects, citing 98.5% and 97.8% failure rates on the Fast Track technical screens for projects in DEP and DEC, respectively.

IREC witness Lydic focused in particular on the 15% of peak load screen and the Duke Utilities' interpretation of "line section" when applying the screen.

Both IREC witnesses argued that the Duke Utilities' interpretation of line section is too narrow and that, instead, the Fast Track screens should require the use of a larger feeder section that would include more customer load. IREC recommended that this clarifying footnote be added to Section 3.2.1.2:

A. If the point of common coupling is downstream of a line recloser, include those medium voltage (MV) line sections from the recloser to the end of the feeder. If the 15% criterion is passed for aggregate distributed generation and peak load at [the] first upstream recloser, then the screen is passed.

B. If the point of common coupling is upstream of all line reclosers (or none exist), include aggregate distributed generation relative to peak load of the feeder measured at the substation. If the 15% criterion is passed for the aggregate distributed generation and peak load for the whole feeder, then the screen is passed.

Witness Lydic also suggested that the following definition of "line section" be added to the NC Interconnection Standard' Glossary of Terms:

> Line Section – A portion of a distribution circuit bounded by an automatic sectionalizing device and the end of the feeder. When applying this to the 15% of peak load screen described in Section 3.2.1.2, the smallest line section to be evaluated should begin at the first line recloser or circuit breaker upstream of the Point of Interconnection.

IREC witness Lydic testified that he developed this definition in consultation with EPRI, among others.

IREC witness Lydic also took issue with the Fast Track technical screen contained at Section 3.2.1.7, which currently states as follows:

> The proposed 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% of the short circuit interrupting capability; nor shall the

interconnection be proposed for a circuit that already exceeds 87.5% of the short circuit interrupting capability.

Witness Lydic stated that this screen is intended to ensure that protective devices are not overloaded. He stated further that although Duke does not appear to be misapplying this screen, it should still be re-evaluated given the high rate of failure of the Fast Track process, and the fact that Duke typically uses protective devices up to 100% of their ratings. Witness Lydic recommended that a higher use rate be allowed in order to decrease the Fast Track fail rate. He stated that setting the metric at 96% of short circuit interrupting capability would provide a wide safety margin, "but this issue should be discussed further, considering Duke's typical voltage levels and protection ratings."

IREC witnesses Auck and Lydic also recommended that the Fast Track eligibility thresholds in Section 3.1 for lines with a voltage of less than 5 kV be raised from 100 kW to 500 kW. Witness Lydic argued that the 100-kW maximum generator size is overly conservative and may send small projects to full Section 4 study process. IREC's witnesses also testified that other states and the Federal Energy Regulatory Commission (FERC) have adopted a 500-kW eligibility threshold for projects interconnecting to lines with a voltage of less than 5 kV, regardless of location.

IREC witness Auck proposed that all Fast Track-eligible projects that fail the initial Fast Track screens should be able to proceed to a robust Supplemental Review process with defined screens. Witness Auck stated that expanding Supplemental Review in this way would allow Interconnection Customers to make more informed decisions regarding the future of their projects based on the information they receive through the Supplemental Review process.

IREC witness Lydic also advocated for a defined set of technical screens that the Utility would use during the Supplemental Review process: (1) 100% minimum load screen (using IREC's revised definition of "line section"), (2) voltage and power quality screen, and (3) safety and reliability screen. He stated that the current Supplemental Review process does not define how the Utility will determine if a project can be interconnected safely and reliably. Witness Lydic argued that defined screens would let customers make informed decisions on whether Supplemental Review or a full study is the next best step for their project if it fails the Fast Track process. Witness Lydic testified further that at a minimum, the Commission should require Utilities to provide a detailed technical report to the Interconnection Customer, which would explain the analyses the Utility conducted during Supplemental Review and their outcomes.

IREC witness Auck acknowledged that, despite the high Fast Track technical screen failure rate, nearly all of the Section 3 Fast Track projects that proceed to Supplemental Review ultimately pass and are successfully interconnected.

Witness Gajda noted that accepting IREC's proposed changes outside of a collaborative process would make sweeping assumptions about North Carolina's distribution systems and increase the complexities of managing the interconnection process. Witness Gajda also testified that the Fast Track failure rates cited by IREC do not evidence that Fast Track is "failing," but instead indicate that due to high solar penetration

in North Carolina, more projects need increased scrutiny from the utility's engineers prior to interconnection.

In his rebuttal, DENC witness Nester testified that Fast Track screens should generally be designed to be conservative, with the intention that only those requests that do not impact the grid or require additional review will pass. The desired result is that no harm to the grid results from the facility's interconnection. Witness Nester stated DENC's position that the existing Fast Track process appears to be working as designed so that requests that pass the screens do not require additional study.

With regard to the 15% peak load screen, Duke witness Gajda stated that the screen is a valuable flagging step in order to identify potential uncontrolled high voltage occurrences. Witness Gajda testified that the current definition of "line section" as applied by the Duke Utilities is reasonable and efficient. He noted that IREC cites a paper to justify its recommended definition of line section, yet the paper acknowledges that a fuse is an automatic sectionalizing device, and the paper "therefore also supports the Companies' current definition and application of line section with NC Procedures section 3.2.1.2." The Companies do, however, agree that it would be appropriate to address this issue at a TSRG meeting to increase transparency as to the Duke Utilities' use of the term.

DENC witness Nester added that changing the screening zones to allow more projects to avoid triggering the screen would risk loss of visibility to technical issues closer to retail customers' premises.

The Utilities also stated that they opposed IREC's proposed change to increase Fast Track eligibility for lines under 5 kV from 100 kW to 500 kW. Duke witness Gajda explained that these circuits are of a legacy design and, while they are still able to reliably serve small areas, connecting a generator larger than 100 kW to one of these lines would be significant. Witness Gajda also explained that these small circuits comprise only about 6% of Duke's North Carolina distribution circuits. Due to the few circuits and potential reliability issues with larger generators, witness Gajda urged the Commission not to revise the current Fast Track eligibility thresholds.

DENC witness Nester testified similarly that 5-kV circuits are an older type of distribution infrastructure that require particular care to ensure interconnections are established safely and reliably. Additionally, because only three out of DENC's 108 distribution circuits in North Carolina are of this voltage class, IREC's proposal would not significantly improve DENC's Interconnection Request processing.

Duke witness Gajda opposed IREC's proposal to raise from 87.5% the loading limit for protective devices because it would be less conservative. He stated that "Fast Track screens should be conservative and designed such that only requests with no impact to the electric grid will pass without additional review."

The Utilities also opposed IREC's proposal to add standardized technical screens to the Supplemental Review process. Duke witness Gajda explained that such standardization

incorrectly assumes uniformity of future interconnections and of North Carolina's distribution system as compared to the systems in other jurisdictions:

> The Companies first reject IREC's proposal because the addition of standardized screens to the Supplemental Review process implies that there is a complete and uniform understanding of every possible future design of DER [distributed energy resources] and how it might connect to the distribution system.

Instead, the Duke Utilities support the current, more flexible approach to Supplemental Reviews. Duke witness Gajda also proposed using the TSRG as a forum to evaluate whether a more defined Supplemental Review process would be beneficial.

DENC witness Nester also opposed IREC's proposed Supplemental Review screens. He explained how IREC's 100% of minimum load screen would be technically inappropriate because Utility estimates of minimum loads are "inherently less accurate for downstream zones." In addition, using a 100% of minimum load screen "would imply that minimum load levels will not decrease. Load patterns inevitably shift around on distribution circuits, making a minimum load screen at that level not appropriate…."

The Public Staff opposed IREC's proposed changes to the Section 3 Fast Track study process.

Public Staff witness Williamson recommended maintaining the 100-kW eligibility threshold for projects proposing to interconnect to lines smaller than 5 kV. He stated that it is prudent to require additional study of a 500-kW facility, and noted that the 100-kW limit is only for Fast Track eligibility, and does not hinder a larger facility proposing to connect to a 5-kV line from moving through the interconnection process.

Witness Williamson also testified that Utilities are reasonable in using a conservative definition of line section when applying the 15% of peak load screen, stating that this will result in a higher degree of grid safety and reliability. Witness Williamson testified that a technical screen should not be arbitrarily adjusted on the sole premise of allowing more projects to pass the screen and be interconnected without additional study, noting that as higher levels of DER are connected to the System, there will be a cumulative effect. The Public Staff agreed that the Utilities' interpretation of "line section" is appropriate and that the definition should not be modified as proposed by IREC. Witness Williamson noted further, however, that the Utilities should promote transparency when determining how they interpret terms within the NC Interconnection Standard and discuss any changes in interpretation with the TSRG.

Public Staff witness Williamson noted that in the Stipulation, Duke agreed to consult with EPRI regarding potential modifications to the Fast Track and Supplemental Review processes, and report back to the TSRG.

In witness Auck's rebuttal testimony, IREC agreed with some of the Utilities' minor modifications, including the revision to Section 3.1 to allow the Utility and the Interconnection Customer to agree to Section 3 Fast Track review even if the Customer

seeks to interconnect to a line sized at 35 kV or greater, suggesting this flexibility would speed up the interconnection process for some Interconnection Customers.

During the Public Staff's cross examination of Duke's witnesses, counsel for the Public Staff asked Company witnesses whether the technical screens and standards applied during Supplemental Review could be made available on the Utility's website similar to how the Method of Service Guidelines are available today. Duke witness Gajda agreed that it would be reasonable to make these screens available while noting that they are subject to change in the future.

The Duke Utilities also offered to discuss further ways to improve the Fast Track process and suggested that they do so through the newly-formed TSRG. The Stipulated Redline included a commitment by the Duke Utilities to consult with EPRI regarding potential modifications to the Fast Track and the Supplemental Review processes. The Stipulation provides that the Duke Utilities will commence that process no later than April 1, 2019, and will provide a summary report regarding potential modifications at the TSRG meeting occurring in the third quarter of 2019.

IREC witness Auck expressed support for Duke's willingness to take a closer look at its Fast Track screens and its implementation of the Supplemental Review process: "However, we think this should be done as an independent review overseen by the Commission and/or its staff with the opportunity for IREC and other stakeholders … to review and comment…."

In its post-hearing brief, NCSEA opposed the Stipulated Redline's change to Section 3.4 to shorten the time period from 15 days to 10 days for an Interconnection Customer to agree to pursue Supplemental Review. NCSEA stated that the Utilities had not shown why such a change is necessary.

Discussion and Conclusions

Based on the evidence presented, the Commission finds that the modifications to the Fast Track process, including Supplemental Reviews, as stated in the Stipulated Redline, are appropriate and will approve them. These changes are reasonable and useful modifications to the NC Interconnection Standard that should help move Interconnection Requests along more quickly. That said, the Commission is concerned that the new provision in Section 3.1 allowing the Utility and the Interconnection Customer to mutually agree to use the Fast Track process on lines 35 kV or larger has the potential to create arbitrary exceptions to the NC Interconnection Standard. The Commission will require the Utilities to retain documentation of their rationale for each instance when they invoke this new provision, such documentation to be available for future consideration as to whether the eligibility criteria in Section 3.1 should be changed and applied to all Fast Track applications.

The Commission agrees with the Utilities and the Public Staff that, due to the limited number and age of distribution lines that are smaller than 5 kV, the Fast Track eligibility threshold should continue to limit to 100 kW the size of facilities connecting to those lines under the Fast Track process.

The Commission is not persuaded that IREC's proposal to increase the Section 3.2.1.7 screen to allow for protective device utilization greater than the current 87.5% would be appropriate at this time. The Commission agrees with those witnesses who advocated for a conservative approach in order to maintain reliable and safe operations for retail electricity consumers.

The Commission notes that IREC and the Duke Utilities agreed that a significant percentage of projects are failing the Fast Track screens, specifically, the 15% peak load screen. These parties disagree, however, on whether these failure rates are representative of deficiencies in the current Fast Track screening process reflective of an overly conservative application of the 15% screen. The Commission finds Public Staff witness Williamson's testimony persuasive that Utilities are reasonable in using a conservative approach to defining line section and applying the 15% screen because this approach will result in a higher degree of grid safety and reliability.

The Commission has carefully considered IREC's proposal to define specific technical screens to be used during Supplemental Reviews. While IREC argued that precise screens would provide transparency and certainty for Interconnection Customers, the Utilities and the Public Staff instead preferred the current Supplemental Review process. That process allows the Utility to tailor its analyses to the specific system topology and generator in question. The Commission finds it is not necessary to impose the IREC screens at this time, but will instead await the results of the EPRI review that Duke agreed to pursue in the Stipulation as discussed below. The Commission will, however, direct Duke to post on its websites a brief description of the technical evaluations and screens that it typically applies during the Supplemental Review process, noting that they are subject to change.

The Commission recognizes the Duke Utilities' commitment in the Stipulation to consult with EPRI regarding potential modifications to the Fast Track and Supplemental Review processes during 2019. Duke agreed to provide a summary report regarding potential modifications at the third quarter 2019 TSRG meeting. The Commission will also require Duke to file that report with the Commission and to serve copies on parties to this proceeding. Parties may file comments within 30 days thereafter. In addition, the Commission will require Duke to discuss its definition of "line section" and its implementation of the peak load screen at a TSRG meeting in 2019.

Based upon the foregoing, the Commission finds that the proposed modifications to the Section 3 study processes included in the Stipulated Redline are reasonable and the NC Interconnection Standard should be modified accordingly.

DISPUTE RESOLUTION PROCESS

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 12

The evidence supporting this finding of fact is found in the Stipulation and the Stipulated Redline, and in the testimony of Duke witnesses Riggins and Freeman, DENC witness Nester, IREC witness Auck, and Public Staff witness Lucas.

DENC witness Nester described the current dispute resolution process from Section 6.2 of the NC Interconnection Standard. He testified that this provision allows an

Interconnection Customer to submit an informal Notice of Dispute to the Utility. If the dispute is not resolved within ten days, the process provides for the Public Staff's assistance in informally resolving the dispute. Witness Nester further testified that Section 6.2 provides that an Interconnection Customer may file a formal complaint with the Commission if the parties, with the help of the Public Staff, are unable to resolve the dispute. Witness Nester stated that DENC has successfully resolved disputes under Section 6.2.

Duke witness Riggins similarly stated that the Duke Utilities' experience resolving informal disputes under the current process has been largely successful. He stated that most disputes are resolved early and do not require the involvement of the Public Staff or the Commission. Witness Riggins testified that the Public Staff's involvement, technical understanding, and perspective have been valuable in this process, and, in nearly all instances, have enabled the Duke Utilities and Interconnection Customers to successfully resolve the dispute.

That said, witness Riggins noted that the increasing number and complexity of Interconnection Requests appear to be causing more disputes because developers are required to either commit to costly Upgrades or reduce their project's capacity in order to safely interconnect. Witness Freeman also testified that disputes by developers have become more common, consume more of Duke's resources, and cause delay in studying other projects. In rebuttal, witness Freeman described how notices of dispute inevitably and unavoidably impact other projects and are an example of a factor outside of the Utilities' control that contributes to delays.

Witness Riggins testified to specific challenges and concerns the Duke Utilities have with the current Section 6.2 dispute resolution process. Witness Riggins explained that the lack of enforceable timeframes makes it difficult to determine when an Interconnection Customer has "abandoned the process," which is the trigger for when the Utility may withdraw an Interconnection Request from the queue. Witness Riggins explained that an Interconnection Request hypothetically could remain in dispute in perpetuity with no recourse for the Utility, which could negatively impact interdependent Interconnection Customers. Witness Riggins provided the example of one Interconnection Customer who initiated a dispute regarding the Duke Utilities' voluntary mitigation options for the customer's project. Witness Riggins testified that the Interconnection Customer took about one year before making a decision on the mitigation options, challenging the Duke Utilities' technical conclusions, filing a dispute, and requesting multiple dispute resolution meetings, which Duke obliged. Witness Riggins noted that Duke and the Public Staff spent a significant amount of time with this customer only to then wait extended periods for the customer to make a decision. Ultimately, this project was withdrawn from the queue when the customer failed to comply with an express requirement in the NC Interconnection Standard.

Witness Riggins testified that as currently drafted, Section 6.2 states that "any disputed loss of Queue Number shall not be final until Interconnection Customer abandons the process set out in this section or a final Commission Order is entered." He stated that Duke believes that once a dispute has been initiated by the Customer, failure of the customer to pursue the dispute resolution remedies within a reasonable timeframe would constitute "abandonment of the process." However, witness Riggins testified that developers have asserted that it is solely up to the customer to determine when it has

"abandoned the process," which leads to the "absurd conclusion that an Interconnection Customer could remain in dispute in perpetuity with no recourse for the Companies or interdependent Interconnection Customers awaiting a decision…."

Witness Riggins testified that because of this problem the Utilities proposed revisions, which are included in the Stipulated Redline, that would establish clear timeframes for both parties to diligently pursue dispute resolution. Revisions to Section 6.2.3 state that the parties shall seek to resolve a dispute within 20 Business Days after receipt of the notice of dispute, and could mutually agree to negotiate for another 20 Business Days. In addition, either Party could contact the Public Staff for assistance to resolve the dispute informally within 20 Business Days. Section 6.2.4 contains new language that would allow the parties, upon mutual agreement, to seek the help of a dispute resolution service within 20 Business Days, with the opportunity to extend this timeline "upon mutual agreement." Similar to the current process, the new Section 6.2.5 would provide:

> If the Parties are unable to informally resolve the dispute within the timeframe provided … either Party may then file a formal complaint with the Commission, and may exercise whatever rights and remedies it may have in equity or law consistent with the terms of these procedures.

Finally, new provision 6.2.6 would address the question of when the Utility could withdraw from the queue an Interconnection Request that is the subject of a dispute. That provision would state:

> 6.2.6 The Queue Number assigned to an Interconnection Customer seeking to resolve a dispute shall not be withdrawn … unless: (1) the Interconnection Request is deemed withdrawn by the Utility and the Interconnection Customer fails to take advantage of any express opportunity to cure; (2) the informal dispute processes described in Sections 6.2.3 and 6.2.4 does [sic] not resolve the dispute and the Interconnection Customer does not indicate its intent to file a formal complaint within ten (10) Business Days following the completion of the informal dispute process and file a formal complaint within [thirty] (30) Business Days; (3) the Commission issues a final order on a formal complaint process stating that the Interconnection Request is deemed withdrawn; or (4) the Interconnection Customer voluntarily submits a written request for withdrawal.

Public Staff witness Lucas testified that the Public Staff agreed that it should continue to be involved in the dispute process in order to protect the interests of the using and consuming public, as well as to promote efficient resolution of informal disputes where possible. Witness Lucas stated that the Public Staff, however, should not be the only option to resolve disputes between the Utilities and Interconnection Customers. Witness Lucas proposed modifications to Section 6.2 (as described above and included in the Stipulated Redline) that would allow the parties, upon mutual agreement, to use a third-party dispute resolution service. Witness Lucas also noted the Public Staff's support for inclusion of express timeframes within the dispute resolution process.

Witness Lucas testified that in 2017 the Public Staff was involved with 11 interconnection-related informal complaints, and that they were involved with a similar

number in 2018. He stated, “Sometimes they are very simple net metering-type complaints that we solve in just a few telephone calls and emails, but if it’s a problem with a utility-scale solar, it could take many hours of dealing with the attorneys and engineer that are involved in the complaint.”

IREC witness Auck proposed revisions to the Section 6.2 dispute resolution process in her Exhibit SBA-Direct-2, which she testified adopted features from the dispute resolution processes in California and Massachusetts. Witness Auck testified that the “central feature” of these revisions is the inclusion of an “interconnection ombudsperson” at the Commission who would facilitate the resolution of disputes. Under IREC’s proposal, “if parties are unable to resolve disputes by working together, they may seek assistance from the interconnection ombudsperson or an outside mediator….” Witness Auck testified that “recent disputes regarding queue management and implementation of new study guidelines highlight the need for a clearly defined dispute resolution process in North Carolina.”[6] On cross examination, witness Auck explained that the ombudsperson would be hired by the Commission to oversee interconnection disputes in a neutral fashion. Witness Auck also stated that IREC is open to alternate dispute resolution approaches to further define the current process.

In rebuttal, witness Lucas noted the Utilities’ opposition to an ombudsperson as proposed by IREC witness Auck, but did not oppose such an idea if it helped to facilitate the resolution of disputes between the Utilities and Interconnection Customers. However, he testified that the role of the ombudsperson should not be assigned to the Public Staff because “it is the Public Staff’s mission and statutory obligation to advocate before the Commission for the using and consuming public, and a dispute resolution settlement between the Utilities and interconnection customers may not necessarily be in the best interest of the using and consuming public.” He supported allowing parties to use a third party dispute resolution service, and his proposal in that regard was included in the Stipulated Redline. Finally, witness Lucas recommended that the Commission require any dispute resolution reached under Section 6.2.4 (via a dispute resolution service) be filed for information purposes with the Commission.

In its post-hearing brief, NCSEA asserted that the Public Staff’s responsibility to represent the using and consuming public prevents the Public Staff from being a neutral arbiter in the dispute resolution process. NCSEA stated that while it supports the use of a dispute resolution service, the language in Section 6.2.4 of the Stipulated Redline is insufficient to protect Interconnection Customers because Utilities have no incentive to use a dispute resolution service. NCSEA cited testimony by Duke witness Riggins to the effect that the Utility would only agree to use a dispute resolution service if the Public Staff “couldn’t handle the volume” of disputes. NCSEA noted that FERC recently mandated the use of third-party dispute resolution in its Large Generator Interconnection Procedures. For these reasons, NCSEA supported IREC’s proposal to establish an interconnection ombudsperson at the Commission who could facilitate resolution of disputes.

[6] The “recent disputes” cited by witness Auck involved four docketed matters before this Commission dating back several years. Three were formal complaints, and one was a notice of settlement that was filed in the instant docket. All of the complaints were resolved by the parties, and none required action by the Commission. No complaints or disputes relative to the NC Interconnection Standard are currently pending.

Witness Nester opposed the modifications to Section 6.2 as proposed by IREC witness Auck. He stated that the introduction of an ombudsperson would be inconsistent with the way disputes with retail customers are handled. Witness Riggins expressed concern that the addition of a dispute resolution service could extend the time for resolving disputes. He also stated that Duke believes the Public Staff has informally facilitated the role of "interconnection ombudsperson" and that no further formalization of this role is needed.

While the Attorney General's Office (AGO) did not sponsor any expert witnesses in this proceeding, it nonetheless filed a post-hearing brief in which it advocated that the Commission appoint a "special master" to oversee all technical and procedural stakeholder processes in this docket.

> Because of the rapid pace of change in the landscape of distributed generation interconnection, it is difficult and impractical for the Commission to effectively exercise its oversight solely through the hearing process. At the same time, the AGO appreciates that the Commission may lack the resources necessary to directly manage interconnection stakeholder processes."

The AGO recommended that stakeholder processes be overseen by a special master, "who would be a neutral subject matter expert employed by the Commission." The AGO recommended that the Commission research whether a publicly funded institution such as the NC State Clean Energy Technology Center, the National Renewable Energy Laboratory, or the Lawrence Livermore National Laboratory would be willing to serve this function. If that was not possible, the AGO recommended following a procedure similar to that in Commission Rule R8-71(d) which allowed the Commission to select an Independent Administrator for the CPRE program.

Discussion and Conclusions

The Commission finds that the current dispute resolution process, with the engaged support of the Public Staff, has been largely effective. Very few formal complaints have been filed with the Commission, and all of those were withdrawn when the parties were able to settle their differences. The Commission believes it is unnecessary and inappropriate to assign a Commission staff person as ombudsperson to settle interconnection-related disputes. The Commission's formal complaint process remains the appropriate path for securing a decision from the Commission about a dispute between an Interconnection Customer and a Utility.

The Commission is not troubled by the Public Staff's dispute resolution role, despite the Public Staff's obligation to represent the using and consuming public in matters before the Commission. The Public Staff has the expertise and perspective to consider the disparate interests of the parties, and is uniquely qualified to help Utilities and Interconnection Customers resolve their differences. The Commission notes that N.C. Gen. Stat. § 62-15(g) states:

> Upon request, the executive director shall employ the resources of the public staff to furnish the Commission … such information and reports or conduct such investigations and provide such other assistance as may reasonably be

> required in order to supervise and control the public utilities of the State as may be necessary to carry out the laws providing for their regulation. [Emphasis added.]

The Commission acknowledges the significant assistance that the Public Staff has provided by helping Utilities and Interconnection Customers to resolve their disputes.

Nonetheless, the Commission recognizes that such disputes could become more common for the reasons cited by witnesses. The changes included in the Stipulated Redline should help the Utilities and the Interconnection Customers, as well as the Public Staff, by providing a more defined dispute resolution process with clear timelines. The Commission agrees with the parties to the Stipulation that these revisions should help remedy ambiguity and delays. The modified process continues to involve the Public Staff in the dispute resolution process, but also gives the parties the option, upon mutual agreement, to seek the assistance of a dispute resolution service before ultimately filing a formal complaint with the Commission if those efforts are not successful. In addition to accepting these changes as reasonable and appropriate, the Commission will amend "Article 10. Disputes" in the Interconnection Agreement to make clear that Parties may mutually agree to seek the help of a dispute resolution service.

The Commission notes that the Commission is typically unaware of interconnection-related disputes unless a formal complaint or settlement agreement is filed directly with the Commission. In order to better monitor the volume of interconnection disputes and the subject areas involved in those disputes, the Commission requests that the Public Staff periodically on its own timetable make informational filings with the Commission in this docket regarding interconnection disputes. Such filings should be general in nature so as not to prejudice the Commission in the event a dispute eventually becomes a formal complaint. In addition, as suggested by the Public Staff, the Commission will add the following requirement to Section 6.2.4:

> Upon resolution of the dispute, the parties shall jointly make an informational filing with the Commission.

As to the AGO's proposal that the Commission establish a special master to lead interconnection-related stakeholder processes, the Commission is not convinced that such a proposal would be effective. Significant efficiencies would be lost while the selected person learned the NC Interconnection Standard. Further, the Commission speaks through its orders, and only through its orders.

Therefore, based on all of the evidence presented, the Commission concludes that it is not necessary or appropriate to adopt IREC's proposal for an ombudsperson at this time, or to establish a special master. Instead the Commission concludes that it is appropriate to approve the modifications to Section 6.2, the dispute resolution provisions of the NC Interconnection Standard, as provided in the Stipulated Redline.

SURETY BONDS AND REFUNDS

EVIDENCE AND CONCLUSIONS FOR FINDINGS OF FACT NOS. 13-14

The evidence supporting these findings of fact is found in the Stipulated Redline and in the testimony and exhibits of Duke witnesses Freeman, Riggins, and Gajda; DENC witness Nester; and NCCEBA witnesses Duke and Norqual.

NCCEBA witness Duke explained that a suretyship is a specialized line of insurance that is created when one party guarantees the performance of an obligation by another party. He testified that there are three parties to a surety agreement: (1) the principal undertakes the obligation; (2) the surety guarantees that the obligation will be performed; and (3) the obligee receives the benefit of the bond. The surety provides financial protection in the event the principal defaults in its performance.

Witness Duke testified that a surety bond is a contract, and the form of the bond is generally prescribed by the obligee. He stated further that the terms and conditions of the bond may be written to provide for the non-cancellability of the bond and may set the conditions under which a surety pays. Witness Duke testified that the surety will underwrite accordingly based on the terms and conditions of the bond. He stated further that a surety seeks to avoid a loss by making an assessment of the bond principal's experience, capabilities, and financial resources, and provides a bond only to those entities that are capable of performing the obligation that is bonded.

Witness Duke recommended that the Commission allow surety bonds as a form of financial security for Interconnection Facilities under Provision 6.3 of the Interconnection Agreement, which is part of the NC Interconnection Standard. He stated that not allowing acceptance of surety bonds unnecessarily deprives the parties of the valuable services provided by a surety bond.

NCCEBA witness Norqual testified that NCCEBA and NCSEA believe that a surety bond should be an allowable form of financial security for Interconnection in all circumstances. He stated that DENC accepts surety bonds for Interconnection facilities in North Carolina, and provided a copy of the approved bond form from Dominion. Witness Norqual testified further that allowing performance security for Interconnection Facilities in only the forms currently accepted by the Duke Utilities – cash or a cash-collateralized letter of credit – is burdensome to Interconnection Customers and serves no legitimate public purpose. He stated that surety bonds could potentially be obtained by Interconnection Customers for a fee of about 1 percent annually, "whereas the cost of capital for cash or a letter of credit could be in the 5 to 10 percent range."

Witness Norqual further stated that until the Utility has a need to incur costs for the design or construction of the Interconnection Facilities, there is no need for the payment of the costs to be secured. He asserted that neither Duke, nor other parties, nor ratepayers are at risk if an interconnection fails to go forward. He also testified that other Interconnection Customers would not be prejudiced if a project was cancelled after posting a surety bond, and that if a project is not constructed, any unspent funds should be returned to the Interconnection Customer. Norqual testified that the Utility should not be permitted to retain the funds of Interconnection Customers for unconstructed Interconnection Facilities.

He testified further that if Duke allowed a surety, yet needed to buy materials during the construction process, it could invoice the customer, who could pay cash as Duke requires it. In conclusion, witness Norqual stated that a surety bond would provide sufficient financial protection to the Duke Utilities in the event the Interconnection Customer fails to pay the Utility for the Interconnection Facility, because the surety would step in to satisfy the claim on the bond and provide payment.

On rebuttal, witness Norqual testified that he believed the Commission should consider FERC's policies in weighing whether surety bonds should be accepted as financial security. He testified that the Interconnection Customer should not have to provide cash or a cash-collateralized letter of credit if the Utility does not yet need the funds to begin construction of the Interconnection Facility. Witness Norqual further testified that Duke's policy of requiring that 100% of the construction cost for the Interconnection Facility be paid up front is inconsistent with FERC's Large Generator Interconnection Agreement, and that Duke should not be entitled to keep any unspent funds. Witness Norqual recommended that Section 6.1.1 of the Interconnection Agreement be modified to enable the Interconnection Customer to "pay-as-you-go" for Interconnection Facilities.

Duke witness Riggins testified that Duke had previously committed to accept surety bonds from Interconnection Customers that contain terms that are reasonably acceptable to the Duke Energy credit and risk management department under three interconnection-related scenarios:

1) As security pursuant to Section 4.3.9 in the case of an executed Facilities Study Agreement with identified Network Upgrades.

2) For an executed Interconnection Agreement with identified Interconnection Facilities (but no Network Upgrades) when the project is participating in the CPRE evaluation process, until the outcome of the CPRE Tranche 1 RFP is determined.

3) For an Interconnection Agreement with Interconnection Facilities and Network Upgrades that will not be completed for three to five years and where Duke would not begin final design, procurement and scheduling for the Interconnection Facilities for an extended period of time.

He testified further that Duke is willing to accept surety bonds in any circumstance in which there is a material lag between the execution of the Interconnection Agreement and the time when Duke incurs costs for Interconnection Facilities. He stated that any surety bond must contain terms that are acceptable to Duke. Those terms include the requirement that payment be within a short period, such as 10 days, and the surety bond must be irrevocable.

Witness Riggins disagreed with witness Norqual's contention that surety bonds are "widely accepted" in the utility industry and stated that NCCEBA was only able to identify one other utility that had accepted a surety bond in the interconnection context. He opined that this was most likely because surety bonds generally contain terms and conditions that provide less security than letters of credit, are less standardized and more complex than letters of credit, and, therefore, require more case-by-case analysis to confirm acceptability.

Contrary to the testimony of witness Duke, witness Riggins testified that Duke has been unable to secure any material changes in bond form language in the few instances where they have determined surety bonds to be acceptable.

Despite these issues, witness Riggins testified that in the interest of compromise and because the financial risk to other customers is lessened in the case of Interconnection Facilities if the security arrangement is properly structured, Duke would accept surety bonds containing terms and conditions acceptable to the Company's credit/risk department.

Witness Riggins explained that Duke typically commences work (such as design and procurement), and, therefore, incurs costs, immediately after execution of the Interconnection Agreement even though construction might not begin until a later date. Witness Riggins testified that interconnection facilities are generally paid for under the "extra facilities methodology," and those methods differ from DEP to DEC. In DEP there's a "contributory plan" that would require an up-front pre-payment. In DEC, customers typically choose the monthly payment approach, which involves a deposit followed by monthly payments after the facility is built.

Witness Riggins stated that the Duke Utilities have never retained unspent money for Interconnection Facilities where the Interconnection Customer terminated the Interconnection Agreement, and noted that Cypress Creek had failed to identify any instance in which this had occurred. Witness Riggins stated that Duke proposed to modify Section 6.1.1 of the Interconnection Agreement to memorialize this practice. The Stipulated Redline shows the following:

> 6.1.1 The Interconnection Customer shall pay 100% of required Interconnection Facilities and any other charges are required in Appendix 2 pursuant to the milestones specified in Appendix 4.
>
> The Interconnection Customer shall pay 100% of required Upgrades and any other charges as required in Appendix 6 pursuant to the milestones specified in Appendix 4.
>
> Upon receipt of 100% of the foregoing pre-payment charges <u>for Upgrades</u>, the payment is not refundable due to cancellation of the Interconnection Request for any reason.

DENC witness Nester stated that DENC accepts surety bonds from Interconnection Customers because DENC accepts surety bonds as financial security for electric service deposits, and the Company seeks to align its policies regarding financial security generally. However, witness Nester clarified that DENC Provides a surety bond form to customers, and, upon return of that form, submits it to the DENC system credit department for review to determine if it is acceptable financial security or not.

In its post-hearing brief, NCSEA stated that it opposed the Stipulated Redline's changes to Section 6.1.1 "to make pre-payment for Upgrades non-refundable," stating that the Utilities had presented no evidence to support this change.

Discussion and Conclusions

Duke's proposal to accept surety bonds for Interconnection Facilities under certain circumstances, including when there is a material lag between the execution of an Interconnection Agreement and the time when Duke incurs costs for the Interconnection Facilities, is helpful. However, the Duke Utilities failed to present any compelling reasons as to why they cannot accept surety bonds as a form of financial security for Interconnection Facilities, as is done by DENC. Because a surety bond is a contract, Duke has full control over its terms. Therefore the Commission will require Duke to develop a standard form surety bond with terms that are acceptable to the Company and make it available to Interconnection Customers.

The Commission recognizes that the Utilities typically incur some costs immediately upon execution of an Interconnection Agreement and, therefore, need to ensure that adequate financial protection is in place at that time. Further, requiring upfront payments/security helps to ensure that non-viable projects leave the queue as soon as possible. The Commission declines to adopt a "pay as you go" payment arrangement for Interconnection Facilities at this time, as such a change would represent a substantial departure from current practice, is not adequately supported in the record, and would impose an unnecessary administrative burden on the Utilities, thereby working against efforts to improve their efficiency.

Regarding the proposed changes to Section 6.1.1 of the Interconnection Agreement, the Commission finds that NCSEA's position misunderstands the current NC Interconnection Standard, which already provides that pre-payments for Upgrades are non-refundable. The purpose of the amendment in the Stipulated Redline is to clarify that unspent funds for Interconnection Facilities shall be refunded if the Interconnection Agreement is cancelled. In order to further clarify the proposed changes, the Commission will amend the third paragraph of Section 6.1.1 to read as follows:

> Upon receipt of 100% of the foregoing pre-payment charges for Upgrades, the payment is not refundable due to cancellation of the Interconnection Request for any reason. However, if an Interconnection Customer terminates its Interconnection Agreement and cancels its facility, it shall be entitled to a refund of any unspent amounts that had been collected by the Utility for Interconnection Facilities.

TECHNICAL STUDY PRACTICES AND COMMUNICATIONS

EVIDENCE AND CONCLUSIONS FOR FINDINGS OF FACT NOS. 15-18

The evidence supporting these findings of fact is found in the Stipulated Redline and in the testimony and exhibits of Duke witness Gajda, DENC witness Nester, NCSEA witness Brucke, IREC witness Lydic, and Public Staff witness Williamson.

NCSEA witness Brucke testified in opposition to several Duke interconnection policies, asserting that they do not represent Good Utility Practice and that increased oversight of Duke's technical restrictions to interconnection are needed.

For example, witness Brucke stated that Duke introduced a "circuit stiffness review" in 2016 to determine the relative strength of the grid compared to the size of an interconnecting Facility. He stated that Duke originally announced that projects with a stiffness factor below 25 at the Point of Interconnection or the substation would not be allowed to interconnect. He stated that Duke revised its approach and now instead performs an advanced study for those kinds of Facilities. He stated that Duke's circuit stiffness review was not Good Utility Practice, and that it was not technically justified.

Witness Brucke criticized Duke's policy of no longer allowing generators to interconnect beyond a line voltage regulator. He testified that Duke wanted to reserve the ability to use double-circuiting to serve future load. Witness Brucke stated that a universal prohibition of double-circuiting is a convenience for Duke, but Duke could instead make a project-specific determination of whether they might need double circuits to serve future load growth in an area, or find other ways to serve future load growth.

NCSEA witness Brucke also criticized Duke's Method of Service Guidelines. He stated that the guidelines are overly restrictive, citing especially Duke's requirement that the aggregated capacity of all generators on a substation cannot exceed the nameplate rating of the substation transformer. He testified that Duke has defined the nameplate rating for this purpose as the lowest of three ratings that are typically available, and that DEP used to allow the highest rating on the transformer to be determinative. He stated that Duke has not given a technical justification for this policy. Witness Brucke stated that the technical standards in the Method of Service Guidelines are overly restrictive, not typical compared to those in other states, and not technically justified.

Witness Brucke testified that the Commission should review Duke's application of Good Utility Practice via a technical working group with direct oversight by the Commission or the Public Staff.

IREC witness Lydic similarly advocated for the Commission to convene an Interconnection Technical Working Group with representatives from all stakeholders. This group would review any new issues or proposed changes to the interconnection process and requirements that might arise between major revisions to the NC Interconnection Standard. Lydic stated that no changes should be able to go into effect unless there is consensus within the group or the Commission approves the changes.

Duke witness Gajda testified that Good Utility Practice is defined in the NC Interconnection Standard as follows:

> Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods or acts generally accepted in the region.

He explained that the Duke Utilities had each developed Good Utility Practices for serving retail customers before the term was implemented under the NC Interconnection Standard in the context of generator interconnections. Witness Gajda highlighted that due to the Duke Utilities' responsibility for safety, reliability, and power quality, Duke continuously and deliberately considers what technical standards to implement, and why, how, and when to change its standards. Witness Gajda testified that the Duke Utilities develop their technical standards through involvement in organizations like the Institute of Electrical and Electronics Engineers (IEEE) and the National Electrical Safety Code (NESC), the sharing of technical information with other utilities, and the careful application of power system theory and engineering. He testified that the majority of Duke engineers involved in decisions to change the standards are licensed professional engineers with deep understanding of Duke's systems.

Witness Gajda explained that as a result of North Carolina's unparalleled growth of solar Interconnection Requests, the concept of Good Utility Practice and how the Utilities apply it has had to rapidly evolve. He testified that in 2016 Duke applied significant distribution engineering resources to evaluate whether Good Utility Practice required that additional study criteria be used during System Impact Studies. He testified:

> I and other engineers within the Companies were increasingly recognizing that historically valid "steady state" engineering studies were inadequate to properly predict power quality issues associated with utility-scale solar projects connected to the distribution system and, as such, more robust and dynamic models and standards were needed ….

Witness Gajda testified that Duke's DER Method of Service Guidelines, which took effect October 1, 2017, illustrates the Companies' adaptation of Good Utility Practice to the evolving interconnection landscape in North Carolina. He stated that these guidelines "allow for sustainable methods of interconnection for all sizes of DER while maintaining the Companies' ability to provide reliable retail electric service for current and future retail customers."

Witness Gajda testified that the Method of Service Guidelines provide guidance in these areas: (1) the appropriate method and Point of Interconnection based on the generator's size; (2) configuration options for line design and construction on the distribution system; (3) appropriate voltage regulation zones (also known as the line voltage regulator policy); (4) the construction of line extensions; and (5) methods for screening and assessing the potential for power quality impacts to retail customers (also known as the circuit stiffness review). Witness Gajda testified:

> Importantly, Interconnection Customers proposing new projects that are now impacted by the Method of Service Guidelines are presented an alternative point of interconnection or method of service during System Impact Study, such as a direct-to-substation connection or a transmission-level interconnection, that more appropriately reflects the ability of the System to accommodate the … Facility.

He specifically pointed to the Duke Utilities' determination in 2016 that Good Utility Practice supported requiring Interconnections Customers to interconnect ahead of the first

line voltage regulator and also to eliminate the use of "partial double circuits" to interconnect to the Utility's system. Witness Gajda testified that the Method of Service Guidelines serve to ensure that Generating Facilities are interconnected in a manner that would not force retail customers to bear higher costs due to engineering limitations caused by non-standardized interconnection practices.

Witness Gajda explained that accommodating utility-scale projects with non-standard methods on a quantity basis, when a growing number of technical parameters may not yet be well-understood, shifts cost and reliability risk to the Duke Utilities' retail customers and can become unsustainable over time. Witness Gajda testified that because of evolving challenges with high penetrations of DER, the Duke Utilities intend to continue refining Good Utility Practice to ensure adequate system safety, power quality, and reliability are maintained for all customers.

DENC witness Nester testified that the Utility should be responsible for determining what constitutes Good Utility Practice for its service territory within the definition of the term in the NC Interconnection Standard. He noted that:

> the Utility is the most consistent party associated with the interconnection process, since, in the Company's experience, many developers of interconnection projects that desire to participate in the determination of Good Utility Practice have no intent to operate their generating facilities for any significant length of time but, rather, intend to sell their generating facilities ….

In his rebuttal testimony, witness Nester objected to "attempt[s] to socialize the determination of Good Utility Practice. DENC believes that the determination of Good Utility Practice is a critical area in which the Utility needs to remain predominantly responsible."

Public Staff witness Williamson testified that the definition of Good Utility Practice "clearly contemplates … changing over time." He testified further that "The Utilities are responsible for determining the practices, methods and acts necessary to meet the rules and standards established by the relevant regulatory bodies." Witness Williamson testified that, in his professional opinion, Duke's Method of Service Guidelines are "reasonable guidelines for the Duke Utilities to apply in meeting their obligation to provide safe, reliable electric service to the using and consuming public." He testified further that "Duke Energy retains the right to make the final decision on all technical standards or evolving GUP [Good Utility Practice] revisions, subject to Commission review as part of its general regulatory power and the dispute resolution process defined in the NCIP [NC Interconnection Procedures]."

With regard to the communication of new study criteria, witness Williamson recommended that if a new screen, study, or major modification in the application of the NC Interconnection Standard is developed, the Utilities should be required to file it with the Commission in this docket for informational purposes only, post information regarding the new screen, study, or modification on the Utility's website, and present the topic for discussion at the next TSRG stakeholder meeting. Witness Williamson testified further that when the Utilities file such a revision with the Commission, they should be required to inform the Commission of any potential queue impacts such as impacts to processing time,

potential for projects to withdraw from the queue, and increased costs to be incurred by the Applicant.

Witness Gajda rebutted NCSEA witness Brucke's assertion that the Duke Utilities have denied interconnections outright, instead noting that as penetrations of DER have increased, the cost to interconnect facilities has increased, which may make some interconnection projects financially infeasible. Witness Gajda explained that the Duke Utilities have always sought to identify the simplest and most reasonable interconnection solution, at the least cost, consistent with Good Utility Practice, and the Duke Utilities should not alter their conclusions simply because the outcome may not be financially feasible for each Interconnection Customer. Duke witness Freeman made a similar point that many Interconnection Customers request the Utilities consider one-off, "non-standard" methods to interconnect their projects. Witness Freeman noted that this shifts cost and reliability risk to the Utilities' retail customers and can become unsustainable and incompatible with the Utilities' obligation to plan and operate the system in a safe and reliable manner for all customers.

At the hearing, NCSEA witness Brucke conceded that the Duke Utilities have never denied an interconnection outright but sometimes offered options that were financially infeasible.

In response to Public Staff witness Williamson's proposal for publicizing revisions to study criteria, Duke witness Gajda clarified that the Duke Utilities agree to (1) file any significant new screens, studies, or major modifications in their application of the NC Interconnection Standard with the Commission in this docket for informational purposes only; (2) post information on the Utility's website regarding the change; and (3) present the topic for discussion at the next TSRG stakeholder meeting.

DENC witness Nester stated in his rebuttal that in DENC's experience, the communications processes that already exist in the NC Interconnection Standard allows study parameters to be presented and explained to Interconnection Customers with the opportunity to dispute those parameters should the customer desire. He stated that DENC already communicates interconnection information to customers regarding particular requests that could not be shared publicly due to confidentiality concerns. Finally, he noted that since DENC does not participate in the TSRG, any requirement to present information at TSRG meetings should not apply to DENC. Witness Nester testified that DENC believes the best way for it to communicate study criteria to customers is through the actual interconnection study process, and that it is helpful to have a real Interconnection Request to frame such discussions.

Discussion and Conclusions

Good Utility Practice is a defined term in Attachment 1 of the NC Interconnection Standard. No party in this proceeding proposed to modify the term. Rather, some parties chose to use this proceeding to criticize Duke's application of Good Utility Practice and to advocate for increased Commission oversight or a stakeholder-driven consensus process for determining whether a Utility's practices meet the definition of Good Utility Practice.

The Commission agrees with those witnesses who asserted that increased levels of DER will necessitate evolving practices as regards Good Utility Practice. The Commission finds that Duke and DENC both have reasonable practices in place for communicating policy changes to Interconnection Customers, and the Commission will take no further action in that regard except, as recommended by the Public Staff, to require Utilities to notify the Commission of changes in their practices and policies relative to reviewing Interconnection Requests, and to inform the Commission of any potential impacts to Interconnection Request processing time, the potential for projects to withdraw from the queue, and increased costs to be incurred by Applicants.

The Commission takes judicial notice of its review of a settlement agreement between the Duke Utilities and a group of "late-stage Interconnection Customers" relating to the circuit stiffness review and related comments filed in this docket in 2016. At that time the Commission determined that the Duke Utilities were taking appropriate steps to ensure electric service to retail customers is not degraded due to the operations of newly interconnected Generation Facilities.[7] The Commission similarly now finds that the Duke Utilities have applied reasonable judgment and have taken appropriate steps in light of the facts known to establish the Method of Service Guidelines and other technical standards, as a reasonable implementation of Good Utility Practice.

Consistent with the Public Staff's testimony, the Commission finds that the Utilities should continue to take a conservative view when evaluating impacts of generator interconnections and assigning costs associated with Interconnection Requests. When evaluating an Interconnection Customer's impact to the System under Good Utility Practice, Utilities should ensure that electric service is not degraded or adversely impacted. Utilities should continue to evolve Good Utility Practice, when needed, to ensure that electric service to existing and future retail customers is not adversely impacted.

The Commission agrees with the Public Staff that the definition of Good Utility Practice provides the Utilities necessary flexibility to make changes, when needed, to ensure safe and reliable operation of the electric System going forward.

The Commission also agrees with Duke witness Gajda that the Utilities should continue to develop and implement Good Utility Practice in a sustainable and scalable manner that applies equally to all Interconnection Customers, while ensuring that adequate long-term system safety, power quality, and reliability of the power delivery system is maintained for all customers. Deviating from Good Utility Practice to accommodate a single Interconnection Customer with non-standard methods and interconnection solutions could shift cost and reliability risk to retail customers and is, therefore, unacceptable.

To the extent an Interconnection Customer does not agree with the Utilities' application of Good Utility Practice, it may pursue the informal dispute process in Section 6.2 of the NC Interconnection Standard. If that proves unsuccessful, the Interconnection Customer can pursue a complaint before the Commission.

[7] Order Regarding Duke Settlement Agreement with Generation Interconnection Customers, Docket No. E-100, Sub 101 (Nov. 1, 2016).

The Commission declines to adopt IREC's recommendation that changes to Utility study methods should be agreed to via consensus in a stakeholder process. As DENC witness Nester testified, while Utilities have long-term responsibility to serve customers reliably and safely, DER developers are often transitory and potentially have little or no long-term commitment to the electric system whose design they would like to influence. Further, it is possible that prudent electric system management would require the speedy adoption of new policies as DER penetrations increase and new technologies are adopted. Because the Commission will continue to hold North Carolina's Utilities to high operational standards, it is not appropriate for the Commission to hobble them with a requirement to make important System design decisions by committee.

The Commission rejects NCSEA's assertion in its post-hearing brief "that the Commission has not exercised oversight over Good Utility Practice since its 2015 Order." That Order set the stage for the instant proceeding, which was delayed to give Parties an opportunity to reach consensus, which was accomplished to some degree. The Commission notes that not a single complaint has been filed with the Commission relative to the question of "Good Utility Practice," no Interconnection-related complaints are pending before the Commission today, and the Commission is holding the Utilities to high operational standards. The purpose of the instant proceeding is to consider changes to the NC Interconnection Standard that would make it more effective. Not a single party proposed changes to the definition of Good Utility Practice. In conclusion, the Commission will require the Utilities to (1) file any significant new screens, studies, or major modifications in their application of the NC Interconnection Standard with the Commission in this docket for informational purposes; (2) post information on the Utility's website regarding the change; and (3) Duke shall present the topic for discussion and feedback at a TSRG stakeholder meeting prior to implementing the change.

TIMELINE ENFORCEMENT MECHANISM

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 19

The evidence supporting this finding of fact is found in the testimony and exhibits of Duke witness Riggins, DENC witness Nester, IREC witness Auck, and Public Staff witness Lucas.

IREC witness Auck recommended that the Commission adopt a timeline enforcement mechanism (TEM) similar to one adopted in Massachusetts, which would provide positive and negative earnings adjustments for Utilities in order to encourage compliance with the NC Interconnection Standard's timelines. Witness Auck testified that under the TEM proposal, each Utility would calculate the total aggregate average time that it had taken to interconnect projects over the past year, and then compare those results to the timelines outlined in the NC Interconnection Standard to determine the appropriate penalty or reward. Witness Auck explained that when the Utility's calculations show that its performance has deviated from the aggregate allowed timeframes by more than five percent in one direction or the other, the Utility would either incur a penalty or earn an offset to carry forward to the next year. Witness Auck stated that the TEM would not require strict compliance with the timelines in the NC Interconnection Standard for every project, since the proposed TEM method tracks and bases the penalty or credit on overall compliance, and argued that this TEM approach would work well in North Carolina.

Public Staff witness Lucas stated that the Public Staff did not support the adoption of a TEM. He stated that the Utilities appear to have made good faith efforts to interconnect Interconnection Customers, as evidenced by North Carolina having over 3,000 MW of solar interconnected to its system, and that this unprecedented amount of growth in solar could only have been brought about by the cooperation of the Utilities.

Duke witness Riggins testified that the Company opposes the adoption of a TEM because it is inappropriately punitive. He testified that the Duke Utilities have already made significant investments in staffing, technology, and process improvements to address delays in the interconnection process that were identified by NCCEBA and IREC. He testified that the unprecedented and unparalleled number of utility-scale solar generators already connected by the Duke Utilities validates their reasonable and good faith efforts to adhere to deadlines in the NC Interconnection Standard.

Witness Riggins further testified that IREC's recommendation to impose a TEM is based upon the flawed assumption that the Duke Utilities have complete control over the amount of time it takes to interconnect a project, and additionally fails to account for the complexity of North Carolina's interconnection process. Witness Riggins stated that under IREC's TEM proposal, the Utilities could be penalized for delays caused by interdependent projects, even though the Utilities would actually be adhering to the terms of the NC Interconnection Standard. Additionally, witness Riggins opined that the TEM proposal could actually create an incentive for the Utilities to refuse to grant extensions or cure periods, or allow even the slightest accommodation for Interconnection Customers. Witness Riggins concluded that the TEM was unreasonable in light of the Utilities' good faith efforts and unparalleled success in interconnecting projects, as well as the current complexities of the interconnection process in North Carolina, and should be rejected.

DENC witness Nester also opposed IREC's TEM proposal and testified that the Utilities had made reasonable efforts to administer the timelines in the NC Interconnection Standard as evidenced by North Carolina's status as second in the nation in installed solar capacity. He also stated that the NC Interconnection Standard already contains communication and dispute provisions by which timeline issues for specific Interconnection Requests can be addressed.

Discussion and Conclusions

The Commission is not persuaded by the testimony of IREC witness Auck that a timeline enforcement mechanism is reasonable or necessary to address delays in North Carolina's interconnection queue. As witness Riggins testified, the Utilities in North Carolina have a large number of interdependent projects in their queues, making strict adherence to the deadlines in the NC Interconnection Standard difficult. In addition, as discussed in the final section of this Order, Duke offers Interconnection Customers mitigation options when an Interconnection Request results in expensive Upgrades. While the developer community appears to support the mitigation options step, it does have the effect of delaying the process. Based on the large amounts of solar generation that the Utilities have successfully interconnected, and the lack of formal complaints pending before the Commission, the Commission finds that the Utilities have made reasonable efforts to adhere to the timelines outlined in the NC Interconnection Standard and concludes that a timeline enforcement

mechanism is not necessary or appropriate. The Commission reiterates that it expects the Utilities to meet those deadlines that are within their control.

QUEUE MANAGEMENT REPORTING

EVIDENCE AND CONCLUSIONS FOR FINDINGS OF FACT NOS. 20-21

The evidence supporting these findings of fact is found in the testimony and exhibits of Duke witnesses Freeman, Riggins, and Gajda; DENC witness Nester; IREC witness Auck; and Public Staff witness Lucas.

Public Staff witness Lucas testified that since the 2015 proceeding, the Duke Utilities have improved the transparency and communications with Interconnection Customers. Witness Lucas described the Duke Utilities' initial use of the PowerClerk online software platform for the submission and tracking of interconnection requests for small interconnection projects, and their current transition to the use of Salesforce as the system of record for tracking all interconnection data. He recommended that the Utilities evaluate the cost of developing and operating an online portal that would allow developers to track the status of their projects as well as provide a record of the date on which a project completes each step in the interconnection process. Witness Lucas recommended that the Utilities provide a cost estimate for an online portal to the Commission and the Public Staff for review and consideration. Witness Lucas commended the Duke Utilities on their efforts to make additional information available to Interconnection Customers through semimonthly distribution and transmission queue status reports, and encouraged the Utilities to continue to provide that information on all projects in the interconnection queue.

In addition, witness Lucas explained that, due to the rapid increase in the amount of DER being built, and the anticipated distributed generation to be constructed as a result of HB 589, the Public Staff recommended that the Utilities modify the information filed with the Commission in their annual queue reports and begin filing the reports on a quarterly basis. Specifically, the Public Staff recommended the reports be modified to include interconnections that are under the jurisdiction of FERC, since those projects result in potential interdependency issues with State-jurisdictional interconnections, and to use the operational status definitions used in the Utilities' online distribution and transmission queue reports.

Duke witness Riggins testified that the Duke Utilities had improved their reporting and communication related to the interconnection process. He testified that the Duke Utilities voluntarily provide public semimonthly updates to queue reports on the Duke Energy Renewables website. The reports provide information for each interconnection request, including operational status and interdependency status. He stated that the Duke Utilities recently began providing information about each project's System Impact Study. Witness Riggins also testified that because of the Duke Utilities' expanded use of Salesforce, they will be able to create reminders of milestones and deadlines for both themselves and the Interconnection Customers so that timelines can be more proactively managed. The Companies also added additional account managers and customer account specialists to make the process more transparent.

Duke witness Riggins testified that the Duke Utilities were already in the process of developing an online Interconnection Customer portal. Witness Riggins committed to share with the Public Staff the plans for the online portal, and to identify additional features that may need to be evaluated. Witness Riggins further testified that the Duke Utilities agreed with the Public Staff's recommendations with respect to the annual queue reports. He explained that, due to the significant increase in the number of generator interconnections, the Duke Utilities did not oppose reporting this information to the Commission quarterly instead of annually, and to add each facility's their operational status, including identifying FERC-jurisdictional projects.

Witness Nester testified that DENC has complied with the reporting requirements in the 2015 Order. He did not propose any changes because the current requirements strike a reasonable balance between providing information to developers and not burdening Utilities. Witness Nester stated that DENC Processes its reports manually, and while it is investigating queue-reporting platforms, he was not able to commit to those technologies. He explained that more reporting could divert resources away from processing Interconnection Requests. He noted that Interconnection Customers can and do contact DENC directly to inquire about their projects. DENC witness Nester testified that DENC did not support any of the proposals to increase reporting frequency and content. He testified that for DENC, these added obligations would impose a significant burden given that DENC administers its queue manually. He stated that DENC does not necessarily oppose the Public Staff's proposal that the Utilities evaluate the cost to develop and operate an online portal. However, DENC opposed requiring software development in the NC Interconnection Standard at this time, due to the lack of clarity regarding timing and cost. He clarified that DENC did not oppose the Public Staff's proposal that queue reports include FERC-jurisdictional requests, so long as it is limited to the FERC interconnections that are placed into operation. He explained that at the request of the Public Staff, DENC has already been including FERC-jurisdictional interconnections that have been placed into operation. Witness Nester further explained that data concerning Interconnection Requests submitted to PJM can be found on PJM's website. In conclusion, he stated that DENC's quarterly queue status reports already contain preliminary interdependency status of state projects which incorporate interdependency with FERC projects, and that DENC's queue reporting was sufficient.

IREC witness Auck recommended that the Commission require Utilities to publish monthly a public distribution queue on their websites in a downloadable and sortable format. She recommended 23 specific items of information to be included in the public distribution queue, and testified that this information would increase efficiency, reduce costs, and help lighten the burden on the queue, as customers would make better-informed decisions. She suggested that this requirement should not burden the Utilities as they already track the majority of the items she recommended be included in the public distribution queue.

Witness Auck also recommended that Utilities be required to modify their annual queue reports because they do not provide information necessary to determine why the queue remains clogged. She recommended the reports be filed quarterly, and that the reports provide summary queue data and data about the Pre-Application process. Witness Auck testified that currently these reports only include information on larger projects, so there is little visibility as to how projects eligible for Supplemental Review, Fast Track, and small inverter-based projects, are being processed. In conclusion, she testified that

additional reporting would illuminate why projects are getting stuck in the queue, how often this occurs, and what opportunities there are to improve the process.

With respect to IREC's request for additional information to be included in quarterly reports, witness Riggins testified that the administrative burden and expense would significantly outweigh any benefit to Interconnection Customers or the overall interconnection process. He explained that adopting IREC's reporting recommendations would require the Utilities to dedicate additional engineering and administrative resources to reporting versus actually studying Interconnection Requests. He, therefore, recommended the Commission reject IREC's proposed modifications to the Utilities' reports.

Witness Riggins also opposed IREC's proposal to require Utilities to publish public distribution queue reports. He explained that the Duke Utilities already voluntarily publish Queue Snapshot reports on its website in a downloadable format twice a month; more frequently than IREC requested. He stated that some of the information requested by IREC to be published was inappropriate to publicly disclose. Witness Riggins also testified that adopting IREC's proposal would require additional investments and significant manual effort, further increasing costs. In sum, witness Riggins testified that the Duke Utilities' current voluntary queue tracking and reporting is sufficient.

Discussion and Conclusions

Since the 2015 Proceeding, the Utilities have made significant efforts to increase the transparency of the interconnection process through the quarterly and annual reporting requirements required by the Commission, as well as through their voluntary efforts. The reports filed in this docket, Docket No. E-100, Sub 101A, and Docket No. E-100, Sub 113B, are providing useful information.

Based on the evidence presented, the Commission concludes that the Public Staff's recommended new reporting requirements, as agreed to by Duke witness Riggins, are reasonable and strike the appropriate balance between promoting transparency and burdening the Utilities. The Duke Utilities' agreement to identify all projects above 20 kW requesting interconnection, including designating operational status, in the quarterly queue status reports submitted in Docket No. E-100, Sub 101A appropriately addresses the desire for more detailed information without overly burdening the Utilities.

Since DENC already provides operational status in its quarterly queue status and annual interconnection reports, this new requirement will only impact the Duke Utilities. The Commission agrees with Duke witness Riggins that for administrative efficiency, Utilities should continue to file the small generator report annually in Docket No. E-100, Sub 113B. With respect to the Public Staff's proposal that this list include all FERC-jurisdictional projects, the Duke Utilities shall be required to add this information to their quarterly reports. As noted by witness Nester, DENC already provides FERC information, and the Commission finds it appropriate that DENC continue to report this information annually as it does now.

In addition to these changes, the Commission is encouraged by the ongoing voluntary efforts being considered or implemented by Utilities to make additional information available.

The additional reporting requirements proposed by IREC would place an undue burden on Utilities that is not supported by the record. Accordingly, the Commission declines to adopt IREC's recommendation at this time.

HOSTING CAPACITY MAPS

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 22

The evidence supporting this finding of fact is found in the testimony and exhibits of Duke witness Riggins, DENC witness Nester, IREC witness Auck, and Public Staff witness Lucas.

IREC witness Auck described hosting capacity map (HCM) tools and recommended that the Utilities be required to implement a hosting capacity analysis based on proposals developed by a Commission-initiated working group. She testified that the ideal HCMs would include detailed hosting capacity modeling and the public posting of available capacity for each node, along with substation, circuit, and feeder information. She testified that the maps could help indicate circuits where the transformer capacity has been exceeded, as well as help customers to avoid incompatible sites and/or would help them plan for a longer duration review process by being able to anticipate needed upgrades.

Witness Auck stated that without an HCM, Interconnection Customers have no information regarding the best and worst locations for new distributed generation facilities. Witness Auck referred to the Commission's guidance in its October 5, 2018 Order Approving Interim Modifications to the NC Interconnection Procedures for Tranche 1 of CPRE RFP in which the Commission expressed interest in "options for Duke to more specifically direct generators to locations on the system that will not involve major network upgrades." She noted that projects participating in CPRE are more likely to interconnect to the utility's transmission system, and that hosting capacity maps focus exclusively on the distribution system.

Public Staff witness Lucas testified that a distribution level HCM would provide little benefit due to the shift towards larger, transmission-connected projects in North Carolina. Witness Lucas recommended instead that the Duke Utilities be required to build on the grid location guidance provided for CPRE Tranche 1 to provide basic information on the transmission system and identify those areas that are at or near their hosting capacity limit. He further recommended that the Duke Utilities provide the Commission and the Public Staff a detailed estimate of the cost to develop and maintain HCMs utilizing existing data and tools, and noted that all costs associated with HCMs should be recovered from Interconnection Customers through charges and fees

DENC witness Nester testified that it is unreasonable and inappropriate to require the Utilities to develop HCMs at this time. He noted that the Section 1.2 and Section 1.3 Pre-Request Response and Pre-Application Report in the NC Interconnection Standard already provide more site-specific data than an HCM would. He also expressed DENC's concern that IREC's proposal does not provide clarity as to the timeframe or cost to develop such maps, address the confidentiality of sensitive utility grid infrastructure information, or provide any detail as to the frequency of updates necessary to ensure that information is relevant. Witness Nester stated that DENC is not opposed to investigating potential

development of an HCM tool, but that DENC does not support including an HCM requirement in the NC Interconnection Standard. He agreed with the Public Staff that the cost of any HCM development should be recovered from developers, as they would receive the primary benefit.

Duke witness Riggins agreed with Public Staff witness Lucas that there has been a shift such that transmission-connected Interconnection Requests are now more common that those at the distribution level. He testified that in 2018, for solar projects larger than one megawatt, the Duke Utilities received 44 transmission-connected Interconnection Requests compared to just 16 distribution-connected Interconnection Requests.

Witness Riggins also testified that the Duke Utilities annually receive thousands of Interconnection Requests for customer-sited net metering projects, but since customer-sited net metering projects cannot change their location in response to information provided through an HCM, there would be a limited audience for a distribution level HCM in North Carolina.

Additionally, witness Riggins agreed with the Public Staff that Duke should continue to refine the transmission grid location guidance required by CPRE. He stated that the Company posts information "for the benefit of larger transmission projects," information about where there are constrained areas on the grid so as to "direct projects to areas where there's not constraints."

Witness Riggins disagreed with IREC witness Auck's assertion that an HCM is the only way for customers to evaluate locations for new DER. He explained that Section 1.2 of the NC Interconnection Standard requires Utilities to provide free basic distribution system information to Interconnection Customers for a potential Point of Interconnection. Also, Section 1.3 allows an Interconnection Customer to request a Pre-Application Report for $300.[8] The Utility must respond within 10 Business Days by providing extensive distribution system information, including the capacity of the substation/area bus, bank, or circuit for a given Point of Interconnection, and the amount of queued or existing generation currently served by the substation/area bus, bank, or circuit.

Witness Riggins further testified that in addition to these reports, the Duke Utilities publicly post their respective interconnection queues through semimonthly Queue Snapshot reports as well as transmission grid locational guidance.

Witness Riggins also testified that Duke had performed a preliminary analysis of the costs to develop an HCM. He testified that Duke estimated that it would cost between $2 million and $8 million for Duke to develop HCMs, with an additional $1 million to $5 million each year to maintain them. In conclusion, witness Riggins recommended the Commission reject IREC's HCM proposal.

IREC witness Auck testified on rebuttal that IREC believes it is appropriate at this time for the Utilities to develop hosting capacity analyses that can help customers better site their projects and predict the outcomes of the interconnection process. She further

[8] The Stipulated Redline would increase this fee to $500.

testified it is reasonable to expect that small projects, which are likely to connect to the distribution system, will comprise the vast majority of the Interconnection Requests that the Duke Utilities receive in the coming years, and, therefore, recommended the Commission direct the Duke Utilities to prepare a hosting capacity analyses of its distribution system to facilitate the smart siting and efficient interconnection of those projects. IREC took no position on whether the Duke Utilities should be required to prepare a transmission level HCM.

Witness Auck testified that IREC did not agree with the Public Staff's cost-recovery proposal for HCM costs, because IREC believed that an HCM provides benefits to all customers. Witness Auck further testified imposing HCM costs only on Interconnection Customers would require a complex cost allocation methodology which could prove difficult to implement. In conclusion, witness Auck stated that IREC was not aware of any other state that asks Interconnection Customers to pay the costs of a distribution-level HCM, and therefore, the Commission should reject the Public Staff's cost-recovery proposal for an HCM, and instead allocate HCM costs the same way as utilities allocate the costs of other distribution system planning tools.

Witness Auck acknowledged that the value of hosting capacity maps is based on their ability to be used in a real-time basis, which requires that they be updated with some regular frequency that may result in ongoing costs.

Discussion and Conclusions

The Commission has considered the evidence in this proceeding concerning the development of HCMs, and for the following reasons concludes that it is not necessary or appropriate to require Utilities to pursue such an effort at this time.

The Commission is persuaded that the information already available to Interconnection Customers via the Section 1.3 Pre-Application Reports is more extensive than an HCM would likely provide, is targeted to Points of Interconnection of actual interest to specific Interconnection Customers, and can be provided at a fraction of the cost of an HCM. Further, as several witnesses testified, HCMs would have no value to smaller customers who want to net meter and have no choice as to where to locate their solar installation. Also, HCMs would be expensive to develop, and would require costly ongoing revisions. In addition, it appears that the distribution grid is increasingly less likely to see further growth in large solar installations. As the Public Staff and Duke testified, North Carolina is seeing a shift as large solar projects choose to interconnect on the transmission system instead of on the distribution system. Refining the locational guidance maps that Duke provided in Tranche 1 of the CPRE solicitations, which included extensive lists of constrained transmission facilities, would appear to be of higher value than creating detailed HCMs for the distribution grid. Those maps are publicly available on the website for the CPRE solicitation process.

For these reasons, and based on the evidence in this case, the Commission concludes that it is not appropriate or necessary to adopt IREC's HCM proposal.

STAKEHOLDER WORKING GROUPS

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 23

The evidence supporting this finding of fact is found in the Stipulation, and the testimony of Duke witness Freeman, IREC witness Auck, and Public Staff witnesses Lucas and Williamson.

Duke witness Freeman testified that although the Utilities proposed only limited changes to the NC Interconnection Standard at this time, a more comprehensive reform is needed in the near term to address the continued growth of the interconnection queue. Witness Freeman testified that because the interconnection queue and study complexities continue to increase, the current serial study process is not sustainable, and that it would likely require decades to serially study and potentially connect the 14,000 MW of renewable generating facilities that are in the current North and South Carolina Duke Utilities' queues.

Witness Freeman explained that when larger transmission network upgrades are triggered by an Interconnection Request, the serial study process results in large upgrade costs being assigned to one project even though it is extremely unlikely that a single project could absorb such significant cost. This will result in paralysis in certain areas, as project after project will be forced to withdraw from the queue. Witness Freeman testified that Duke believed that it is now necessary to transition from a serial study process to a cluster study process, like that used by an increasing number of regional transmission organizations (RTOs) and utilities in other areas of the country.

Witness Freeman testified that the Duke Utilities hosted an initial stakeholder meeting in June 2018 to receive feedback regarding transitioning to a cluster study approach. Witness Freeman stated that stakeholders seemed to agree that queue reform is needed, and that several issues would need to be addressed prior to implementation of a cluster study approach. Witness Freeman testified that in parallel with supporting the modifications to the NC Interconnection Standard presented to the Commission for approval now, the Duke Utilities are also now working on a queue reform proposal to share with the Public Staff and other stakeholders to develop a more sustainable approach to studying projects, assigning upgrade costs, and collecting the costs of those upgrades. Witness Freeman concluded that the Duke Utilities anticipate requesting Commission approval of additional revisions to the NC Interconnection Standard to accomplish this reform, which reform would also need to align with Duke's FERC-jurisdictional open access transmission tariff, to solve challenges associated with administering both a state- and FERC-jurisdictional interconnection queue.

Public Staff witness Lucas recommended that within three months from the final order in this proceeding, or three months after issuance of the CPRE Tranche 1 report, whichever occurs later, interested parties should convene a stakeholder discussion focused solely on revisiting the Project A/B process and the optional grouping study process to determine how they might be used together to more efficiently manage the large number of projects in the queue. Witness Lucas further testified that the Public Staff recommended that the Utilities file a report with the Commission with recommendations and any consensus among the parties within six months from the start of these stakeholder discussions.

IREC witness Auck agreed with witness Freeman that the current interconnection process is unsustainable, and did not oppose consideration of a cluster study process. Witness Auck testified that a useful cluster study must be developed and vetted through a collaborative stakeholder process that ensures projects are treated fairly and in a non-discriminatory manner. Witness Auck stated that, based upon IREC's experience in other states that have developed group and cluster studies, at a minimum any proposed cluster study process should (1) define timelines for each step of the process, (2) define what happens if projects drop out of the study group, (3) explain how costs will be allocated among projects in a group, and (4) explain how groups would be formed.

In his rebuttal, witness Freeman explained that grouping studies would make the interconnection process more efficient from a transmission-level perspective and would allow costly transmission network upgrades to be allocated to multiple projects rather than burdening individual projects with the entire upgrade costs. He testified that the Duke Utilities are committed to an extensive stakeholder engagement process beginning in the first quarter of 2019, and that the Duke Utilities are developing a strawman proposal that will be used as a starting point for the stakeholder process. He stated that the Duke Utilities envision an iterative process that allows for multiple meetings with stakeholders with a goal to complete the stakeholder process by late June 2019, which would result in redline changes to the State and Federal interconnection procedures, which would be filed with both FERC and the Commission. Witness Freeman recommended the Commission allow the Duke Utilities to implement the aforementioned steps for transitioning to a grouping study approach rather than adopting the Public Staff's recommended stakeholder and reporting requirements at this time.

In the Stipulation, the Duke Utilities agreed to undertake efforts to fully implement a grouping study as detailed in witness Freeman's rebuttal testimony, including a stakeholder process in the first quarter of 2019, with the goal of completing the stakeholder process by June 2019 and making filings with both FERC and the Commission in July 2019. Public Staff witness Williamson testified that the Public Staff agreed to withdraw its recommendation for an independent review of the entire interconnection process and a stakeholder discussion focused on the Project A/B process. "In exchange, DEP and DEC have agreed to undertake efforts to fully implement a grouping study process…."

Discussion and Conclusions

The Commission has reviewed the evidence submitted by the parties concerning implementation of a grouping study process in North Carolina. The Commission notes that no party disputed that the current serial study process is unsustainable for the Duke Utilities based upon the current and growing volumes of utility scale Interconnection Requests. The Commission, therefore, agrees with the Duke Utilities, the Public Staff, and IREC that it is necessary to evaluate whether the Duke Utilities' transition to a grouping study process in North Carolina should be pursued.

In its post-hearing brief, NCSEA stated that the Commission should hold technical conferences with stakeholders to discuss a transition to cluster studies. NCSEA appears to believe that this level of direct involvement is necessary for the Commission to provide oversight. The Commission disagrees, finding instead that parties will be able to speak more

freely and that there will be no potential for inappropriate ex parte communications under the process outlined in the Stipulation.

Therefore, the Commission concludes that it is reasonable for the Duke Utilities to establish a stakeholder process to discuss the potential to transition their North Carolina queues to a grouping study process, and that the Duke Utilities shall report to the Commission no later than July 31, 2019, as to the status of that stakeholder process. The stakeholder process should allow for all participants to contribute to the joint development of meeting agendas, including topics to be addressed, and for all participants to have reasonable opportunity to contribute to the discussion of all issues or items on the agendas.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT 24

The evidence for this finding of fact is found in the testimony of Duke witness Gajda, DENC witness Nester, IREC witness Lydic, and Public Staff witness Williamson.

Public Staff witness Williamson testified that IEEE Standard 1547 (IEEE 1547) is a technical standard published by the Institute of Electrical and Electronics Engineers (IEEE) for the uniform interconnecting and interoperability of distributed energy resources with electric power systems. He testified that a revised IEEE 1547 was released in January of 2018, and that Duke and IREC had agreed to continue discussions about IEEE 1547 in the quarterly TSRG meetings.

Witness Williamson testified that IEEE 1547 is not a mandatory requirement, but it does provide guidance for incorporating DER into the grid.

Duke witness Gajda agreed that the TSRG is Duke's intended forum to specifically address the new IEEE 1547 standards, and that the Companies are working to determine if and when some of the standard's new provisions may be appropriate to adopt. He stated that its use will require coordination with, and action by, interconnection developers.

DENC witness Nester testified that the Energy Policy Act of 2005 established IEEE 1547 as the national standard for the interconnection of distributed generation resources. He stated that in the most recent revision, smart inverters are required to be capable of supporting the grid for specific functionality. Witness Nester testified further that the Utility should decide when to apply IEEE 1547's inverter ride-through and power factor capabilities in accordance with Good Utility Practice. He stated further:

> My understanding is that work is still ongoing to revise the IEEE 1547.1 standard … which is essential in determining how to test and certify any DER and their smart functions, such as ride-through, in the laboratory and in the field …. [T]he Company anticipates the revision of the IEEE 1547.1 standard to be completed by mid to late 2019 or early 2020.

IREC witness Lydic testified that "the IEEE update and smart inverters will address many issues that have arisen in interconnections in North Carolina." He stated further:

> The updates to the standard include voltage and frequency ride-through (for both bulk system reliability and distribution effects for high penetration),

> voltage regulation capabilities, standardized communications/control capabilities, and updated power quality requirements …. The related testing standard, IEEE 1547.1, is expected to be published in late 2019 or early 2020, with UL [Underwriters Laboratory] … adopting new requirements soon thereafter. Certified inverters and other equipment could then be available on the market about 18 months later.
>
> Adopting these standards … will allow smart inverters and other DER to offer meaningful grid services that can help mitigate the impacts of increased DER growth. The standards will allow states and utilities to implement voltage regulation so high penetration effects can be mitigated. … wide application of the standard should help increase hosting capacity of DER and reduce negative effects on the distribution system or other customers. …
>
> Since there is no one default requirement in IEEE 1547-2018, interconnecting customers will need clear direction on what requirements their project will need to meet. The Commission should thus set forth a clear path for their rollout. The discussions about this process should begin immediately ….

Discussion and Conclusions

The Commission finds that IEEE 1547-2018 offers technical standards that could allow for higher penetrations of DER on the distribution grid. However, the costs and benefits of implementing various aspects of this new standard are not well understood. Since Duke has already committed to discuss the standard within its TSRG, the Commission will task Duke with hosting stakeholder meetings on this topic and filing a report with the Commission by April 1, 2020. Parties may file comments on that report by June 1, 2020. The stakeholder process should allow for all participants to contribute to the joint development of meeting agendas, including topics to be addressed, and for all participants to have a reasonable opportunity to contribute to the discussion of all issues or items on the agendas.

COST OF SERVICE IMPACTS OF DISTRIBUTED GENERATION

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 25

The evidence supporting this finding is contained in the testimony and exhibits of Public Staff witness Lucas.

Public Staff witness Lucas testified that as more and more distributed generation is interconnected, that capacity is straining the grid's ability to accommodate additional, future capacity without requiring significant investments. He stated:

> Those additional facilities could be characterized as either additional interconnection facilities, network upgrades, or customary transmission and distribution system investment and capacity. With those additional facilities comes additional grid operation and maintenance expenses. The decision as to who will pay these costs will continue going forward.

Witness Lucas testified further that the interconnection fees currently paid by distributed generators are designed to recover: (1) the costs of the actual studies and facilities needed to interconnect the generator to the grid, and (2) the necessary upgrades to accommodate the capacity. "It is the Public Staff's understanding that the fees associated with network upgrades do not include costs associated with future grid investment or ongoing operation and maintenance of the grid." He stated that as a result, these costs are generally borne by the Utilities' consumers. He testified further:

> as network hosting capacity has been limited in recent years due to [the] sheer volume of DGs and consumer load, the issue of future grid capacity expansion and the need to update the grid to accommodate ever higher density of both DGs and consumer loads has given rise to a question of fairness regarding the drivers behind the need for future grid costs and who pays them.
>
> …
>
> Under today's cost recovery paradigm, only consumer load is responsible for the recovery of grid related investments and expenses.

Witness Lucas cited the example of storm recovery costs:

> We have had lots of storm damage the past few years. Many millions of dollars expended. That storm cost recovery is only passed on to the load customers. However, distributed generators are using the grid …. Storm cost recovery is one example where the using and consuming public is bearing almost all those costs.

Witness Lucas recommended that the Commission direct the Utilities to evaluate the long-term operations and maintenance (O&M) costs resulting from distributed generation and incorporate these costs into their cost of service studies.

Discussion and Conclusions

Witness Lucas raises a potentially significant issue regarding the future of the distribution grid, the costs of operating and maintaining that grid, the benefits provided by distributed generation on the grid, and how those costs and benefits are to be apportioned to grid users and recovered.

The Commission notes that Section 6.1.3 of the Interconnection Agreement that is part of the NC Interconnection Standard states as follows:

> 6.1.3 The Utility shall also bill the Interconnection Customer for the costs associated with operating, maintaining, repairing and replacing the Utility's System Upgrades, as set forth in Appendix 6 of this Agreement …

It appears that the Utilities currently have the ability to bill an Interconnection Customer for the ongoing costs of Upgrades that were built specifically to allow the interconnection of their Facility. But, if no such construction was needed, the Interconnection Customer has no ongoing financial obligation to support the System.

The Commission concludes that the Utilities should address this issue in testimony filed in their next general rate cases. The Commission especially requires testimony characterizing the benefits that distributed generators are receiving from the Utility's Systems, estimating their share of the related costs, and providing options for fully recovering those costs from distributed generators. The testimony should also explain the impact that shifting these costs to distributed generators would have on other customer classes.

MISCELLANEOUS

The Commission laid the foundation for this proceeding four years ago, anticipating that the changes being made to the NC Interconnection Standard at that time might need revisions. The Public Staff subsequently enlisted the assistance of Advanced Energy, whose staff facilitated multiple stakeholder meetings. While consensus was not reached on all issues, the Stipulated Redline itself was not the source of much controversy, nor were the 2015 changes. Rather, in this proceeding Parties expressed wide-ranging opinions on how best to evolve not only the NC Interconnection Standard but also the role of the Commission in its oversight of the Utilities. Many of the policies being advocated pointed toward the need to fashion a transition to ever higher penetrations of DER while wrestling with emerging technical and equity issues. The Commission acknowledges that these issues will require substantial attention over the next several years. Hence this Order requires the Utilities to host a series of stakeholder efforts targeted at specific questions, with the requirement to report back to the Commission.

The Commission notes that on October 5, 2018, the Commission issued an Order Approving Interim Modifications to North Carolina Interconnection Procedures for Tranche 1 of CPRE RFP. As no party advocated for changes to the CPRE modifications, the Commission reaffirms its October 5, 2018 Order. The revisions made in that Order remain in place and will no longer be considered "interim."

Finally, the Commission acknowledges the testimony of Duke witnesses regarding the mitigation options that the Duke Companies now provide Interconnection Customers when interconnecting a generator at a specific Point of Interconnection will require costly upgrades. This typically involves the Utility determining how the customer could downsize their project so as to avoid the upgrades. Duke witness Riggins testified that the Duke Utilities began offering mitigation options following the implementation of new technical standards, including the Method of Service Guidelines. This "mitigation options step" occurs during the System Impact Study process, but is not part of the NC Interconnection Standard, and it has the effect of delaying Duke from studying other pending Interconnection Requests. Duke witness Freeman acknowledged this delaying impact when he said, "we can deliver a fast no or a slow yes." No party spoke against Duke's practice of providing mitigation options, nor did any party advocate that this practice should be formalized in the NC Interconnection Standard. Therefore, the Commission will take no action except to state that it expects Duke to treat all Interconnection Customers in a similar fashion.

IT IS, THEREFORE, ORDERED as follows:

1. That the Stipulated Redline version of the NC Interconnection Standard, with additional modifications as discussed in this Order, and attached as Appendix A to this

Order, shall be, and hereby is, adopted as the generator interconnection standard for North Carolina, except that provisions related to production profile information are delayed pending the Commission's review of the information required in Ordering Paragraph 4 below. The changes approved in this Order will be effective upon issuance of this Order, except that they will not apply to Facilities that have a fully executed Interconnection Agreement as of the date of this Order. All Facilities will be subject to this Order for the processing of Material Modifications and ownership transfers.

2. That Interconnection Customers shall have 10 Business Days to cure Utility requests for information in the Facilities Study and System Impact Study processes; failure to provide the requested information within 10 Business Days shall result in the Interconnection Request being removed from the interconnection queue, effective starting July 15, 2019. The Utilities shall inform Interconnection Customers of this new policy by mail by June 28, 2019.

3. That the Utilities shall file with the Commission, not later than March 1 of each year, a verified report showing interconnection-related expenses and revenues associated with fee-related work for the prior year. The report shall include information on the number of inspections conducted pursuant to new Sections 6.5.2, 6.5.3, and 6.5.4, an explanation of the related costs, and the revenues billed to and collected from the Interconnection Customers for these inspections.

4. That within 20 business days of this Order, the Utilities shall file the additional information regarding generator hourly production profile information as discussed in this Order. Parties may file responsive comments within 10 business days thereafter.

5. That the Duke Utilities shall consult with EPRI regarding the Section 3 Fast Track and Supplemental Review processes and provide a summary report regarding potential modifications at the TSRG meeting occurring in the third quarter of 2019. Duke shall also file the report with the Commission.

6. That the Duke Utilities shall post a brief description of the technical evaluations conducted during a Section 3.4 Supplemental Review on their interconnection websites within 60 days of this Order.

7. That Duke shall host stakeholder and TSRG meetings dedicated to the question of whether a process for re-studying an existing Generating Facility for the addition of energy storage could be more efficient than requiring the Facility to submit a new Interconnection Application. On or before September 3, 2019, the Utilities shall file a streamlined process for efficiently studying the addition of storage at existing generation sites that builds upon the grouping study approach that is already under development as required by the Stipulation.

8. That the Duke Utilities shall file any significant new screens, studies, or major modifications in their application of the NC Interconnection Standard, and information about the implications of those changes, with the Commission in this docket for informational purposes only. The Utilities shall post information regarding the new screen, study, or modification on their applicable websites, and Duke shall present the topic for discussion at a TSRG meeting in advance of implementation.

9. That the Utilities shall include in their Quarterly Queue Status and Interconnection Performance Reports filed in Docket No. E-100, Sub 101A all projects above 20 kW requesting interconnection and their operational status.

10. That the Duke Utilities shall post the current version of the grid locational guidance provided for CPRE purposes on each Utility's website in the same location as its Queue Status reports.

11. That the Duke Utilities shall establish a stakeholder process within the first quarter of 2019 to discuss the process of transitioning their North Carolina queues to a grouping study process, and that the Duke Utilities shall report to the Commission no later than July 31, 2019, as to the status of that stakeholder process.

12. That the Utilities shall host stakeholder meetings on IEEE-1547 and file a report with the Commission by April 1, 2020. Parties may file comments on that report by June 1, 2020.

13. That the Utilities shall file testimony in their next general rate case applications regarding the benefits that distributed generators are receiving from the Utility's System, estimating their share of the related costs, and providing options for recovering those costs from distributed generators.

14. That the Public Staff shall adopt a procedure for periodically filing summary information regarding interconnection disputes in this docket.

ISSUED BY ORDER OF THE COMMISSION.

This the 14th day of June, 2019.

NORTH CAROLINA UTILITIES COMMISSION

Janice H. Fulmore, Deputy Clerk

NORTH CAROLINA

INTERCONNECTION PROCEDURES, FORMS, AND AGREEMENTS

For State-Jurisdictional Generator Interconnections

Effective June 14, 2019

Docket No. E-100, Sub 101

TABLE OF CONTENTS

Page No.

Section 1. General Requirements……1

1.1 Applicability....1
1.2 Pre-Request Response....3
1.3 Pre-Application Report……..3
1.4 Interconnection Request....6
1.5 Modification of the Interconnection Request....7
1.6 Site Control....10
1.7 Queue Number....11
1.8 Interdependent Projects....11
1.9 Interconnection Requests Submitted Prior to the Effective Date of these Procedures....14

Section 2. Optional 20 kW Inverter Process for Certified Inverter-Based Generating Facilities No Larger than 20 kW....14

2.1 Applicability....14
2.2 Interconnection Request....15
2.3 Certificate of Completion....16
2.4 Contact Information....16
2.5 Ownership Information....16
2.6 UL 1741 Listed....16

Section 3. Optional Fast Track Process for Certified Generating Facilities....17

3.1 Applicability....17
3.2 Initial Review....18
3.3 Customer Options Meeting....21
3.4 Supplemental Review....21

Section 4. Study Process....23

4.1 Applicability....23
4.2 Scoping Meeting....23
4.3 System Impact Studies....23
4.4 Facilities Study....26

Section 5. Interconnection Agreement and Scheduling....27

5.1 Construction Planning Meeting....27
5.2 Interconnection Agreement....27
5.3 Interconnection Construction....28

TABLE OF CONTENTS

Section 6. Provisions that Apply to All Interconnection Requests 28

6.1 Reasonable Efforts 28
6.2 Disputes 28
6.3 Withdrawal of An Interconnection Request 29
6.4 Interconnection Metering 30
6.5 Commissioning and Post-Commissioning Inspections 30
6.6 Confidentiality 30
6.7 Comparability 31
6.8 Record Retention 31
6.9 Coordination with Affected Systems 32
6.10 Capacity of the Generating Facility 32
6.11 Sale of an Existing or Proposed Generation Facility 32
6.12 Isolating or Disconnecting the Generating Facility 33
6.13 Limitation of Liability 34
6.14 Indemnification 34
6.15 Insurance 34
6.16 Disconnect Switch 35
6.17 Certification Codes and Standards 35
6.18 Certification of Generator Equipment Packages 35

Attachment 1 – Glossary of Terms

Attachment 2 – Interconnection Request Application Form

Attachment 3 – Generating Facility Pre-Application Report Form

Attachment 4 – Certification Codes and Standards

Attachment 5 – Certification of Generator Equipment Packages

Attachment 6 – Interconnection Request Applications Form, Certificate of Completion, and Terms and Conditions for Certified Inverter-Based Generating Facilities No Larger than 20 kW

Attachment 7 – System Impact Study Agreement

Attachment 8 – Facilities Study Agreement

Attachment 9 – Interconnection Agreement

Section 1. General Requirements

1.1 Applicability

1.1.1 This Standard contains the requirements, in addition to applicable tariffs and service regulations, for the interconnection and parallel operation of Generating Facilities with Utility Systems in North Carolina. These procedures apply to Generating Facilities that are interconnecting to Utility Systems in North Carolina where the Interconnection Customer is not selling the output of its Generating Facility to an entity other than the Utility to which it is interconnecting.

Interconnection Requests for new Generating Facilities shall be submitted to the Utility for approval at the final design stage and prior to the beginning of construction.

The submission of a written request for a Section 1.2 Pre-Request Response and/or Section 1.3 Pre-Application Report is encouraged to identify potential interconnection issues unforeseen by the Interconnection Customer.

Revised Interconnection Requests for equipment or design changes should be submitted pursuant to Section 1.5.

Notification by the Interconnection Customer to the Utility of change of ownership or change in control should be submitted pursuant to Section 6.11.

1.1.1.1 A request to interconnect a certified inverter-based Generating Facility no larger than 20 kW shall be evaluated under the Section 2, 20 kW Inverter Process. (See Attachments 4 and 5 for certification criteria.)

1.1.1.2 A request to interconnect a certified Generating Facility no larger than the capacity specified in Section 3.1 shall be evaluated under the Section 3 Fast Track Process. (See Attachments 4 and 5 for certification criteria.)

1.1.1.3 A request to interconnect a Generating Facility larger than the capacity stated in Section 3.1, or a Generating Facility that does not qualify for or pass the Fast Track Process or qualify for the 20 kW Inverter Process, shall be evaluated under the Section 4 Study Process. Interconnection Customers that qualify for Section 2 or Section 3 may also choose to proceed directly to Section 4 if they believe Section 4 review is likely to be necessary.

1.1.2 Capitalized terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1 or the body of these procedures.

1.1.3 The 2018~~9~~ revisions to ~~the Commission's~~ this interconnection S~~s~~tandard shall not apply to Generating Facilities ~~already interconnected~~ having a fully executed Interconnection Agreement as of the effective date of the 201~~5~~9 revisions to this Standard, unless the Interconnection Customer proposes a Material Modification, transfers ownership of the Generating Facility, or application of the 201~~5~~9 revisions to the Commission's interconnection standard are agreed to in writing by the Utility and the Interconnection Customer. This Standard shall apply if the Interconnection Customer does not have a fully executed Interconnection Agreement for ~~has not actually interconnected~~ the Generating Facility as of the effective date of the ~~2015~~ 2019 revisions. Revised fees and new deposits will apply to new Interconnection Requests and future transactions involving existing Interconnection Requests occurring after the effective date of the 2019 revisions.

Any Interconnection Customer that has not executed an I~~i~~nterconnection A~~a~~greement with the Utility prior to the effective date of the ~~2015~~ 2019 revisions to this Standard shall have ~~30 Calendar Days~~ 45 Business Days following the later of the effective date of the Standards or the posted date of notice in writing from the Utility to ~~demonstrate site control pursuant to Section 1.6, and to post the deposit outlined in Section 1.4~~ make prepayment or provide Financial Security in a form reasonably acceptable to the Utility for any Network Upgrades identified in the Interconnection Customer's System Impact Study Report as required by Section 4.3.9 of the Procedures.

~~Any Interconnection Customer that has executed an interconnection agreement with the Utility prior to the effective date of this Standard but the Utility has not actually interconnected the Generating Facility, shall have 60 Calendar Days to submit Upgrade and Interconnection Facility payments (or Financial Security acceptable to the Utility for Interconnection Facilities only) required pursuant to Section 5.2. Any amounts previously paid by the Interconnection Customer at the time deposit or payment is due under this Section shall be credited towards the deposit amount or other payment required under this Section.~~

~~1.1.4 Prior to submitted its Interconnection Request, the Interconnection Customer may ask the Utility's interconnection contact employee or office whether the proposed interconnection is subject to these procedures. The Utility shall respond within 10 Business Days.~~

1.1.4~~5~~ Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational security. All Utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

1.1.5~~6~~ References in these procedures to Interconnection Agreement are to the North Carolina Interconnection Agreement. (See Attachment 9.)

1.2 Pre-Request Response

1.2.1 The Utility shall designate an employee or office from which information on the application process 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.

1.2.2 The Interconnection Customer may request a Pre-Request Response by providing the Utility details of a potential project in writing, including site address, grid coordinates, project size, project developer name, and proposed Point of Interconnection.

Electric system information provided to the Interconnection Customer should include number of phases and voltage of closest circuit, distance to existing source, distance to substation, and other information and/or 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 in a timely manner, not to exceed ten (10) Business Days. The Pre-Request Response produced by the Utility is non-binding and does not confer any rights. The Interconnection Customer must still meet the Section 1.4 requirements to apply to interconnect to the Utility's S~~s~~ystem and to obtain a Queue Number. Any one developer shall have no more than five (5) requests for Pre-Request Responses in the Pre-Request Response queue at one time.

1.3 Pre-Application Report

1.3.1 In addition to, or instead of, requesting an informal Pre-Request Response, an Interconnection Customer may submit a formal written Pre-Application Report request form (see Attachment 3) along with a non-refundable fee of $500 ~~$300~~ for a Pre-Application Report on a proposed project at a specific site. The Utility shall provide the Pre-Application data described in Section 1.3.2 to the Interconnection Customer within ten (10) Business Days of receipt of the completed request form and payment of the $500 ~~$300~~ fee. The Pre-Application Report produced by the Utility is non-binding, does not confer any rights, and the Interconnection Customer must still successfully apply to interconnect to the Utility's S~~s~~ystem and to obtain a Queue Number. The written Pre-Application Report request form shall include the information in Sections 1.3.1.1 through 1.3.1.8 below to clearly and sufficiently identify the location of the proposed Point of Interconnection. Any one developer shall have no more than five (5) requests for Pre-Application Reports in the Pre-Application Report queue at one time.

1.3.1.1 Project contact information, including name, address, phone number, and email address.

1.3.1.2 Project location (street address, location map with nearby cross streets and town, grid coordinates of anticipated Point of Interconnection, etc.).

1.3.1.3 Meter number, pole number, location map or other equivalent information identifying proposed Point of Interconnection, if available.

1.3.1.4 Generator or Storage Type (e.g., solar, wind, combined heat and power, battery, etc.)

1.3.1.5 Size (alternating current kW, and for Storage kWh).

1.3.1.6 Single or three phase generator configuration.

1.3.1.7 Stand-alone generator (no onsite load, not including station service – Yes or No?)

1.3.1.8 Is new service requested? Yes or No? If there is existing service, include the customer account number, site minimum and maximum current or proposed electric loads in kW (if available) and specify if the load is expected to change.

1.3.2. Using the information provided by the Interconnection Customer in the Pre-Application Report request form pursuant to ~~in~~ Section 1.3.1, the Utility shall identify the substation/area bus, bank or circuit likely to serve the proposed Point of Interconnection. This selection by the Utility does not necessarily indicate, after application of the screens and/or study, that this would be the circuit the project ultimately connects to. The Interconnection Customer must request additional Pre-Application Reports if information about multiple Points of Interconnection is requested. Subject to Section 1.3.3, the Pre-Application Report shall include the following information:

1.3.2.1 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.

1.3.2.2 Existing aggregate generation capacity (in MW) interconnected to a substation/area bus, bank or circuit (i.e., amount of generation online) likely to serve the proposed Point of Interconnection.

1.3.2.3 Aggregate queued generation capacity (in MW) for a substation/area bus, bank or circuit (i.e., amount of generation in the queue) likely to serve the proposed Point of Interconnection.

1.3.2.4 Substation nominal distribution voltage and/or transmission nominal voltage if applicable.

1.3.2.5 Nominal distribution circuit voltage at the proposed Point of Interconnection.

1.3.2.6 Approximate circuit distance between the proposed Point of Interconnection and the substation.

1.3.2.7 Relevant line section(s) actual or estimated peak load and minimum load data, including daytime minimum load and absolute minimum load, when available.

1.3.2.8 Number, location, and rating of protective devices, and number, location, 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.

1.3.2.9 Number of phases available at the proposed Point of Interconnection. If a single phase, distance from the three-phase circuit.

1.3.2.10 Limiting conductor ratings from the proposed Point of Interconnection to the distribution substation.

1.3.2.11 Whether the Point of Interconnection is located on a spot network, grid network, or radial supply.

1.3.2.12 Based on the proposed Point of Interconnection, 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.

1.3.2.13 Other information regarding an Affected System the Utility deems relevant to the Interconnection Customer.

1.3.3 The Pre-Application Report need only include existing data. A Pre-Application Report request does not obligate the Utility to conduct a study or other analysis of the proposed generator in the event that data is not readily available. If the Utility cannot complete all or some of the Pre-Application Report due to lack of available data, the Utility shall provide the Interconnection Customer with a Pre-Application Report that includes the data that is readily available. 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. Further, the total capacity provided in Section 1.3.2.1 does not indicate that an interconnection of aggregate generation up to this level may be completed without impacts since there are many variables studied as part of the interconnection review process, and data provided in the Pre-Application Report may become outdated at the time of the submission of the complete Interconnection Request.

1.4 Interconnection Request

1.4.1 The Interconnection Customer shall submit its Interconnection Request to the Utility, and the Utility shall notify the Interconnection Customer confirming receipt of the Interconnection Request within three (3) Business Days of receiving the Interconnection Request.

The Interconnection Request Application Form shall be date- and time-stamped upon receipt of the following:

1.4.1.1 A substantially complete Interconnection Request Application Form contained in Attachment 2 submitted by a valid legal entity registered with the North Carolina Secretary of State, and signed by the Interconnection Customer.

1.4.1.2 The applicable fee or Interconnection Request Deposit. The applicable fee is specified in the Interconnection Request Application Form and applies to a certified inverter-based Generating Facility no larger than 20 kW reviewed under Section 2 and to any certified Generating Facility no larger than the capacity specified in Section 3.1 to be evaluated under the Section 3 Fast Track Process.

For all <u>other</u> Generating Facilities<u>, including those</u> that do not qualify for the 20 kW Inverter Process or the Fast Track Process <u>,or that</u>~~,~~ fail the Fast Track and Supplemental Review Process under Section 3.0 and are to be evaluated under the Section 4 Study Process, an Interconnection Request Deposit is required. The Interconnection Request Deposit shall equal $20,000 plus one dollar ($1.00) per kWac of capacity specified in the Interconnection Request Application Form, not to exceed an aggregate Interconnection Request Deposit of $100,000. The Interconnection Request Deposit is intended to cover the Utility's reasonably anticipated costs <u>including overheads</u> for conducting the System Impact Study and the Facilities Study. Such deposit shall, however, be applicable towards the cost of all studies, Upgrades and Interconnection Facilities <u>including overheads</u>.

1.4.1.3 A Site Control Verification letter (sample included within Attachment 2).

1.4.1.4 A site plan indicating the location of the project, the property lines and the desired Point of Interconnection.

1.4.1.5 An electrical one-line diagram for the Generating Facility.

1.4.1.6 Inverter specification sheets for the Interconnection Customer's equipment that will be utilized.

1.4.2 The original date- and time-stamp applied to the Interconnection Request Application Form shall be accepted as the qualifying date- and time-stamp

for the purposes of establishing Queue Position and any timetable in these procedures.

1.4.3 The Utility shall notify the Interconnection Customer in writing within ten (10) Business Days of the receipt of the Interconnection Request Application Form as to whether the Form and initial supporting documentation specified in Sections 1.4.1.1 through 1.4.1.6 are complete or incomplete. An Interconnection Request will be deemed complete upon submission of the listed information in Section 1.4.1 to the Utility.

1.4.4 If the Interconnection Request Application Form and/or the initial supporting documentation or any other information requested by the Utility is incomplete, the Utility shall provide, along with notice that the information is incomplete, a written list detailing all information that must be provided. The Interconnection Customer will have ten (10) Business Days after receipt of the notice to submit the listed information. If the Interconnection Customer does not provide the listed information or a written request for an extension of time, not to exceed ten (10) additional Business Days, within the deadline, the Interconnection Request will be deemed withdrawn.

1.5 Modification of the Interconnection Request

"Material Modification" means a modification to machine data or equipment configuration or to the interconnection site of the Generating Facility that has a material impact on the cost, timing or design of any Interconnection Facilities or Upgrades~~.~~ or that may adversely impact other Interdependent Interconnection Requests with higher Queue Numbers. Material Modifications include certain project revisions ~~proposed at any time after receiving notification by the Utility of a complete Interconnection Request pursuant to Section 1.4.3 that 1) alters the size or output characteristics of the Generating Facility from its Utility-approved Interconnection Request submission; or 2) may adversely impact other Interdependent Interconnection Requests with higher Queue numbers.~~ ,as defined in Section 1.5.1, but exclude certain project revisions as defined in Section 1.5.2.

1.5.1 Changes ~~I~~indicia of a Material Modification ~~include but are not limited to:~~ are described as follows:

1.5.1.1 Indicia of a Material Modification before the System Impact Study Agreement has been executed by the Interconnection Customer include only:

1.5.1.1.1 A change in Point of Interconnection (POI) to a new location, unless the change in a POI is on the same circuit less than two (2) poles away from the original location, and the new POI is within the same protection zone as the original location;

~~1.5.1.2 A change or replacement of generating equipment such as generator(s), inverter(s), transformers, relaying, controls, etc. that is not a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;~~

1.5.1.~~3~~.1.2 A change from certified to non-certified devices (“certified” means certified by an OSHA recognized Nationally Recognized Test Laboratory (NRTL), to relevant UL and IEEE standards, authorized to perform tests to such standards);

~~1.5.1.4 A change of transformer connection(s) or grounding from that originally proposed;~~

~~1.5.1.5 A change to certified inverters with different specifications or different inverter control specifications or set-up than originally proposed;~~

1.5.1.~~6.~~1.3 An increase of the ~~AC output~~ Maximum Generating Capacity of a Generating Facility; or

1.5.1.~~6.~~1.4 A change reducing the AC output of the G~~g~~enerating F~~f~~acility by more than 10%.

1.5.1.2 Indicia of a Material Modification after the System Impact Study Agreement has been executed by the Interconnection customer include, but are not limited to:

1.5.1.2.1 A change in the POI to a new location, unless the new POI is on the same circuit less than two (2) poles away from the original location, and the new POI is within the same protection zone as the original location;

1.5.1.2.2 A change or replacement of generating equipment such as generator(s), inverter(s), transformers, relaying, controls, etc. that is not a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;

1.5.1.2.3 A change from certified to non-certified devices (“certified” means certified by an OSHA recognized Nationally Recognized Test Laboratory (NRTL), to relevant UL and IEEE standards, authorized to perform tests to such standards);

1.5.1.2.4 A change of transformer connection(s) or grounding from that originally proposed;

1.5.1.2.5 A change to certified inverters with different specifications or different inverter control specifications or set-up than originally proposed;

1.5.1.2.6 An increase of the Maximum Generating Capacity of a Generating Facility; or

1.5.1.2.7 A change reducing the Maximum Generating Capacity of the Generating Facility by more than 10%.

1.5.2 Changes ~~The following are~~ not indicia of a Material Modification are described as follows:

1.5.2.1 The following are not indicia of a Material Modification before the System Impact Study Agreement has been executed by the Interconnection Customer:

1.5.2.1.1 A change in the DC system configuration to include additional equipment including: DC optimizers, DC-DC converters, DC charge controllers, power plant controllers, and energy storage devices, so long as the proposed change does not violate any of the provisions laid out in Section 1.5.1.1.

1.5.2.2 Except as provided for in Section 1.5.2.1, the~~The~~ following are not indicia of a Material Modification at any time:

1.5.2.2.1 A change in ownership of a Generating Facility; the new owner, however, will be required to execute a new Interconnection Agreement and Study agreement(s) for any Study which has not been completed and the Report issued by the Utility;

1.5.2.2.2 A change or replacement of generating equipment such as generator(s), inverter(s), solar panel(s), transformers, relaying controls, etc. that is a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;

1.5.2.2.3 An increase in the DC/AC ratio that does not increase the maximum AC output capability of the G~~g~~enerating F~~f~~acility;

1.5.2.2.4 A decrease in the DC/AC ratio that does not reduce the AC output capability of the G~~g~~enerating F~~f~~acility by more than 10%.

1.5.2.2.5 A change in the DC system configuration to include additional equipment that does not impact the Maximum Generating Capacity, daily production profile or the proposed AC configuration of the Generating Facility including: DC optimizers, DC-DC converters, DC charge controllers, power plant controllers, and energy storage devices such that the output is delivered during the same periods and with the same profile considered during the System Impact Study.

1.5.3 To the extent Interconnection Customer proposes to modify any information provided in the Interconnection Request deemed complete by the Utility, the Interconnection Customer shall submit any such modifications to the Utility in writing. If the Utility determines that the proposed modification(s) constitutes a Material Modification, the Utility shall notify the Interconnection Customer in writing within ten (10) Business Days that the modification is a Material Modification and the Interconnection Request shall be withdrawn from the q~~Q~~ueue unless the Interconnection Customer withdraws the proposed Material Modification within 15 Calendar Days of receipt of the Utility's

written notification. If the modification is determined by the Utility not to be a Material Modification, then the Utility shall notify the Interconnection Customer in writing that the modification has been accepted and that the Interconnection Customer shall retain its Queue Number. Any dispute as to the Utility's determination that a modification constitutes a Material Modification shall proceed in accordance with Section 6.2 below.

1.5.4 Modification Inquiry

1.5.4.1 Prior to making any modification, the Interconnection Customer may first submit an informal modification inquiry in writing that requests the Utility to evaluate whether such modification to the original or most recent Interconnection Request is a Material Modification. The Interconnection Customer shall provide specific details on all changes that are to be considered by the Utility.

1.5.4.2 In response to Interconnection Customer's informal request, if the Utility evaluates the proposed modification(s) and determines that the changes are not Material Modifications, the Utility shall inform the Interconnection Customer in writing within ten (10) Business Days. If the Interconnection Customer wishes to proceed with the proposed modification(s), the Interconnection Customer shall submit a revised Interconnection Request Application Form that reflects the approved modifications.

1.6 Site Control

Documentation of site control shall be submitted to the U~~u~~tility with the Interconnection Request using the sample site control verification form included in the Interconnection Request in Attachment 2~~3~~.

Site control may be demonstrated through:

1. Ownership of, a leasehold interest in, or a right to develop a site for the purpose of constructing the Generating Facility;

2. An option to purchase or acquire a leasehold site for such purpose; or

3. An exclusivity or other business relationship between the Interconnection Customer and the entity having the right to sell, lease, or grant the Interconnection Customer the right to possess or occupy a site for such purpose.

Should Interconnection Customer's site control lapse at any point in time prior to interconnection and such lapse is brought to the attention of Utility, the Utility shall notify the Interconnection Customer in writing of the alleged lapse in site control. The Interconnection Customer shall have ten (10) Business Days from the posted date on the notice from the Utility to cure and submit documentation of re-established site control, where failure to cure the lapse will result in the Interconnection Request being deemed withdrawn.

1.7 Queue Number

1.7.1 The Utility shall assign a Queue Number pursuant to Section 1.4.2. Subject to an Interconnection Customer's election to participate in an optional Utility-sponsored System Impact Grouping Study, as described in Section 4.3.4, the Queue Number of each Interconnection Request shall be used to determine the cost responsibility for the Upgrades necessary to accommodate the interconnection. Subject to Sections 1.7.3, 1.8, and Section 4.3.4, the Queue Number of each Interconnection Request shall also determine the order in which each Interconnection Request is studied.

1.7.2 Subject to the provisions of Sections 1.4, 1.5, and 1.6, Generating Facilities shall retain the Queue Number assigned to their initial Interconnection Request throughout the review process, including when ~~where~~ moving through the processes covered by Sections 2, 3, and 4.

1.7.3 A Queue Number established for purposes of administering a Competitive Resource Solicitation under Section 4.3.4 shall not be subject to the Interdependency provisions of Section 1.8. Any Interconnection Customer that elects to participate in the System Impact Grouping Study and is selected through the Competitive Resource Solicitation shall complete the Section 4 Study process based upon the Queue Position designated to administer the Competitive Resource Solicitation and the Interconnection Customer's cost responsibility shall be determined based upon the terms of the Competitive Resource Solicitation. Any Interconnection Customer that elects to participate in the System Impact Grouping Study established in Section 4.3.4 but is not selected through the Competitive Resource Solicitation shall be deemed subordinate to the designated Competitive Resource Solicitation Queue Number or an Interconnection Customer that has completed System Impact Study and committed to Upgrades under Section 4.3.9, but shall maintain its original Queue Position for purposes of determining cost responsibility for Upgrades in relation to (i) other Interconnection Customers that elected to participate in the System Impact Grouping Study, but were not selected through the Competitive Resource Solicitation; and (ii) projects that were assigned a Queue Number after the date on which the Queue Number was designated by the Utility to administer the System Impact Grouping Study.

1.8 Interdependent Projects

"Interdependent Customer" (or "Project"), "Project A", "Project B", and "Project C" are defined in the ~~g~~Glossary of ~~t~~Terms (see Attachment 1).

1.8.1 Upon an Interconnection Customer's submission of a Section 1.4 Interconnection Request for the Section 3 Fast Track Process or Section 4 Study Process, the Utility shall review the Interconnection Request and make a preliminary determination whether any known Interdependency exists between the Interconnection Customer's proposed Generating Facility and any other Interconnection Customer with a lower Queue Number. Any preliminary determination by the Utility that the Generating Facility does not create an Interdependency will result in the Interconnection Request being

preliminarily designated as a Project A and the Utility shall proceed immediately to either the Section 3 Fast Track Process or the Section 4 Study process, as applicable. The Utility shall advise the Interconnection Customer in writing or at the Section 4.2 ~~S~~scoping ~~M~~meeting, if requested by the Interconnection Customer, regarding its preliminary determination of whether Interdependency would be created by the Generating Facility. A Generating Facility designated and reviewed for system impacts as a Project A may still be determined to create an Interdependency and may be designated by the Utility as an Interdependent Project during the Section 4.3 System Impact Study Process. Once the System Impact Study R~~r~~eport is issued by the Utility designate~~d~~ing a Generating Facility as a Project A for purposes of the Section 4.4 Facilities Study, the Interconnection Request shall retain this designation without change.

1.8.2 If the Utility determines that ~~that~~ the Interconnection Customer's proposed Generating Facility is Interdependent with one (1) other Interconnection Request with a lower Queue Number, the Utility shall notify the Interconnection Customer in writing or at the Section 4.2 ~~S~~scoping ~~M~~meeting that the Interconnection Request is designated as a Project B.

1.8.2.1 Following the Section 4.2 ~~S~~scoping ~~M~~meeting and execution of the System Impact Study Agreement, the Project B shall proceed to the Section 4.3 Study process. Project B shall receive a System Impact Study R~~r~~eport that assumes the interdependent Project A Interconnection Request with the lower Queue Number completes construction and interconnection and another System Impact Study R~~r~~eport that assumes the interdependent Project A Interconnection Request with the lower Queue Number is not constructed and is withdrawn.

1.8.2.2 The Utility shall not proceed to a Project B Facilities Study until after the Project B Interconnection Customer returns a signed Facilities Study Agreement to the Utility and the Utility has issued the Section 4.4.4 Facilities Study R~~r~~eport for the Interdependent Project A. The Project B Interconnection Customer shall then have the option of whether to proceed with a Facility Study, or wait until the Interdependent Project A executes an Interconnection Agreement and makes payment for any required Upgrade, Interconnection Facilities, and other charges under Section 5.2. If the Project B Interconnection Customer ~~with a~~ signed a Facilities Study Agreement prior to Interdependent Project A committing to Section 5 construction, the Project B's Facility Study shall assume that the I~~i~~nterdependent Project A Interconnection Request with the lower Queue Number completes construction and interconnection. If Project A is later cancelled prior to the Project A Interconnection Customer making payment for the required Upgrade, the Utility will revise the Project B Facility Study at Project B Interconnection Customer's expense. If Project B Interconnection Customer chooses to wait to request the Project B Facility Study, Project B is not required to adhere to the timeline in Section 4.4.1 until Project A has signed an Interconnection

Agreement and paid the ~~payment~~ charges specified in Section 5.2.4 of these Interconnection Procedures or withdrawn.

1.8.3 If the Utility determines ~~that~~ that the Interconnection Customer's proposed Generating Facility is Interdependent with more than one (1) other Interconnection Request with lower Queue Numbers, the Utility shall make a preliminary determination and notify the Interconnection Customer in writing or at the Section 4.2 scoping meeting, if requested by the Interconnection Customer, describing generally the number and type of Interdependencies of Interconnection Requests with lower Queue Numbers.

1.8.3.1 Except as provided in Section 1.8.3.3 below, t~~T~~he Utility shall not study a project if it is interdependent with more than one project, each of which has a lower Queue Number. The U~~u~~tility will study a project when interdependency with only one lower Queue Number project exists. The removal of interdependency with multiple projects may be the result of 1) upgrades to the Utility System which eliminate the cause of the interdependency, 2) withdrawal of interdependent project(s) with lower Queue Numbers, or 3) a lower Queue Number project signing an Interconnection Agreement and making payments required in Section 5.2.4.

1.8.3.2 Within five (5) Business Days of an Interconnection Request becoming a Project B Interconnection Request that is Interdependent with only one (1) other Interconnection Request with a lower Queue Number, the Utility shall ~~schedule the Section 4.2 Scoping Meeting~~ notify the Interconnection Customer in writing and provide the new Project B an executable System Impact Study Agreement. Upon being designated by the Utility as a Project B, the Interconnection Customer may request a Section 4.2 scoping meeting on or before the date that the System Impact Study Agreement must be returned to the Utility pursuant to Section 4.2.1. The new Project B ~~the~~ Interconnection Customer's Queue Number will be used to determine the order in which the Interconnection Request is studied under S~~s~~ection 4.3 relative to all other Interconnection Requests.

1.8.3.3 When an Interconnection Customer is proposing to interconnect a Small Animal Waste Facility and that facility is interdependent with more than one project, each of which has a lower Queue Number, the Utility shall designate the Small Animal Waste Facility for expedited Section 4 study ahead of other interdependent Interconnection Customers that have not commenced the Section 4 Study Process pursuant to Section 1.8.3.1, as either (i) Project B, if the project with the next lowest Queue Number to Project A has not completed the Section 4.2 scoping meeting or executed a System Impact Study Agreement; or (ii) Project C, if a Project B has already been designated by the Utility, completed the Section 4.2 scoping meeting, or executed a System Impact Study Agreement. Upon being designated by the Utility as a Project C, the Small

Animal Waste Facility shall be the next facility to become a Project B, regardless of whether another interdependent Interconnection Request with a lower Queue Number exists and notwithstanding Section 1.8.3.2. Upon being designated a Project B, a Small Animal Waste Facility shall be the next Project B studied under Section 4.3 regardless of Queue Number.

1.8.3.4 When an Interconnection Customer is proposing to interconnect a Standby Generating Facility with zero export requested, the Utility shall designate the Standby Generating Facility for expedited Section 4 study as a Project A and also ahead of all other Section 4 studies currently underway in the Utility study queue, unless there are other Standby Generating Facilities currently under study, in which case such Standby Generating Facilities shall be studied in their own queue order. Notwithstanding Section 1.7.1, a Standby Generating Facility will be responsible for Interconnection Facilities and any Upgrades arising from its designated Project A position in the Queue as provided for in this section.

1.9 Interconnection Requests Submitted Prior to the Effective Date of these Procedures

Other than as set forth in Section 1.1.3, nothing in this Standard affects an Interconnection Customer's Queue Number assigned before the effective date of these procedures. Interconnection Requests which have received a System Impact Study report as of the effective date of these procedures that did not identify any interdependency with another project shall be deemed a Project A. Any Interconnection Requests for which the Utility has not completed the System Impact Study and issued a System Impact Study R~~r~~eport to the Interconnection Customer as of the effective date of these procedures shall be reviewed for Interdependency pursuant to Section 1.8.

~~Should an Interconnection Customer fail to comply with Section 1.1.3 following receipt of written notice specifying how the Interconnection Customer failed to comply and the expiration of an opportunity to cure by the close of business on the tenth (10th) Business Day following the posted date of such notice to cure, such Interconnection Customer will lose its Queue Number and such Interconnection Request shall be deemed withdrawn.~~

Section 2. Optional 20 kW Inverter Process for Certified Inverter-Based Generating Facilities No Larger than 20 kW

2.1 Applicability

The 20 kW Inverter Process is available to an Interconnection Customer proposing to interconnect its inverter-based Generating Facility with the Utility's System if the Generating Facility is no larger than 20 kW and if the Interconnection Customer's proposed Generating Facility meets the codes, standards, and certification requirements of Attachments 4 and 5 of these procedures, or the Utility has reviewed the design or tested the proposed Generating Facility and is satisfied that it is safe to operate.

The Utility may require the Interconnection Customer to install a manual load-break disconnect switch or safety switch as a clear visible indication of switch position between the Utility System and the Interconnection Customer. When the installation of the switch is not otherwise required (e.g. National Electric Code, state or local building code) and is deemed necessary by the Utility for certified, inverter-based generators no larger than 10 kW, the Utility shall reimburse the Interconnection Customer for the reasonable cost of installing a switch that meets the Utility's specifications (see also Section 6.16).

2.2 Interconnection Request

The Interconnection Customer shall complete the Interconnection Request Application Form for a certified inverter-based Generating Facility no larger than20 kW in the form provided in Attachment 6 and submit it to the Utility, together with the non-refundable processing fee specified in the Interconnection Request Application Form and the documentation required pursuant to Section 1.4.1.

2.2.1 The Utility shall verify that the Generating Facility can be interconnected safely and reliably using the screens contained in the Fast Track Process. (See Section 3.2.1.) The Utility has 15 Business Days to complete this process. Unless the Utility determines and demonstrates that the Generating Facility cannot be interconnected safely and reliably, the Utility shall approve the Interconnection Request upon fulfillment of all requirements in Section 1.4 and return the Interconnection Request Application Form to the Interconnection Customer.

2.2.1.2 If the proposed interconnection passes the screens but the Utility determines that minor Utility construction is required to interconnect the Generating Facility to the Utility's ~~S~~system, the Interconnection Request shall be approved and the Utility will provide the Interconnection Customer a non-binding good faith estimate of the cost of interconnection along with the Interconnection Request Application Form within 15 Business Days after the determination.

2.2.1.3 If the proposed interconnection passes the screens, but the costs of interconnection including System Upgrades and Interconnection Facilities cannot be determined without further study or review, the Utility will notify the Interconnection Customer that the Utility will need to complete a Facilities Study under Section 4.4 to determine the necessary costs of interconnection and will charge the actual cost of the Facilities Study to the Interconnection Customer.

2.2.2 Screen~~s~~ failure: Despite the failure of one or more screens, the Utility, at its sole option, may approve the interconnection provided such approval is consistent with safety and reliability. If the Utility cannot determine that the Generating Facility may be interconnected consistent with safety, reliability, and power quality standards, the Utility shall provide the Interconnection

Customer with detailed information on the reasons for failure in writing. In addition, the Utility shall either:

2.2.2.1 Notify the Interconnection Customer in writing that the Utility is continuing to evaluate the Generating Facility under Section 3.4 Supplemental Review if the Utility concludes that the Supplemental Review might determine that the Generating Facility could continue to qualify for interconnection pursuant to Fast Track; or

2.2.2.2 Offer to continue evaluating the Interconnection Request under the Section 4 Study Process.

2.3 Certificate of Completion

2.3.1 After installation of the Generating Facility, the Interconnection Customer shall submit the Certificate of Completion in the form provided in Attachment 6 to the Utility. Prior to parallel operation, the Utility may inspect the Generating Facility for compliance with standards including a witness test and the scheduling of an appropriate metering replacement, if necessary.

2.3.2 The Utility shall notify the Interconnection Customer in writing that interconnection of the Generating Facility is authorized. If the witness test is not satisfactory, the Utility has the right to disconnect the Generating Facility. The Interconnection Customer has no right to operate in parallel with the Utility until a witness test has been performed, or previously waived on the Interconnection Request. The Utility is obligated to complete this witness test within ten (10) Business Days of the receipt of the Certificate of Completion. If the Utility does not inspect within ten (10) Business Days or by mutual agreement of the Parties, the witness test is deemed waived.

2.3.3 Interconnection and parallel operation of the Generating Facility is subject to the Terms and Conditions stated in Attachment 6 of these procedures.

2.4 Contact Information

The Interconnection Customer must provide its contact information. If another entity is responsible for interfacing with the Utility, that contact information must also be provided on the Interconnection Request Application Form.

2.5 Ownership Information

The Interconnection Customer shall provide the legal name(s) of the owner(s) of the Generating Facility.

2.6 UL 1741 Listed

The Underwriters' Laboratories (UL) 1741 standard (Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources) addresses the electrical interconnection design of various

forms of generating equipment. Many manufacturers submit their equipment to a nationally recognized testing laboratory that verifies compliance with UL 1741. This "listing" is then marked on the equipment and supporting documentation.

Section 3. Optional Fast Track Process for Certified Generating Facilities

3.1 Applicability

The Fast Track Process is available to an Interconnection Customer proposing to interconnect its Generating Facility with the Utility's System if the Generating Facility's capacity does not exceed the size limits identified in the table below. Generating Facilities below these limits are eligible for Fast Track review. However, Fast Track eligibility is distinct from the Fast Track Process itself, and eligibility does not imply or indicate that a Generating Facility will pass the Fast Track screens in Section 3.2 below or the Supplemental Review screens in Section 3.4 below.

Fast Track eligibility is determined based upon the generator type, the size of the generator, voltage of the line and the location of and the type of line at the Point of Interconnection. ~~All~~ Generating Facilities connecting to lines greater or equal to 35 kilovolt (kV) are ineligible for the Fast Track Process regardless of size, unless mutually agreed to in writing between the Interconnection Customer and the Utility. ~~For inverter-based systems,~~ Only certified inverter-based systems are eligible for the Fast Track Process and the size limit varies according to the voltage of the line at the proposed Point of Interconnection. Certified inverter-based Generating Facilities located within 2.5 electrical circuit miles of a substation and on a mainline (as defined in the table below) are eligible for the Fast Track Process under the higher thresholds set forth in the table below. In addition to the size threshold, the Interconnection Customer's proposed Generating Facility must meet~~s~~ the codes, standards, and certification requirements of Attachments 4 and 5 of these procedures, or the Utility has to have reviewed the design or tested the proposed Generating Facility and be satisfied that it is safe to operate.

Fast Track Eligibility for Inverter-Based Systems[1]		
Line VMoltage	Fast Track Eligibility Regardless of Location	Fast Track Eligibility on a Mainline[2] and ≤ 2.5 Electrical Circuit Miles from Substation[3]
< 5 kV	≤ 100 kW	≤ 500 kW
≥ 5 kV and < 15 kV	≤ 1 MW	≤ 2 MW
≥ 15 kV and < 35 kV	≤ 2 MW	≤ 2 MW

[1] Must be an UL certified inverter.
[2] For purposes of this table, a mainline is the three-phase backbone of a circuit. It will typically constitute lines with wire sizes of 4/0 American wire gauge, 336.4 kcmil, 397.5 kcmil, 477 kcmil, and 795 kcmil.
[3] An Interconnection Customer can determine this information about its proposed interconnection location in advance by requesting a Pre-Application Report pursuant to Section 1.3~~2~~ .

3.1.1 The Interconnection Customer may elect in the Interconnection Request Application Form to proceed directly to Supplemental Review, in order to minimize overall processing time in the event the Utility deems Supplemental Review is appropriate. This is accomplished by selecting both the Fast Track and Supplemental Review options on the Interconnection Request Application Form and paying the applicable Fast Track fee and Supplemental Review deposit.

3.2 Initial Review

Within 15 Business Days after the Utility notifies the Interconnection Customer it has received a complete Interconnection Request pursuant to Section 1.4 and the Utility has preliminarily determined that the Interconnection Request is not interdependent with more than one Interconnection Request with lower Queue Numbers under Section 1.8, 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.

3.2.1 Screens

3.2.1.1 The proposed Generating Facility's Point of Interconnection must be on a portion of the Utility's Distribution System.

3.2.1.2 For interconnection of a proposed Generating Facility to a radial distribution circuit, the aggregated generation, including the proposed Generating Facility, on the circuit shall not exceed 15% of the line section annual peak load as most recently measured at the substation. A line section is that portion of a Utility's System connected to a customer bounded by automatic sectionalizing devices or the end of the distribution line.

3.2.1.3 For interconnection of a proposed Generating Facility to a radial distribution circuit, the aggregated generation, including the proposed Generating Facility, on the circuit shall not exceed 90% of the circuit and/or bank minimum load at the substation.

~~3.2.1.4 All synchronous and induction machines must be connected to a distribution circuit where the local minimum load to generation ratio on the circuit line segment is larger than 3 to 1. A 3-1 load to generation ratio screen utilizes actual recorded data that is sufficient to establish the minimum threshold.~~

3.2.1.4~~5~~ For interconnection of a proposed Generating Facility to the load side of spot network protectors, the proposed Generating Facility must utilize an inverter-based equipment package and, together with the aggregated other inverter-based generation, shall not exceed the smaller of 5% of a spot network's maximum load or 50 kW.

3.2.1.5~~6~~ The proposed Generating Facility, in aggregation with other generation on the distribution circuit, shall not contribute more than 10% to the distribution circuit's maximum fault current at the point on the high voltage (primary) level nearest the proposed point of change of ownership.

3.2.1.6~~7~~ The proposed 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% of the short circuit interrupting capability; nor shall the interconnection be approved ~~proposed~~ for a circuit that already exceeds 87.5% of the short circuit interrupting capability.

3.2.1.7~~8~~ 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 to be provided to the Interconnection Customer, including line configuration and the transformer connection for the purpose of limiting the potential for creating over-voltages on the Utility's 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 three-phase or single phase, line-to-	Pass Screen

3.2.1.8~~9~~ If the proposed Generating Facility is to be interconnected on a single-phase shared secondary, the aggregate Generating Facility capacity on the shared secondary, including the proposed Generating Facility, shall not exceed 65% of the transformer nameplate rating.

3.2.1.9~~10~~ If the proposed 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% of the nameplate rating of the service transformer.

3.2.1.10~~1~~ The Generating Facility, in aggregate with other generation interconnected to the transmission side of a substation transformer feeding the circuit where the Generating Facility proposes to interconnect shall not exceed 10 MW in an area where there are known, or posted, transient stability limitations to generating units located in the general electrical vicinity (e.g., three or four transmission busses from the point of interconnection).

3.2.2 Screen Results

3.2.2.1 If the proposed interconnection passes the screens and requires no construction by the Utility on its own System, the Interconnection Request shall be approved and the Utility will provide the Interconnection Customer an executable Interconnection Agreement within ten (10) Business Days after the determination.

3.2.2.2 If the proposed interconnection passes the screens and the Utility is able to determine without further study or review that only minor Utility construction is required to interconnect the Generating Facility to the Utility's Ssystem, the Interconnection Request shall be approved and the Utility will provide the Interconnection Customer a non-binding good faith estimate of the cost of interconnection along with an executable Interconnection Agreement within 15 Business Days after the determination.

3.2.2.3 If the proposed interconnection passes the screens, but the costs of interconnection including System Upgrades and Interconnection Facilities cannot be determined without further study or review, the Utility will notify the Interconnection Customer that the Utility will need to complete a Facilities Study under Section 4.4 to determine the necessary costs of interconnection.

3.2.2.4 If the proposed interconnection fails the screens, but the Utility determines that the Generating Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards, and requires no construction by the Utility on its own System, the Interconnection Request shall be approved and the Utility shall provide the Interconnection Customer an executable Interconnection Agreement within ten (10) Business Days after the determination.

3.2.2.5 If the proposed interconnection fails the screens, but the Utility determines that the Generating Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards and the Utility is able to determine without further study or review that only minor Utility construction is required to interconnect with the Generating Facility, the Interconnection Request shall be approved and the Utility will provide the Interconnection Customer a non-binding good faith estimate of the cost of interconnection along with an executable Interconnection Agreement within 15 Business Days after the determination.

3.2.2.6 If the proposed interconnection fails the screens, and the Utility does not or cannot determine from the initial review that the Generating Facility may nevertheless be interconnected consistent with safety, reliability, and power quality standards

unless the Interconnection Customer is willing to consider minor modifications or further study, the Utility shall provide the Interconnection Customer with the opportunity to attend a customer options meeting as described in Section 3.3 below.

3.3 Customer Options Meeting

If the Utility determines the Interconnection Request cannot be approved without (1) minor modifications at minimal cost, (2) a supplemental study or other additional studies or actions, or (3) incurring significant cost to address safety, reliability, or power quality problems, the Utility shall notify the Interconnection Customer of that determination within five (5) Business Days after the determination, and upon request provide copies of ~~all~~ data and analyses underlying its conclusion. Within ten (10) Business Days of the Utility's determination, the Utility shall offer to convene a customer options meeting to review possible Interconnection Customer facility modifications or the screen analysis and related results, to determine what further steps are needed to permit the 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:

3.3.1 Offer to perform facility modifications or minor modifications to the Utility's 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 System. The Interconnection Customer shall have ten (10) Business Days to agree to pay for the modifications to the Utility's electric S~~s~~ystem or the Interconnection Request shall be deemed to be withdrawn. If the Interconnection Customer agrees to pay for the modifications to the Utility's electric S~~s~~ystem, the Utility will provide the Interconnection Customer with an executable Interconnection Agreement within ten (10) Business Days of the Interconnections Customer's agreement to pay; or

3.3.2 Offer to perform a S~~s~~upplemental R~~r~~eview under Section 3.4 if the Utility concludes that the S~~s~~upplemental R~~r~~eview might determine that the 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 of such review. The Interconnection Customer shall have ten (10) Business Days to accept in writing the Utility's offer to perform a Supplemental Review and post any deposit requirement for the Supplemental Review, or the Interconnection Request shall be deemed to be withdrawn; or

3.3.3 Offer to continue evaluating the Interconnection Request under the Section 4 Study Process. The Interconnection Customer shall have ten (10) Business Days to agree in writing to its Interconnection Request continuing to be evaluated under the Section 4 Study Process, and post any deposit requirement for the Study Process, or the Interconnection Request shall be deemed to be withdrawn.

3.4 Supplemental Review

If the Interconnection Customer agrees to a Ssupplemental Rreview, the Interconnection Customer shall agree in writing within ~~15~~ ten (10) Business Days of the offer, and submit a deposit of $750 (if the facility is larger than 20 kW but not larger than 100 kW) or $1,000 (if the facility is larger than 100 kW but not larger than 2 MW), ~~for the estimated costs~~ or the request shall be deemed to be withdrawn. The Interconnection Customer shall be responsible for the Utility's actual costs for conducting the Ssupplemental Rreview. The Interconnection Customer 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.

3.4.1 Within ten (10) Business Days following receipt of the deposit for a Ssupplemental R review, the Utility will determine if the Generating Facility can be interconnected safely and reliably.

3.4.1.1 If so, the Utility shall forward an executable Interconnection Agreement to the Interconnection Customer within ten (10) Business Days.

3.4.1.2 If so, and Interconnection Customer facility modifications are required to allow the Generating Facility to be interconnected consistent with safety, reliability, and power quality standards under these procedures, the Utility shall ask if the customer agrees to make the necessary modifications. The customer will be given 10 Business Days to agree, in writing, to the required modifications. The Utility will forward an executable Interconnection Agreement to the Interconnection Customer within 15 Business Days after confirmation that the Interconnection Customer has agreed to make the necessary modifications at the Interconnection Customer's cost.

3.4.1.3 If so, and minor modifications to the Utility's System are required to allow the 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 Interconnection Customer within ten (10) Business Days that requires the Interconnection Customer to pay the costs of such System modifications prior to interconnection.

3.4.1.4 If so, but the costs of interconnection including System Upgrades and Interconnection Facilities cannot be determined without further study or review, the Utility will notify the Interconnection Customer that the Utility will need to complete a Facilities Study under Section 4.4 to determine the necessary costs of interconnection.

3.4.1.5 If not, the Interconnection Request will continue to be evaluated under the Section 4 Study Process, provided the Interconnection

Customer indicates it wants to proceed and submits the required deposit within 15 Business Days.

Section 4. Study Process

4.1 Applicability

The Study Process shall be used by an Interconnection Customer proposing to interconnect its Generating Facility with the Utility's System if the Generating Facility exceeds the size limits for the Section 3 Fast Track Process, is not certified, or is certified but did not pass the Fast Track Process or the 20 kW Inverter Process. The Interconnection Customer may be required to submit additional information or documentation, as may be requested by the Utility in writing, during the Study Process.

4.2 Scoping Meeting

4.2.1 A scoping meeting will be held within ten (10) Business Days after the Interconnection Request is deemed complete, unless the Interconnection Customer is preliminarily designated as interdependent with more than one (1) Interconnection Request pursuant to Section 1.8.3.1, 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. The scoping meeting may be omitted by mutual agreement in writing.

4.2.2 The purpose of the scoping meeting is to discuss the Interconnection Request and review existing studies relevant to the Interconnection Request. The Parties shall further discuss whether the Utility should perform a System Impact Study, a Facilities Study, or proceed directly to an Interconnection Agreement.

4.2.3 If the Utility, after consultation with the Interconnection Customer, determines the project should proceed to a System Impact Study or Facilities Study, the Utility shall provide the Interconnection Customer, no later than ten (10) Business Days after the scoping meeting, either a System Impact Study Agreement (Attachment 7) or a Facilities Study Agreement (Attachment 8), as appropriate, including an outline of the scope of the study or studies and a nonbinding good faith estimate of the cost to perform the study or studies, which cost shall be subtracted from the deposit outlined in Section 1.4.1.2.

4.2.4 If the Parties agree not to perform a System Impact Study or Facilities Study, but to proceed directly to an Interconnection Agreement, the Parties shall proceed to the Construction Planning Meeting as called for in Section 5.

4.3 System Impact Study

4.3.1 In order to retain its Queue Position the Interconnection Customer must return a System Impact Study Agreement signed by the Interconnection Customer within 15 Business Days of receiving an executable System Impact Study Agreement as provided for in Section 4.2.3.

4.3.2 The scope of and cost responsibilities for a System Impact Study are described in the System Impact Study Agreement. The time allotted for completion of the System Impact Study shall be as set forth in the System Impact Study Agreement.

4.3.3 The System Impact Study shall identify and detail the electric Ssystem impacts that would result if the proposed Generating Facility were interconnected without project modifications or electric Ssystem modifications, or to study potential impacts, including, but not limited to, those identified in the scoping meeting. The System Impact Study shall evaluate the impact of the proposed interconnection on the reliability of the electric Ssystem, including the distribution and transmission systems, if required.

4.3.4 At the Utility's option, and solely for purposes of administering a Commission-approved Competitive Resource Solicitation, a Utility may designate a Queue Number and act as authorized representative for Interconnection Customer(s) proposing a Generating Facility requesting to interconnect to the Utility's System for evaluation through the Solicitation. The Utility shall evaluate combinations of such Interconnection Requests for purposes of conducting the System Impact Grouping Study(ies) of combinations of Generating Facilities within the Queue Number in order to achieve the resource need identified in the Competitive Resource Solicitation. Such studies in connection with a Competitive Resource Solicitation shall be implemented based upon the Queue Number relative to the Queue Position of all other Interconnection Requests. The Utility may also study an Interconnection Request separately to the extent provided for under the terms of the Competitive Resource Solicitation or if otherwise warranted by Good Utility Practice such as to evaluate the locational remoteness of a proposed Generating Facility.

Through completing the System Impact Grouping Study(ies) of the requested combinations of Interconnection Requests, the Utility must select one of the studied combinations that achieves the capacity solicited through the Competitive Resource Solicitation Process prior to the start of any Interconnection Facilities Study. While conducting the Interconnection Facilities Study(ies) for the selected combination of resources, the Utility may suspend further study of the Interconnection Customers that have opted in to the System Impact Grouping Study that are not included in the selected combination and such customers may elect during this period to return to their original Queue Position, subject to 1.7.3, or participate in a new Competitive Resource Solicitation, if available.

4.3.5 The System Impact Study Rreport will provide the Preliminary Estimated Upgrade Charge, which is a preliminary indication of the cost and length of

time that would be necessary to correct any System problems identified in those analyses and implement the interconnection.

4.3.6 The System Impact Study R~~r~~eport will provide the Preliminary Estimated Interconnection Facilities Charge, which is a preliminary non-binding indication of the cost and length of time that would be necessary to provide the Interconnection Facilities.

4.3.7 If the Utility has determined that an Interdependency exists and the Project is designated as a Project B, the Project B Interconnection Request shall receive a System Impact Study report, addressing a scenario assuming Project A is constructed and a second scenario assuming Project A is not constructed.

4.3.8 After receipt of the System Impact Study R~~r~~eport(s), the Interconnection Customer shall inform the Utility in writing if it wishes to withdraw the Interconnection Request and to request an accounting of any remaining deposit amount pursuant to Section 6.3.

~~4.3.8 If requested by the Interconnection Customer following delivery of the System Impact Study report, the Utility shall provide the Interconnection Customer an executable Interim Interconnection Agreement within ten (10) Business Days. The Interim Interconnection Agreement shall be identical in form and content to the Final Interconnection Agreement, but will not include Detailed Estimated Upgrade Charges, Detailed Estimated Interconnection Facility Charge, Appendix 4 (Construction Milestone schedule listing tasks, dates and the party responsible for completing each task), and other information that otherwise would be determined in Section 5.~~

4.3.9 At the time the System Impact Study Report is provided to the Interconnection Customer, the Utility shall also deliver an executable Facilities Study Agreement to the Interconnection Customer. After receipt of the System Impact Study Report and Facilities Study Agreement, when the Interconnection Customer is ready to proceed with the design and construction of the Upgrades and Interconnection Facilities, the Interconnection Customer shall return the signed Facilities Study Agreement to the Utility in accordance with Section 4.4 and shall also submit payment or Financial Security reasonably acceptable to the Utility equal to the cost of any Network Upgrades identified in the Preliminary Estimated Upgrade Charge, as set forth in the System Impact Study Report, that would be borne by the Interconnection Customer under a future Interconnection Agreement. This payment or Financial Security shall be held by the Utility as a non-refundable pre-payment for the estimated cost of Network Upgrades to be designed by the Utility in the Section 4.4 Facilities Study. The preliminary Network Upgrade pre-payment amount shall be trued up by the Utility in the Detailed Estimated Upgrade Charges included in a future Interconnection Agreement or shall be forfeited to the Utility to construct the Network Upgrades if the Interconnection Request is subsequently withdrawn by the Interconnection Customer. ~~For Interconnection Customers that have already received their system impact studies, and have proceeded to the facilities study phase, the non-refundable pre-payment for network upgrades shall be~~

~~due within 30 business days of this requirement being adopted by the Commission.~~ Failure to timely make such pre-payments will result in the Utility removing the Interconnection Request from the queue.

4.4 Facilities Study

4.4.1 A solar Interconnection Customer must request a Facilities Study by returning the signed Facilities Study Agreement within 60 Calendar Days of the date the Facilities Study Agreement was provided. Any other Interconnection Customer must request a Facility Study by returning the signed Facilities Study Agreement within 180 Calendar Days of the date the Facilities Study Agreement was provided. Failure to return the signed Facilities Study Agreement within the foregoing applicable time period will result in the Interconnection Request being deemed withdrawn.

4.4.2 When an Interdependent Project A exists, a Project B Interconnection Request will not be required to comply with Section 4.4.1 until Project A has signed the Interconnection Agreement, and made payments and provided Financial Security as specified in Section 5.2 or withdrawn. If Project B has not provided written notice of its intent to proceed to a Facilities Study under Section 1.8.2.2, upon the Project A fulfilling the requirements in Section 5.2 or withdrawing the Interconnection Request, the Utility shall notify the Project B Interconnection Customer that it has the time specified in Section 4.4.1 to return the signed Facilities Study Agreement or the Interconnection Request shall be deemed withdrawn.

4.4.3 The scope of and cost responsibilities for the Facilities Study are described in the Facilities Study Agreement. The time allotted for completion of the Facilities Study is described in the Facilities Study Agreement.

4.4.4 The Facilities Study R~~r~~eport shall specify and estimate the cost of the equipment, engineering, procurement and construction work (including overheads) needed to implement the System Impact Studies and to allow the Generating Facility to be interconnected and operated safely and reliably.

4.4.5 The Utility shall design any required Interconnection Facilities and/or Upgrades under the Facilities Study Agreement. The Utility may contract with consultants to perform activities required under the Facilities Study Agreement. The Interconnection Customer and the Utility may agree to allow the Interconnection Customer 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 that critical infrastructure security and confidentiality requirements can be met, the Utility shall make sufficient information available to the Interconnection Customer in accordance with confidentiality and critical infrastructure requirements to permit the Interconnection Customer to obtain an independent design and cost estimate for any necessary facilities.

Section 5. Interconnection Agreement and Scheduling

5.1. Construction Planning Meeting

5.1.1. Within ten (10) Business Days of receipt of the Facilitiesy Study R report, the Interconnection Customer shall request a Construction Planning Meeting, where failure to comply shall result in the Interconnection Request being deemed withdrawn. The Construction Planning Meeting request shall be in writing and shall include the Interconnection Customer's reasonably requested date for completion of the construction of the Upgrades and Interconnection Facilities.

5.1.2. The Construction Planning Meeting shall be scheduled within ten (10) Business Days of the Section 5.1.1 request from the Interconnection Customer, or as otherwise mutually agreed to in writing by the parties.

5.1.3. The purpose of the Construction Planning Meeting is to identify the tasks for each party and discuss and determine the milestones for the construction of the Upgrades and Interconnection Facilities. Agreed upon milestones shall be specific as to scope of action, responsible party, and date of deliverable and shall be recorded in the Final Interconnection Agreement (see Appendix 4 to Attachment 9) to be provided to Interconnection Customer pursuant to Section 5.2.1 below.

5.1.4. If the Utility cannot complete the installation of the required Upgrades and Interconnection Facilities within two (2) months of the Interconnection Customer's reasonably requested In-Service Date, the Interconnection Customer shall have the option of payment for work outside of normal business hours or hiring a Utility-approved subcontractor to perform the distribution Upgrades. Any Utility-approved subcontractor performance remains subject to Utility oversight during construction. The Utility shall make a list of Utility-approved subcontractors available to the Interconnection Customer promptly upon request.

5.2. Final Interconnection Agreement

5.2.1. Within fifteen (15) Business Days of the Construction Planning Meeting, the Utility shall provide an executable Final Interconnection Agreement containing the Detailed Estimated Upgrade Charges, Detailed Estimated Interconnection Facility Charge, Appendix 4 (Construction Milestone and payment schedule listing tasks, dates and the party responsible for completing each task), and other appropriate information, requirements, and charges. The Final Interconnection Agreement will replace any Interim Interconnection Agreement, which shall terminate upon execution of the Final Interconnection Agreement by the Interconnection Customer and the Utility.

5.2.2. Within ten (10) Business Days of receiving the Final Interconnection Agreement, the Interconnection Customer must execute and return the Final Interconnection Agreement, where failure to comply results in the Interconnection Request being deemed withdrawn.

5.2.3. After the Parties execute the ~~Final~~ Interconnection Agreement, the Utility shall return a copy of the ~~Final~~ Interconnection Agreement to the Interconnection Customer and interconnection of the Generating Facility shall proceed under the provisions of the ~~Final~~ Interconnection Agreement.

5.2.4. The ~~Final~~ Interconnection Agreement shall specify milestones for payment for Upgrades and Interconnection Ffacilities and/or, provision of Financial Security for Interconnection Ffacilities, if acceptable to the Utility, that are required prior to the start of design and construction of Upgrades and Interconnection Facilities. Payment and Financial Security must be received by close of business forty-five (45) ~~sixty (60)~~ Business Days after the date the Interconnection Agreement is delivered to the Interconnection Customer for signature, where failure to comply results in the Interconnection Request being deemed withdrawn.

5.3 Interconnection Construction

Construction of the Upgrades and Interconnection Facilities will proceed as called for in the Interconnection Agreement and Appendices.

Section 6. Provisions that Apply to All Interconnection Requests

6.1 Reasonable Efforts

The Utility shall make reasonable efforts to meet all time frames provided in these procedures unless the Utility and the Interconnection Customer agree to a different schedule. If the Utility cannot meet a deadline provided herein, it shall at its earliest opportunity notify the Interconnection Customer, 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.

6.2 Disputes

6.2.1 The Parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this section. ~~Where an Interconnection Customer seeks to resolve a dispute involving its Queue Number according to the provisions of this section, any disputed loss of Queue Number shall not be final until Interconnection Customer abandons the process set out in this section or a final Commission order is entered.~~ Each Party agrees to conduct all negotiations in good faith.

6.2.2 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. A copy of the Notice of Dispute shall also be served on the Public Staff.

6.2.3 ~~If the dispute has not been resolved within ten (10) Business Days after receipt of the Notice, either Party may contact the Public Staff for assistance in informally resolving the dispute.~~ The Parties shall seek to resolve a dispute within twenty (20) Business Days after receipt of the Notice. ~~If the Parties are unable to informally resolve the dispute, either Party may then file a formal complaint with the~~

~~Commission.~~ If a resolution is not reached, the Parties may 1) if mutually agreed, continue negotiations for up to an additional twenty (20) Business Days; or 2) either Party may contact the Public Staff for assistance in informally resolving the dispute within twenty (20) Business Days with the opportunity to extend this timeline upon mutual agreement.

6.2.4 ~~Each Party agrees to conduct all negotiations in good faith.~~ In the alternative, the parties may, upon mutual agreement, seek the assistance of a dispute resolution service to resolve the dispute within twenty (20) Business Days, with the opportunity to extend this timeline upon mutual agreement. The dispute resolution service will assist the parties in either resolving the 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. Each Party will be responsible for one-half of any costs paid to neutral third-parties. Upon resolution of the dispute, the parties shall jointly make an informational filing with the Commission.

6.2.5 If the Parties are unable to informally resolve the dispute within the timeframe provided in Sections 6.2.3 or 6.2.4, either Party may then file a formal complaint with the Commission, and may exercise whatever rights and remedies it may have in equity or law consistent with the terms of these procedures.

6.2.6 The Queue Number assigned to an Interconnection Customer seeking to resolve a dispute shall not be withdrawn pursuant to Section 6.3 unless: (1) the Interconnection Request is deemed withdrawn by the Utility and the Interconnection Customer fails to take advantage of any express opportunity to cure; (2) the informal dispute processes described in Sections 6.2.3 and 6.2.4 do not resolve the dispute and the Interconnection Customer does not indicate its intent to file a formal complaint within ten (10) Business Days following the completion of the informal dispute process and file a formal complaint within (30) Business Days; (3) the Commission issues a final order in a formal complaint process stating that the Interconnection Request is deemed withdrawn; or (4) the Interconnection Customer voluntarily submits a written request for withdrawal.

6.3 Withdrawal of An Interconnection Request

6.3.1 An Interconnection Customer may withdraw an Interconnection Request at any time prior to executing a ~~Final~~ Interconnection Agreement by providing the Utility with a written request for withdrawal.

6.3.2 An Interconnection Request shall be deemed withdrawn if the Interconnection Customer fails to meet its obligations specified in the Interconnection Procedures, System Impact Study Agreement or Facilit~~y~~ies Study Agreement or to take advantage of any express opportunity to cure.

6.3.3 Within ~~90~~ 60 ~~Calendar~~ Business Days of any voluntary or deemed withdrawal of the Interconnection Request, the Utility will provide the Interconnection Customer with a final accounting report of any difference between (1) the Interconnection Customer's cost responsibility for the actual cost of such work performed, and (2) the Interconnection Customer's previous aggregate Interconnection Facility Request Deposit payments to the Utility for such work. If the Interconnection Customer's cost responsibility exceeds its

previous aggregate payments, the Utility shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to the Utility within 30 Calendar Days. If the Interconnection Customer's previous aggregate payments exceed its cost responsibility under this Agreement, the Utility shall refund to the Interconnection Customer an amount equal to the difference within 30 Calendar Days of the final accounting report.

6.4 Interconnection Metering

Any metering necessitated by the use of the Generating Facility shall be installed at the Interconnection Customer's expense in accordance with all applicable regulatory requirements or the Utility's specifications.

6.5 Commissioning and Post-Commissioning Inspections

6.5.1 Commissioning tests of the Interconnection Customer's installed equipment shall be performed pursuant to applicable codes and standards. If the Interconnection Customer is not proceeding under Section 2.3.2, the Utility must be given at least ten (10) Business Days ~~written~~ notice, or as otherwise mutually agreed to in writing by the Parties, of the tests and may be present to witness the commissioning tests.

6.5.2 In the case of any Generating Facility that was not inspected prior to commencing parallel operation, the Utility shall be authorized to conduct an inspection of the medium voltage AC side of each Generating Facility (including assessing that the anti-islanding process is operational). The Interconnection Customer shall pay the actual cost of such inspection within 30 Business Days after the Utility provides a written invoice for such costs.

6.5.3 The Utility shall also be entitled, on a periodic basis, to inspect the medium voltage AC side of each Interconnected Generating Facility on a reasonable schedule determined by the Utility in accordance with the inspection cycles applicable to its own distribution system. The Interconnection Customer shall pay the actual cost of such inspection within 30 Business Days after the Utility provides a written invoice for such costs.

6.5.4 The Utility shall also be entitled to inspect the medium voltage AC side of an Interconnected Generating Facility in the event that the Utility identifies or becomes aware of any condition that (1) has the potential to either cause disruption or deterioration of service to other customers served from the same electric system or cause damage to the Utility's System or Affected Systems, or (2) is imminently likely to endanger life or property or cause a material adverse effect on the security of, or damage to the Utility's System, the Utility's Interconnection Facilities or the systems of others to which the Utility's System is directly connected. The Interconnection Customer shall pay the actual cost of such inspection within 30 Business Days after the Utility provides a written invoice for such costs.

6.6 Confidentiality

6.6.1 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." For purposes of these procedures all design, operating specifications, and metering data provided by the Interconnection Customer shall be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such.

6.6.2 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 these procedures. 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 these procedures, or to fulfill legal or regulatory requirements.

6.6.2.1 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.

6.6.2.2 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.

6.6.3 If information is requested by the Commission from one of the Parties that is otherwise required to be maintained in confidence pursuant to these procedures, 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 in accordance with North Carolina law and that the information be withheld from public disclosure.

6.6.4 All information pertaining to a project will be provided to the new owner in the case of a change of control of the existing legal entity or a change of ownership to a new legal entity.

6.7 Comparability

The Utility shall receive, process, and analyze all Interconnection Requests received under these procedures in a timely manner, as set forth in these procedures. The Utility shall use the same reasonable efforts in processing and analyzing Interconnection Requests from all Interconnection Customers, whether the Generating Facility is owned or operated by the Utility, its subsidiaries or affiliates, or others.

6.8 Record Retention

The Utility shall maintain for three (3) 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.

6.9 Coordination with Affected Systems

The Utility shall develop an Affected System communication protocol with potential Affected Systems, upon request by the Affected System, such that reciprocal notification of Interconnection Requests, as applicable per the specified communication protocol, between the Utility and the Affected System can be addressed and implemented.

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 studies within the time frame specified in these procedures. The Utility will include such Affected System operators in all meetings held with the Interconnection Customer as required by these procedures. The Interconnection Customer 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 whom interconnection has been requested in all matters related to the conduct of studies and the determination of modifications to Affected Systems.

6.10 Capacity of the Generating Facility

6.10.1 If the Interconnection Request is for a 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, unless otherwise agreed to by the Utility and the Interconnection Customer.

6.10.2 For the purposes of this Standard, the capacity of the Generating Facility shall be considered the maximum rated capacity of the Generating Facility, except where the gross generating capacity of the Generating Facility is limited (e.g., through the use of a control system, power relay(s), or other similar device settings or adjustments as mutually agreed upon by the Utility and Interconnection customer). The Generating Facility's capacity shall be considered the Maximum Generating Capacity specified by the Interconnection Customer in the Interconnection Request. The Maximum Generating Capacity approved in the Study Process will subsequently be included as a limitation in the Interconnection Agreement. ~~The Interconnection Request shall be evaluated using the maximum rated capacity of the Generating Facility, unless otherwise agreed to by the Utility and the Interconnection Customer.~~

6.11 Sale of an Existing or Proposed Generati~~on~~ng Facility

6.11.1 The Interconnection Customer shall notify the Utility of the pending sale of a proposed Generati~~on~~ng Facility in writing. The Interconnection Customer shall provide the Utility with information regarding whether the sale is a change of ownership of the Generati~~on~~ng Facility to a new legal entity, or a change of control of the existing legal entity.

The Interconnection Customer shall promptly notify the Utility of the final date of sale and transfer date of ownership in writing. The purchaser of the Generati~~on~~ng Facility shall confirm to the Utility the final date of sale and transfer date of ownership in writing, and submit an Interconnection Request requesting transfer control or change of ownership together with the $500 change of ownership fee listed in Attachment 2.

6.11.2 Existing Interconnection Agreements are non-transferable. If the Generati~~on~~ng Facility is sold to a new legal entity, a new Interconnection Agreement must be executed by the new legal entity prior to the interconnection or for the continued interconnection of the Generating Facility to the Utility's S~~s~~ystem. The Utility shall not withhold or delay the execution of an Interconnection Agreement with the new owner provided the Generati~~on~~ng facility or proposed Generati~~on~~ng F~~f~~acility complies with requirements of 6.11.

6.11.3 The technical requirements in the Interconnection Agreement shall be grandfathered for subsequent owners as long as (1) the Generating Facility's maximum rated capacity has not been changed; (2) the Generating Facility has not been modified so as to change its electrical characteristics; and (3) the interconnection system has not been modified.

6.12 Isolating or Disconnecting the Generating Facility

6.12.1 The Utility may isolate the Interconnection Customer's premises and/or Generating Facility from the Utility's System when necessary in order to construct, install, repair, replace, remove, investigate or inspect any of the Utility's System, or if the Utility determines that isolation of the Interconnection Customer's premises and/or Generating Facility from~~form~~ the Utility's System is necessary because of emergencies, forced outages, force majeure or compliance with prudent electrical practices.

6.12.2 Whenever feasible, the Utility shall give the Interconnection Customer reasonable notice of the isolation of the Interconnection Customer's premises and/or Generating Facility from~~form~~ the Utility's System.

6.12.3 Notwithstanding any other provision of this Standard, if at any time the Utility determines that the continued operation of the Generating Facility may endanger either (1) the Utility's personnel or other persons or property or (2) the integrity or safety of the Utility's System, or otherwise cause unacceptable power quality problems for other electric consumers, the Utility shall have the right to isolate the Interconnection Customer's premises and/or Generating Facility from the Utility's System

6.12.4 The Utility may disconnect from the Utility's System any Generating Facility determined to be malfunctioning, or not in compliance with this Standard. The Interconnection Customer must provide proof of compliance with this Standard before the Generating Facility will be reconnected

6.13 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 hereunder, 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, special, incidental, consequential, or punitive damages of any kind.

6.14 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 or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney's fees, and all other obligations by or to third parties, arising out of or resulting from the other Party's action or inaction of its obligations hereunder on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

6.15 Insurance

The Interconnection Customer shall obtain and retain, for as long as the Generating Facility is interconnected with the Utility's System, liability insurance which protects the Interconnection Customer from claims for bodily injury and/or property damage. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. This insurance shall be primary for all purposes. The Interconnection Customer shall provide certificates evidencing this coverage as required by the Utility. Such insurance shall be obtained from an insurance provider authorized to do business in North Carolina. The Utility reserves the right to refuse to establish or continue the interconnection of the Generating Facility with the Utility's System, if such insurance is not in effect.

6.15.1 For an Interconnection Customer that is a residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be a standard homeowner's insurance policy with liability coverage in the amount of at least $100,000 per occurrence.

6.15.2 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least $300,000 per occurrence.

6.15.3 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility greater than

250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least $1,000,000 per occurrence.

6.15.4 An Interconnection Customer of sufficient credit-worthiness may propose to provide this insurance via a self-insurance program if it has a self- insurance program established in accordance with commercially acceptable risk management practices, and such a proposal shall not be unreasonably rejected.

6.16 Disconnect Switch

The Utility may require the ~~i~~Interconnection Customer to install a manual load-break disconnect switch or safety switch as a clear visible indication of switch position between the Utility System and the ~~i~~Interconnection Customer. The switch must have padlock provisions for locking in the open position. The switch must be visible to, and accessible to Utility personnel. The switch must be in close proximity to, and on the Interconnection Customer's side of the point of electrical interconnection with the Utility's S~~s~~ystem. The switch must be labeled "Generator Disconnect Switch." The switch may isolate the Interconnection Customer and its associated load from the Utility's System or disconnect only the Generator from the Utility's System and shall be accessible to the Utility at all times. The Utility, in its sole discretion, determines if the switch is suitable and necessary. When the installation of the switch is not otherwise required (e.g. National Electric Code, state or local building code) and is deemed necessary by the Utility for certified, inverter-based generators no larger than 10 kW, the Utility shall reimburse the Interconnection Customer for the reasonable cost of installing a switch that meets the Utility's specifications.

6.17 Certification Codes and Standards

Attachment 4 specifies codes and standards the Generating Facility must comply with.

6.18 Certification of Generator Equipment Packages

Attachment 5 specifies the certification requirements for the Generating Facility.

ATTACHMENT 1

Glossary of Terms

20 kW Inverter Process - The procedure for evaluating an Interconnection Request for a certified inverter-based Generating Facility no larger than 20 kW that uses the Section 3 screens. The application process uses an all-in-one document that includes a simplified Interconnection Request Application Form, simplified procedures, and a brief set of Terms and Conditions. (See Attachment 6.)

Affected System – A Utility ~~An electric system~~ other than the interconnecting Utility's System that may be affected by the proposed interconnection. The owner of an Affected System might be a Party to the Interconnection Agreement or other study agreements needed to interconnect the Generating Facility.

Applicable Laws and Regulations - All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives, or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.

Auxiliary Load - The term "Auxiliary Load" shall mean power used to operate auxiliary equipment in the facility necessary for power generation (such as pumps, blowers, fuel preparation machinery, exciters, etc.)

Business Days - Monday through Friday, excluding State Holidays.

Calendar Days – Sunday through Saturday, including all holidays.

Commission - The North Carolina Utilities Commission.

Competitive Resource Solicitation - A competitive generation procurement process through which a Utility solicits, or Utilities jointly solicit, new Generating Facilities offering to deliver energy to the Utility for the purpose of meeting the requirements of applicable laws or regulations, including but not limited to G.S. § 62-110.8.

Default - The failure of a breaching Party to cure its breach under the Interconnection Agreement.

Detailed Estimated Interconnection Facilities Charge - The estimated charge for Interconnection Facilities that is based on field visits and/or detailed engineering cost calculations and is presented in the Facility~~y~~ies Study R~~r~~eport and ~~Final~~ Interconnection Agreement. This charge is not final.

Detailed Estimated Upgrade Charge - The estimated charge for Upgrades that is based on field visits and/or detailed engineering cost calculations and is presented in the Facility~~y~~ies Study R~~r~~eport and ~~Final~~ Interconnection Agreement.

Distribution System - The Utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries 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.

Distribution Upgrades - The additions, modifications, and upgrades to the Utility's Distribution System at or beyond the Point of Interconnection to facilitate interconnection of the Generating Facility and render the service necessary to allow the Generating Facility to operate in parallel with the Utility and to inject electricity onto the Utility's System. Distribution Upgrades do not include Interconnection Facilities.

Electric Generator Lessor - The owner of a solar energy facility who leases the facility to a customer generator lessee, including any agents who act on behalf of the electric generator lessor.

Fast Track Process - The procedure for evaluating an Interconnection Request for a certified Generating Facility no larger than 2 MW that meets the eligibility requirements of Section 3.1~~, customer options meeting, and optional supplemental review~~.

~~**Final Interconnection Agreement –** The Interconnection Agreement that specifies the Detailed Estimated Upgrade Charge, Detailed Interconnection Facility Charge, mutually agreed upon Milestones, etc. and terminates and replaces the Interim Interconnection Agreement.~~

Financial Security – A letter of credit or other financial arrangement that is reasonably acceptable to the Utility and is consistent with the Uniform Commercial Code of North Carolina that is sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Utility's Interconnection Facilities. Where appropriate, the Utility may deem Financial Security to exist where its credit policies show that the financial risks involved are de minimus, or where the Utility's policies allow the acceptance of an alternative showing of credit-worthiness from the Interconnection Customer.

Generating Facility - The Interconnection Customer's device for the production and/or storage for later injection of electricity identified in the Interconnection Request, but shall not include the Interconnection Customer's Interconnection Facilities.

Good Utility Practice - Any of the practices, methods and acts engaged in or approved by a significant portion of the electric industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method, or act to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

Governmental Authority - Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board, or other governmental subdivision, legislature, rulemaking board, tribunal, or other governmental authority having jurisdiction over the Parties, their respective facilities, or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police, or taxing authority or power; provided, however, that such term does not include the Interconnection Customer, the Utility, or any affiliate thereof.

In-Service Date – The date upon which the construction of the Utility's facilities is completed and the facilities are capable of being placed into service.

Interconnection Agreement – The Interconnection Agreement that specifies the Detailed Estimated Upgrade Charge, Detailed Interconnection Facility Charge, mutually agreed upon Milestones, etc. See Attachment 9 of the NC Procedures.

Interconnection Customer - Any valid legal entity, including the Utility,that proposes to interconnect its Generating Facility with the Utility's System.

Interconnection Facilities – Collectively, the Utility's Interconnection Facilities and the Interconnection Customer's Interconnection Facilities. Collectively, Interconnection Facilities include all facilities and equipment between the Generating Facility and the Point of Interconnection, including any modification, additions or upgrades that are necessary to physically and electrically interconnect the Generating Facility to the Utility's System. Interconnection Facilities are sole use facilities and shall not include Upgrades.

Interconnection Facilities Delivery Date – The Interconnection Facilities Delivery Date shall be the date upon which the Utility's Interconnection Facilities are first made operational for the purposes of receiving power from the Interconnection Customer.

Interconnection Request - The Interconnection Customer's written request, in accordance with these procedures, to interconnect a new Generating Facility, or make changes to a prior Interconnection Request (such as items including but not limited to changes in capacity, equipment substitution requests, etc.), or ~~to change the capacity of or make a Material Modification to~~ to make changes to an existing Generating Facility that is interconnected with the Utility's System.

Interdependent Customer (or Interdependent Project) means an Interconnection Customer (or Project) whose Upgrade or Interconnection Facilities requirements are impacted by another Generating Facility, as determined by the Utility.

"Material Modification" means a modification to machine data or equipment configuration or to the interconnection site of the Generating Facility that has a material impact on the cost, timing or design of any Interconnection Facilities or Upgrades or that may adversely impact other Interdependent Interconnection Requests with higher Queue Numbers. Material Modifications include certain project revisions as defined in Section 1.5.1. ~~proposed at any time after receiving notification by the Utility of a complete Interconnection Request pursuant to Section 1.4.3 that 1) alters the size or~~

~~output characteristics of the Generating Facility from its Utility-approved Interconnection Request submission; or 2) may adversely impact other Interdependent Interconnection Requests with higher Queue Numbers.~~

~~Indicia of a Material Modification, include, but are not limited to:~~

- ~~A change in Point of Interconnection (POI) to a new location, unless the change in POI is on the same circuit less than two (2) poles away from the original location, and the new POI is within the same protection zone as the original location;~~

- ~~A change or replacement of generating equipment such as generator(s), inverter(s), transformers, relaying, controls, etc. that is not a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request;~~

- ~~A change of transformer connection(s) or grounding from that originally proposed;~~

- ~~A change to certified inverters with different specifications or different inverter control specifications or set-up than originally proposed;~~

- ~~An increase of the AC output of a Generating Facility; or~~

- ~~A change reducing the AC output of the generating facility by more than 10%.~~

~~The following are not indicia of a Material Modification:~~

- ~~A change in ownership of a Generating Facility; the new owner, however, will be required to execute a new Interconnection Agreement and Study agreement(s) for any Study which has not been completed and the Report issued by the Utility.~~

- ~~A change or replacement of generating equipment such as generator(s), inverter(s), solar panel(s), transformer, relaying, controls, etc. that is a like-kind substitution in size, ratings, impedances, efficiencies or capabilities of the equipment specified in the original or preceding Interconnection Request.~~

- ~~An increase in the DC/AC ratio that does not increase the maximum AC output capability of the generating facility;~~

- ~~A decrease in the DC/AC ratio that does not reduce the AC output capability of the generating facility by more than 10%.~~

Maximum Generating Capacity - The term shall mean the maximum continuous electrical output of the Generating Facility at any time as measured at the Point of Interconnection and the maximum kW delivered to the Utility during any metering period. Requested Maximum Generating Capacity will be specified by the

Interconnection Customer in the Interconnection Request and an approved Maximum Generating Capacity will subsequently be included as a limitation in the Interconnection Agreement.

~~**Maximum Physical Export Capability Requested –** The term shall mean the maximum continuous electrical output of the Generating Facility at any time at a power factor of approximately unity as measured at the Point of Interconnection and the maximum kW delivered to the Utility during any metering period.~~

Month – The term "Month" means the period intervening between readings for the purpose of routine billing, such readings usually being taken once per month.

Nameplate Capacity – The term "Nameplate Capacity" shall mean the manufacturer's nameplate rated output capability of the generator. For multi-unit generator facilities, the "Nameplate Capacity" of the facility shall be the sum of the individual manufacturer's nameplate rated output capabilities of the generators.

Net Capacity – The term "Net Capacity" shall mean the Nameplate Capacity of the Customer's generating facilities, less the portion of that capacity needed to serve the Generating Facility's Auxiliary Load.

Net Power - The term "Net Power" shall mean the total amount of electric power produced by the Customer's Generating Facility less the portion of that power used to supply the Generating Facility's Auxiliary Load.

Network Upgrades - Additions, modifications, and upgrades to the Utility's Transmission System required to accommodate the interconnection of the Generating Facility to the Utility's System. Network Upgrades do not include Distribution Upgrades.

North Carolina Interconnection Procedures – The term "North Carolina Interconnection Procedures" shall refer to the most recent North Carolina Interconnection Procedures, Forms, and Agreements for State-Jurisdictional Generator Interconnections as approved by the North Carolina Utilities Commission.

Operating Requirements - Any operating and technical requirements that may be applicable due to Regional Reliability Organization, Independent System Operator, control area, or the Utility's requirements, including those set forth in the Interconnection Agreement.

Party or Parties - The Utility, Interconnection Customer, and possibly the owner of an Affected System, or any combination of the above.

Point of Interconnection - The point where the Interconnection Facilities connect with the Utility's System.

Preliminary Estimated Interconnection Facilities Charge - The estimated charge for Interconnection Facilities that is developed using ~~unit costs~~ high level estimates, including overheads and is presented in the System Impact Study Rreport ~~and Interim~~

~~Interconnection Agreement~~. This charge is not based on field visits and/or detailed engineering cost calculations.

Preliminary Estimated Upgrade Charge - The estimated charge for Upgrades that is developed using ~~unit costs~~ high level estimates including overheads and is presented in the System Impact Study R~~r~~eport ~~and Interim Interconnection Agreement~~. This charge is not based on field visits and/or detailed engineering cost calculations.

Project A - An Interconnection Customer that has a lower Queue Number than Interdependent Project B.

Project B - An Interconnection Customer that has a higher Queue Number than Interdependent Project A.

Project C – An Interconnection Customer that has a higher Queue Number than Interdependent Project B.

Public Staff - The Public Staff of the North Carolina Utilities Commission.

Queue Number - The number assigned by the Utility that establishes an ~~Customer's~~ Interconnection Request's position in the study queue relative to all other valid Interconnection Requests. Generally, an Interconnection Request with a ~~A~~ lower Queue Number will be studied prior to one with a higher Queue Number. ~~, except in the case of Interdependent Projects and Interconnection Requests participating in a Competitive Resource Solicitation.~~ The Queue Number of each Interconnection Request shall be used to determine the cost responsibility for the Upgrades necessary to accommodate the interconnection.

Queue Position - The order of a valid Interconnection Request, relative to all other pending valid Interconnection Requests, based on Queue Number.

Reasonable Efforts - With respect to an action required to be attempted or taken by a Party under the Interconnection Agreement, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.

Small Animal Waste to Energy Facility – An electric generating facility 2 MW or less in capacity that uses swine or poultry waste as its energy source, and is eligible for an expedited study process pursuant to G.S. 62-133.8(i)(4).

Standard - The interconnection procedures, forms and agreements approved by the Commission for interconnection of Generating Facilities to Utility Systems in North Carolina when the Generating Facility is selling its output to the Utility.

Standby Generating Facility -- An electric Generating Facility primarily designed for standby or backup power in the event of a loss of power supply from the Utility. Such Facilities may operate in parallel with the Utility for a brief period of time when transferring load back to the Utility after an outage, or when testing the operation of the Facility and transferring load from and back to the Utility.

Study Process - The procedure for evaluating an Interconnection Request that includes the Section 4 scoping meeting, System Impact Study, including optional system Impact Grouping Study(ies), and Facilities Study.

System - The facilities owned, controlled or operated by the Utility that are used to provide electric service in North Carolina.

Utility - The entity that owns, controls, or operates facilities used for providing electric service in North Carolina.

Transmission System - The facilities owned, controlled or operated by the Utility that are used to transmit electricity in North Carolina.

Upgrades - The required additions and modifications to the Utility's System at or beyond the Point of Interconnection. Upgrades may be Network Upgrades or Distribution Upgrades. Upgrades do not include Interconnection Facilities.

ATTACHMENT 2

NORTH CAROLINA
INTERCONNECTION REQUEST APPLICATION FORM

Utility: _____

Designated Utility Contact: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone Number: _____

Fax: _____

An Interconnection Request Application Form is considered complete when it provides all applicable and correct information required below.

Preamble and Instructions

An Interconnection Customer who requests a North Carolina Utilities Commission jurisdictional interconnection must submit this Interconnection Request Application Form by hand delivery, mail, e-mail, or fax to the Utility.

Request for: Fast Track Process ____ Supplemental Review_____
Study Process ____ Standby Generator / Closed Transition_____

(Refer to Section 3 of the Interconnection Standards for guidance in selecting Fast Track Review options. All Generating Facilities larger than 2 MW must use the Section 4 Study Process.)

Processing Fee or Deposit

Fast Track Process – Non-Refundable Processing Fees

- ~~If the Generating Facility is 20 kW or smaller, the fee is $100.~~
- If the Generating Facility is larger than 20 kW but not larger than 100 kW, the fee is ~~$250~~$750.
- If the Generating Facility is larger than 100 kW but not larger than 2 MW, the fee is ~~$500~~$1,000.

Supplemental Review - Deposit

- If the Generating Facility is larger than 20 kW but not larger than 100 kW, the deposit is $750.
- If the Generating Facility is larger than 100 kW but not larger than 2 MW, the deposit is $1,000.

Study Process – Deposit

If the Interconnection Request is submitted under the Study Process, whether a new submission or an Interconnection Request that did not pass the Fast Track Process, the

Interconnection Customer shall submit to the Utility an Interconnection Facilities Deposit Charge of $20,000 plus $1.00 per kW_{AC}.

Standby Generator / Closed Transition - Deposit

- If the Facility is less than 1 MW, deposit is $2,500.
- If the Facility is equal to or greater than 1 MW the deposit is $5,000.

Change in Ownership – Non-Refundable Processing Fee

- If the Interconnection Request is submitted solely due to a transfer of ownership or change of control of the Generating Facility, the fee is ~~$50~~ $500.

Interconnection Customer Information

Legal Name of the Interconnection Customer (or, if an individual, individual's name)

Name: _____

Primary Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Secondary Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Facility Location (if different from above):

Project Name: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Alternative Contact Information (if different from the Interconnection Customer)

Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone (Day) _____ (Evening) _____

Fax: _____

Application is for: _____ New Generating Facility

_____ Capacity Change to a Proposed or Existing Generating Facility

_____ Change of Ownership of a Proposed or Existing Generating Facility to a new legal entity

_____ Change of Control of a Proposed or Existing Generating Facility of the existing legal entity.

_____Equipment Substitution

_____Other

~~If capacity addition to existing Generating Facility, please describe:~~ Please provide additional information regarding the proposed change(s): _____

_____

_____

Will the Generating Facility be used for any of the following?

Net Metering? Yes _____ No _____

To Supply Power to the Interconnection Customer? Yes _____ No _____

To Supply Power to the Utility? Yes _____ No _____

To Supply Power to Others? Yes _____ No _____

(If yes, discuss with the Utility whether the interconnection is covered by the NC Interconnection Standard.)

Is the Generating Facility owned by the Interconnection Customer or Leased from an Electric Generator Lessor in NC?

Owned _____

Leased _____ NCUC Docket No.:_____

Requested Point of Interconnection:

_____

Requested In-Service Date:

_____

For installations at locations with existing electric service to which the proposed Generating Facility will interconnect, provide:

Local Electric Service Provider~~*~~: _____

Existing Account Number: _____

To be provided by the Interconnection Customer if the local electric service provider is different from the Utility

Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Generating Facility Information

Data applies only to the Generating Facility, not the Interconnection Facilities.

Prime Mover Information (Refer to U.S. EIA Form 860 Instructions, Table 2 Prime Mover Codes and Descriptions at: https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Prime Mover Code _____

Prime Mover Description _____

~~Prime Mover: Photovoltaic (PV) ____ Fuel Cell ___ Reciprocating Engine ___~~

~~Gas Turbine ___ Steam Turbine ___ Micro-turbine ___~~

~~Other~~

~~_____~~

~~Energy Source:~~

~~Renewable~~

- ~~❑ Solar – Photovoltaic~~
- ~~❑ Solar – thermal~~
- ~~❑ Biomass – landfill gas~~
- ~~❑ Biomass – manure digester gas~~
- ~~❑ Biomass – directed biogas~~
- ~~❑ Biomass – solid waste~~
- ~~❑ Biomass – sewage digester gas~~
- ~~❑ Biomass – wood~~
- ~~❑ Biomass – other (specify below)~~
- ~~❑ Hydro power – run of river~~
- ~~❑ Hydro power - storage~~
- ~~❑ Hydro power – tidal~~
- ~~❑ Hydro power – wave~~

~~Non-Renewable~~

- ~~❑ Fossil Fuel - Diesel~~
- ~~❑ Fossil Fuel - Natural Gas (not waste)~~
- ~~❑ Fossil Fuel - Oil~~
- ~~❑ Fossil Fuel – Coal~~
- ~~❑ Fossil Fuel – Other (specify below)~~
- ~~❑ Other (specify below)~~

❑ ~~Wind~~
❑ ~~Geothermal~~
❑ ~~Other (specify below)~~

Energy Source Information (Refer to U.S. EIA Form 860 Instructions, Table 28 Energy Source Codes and Heat Content at: https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Fuel Type	Energy Source Code	Energy Source Description

_____
_____

Type of Generator: Synchronous ____ Induction ____ Inverter ____

Total Generator/Storage Nameplate ~~Rating~~ Capacity: _____ kW_{AC} (Typical)_____ kVAR

Storage Nameplate Energy: _____kWh

Interconnection Customer or Customer-Site Load:_____ kW_{AC} (if none, so state)

Interconnection Customer Generator Auxiliary Load:_____ kW_{AC}

Typical Reactive Load (if known): _____ kVAR

Maximum ~~Physical Export Capability~~ Generating Capacity Requested:_____ kW_{AC}
(The maximum continuous electrical output of the Generating Facility at any time at a power factor of approximately unity as measured at the Point of Interconnection and the maximum kW delivered to the Utility during any metering period)

Production profile: provide below the maximum import and export levels (as a percentage of the Maximum Generating Capacity Requested) for each hour of the day, as measured at the Point of Interconnection. Power flow in excess of these levels during the corresponding hour shall be considered an Adverse Operating Effect per section 3.4.4. of the Interconnection Agreement.
Maximum import and export, hour ending:

0100 imp: exp: %	0200 imp: exp: %	0300 imp: exp: %

0400 imp: exp: %	0500 imp: exp: %	0600 imp: exp: %
0700 imp: exp: %	0800 imp: exp: %	0900 imp: exp: %
1000 imp: exp: %	1100 imp: exp: %	1200 imp: exp: %
1300 imp: exp: %	1400 imp: exp: %	1500 imp: exp: %
1600 imp: exp: %	1700 imp: exp: %	1800 imp: exp: %
1900 imp: exp: %	2000 imp: exp: %	2100 imp: exp: %
2200 imp: exp: %	2300 imp: exp: %	2400 imp: exp: %

Please provide any additional pertinent information regarding the daily operating characteristics of the facility here or attached as noted. Also note information about intended reactive flows:

_____
_____
_____
_____

List components of the Generating Facility equipment package that are currently certified:

Number	Equipment Type	Certifying Entity
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____

Generator (or solar panel information)

Manufacturer, Model & Quantity:

_____

_____

Nameplate Output Power Rating in kW_{AC}: Summer _____ Winter _____

Nameplate Output Power Rating in kVA: Summer _____ Winter _____

Individual Generator Rated Power Factor: _____ Leading _____ Lagging

Total Number of Generators in wind farm to be interconnected pursuant to this Interconnection Request (if applicable): _____ Elevation: _____

Inverter Manufacturer, Model & Quantity:

_____

~~For solar projects provide the following information:~~

Latitude: _____ Degrees ~~Minutes North~~ (decimal format, to at least 4 places)

Longitude: _____ Degrees ~~Minutes West~~ (decimal format, to at least 4 places)

For solar projects provide the following information:

Orientation: _____ Degrees (Due South=180°)

❑ Fixed Tilt Array ❑ Single Axis Tracking Array ❑ Double Axis Tracking Array

Fixed Tilt Angle: _____ Degrees

Impedance Diagram - If interconnecting to the Utility System at a voltage of 44-kV or greater, provide an Impedance Diagram. An Impedance Diagram may be required by the Utility for proposed interconnections at lower interconnection voltages. The Impedance Diagram shall provide, or be accompanied by a list that shall provide, the collector system impedance of the generation plant. The collector system impedance data shall include equivalent impedances for all components, starting with the inverter transformer(s) up to the utility level Generator Step-Up transformer.

Load Flow Data Sheet - If interconnecting to the Utility System at a voltage of 44-kV or greater, provide a completed Power Systems Load Flow data sheet. A Load Flow data sheet may be required by the Utility for proposed interconnections at lower interconnection voltages.

Excitation and Governor System Data for Synchronous Generators - If interconnecting to the Utility System at a voltage of 44-kV or greater, provide appropriate IEEE model block diagram of excitation system, governor system and power system stabilizer (PSS) in accordance with the regional reliability council

criteria. A PSS may be required at lower interconnection voltages. A copy of the manufacturer's block diagram may not be substituted.

Generating Facility Characteristic Data (for inverter-based machines)

Max design fault contribution current: _____ Instantaneous _____ or RMS _____

Harmonics Characteristics:

_____

Start-up requirements:

_____

Inverter Short-Circuit Model Data

Model and parameter data required for short-circuit analysis is specific to each PV inverter make and model. All data to be provided in per-unit ohms, on the equivalent inverter MVA base.

Inverter Equivalent MVA Base: _____ MVA

Values below are valid for initial 2 to 6 cycles:

Short-Circuit Equivalent Pos. Seq. Resistance (R1): _____ p.u.

Short-Circuit Equivalent Pos. Seq. Reactance (XL1): _____ p.u.

Short-Circuit Equivalent Neg. Seq. Resistance (R2): _____ p.u.

Short-Circuit Equivalent Neg. Seq. Reactance (XL2): _____ p.u.

Short-Circuit Equivalent Zero Seq. Resistance (R0): _____ p.u.

Short-Circuit Equivalent Zero Seq. Reactance (XL0): _____ p.u.

Special notes regarding short-circuit modeling assumptions:

_____

_____

_____

_____

Generating Facility Characteristic Data (for rotating machines)

RPM Frequency: _____

(*) Neutral Grounding Resistor (if applicable): _____

Synchronous Generators:

Direct Axis Synchronous Reactance, Xd: _____ P.U.

Direct Axis Transient Reactance, X'_d: _____ P.U.

Direct Axis Subtransient Reactance, X''_d: _____ P.U.

Negative Sequence Reactance, X_2: _____ P.U.

Zero Sequence Reactance, X_0: _____ P.U.

KVA Base: _____

Field Volts: _____

Field Amperes: _____

Induction Generators:

Motoring Power (kW): _____

I_2^2t or K (Heating Time Constant): _____

Rotor Resistance, Rr: _____

Stator Resistance, Rs: _____

Stator Reactance, Xs: _____

Rotor Reactance, Xr: _____

Magnetizing Reactance, Xm: _____

Short Circuit Reactance, Xd'': _____

Exciting Current: _____

Temperature Rise: _____

Frame Size: _____

Design Letter: _____

Reactive Power Required In Vars (No Load): _____

Reactive Power Required In Vars (Full Load): _____

Total Rotating Inertia, H: _____ Per Unit on kVA Base

Note: Please contact the Utility prior to submitting the Interconnection Request to determine if the specified information above is required.

Interconnection Facilities Information

Will more than one transformer be used between the generator and the point of common coupling?

Yes ____ No ____ (If yes, copy this section and provide the information for each transformer used. This information must match the single-line drawing and transformer specification sheets.)
Will the transformer be provided by the Interconnection Customer? Yes ____ No _____

Transformer Data (if applicable, for Interconnection Customer-owned transformer):

Is the transformer: Single phase ___ Three phase ___ Size: _____ kVA

Transformer Impedance: _____ % on _____ kVA Base

If Three Phase:

Transformer Primary Winding _____ Volts,

❑ Delta ❑ WYE, grounded neutral ❑ WYE, ungrounded neutral

Primary Wiring Connection
❑ 3-wire ❑ 4-wire, grounded neutral

Transformer Secondary Winding _____ Volts,

❑ Delta ❑ WYE, grounded neutral ❑ WYE, ungrounded neutral

Secondary Wiring Connection
❑ 3-wire ❑ 4-wire, grounded neutral

Transformer Tertiary Winding _____ Volts,
❑ Delta ❑ WYE, grounded neutral ❑ WYE, ungrounded neutral

Transformer Fuse Data (if applicable, for Interconnection Customer-owned fuse):

(Attach copy of fuse manufacturer's Minimum Melt and Total Clearing Time-Current Curves)
Manufacturer: _____ Type: _____ Size: _____ Speed: _____

Interconnecting Circuit Breaker (if applicable):

Manufacturer: _____ Type: _____

Load Rating (Amps): ____ Interrupting Rating (Amps): _____
Trip Speed (Cycles): _____

Interconnection Protective Relays (if applicable):

If Microprocessor-Controlled:

List of Functions and Adjustable Setpoints for the protective equipment or software:

	Setpoint Function	Minimum	Maximum
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____

If Discrete Components:

(Enclose Copy of any Proposed Time-Overcurrent Coordination Curves)

Manufacturer	Type	Style/Catalog No.	Proposed Setting
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Current Transformer Data (if applicable):

(Enclose Copy of Manufacturer's Excitation and Ratio Correction Curves)

Manufacturer: _____ Type: _____

Accuracy Class: _____ Proposed Ratio Connection: _____

Manufacturer: _____ Type: _____

Accuracy Class: _____ Proposed Ratio Connection: _____

Potential Transformer Data (if applicable):

Manufacturer: _____ Type: _____

Accuracy Class: _____ Proposed Ratio Connection: _____

Manufacturer: _____ Type: _____

Accuracy Class: _____ Proposed Ratio Connection: _____

General Information

1. One-line diagram
   Enclose site electrical one-line diagram showing the configuration of all Generating Facility equipment, current and potential circuits, and protection and control schemes.
   - The one-line diagram should include the project owner's name, project name, project address, model numbers and nameplate sizes of equipment, including number and nameplate electrical size information for solar panels, inverters, wind turbines, disconnect switches, latitude and longitude of the project location, and tilt angle and orientation of the photovoltaic array for solar projects.
   - The diagram should also depict the metering arrangement required whether installed on the customer side of an existing meter ("net metering/billing") or directly connected to the grid through a new or separate delivery point requiring a separate meter.
   - List of adjustable set points for the protective equipment or software should be included on the electrical one-line drawing.
   - This one-line diagram must be signed and stamped by a licensed Professional Engineer if the Generating Facility is larger than 50 kW.
   - Is One-Line Diagram Enclosed? Yes ___ No ___
2. Site Plan
   - Enclose copy of any site documentation that indicates the precise physical location of the proposed Generating Facility (Latitude & Longitude Coordinates and USGS topographic map, or other diagram) and the proposed Point of Interconnection.
   - Proposed location of protective interface equipment on property (include address if different from the Interconnection Customer's address) _____
     _____
   - Is Site Plan Enclosed? Yes ___ No ___
3. Is Site Control Verification Form Enclosed? Yes ___ No ___
4. Equipment Specifications
   Include equipment specification information (product literature) for the solar panels and inverter(s) that provides technical information and certification information for the equipment to be installed with the application.
   - Are Equipment Specifications Enclosed? Yes ___ No ___
5. Protection and Control Schemes
   - Enclose copy of any site documentation that describes and details the operation of the protection and control schemes.
   - Is Available Documentation Enclosed? Yes ___ No ___
   - Enclose copies of schematic drawings for all protection and control circuits, relay current circuits, relay potential circuits, and alarm/monitoring circuits (if applicable).
   - Are Schematic Drawings Enclosed? Yes ___ No ___
6. Register with North Carolina Secretary of State (if not an individual)

Applicant Signature

I hereby certify that, to the best of my knowledge, all the information provided in this Interconnection Request Application Form is true and correct.

For Interconnection Customer:
Signature _____ Date:_____
(Authorized Agent of the Legal Entity)

Print Full Name _____
Company Name _____
Title With Company _____
E-Mail Address _____
Mailing Address: _____
City: _____ State: _____ Zip: _____
County: _____
Telephone (Day): _____ (Evening): _____
Fax: _____

In the Matter of the Application of)
[Developer Name] for an) SITE CONTROL VERIFICATION
Interconnection Agreement)
with [Utility Name])

I, [Authorized Signatory Name], [Title] of [Developer Name], under penalty of perjury, hereby certify that, [Developer Name] or its affiliate has executed a written contract with the landowner(s) noted below, concerning the property described below. I further certify that our written contract with the landowner(s) specifies the agreed rental rate or purchase price for the property, as applicable, and allows [Developer Name] or its affiliates to construct and operate a renewable energy power generation facility on the property described below.

This verification is provided to [Utility Name] in support of our application for an Interconnection Agreement.

Landowner Name(s):

_____

Land Owner Contact information (Phone or e-mail):

_____

Parcel or PIN Number: _____

County: _____

Site
Address:_____
___

Number of Acres under Contract (state range, if applicable): _____

Date Contract was executed _____

Term of Contract _____

_____[signature]_____

[Authorized Signatory Name]

[Authorized Signatory Name], being first duly sworn, says that [he/she] has read the foregoing verification, and knows the contents thereof to be true to [his/her] actual knowledge.
Sworn and subscribed to before me this _____ day of _____, 201____.

_____[signature]_____
[Authorized Signatory Name]

[Title], [Developer Name]

_____[Signature of Notary Public]_____
Notary Public

_____
Name of Notary Public [typewritten or printed]
My Commission expires_____

ATTACHMENT 3

Generating Facility Pre-Application Report Form

Preamble and Instructions

An Interconnection Customer who requests a Pre-Application Report must submit this Pre-Application Report Request by hand delivery, mail, e-mail, or fax to the Utility along with the non-refundable fee of ~~$300~~$500.

DISCLAIMER: Be aware that this Pre-Application Report is simply a snapshot in time and is non-binding. System conditions can and do change frequently.

❑ Check here if payment is enclosed. Fee is required for application to be considered complete.

Date:

_____

Interconnecting Customer Name (print): _____

Contact Person: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____

E-Mail Address: _____

Alternative Contact Information (e.g., system installation contractor or coordinating company) Name (print):

_____

Role:

_____

_____

Contact Person:

_____

_____

Mailing Address:

_____

_____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____

E-Mail Address: _____

Facility Information:

1) Proposed Facility Location

Address (or cross-roads):

_____

_____

City: _____ State: _____ Zip Code: _____

❑ Site Map provided (Google, MapQuest, etc.)

❑ Grid Coordinates (decimal) - Latitude: _____ Longitude: _____

❑ Pole or Tower number if available: _____

2) Primary Energy Source (Refer to U.S. EIA Form 860 Instructions, Table 28 Energy Source Codes and Heat Content at https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Fuel Type	Energy Source Code	Energy Source Description

~~**Choose one:**~~

~~**Renewable**~~	~~**Non-Renewable**~~
~~☐ 1. Solar – Photovoltaic~~ ~~☐ 2. Solar – thermal~~ ~~☐ 3. Biomass – landfill gas~~ ~~☐ 4. Biomass – manure digester gas~~ ~~☐ 5. Biomass – directed biogas~~ ~~☐ 6. Biomass – solid waste~~ ~~☐ 7. Biomass – sewage digester gas~~ ~~☐ 8. Biomass – wood~~ ~~☐ 9. Biomass – other (specify below)~~ ~~☐ 10. Hydro power – run of river~~ ~~☐ 11. Hydro power - storage~~ ~~☐ 12. Hydro power – tidal~~	~~☐ 17. Fossil Fuel - Diesel~~ ~~☐ 18. Fossil Fuel - Natural Gas (not waste)~~ ~~☐ 19. Fossil Fuel - Oil~~ ~~☐ 20. Fossil Fuel – Coal~~ ~~☐ 21. Fossil Fuel – Other (specify below)~~ ~~☐ 22. Other (specify below)~~

~~☐ 13. Hydro power – wave~~ ~~☐ 14. Wind~~ ~~☐ 15. Geothermal~~ ~~☐ 16. Other (specify below)~~	

3) Prime Mover (Refer to U.S. EIA Form 860 Instructions, Table 2 Prime Mover Codes and Descriptions at https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Prime Mover Code _____

Prime Mover Description _____

~~Choose one:~~

~~1. ☐ Photovoltaic (PV)~~ ~~2. ☐ Fuel Cell~~ ~~3. ☐ Reciprocating Engine~~ ~~4. ☐ Gas Turbine~~	~~5. ☐ Steam Turbine~~ ~~6. ☐ Micro-turbine~~ ~~7. ☐ Other, including Combined Heat and Power (specify below)~~

4) Type of Generator

Choose one:

1. ☐ Inverter-based Machine 2. ☐ Rotating Machine 3. ☐ Rotating Machine with Inverters	

~~5) Size: _____ kW$_{AC}$~~

5) Generator/Storage Nameplate Capacity: kW

Maximum Generating Capacity requested: _____ kW$_{AC}$

Storage Nameplate Energy: _____ kWh

6) Generator Configuration:

❑ Single-phase ❑ Three Phase

7) Interconnection Configuration

❑ New Generation

❑ Stand-alone

❑ Addition to existing commercial or industrial customer's delivery

Customer's Electric Utility account number: _____

Customer's Electric meter number: _____

Is Customer's kW load going to increase ~~or decrease~~?

❑ No

❑ Yes, Details _____

Is Customer's kW load going to decrease?

❑ No

❑ Yes, Details _____

Proposed Point of Interconnection on Customer-side of Utility meter

_____

OR

❑ Addition to existing generation

❑ Stand-alone

□ Addition to existing commercial or industrial customer's delivery

Customer's Electric Utility account number: _____

Customer's Electric meter number: _____

Is Customer's kW load going to increase ~~or decrease~~?

❑ No

❑ Yes, Details _____

Is Customer's kW load going to decrease?

❑ No

❑ Yes, Details _____

Type of Existing Generation: _____

Size of Existing Generation: _____ kW_{AC}

Proposed Point of Interconnection on Customer-side of Utility meter

Additional Comments

Attachment 4

Certification Codes and Standards

ANSI C84.1-1995 Electric Power Systems and Equipment – Voltage Ratings (60 Hertz)

IEEE 1547, Standard for Interconnecting Distributed Resources with Electric Power Systems (including use of IEEE 1547.1 testing protocols to establish conformity)

IEEE Std 100-2000, IEEE Standard Dictionary of Electrical and Electronic Terms

IEEE Std 519-1992, IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems

IEEE Std C37.108-1989 (R2002), IEEE Guide for the Protection of Network Transformers

IEEE Std C37.90.1-1989 (R1994), IEEE Standard Surge Withstand Capability (SWC) Tests for Protective Relays and Relay Systems

IEEE Std C37.90.2 (1995), IEEE Standard Withstand Capability of Relay Systems to Radiated Electromagnetic Interference from Transceivers

IEEE Std C57.12.44-2000, IEEE Standard Requirements for Secondary Network Protectors

IEEE Std C62.41.2-2002, IEEE Recommended Practice on Characterization of Surges in Low Voltage (1000V and Less) AC Power Circuits

IEEE Std C62.45-1992 (R2002), IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000V and Less) AC Power Circuits

NEMA MG 1-1998, Motors and Small Resources, Revision 3

NEMA MG 1-2003 (Rev 2004), Motors and Generators, Revision 1

NFPA 70 (2002), National Electrical Code

UL1741, Inverters, Converters, Controllers and Interconnection System Equipment for Use With Distributed Energy Resources

Attachment 5

Certification of Generator Equipment Packages

1.0 Generating Facility equipment proposed for use separately or packaged with other equipment in an interconnection system shall be considered certified for interconnected operation if (1) 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 Attachment 4 of the North Carolina Interconnection Procedures, (2) it has been labeled and is publicly listed by such NRTL at the time of the Interconnection Request, and (3) 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.

2.0 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.

3.0 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 ~~n~~or follow-up production testing by the NRTL.

4.0 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.

5.0 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 Interconnection Customer's side of the point of common coupling shall be required to meet the requirements of the North Carolina Interconnection Procedures.

6.0 An equipment package does not include equipment provided by the Utility.

Attachment 6

Interconnection Request Application Form for Interconnecting a Certified Inverter-Based Generating Facility No Larger than 20 kW

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

Processing Fee

A non-refundable processing fee of ~~$100~~ $200 must accompany this Interconnection
Request Application Form.

If the Interconnection Request is submitted solely due to a transfer of ownership of the Generating Facility, the non-refundable fee is $50.

Interconnection Customer

Name: _____

Primary Contact Person: _____

Title _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Secondary Contact Name: _____

Title: _____

E-Mail Address: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Contact (if different than Interconnection Customer)

Name: _____

E-Mail Address: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Owner(s) of the Generating Facility: _____

Generating Facility Information

Facility Location (if different from above):

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Utility: _____

Account Number: _____

Is the Generating Facility owned by the Interconnection Customer or Leased from an Electric Generator Lessor in NC?

Owned_____
Leased_____NCUC Docket No.:_____

Inverter Manufacturer: _____ Model: _____

Nameplate Rating (each inverter): _____ kW (AC) (each inverter)

_____ kVA (AC) (each inverter)

_____ Volts (AC) (each inverter)

Single Phase: _____ Three Phase: _____

System Design Capacity[9]: _____ kW (AC) (system total)
_____ kVA (AC) (system total)

[9] Total inverter capacity.

For photovoltaic sources only:

Total panel capacity: _____ kW (DC) (system total)

Maximum ~~Physical Export Capability~~ Generating Capacity Rquested:[10] _*(calculated)*[11]_ kW (AC)

For other sources:

Maximum ~~Physical Export Capability~~ Generating Capacity Requested:[2] _____ kW (AC)

~~Prime Mover: Photovoltaic ☐ Reciprocating Engine ☐~~

~~Fuel Cell ☐ Turbine ☐ Other ☐~~

~~ENERGY SOURCE TABLE~~

~~Renewable~~	~~Non-Renewable~~
~~H-1. Solar – Photovoltaic~~ ~~H-2. Solar – thermal~~ ~~H-3. Biomass – landfill gas~~ ~~H-4. Biomass – manure digester gas~~ ~~H-5. Biomass – directed biogas~~ ~~H-6. Biomass – solid waste~~ ~~H-7. Biomass – sewage digester gas~~ ~~H-8. Biomass – wood~~ ~~H-9. Biomass – other (specify below)~~ ~~H-10. Hydro power – run of river~~ ~~H-11. Hydro power - storage~~ ~~H-12. Hydro power – tidal~~ ~~H-13. Hydro power – wave~~ ~~H-14. Wind~~ ~~H-15. Geothermal~~ ~~H-16. Other (specify below)~~	~~H-17. Fossil Fuel - Diesel~~ ~~H-18. Fossil Fuel - Natural Gas (not waste)~~ ~~H-19. Fossil Fuel - Oil~~ ~~H-20. Fossil Fuel – Coal~~ ~~H-21. Fossil Fuel – Other (specify below)~~ ~~H-22. Other (specify below)~~

~~Energy Source: _____ (choose from list above)~~

Prime Mover Information (Refer to U.S. EIA Form 860 Instructions, Table 2 Prime Mover Codes and Descriptions at https://www.eia.gov/survey/form/eia_860/instructions.pdf)

[10] At the Point of Interconnection, this is the maximum possible export power that could flow back to the U~~u~~tility. Unless special circumstances apply, load should not be subtracted from the System Design Capacity.

[11] For a photovoltaic installation, the U~~u~~tility will calculate this value as the lesser of (1) the total kW inverter capacity and (2) the total kW panel capacity (no DC to AC losses included, for simplicity).

Prime Mover Code _____

Prime Mover Description

_____

Energy Source Information (Refer to U.S. EIA Form 860 Instructions, Table 28 Energy Source Codes and Heat Content at https://www.eia.gov/survey/form/eia_860/instructions.pdf)

Fuel Type	Energy Source Code	Energy Source Description

Is the equipment UL 1741 Listed? Yes ____ No ____

If Yes, attach manufacturer's cut-sheet showing UL 1741 listing

Estimated Installation Date: _____ Estimated In-Service Date: _____

The 20 kW Inverter Process is available only for inverter-based Generating Facilities no larger than 20 kW that meet the codes, standards, and certification requirements of Attachments 3 and 4 of the North Carolina Interconnection Procedures, or the Utility has reviewed the design or tested the proposed Generating Facility and is satisfied that it is safe to operate.

List components of the Generating Facility equipment package that are currently certified:

	Number	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 Interconnection Request Application Form is true. I agree to abide by the Terms and Conditions for Interconnecting a Certified Inverter-Based Generating Facility No Larger than 20 kW and return the Certificate of Completion when the Generating Facility has been installed.

Signed:

Full Name _____

Company Name

_____

Title With Company

_____

E-Mail Address

_____

Mailing Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Contingent Approval to Interconnect the Generating Facility (For Utility use only)

Interconnection of the Generating Facility is approved contingent upon the Terms and Conditions for Interconnecting a Certified Inverter-Based Generating Facility No Larger than 20 kW and return of the Certificate of Completion.

Utility Signature:

Title: _____ Date: _____

Interconnection Request ID number: _____

Utility waives inspection/witness test? Yes ____No _____

Certificate of Completion
for Interconnecting a Certified Inverter-Based
Generating Facility No Larger than 20 **kW**

Is the Generating Facility owner-installed? Yes _____No _____

Interconnection Customer

Name:_____

Contact Person: _____

E-Mail Address: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

Location of the Generating Facility (if different from above)

Address: _____

City: _____ State: _____ Zip: _____

Electrician

Name:_____

Company: _____

E-Mail Address: _____

Address: _____

City: _____ State: _____ Zip: _____

County: _____

Telephone (Day): _____ (Evening): _____

Fax: _____

License Number: _____

Date Approval to Install Generating Facility granted by the Utility: _____

Interconnection Request ID Number: _____

Inspection:

The Generating Facility has been installed and inspected in compliance with the local building/electrical code of _____

Signed (Local electrical wiring inspector, or attach signed electrical inspection):

Signature: _____

Print Name: _____ Date: _____

As a condition of interconnection, you are required to send/ email/ fax a copy of this form along with a copy of the signed electrical permit to (insert Utility information below):

Utility Name: _____

Attention: _____

E-Mail Address: _____

Address: _____

City: _____ State: _____ Zip: _____

Fax: _____

Approval to Energize the Generating Facility (For Utility use only)

Energizing the Generating Facility is approved contingent upon the Terms and Conditions for Interconnecting a Certified Inverter-Based Generating Facility No Larger than 20 kW.

Utility Signature:

Title: _____ Date: _____

Terms and Conditions
for Interconnecting a Certified Inverter-Based
Generating Facility No Larger than 20 kW

1.0 Construction of the Facility

The Interconnection Customer (Customer) may proceed to construct (including operational testing not to exceed two hours) the Generating Facility when the Utility approves the Interconnection Request and returns it to the Customer.

2.0 Interconnection and Operation

The Customer may interconnect the Generating Facility with the Utility's System and operate in parallel with the Utility's System once all of the following have occurred:

2.1 Upon completing construction, the Customer will cause the Generating Facility to be inspected or otherwise certified by the appropriate local electrical wiring inspector with jurisdiction, ~~and~~

2.2 The Customer returns the Certificate of Completion to the Utility, and

2.3 The Utility has either:

2.3.1 Completed its inspection of the Generating Facility to ensure that all equipment has been appropriately installed and that all electrical connections have been made in accordance with applicable codes. 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 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; or

2.3.2 If the Utility does not schedule an inspection of the Generating Facility within ten Business Days after receiving the Certificate of Completion, the witness test is deemed waived (unless the Parties agree otherwise); or

2.3.3 The Utility waives the right to inspect the Generating Facility.

2.4 The Utility has the right to disconnect the Generating Facility in the event of improper installation or failure to return the Certificate of Completion.

2.5 Revenue quality metering equipment must be installed and tested in accordance with applicable American National Standards Institute (ANSI) standards and all applicable regulatory requirements.

3.0 Safe Operations and Maintenance

The Customer shall be fully responsible to operate, maintain, and repair the Generating Facility as required to ensure that it complies at all times with the interconnection standards to which it has been certified.

The Customer shall not operate the Generating Facility in such a way that the Generating Facility would exceed the Maximum Generating Capacity.

4.0 Access

The Utility shall have access to the disconnect switch (if a disconnect switch is required) and metering equipment of the Generating Facility at all times. The Utility shall provide reasonable notice to the Customer, when possible, prior to using its right of access.

5.0 Disconnection

The Utility may temporarily disconnect the Generating Facility upon the following conditions:

5.1 For scheduled outages upon reasonable notice.

5.2 For unscheduled outages or emergency conditions.

5.3 If the Generating Facility does not operate in a manner consistent with these Terms and Conditions.

5.4 The Utility shall inform the Customer in advance of any scheduled disconnection, or as soon as is reasonable after an unscheduled disconnection.

6.0 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 hereunder on behalf of the indemnifying Party, except in cases of gross negligence or intentional wrongdoing by the indemnified Party.

7. 0 Insurance

All insurance policies must be maintained with insurers authorized to do business in North Carolina. The Parties agree to the following insurance requirements:

7.1 If the Customer is a residential customer of the Utility, the required coverage shall be a standard homeowner's insurance policy with liability coverage in the amount of at least $100,000 per occurrence.

7.2 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least $300,000 per occurrence.

7.3 The Customer may provide this insurance via a self-insurance program if it has a self-insurance program established in accordance with commercially acceptable risk management practices.

8.0 Limitation of Liability

Each Party's liability to the other Party for any loss, cost, claim, injury, or expense, including reasonable attorney's fees, relating to or arising from any act or omission hereunder, 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, special, incidental, consequential, or punitive damages of any kind.

9.0 Termination

The agreement to interconnect and operate in parallel may be terminated under the following conditions:

9.1 By the Customer

By providing written notice to the Utility and physically and permanently disconnecting the Generating Facility.

9.2 By the Utility

If the Generating Facility fails to operate for any consecutive 12-month period or the Customer fails to remedy a violation of these Terms and Conditions.

9.3 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 Generating Facility.

9.4 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.

10.0 Assignment/Transfer of Ownership of the Facility

10.1 This Agreement shall not survive the transfer of ownership of the Generating Facility to a new owner.

10.2 The new owner must complete and submit a new Interconnection Request agreeing to abide by these Terms and Conditions for interconnection and parallel operations within 20 Business Days of the transfer of ownership. The Utility shall acknowledge receipt and return a signed copy of the Interconnection Request Application Form within ten Business Days.

10.3 The Utility shall not study or inspect the Generating Facility unless the new owner's Interconnection Request Application Form indicates that a Material Modification has occurred or is proposed.

ATTACHMENT 7

System Impact Study Agreement

THIS AGREEMENT ("Agreement") is made and entered into this ____ day of _____, 20__, by and between _____, a _____ organized and existing under the laws of the State of _____, ("Interconnection Customer"), and _____, a _____ existing under the laws of the State of _____, ("Utility"). The Interconnection Customer and the Utility each may be referred to as a "Party," or collectively as the "Parties."

RECITALS

WHEREAS, the Interconnection Customer is proposing to develop a Generating Facility or generating capacity addition to an existing Generating Facility consistent with the Interconnection Request completed by the Interconnection Customer, dated _____and received by the Utility on_____; and

WHEREAS, the Interconnection Customer desires to interconnect the Generating Facility with the Utility's System; and

WHEREAS, the Interconnection Customer has requested the Utility to perform a Ssystem Iimpact Sstudy to assess the impact of interconnecting the Generating Facility with the Utility's System, and of any Affected Systems;

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated or the meanings specified in the North Carolina Interconnection Procedures.

2. The Interconnection Customer elects and the Utility shall cause to be performed a Ssystem Iimpact Sstudy consistent with the North Carolina Interconnection Procedures.

3. The scope of the Ssystem Iimpact Sstudy shall be subject to the assumptions set forth in Appendix A to this Agreement.

4. A Ssystem Iimpact Sstudy will be based upon the technical information provided by Interconnection Customer in the Interconnection Request. The Utility reserves the right to request additional technical information from the Interconnection Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the Ssystem Iimpact Sstudy. If the information requested by the Utility is not provided by the Interconnection Customer within a reasonable

timeframe to be identified by the Utility in writing, the Utility shall provide the Interconnection Customer written notice providing an opportunity to cure such failure by the close of business on the tenth (10th) Business Day following the posted date of such notice, where failure to provide the information requested within this period shall result in the study being terminated and the Interconnection Request being deemed withdrawn. The period of time for the Utility to complete the System Impact Study shall be tolled during any period that the Utility has requested information in writing from the Interconnection Customer necessary to complete the study and such request is outstanding.

5. In performing the study, the Utility shall rely, to the extent reasonably practicable, on existing studies of recent vintage. The Interconnection Customer shall not be charged for such existing studies; however, the Interconnection Customer shall be responsible for charges associated with any new study or modifications to existing studies that are reasonably necessary to perform the ~~feasibility~~ System Impact ~~s~~Study.

6. The System Impact Study Report shall provide the following analyses for the purpose of identifying any potential adverse system impacts that would result from the interconnection of the Generating Facility as proposed:

6.1. Initial identification of any circuit breaker short circuit capability limits exceeded as a result of the interconnection, considering the Nameplate Capacity of the Generating Facility;

6.2. Initial identification of any thermal overload or voltage limit violations resulting from the interconnection, considering the Maximum Generating Capacity of the Generating Facility; and

6.3. Initial review of grounding requirements and electric system protection.

7. The System Impact Study shall model the impact of the Generating Facility regardless of purpose in order to avoid the further expense and interruption of operation for reexamination of feasibility and impacts if the Interconnection Customer later changes the purpose for which the Generating Facility is being installed.

8. The S~~s~~tudy shall include the feasibility of any interconnection at a proposed project site where there could be multiple potential Points of Interconnection, as requested by the Interconnection Customer and at the Interconnection Customer's cost.

9. A System Impact Study shall consist of a short circuit analysis, a stability analysis, a power flow analysis, voltage drop and flicker studies,

protection and set point coordination studies, and grounding reviews, as necessary.

10. The System Impact Study will also include an analysis of distribution and transmission impacts as may be necessary to understand the impact of the proposed Generati~~on~~ing Facility on electric system operation.

11. A System Impact Study shall state the assumptions upon which it is based, state the results of the analyses, and provide the requirement or potential impediments to providing the requested interconnection service.

12. The System Impact Study will provide the Preliminary Estimated Upgrade Charge, which is a preliminary indication of the cost and length of time that would be necessary to correct any System problems identified in those analyses and implement the interconnection.

13. The System Impact Study will provide the Preliminary Estimated Interconnection Facilities Charge, which is a preliminary indication of the cost and length of time that would be necessary to provide the Interconnection Facilities.

~~**14.** A system impact study shall provide the information outlined in Section 1.3.2 of the Interconnection Procedures.~~

14~~5~~. A distribution System Impact Study shall incorporate a distribution load flow study, an analysis of equipment interrupting ratings, protection coordination study, voltage drop and flicker studies, protection and set point coordination studies, grounding reviews, and the impact on electric system operation, as necessary.

15~~6~~. Affected Systems may participate in the preparation of a System Impact Study, with a division of costs among such entities as they may agree. All Affected Systems shall be afforded an opportunity to review and comment upon a System Impact Study that covers potential adverse system impacts on their electric systems, and the Utility has 20 additional Business Days to complete a S~~s~~ystem I~~i~~mpact S~~s~~tudy requiring review by Affected Systems.

16~~7~~. The Utility shall have an additional 15 Business Days from the time set forth in Section 18 of ~~19.0~~ the System Impact Study Agreement to complete the dual scenario System Impact Study reports for a Project B.

17~~8~~. If the Utility uses a queuing procedure for sorting or prioritizing projects and their associated cost responsibilities for any required Network Upgrades, the System Impact Study shall consider all generating facilities (and with respect to paragraph ~~18.3~~ 17.3 below, any identified

Upgrades associated with such interconnection with a lower Queue Number) that, on the date the Ssystem Iimpact Sstudy is commenced –

178.1. Are directly interconnected with the Utility's electric System; or

178.2. Are interconnected with Affected Systems and may have an impact on the proposed interconnection; and

178.3. Have a pending Interconnection Request to interconnect with the Utility's electric Ssystem with a lower Queue Number.

189. The System Impact Study shall be completed within a total of 65 Business Days if transmission system impacts are studied, and 50 Business Days if distribution system impacts are studied, but in any case, shall not take longer than a total of 65 Business Days unless the study involves Affected Systems per Section 15~~16.0~~ or the studied Interconnection Request is a Project B per Section 16 ~~17.0~~ or the System Impact Study is a Grouping Study implemented pursuant to Section 4.3.4 of the Interconnection Procedures, which shall be completed during the timeframe of the Competitive Resource Solicitation. The period of time for the Utility to complete the System Impact Study shall be tolled during any period that the Utility has requested information in writing from the Interconnection Customer necessary to complete the Study and such request is outstanding.

~~20~~19. Any study fees shall be based on the Utility's actual costs and will be deducted from the Interconnection Facilities deposit made by the Interconnection Customer at the time of the Interconnection Request. After the study is completed, the Utility shall deliver a summary of costs incurred ~~professional time~~.

20~~21~~. The Interconnection Customer must pay any S~~s~~tudy costs that exceed the Interconnection Request Deposit without interest within 20 Business Days of receipt of the invoice. If the deposit exceeds the invoiced fees or the Interconnection Customer's costs exceed the aggregate deposits received and the Interconnection Customer withdraws the Interconnection Request, the amount of funds equal to the difference will be settled in accordance with Section 6.3 of the NC Interconnection Standard.

22~~1~~. Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of North Carolina, without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

2~~3~~2. Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties.

24~~3~~. No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

25~~4~~. Waiver

25~~4~~.1. The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

25~~4~~.2. Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, or duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Utility. Any waiver of this Agreement shall, if requested, be provided in writing.

26~~5~~. Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

27~~6~~. No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

2~~8~~7. Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

2~~9~~8. Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

2~~9~~8.1. The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Utility be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

2~~9~~8.2. The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

~~29~~30. Reservation of Rights

The Utility shall have the right to make a unilateral filing with the Commission to modify this Agreement with respect to any rates, terms and conditions, charges, or classifications of service, and the Interconnection Customer shall have the right to make a unilateral filing with the Commission to modify this Agreement; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before the Commission in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties except to the extent that the Parties otherwise agree as provided herein.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

[Insert name of Utility]	**[Insert name of Interconnection Customer]**
_____	_____
Signed _____	Signed _____
Name (Printed):	Name (Printed):
_____	_____
Title _____	

Assumptions Used in Conducting the System Impact Study

The Ssystem Iimpact Sstudy shall be based upon the Interconnection Request subject to any modifications in accordance with the Interconnection Procedures, and the following assumptions:

1) Designation of Point of Interconnection and configuration to be studied (to be completed by the Interconnection Customer and the Utility).

~~2) Designation of alternative Points of Interconnection and configuration.~~

2) ~~1) and 2) are to be completed by the Interconnection Customer.~~Other assumptions (listed below) are to be provided by the Interconnection Customer and the Utility.

Facilities Study Agreement

THIS AGREEMENT ("Agreement") is made and entered into this _____ day of _____, 20____, by and between _____, a _____ organized and existing under the laws of the State of _____, ("Interconnection Customer~~,~~"), and, _____, a _____ existing under the laws of the State of _____ ("Utility"). The Interconnection Customer and the Utility each may be referred to as a "Party," or collectively as the "Parties."

RECITALS

WHEREAS, the Interconnection Customer is proposing to develop a Generating Facility or generating capacity in addition to an existing Generating Facility consistent with the Interconnection Request Application Form completed by the Interconnection Customer, dated _____ and received by the Utility on _____; and the single-line drawing provided by the Interconnection Customer, dated _____ and received by the Utility on _____ ; and

WHEREAS, the Interconnection Customer desires to interconnect the Generating Facility with the Utility's System; and

WHEREAS, the Utility has completed a System Impact Study and provided the results of said Sstudy to the Interconnection Customer (this recital to be omitted if the Parties have agreed to forego the Ssystem Iimpact Sstudy); and

WHEREAS, the Interconnection Customer has requested the Utility to perform a Facilities Study to specify and estimate the cost of the equipment, engineering, procurement and construction work needed to implement the conclusions of the Ssystem Iimpact Sstudy and/or any other relevant studies in accordance with Good Utility Practice to physically and electrically connect the Generating Facility with the Utility's System~~;~~.

NOW, THEREFORE, in consideration of and subject to the mutual covenants contained herein the Parties agree as follows:

1. When used in this Agreement, with initial capitalization, the terms specified shall have the meanings indicated or the meanings specified in the North Carolina Interconnection Procedures.

2. The Interconnection Customer elects and the Utility shall cause to be performed a Ffacilities Sstudy consistent with the North Carolina Interconnection Procedures.

3. The scope of the Ffacilities Sstudy shall be subject to data provided in Appendix A to this Agreement.

4. The Ffacilities Sstudy 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 studies. The Ffacilities Sstudy shall also identify (1) the electrical switching configuration of the equipment, including, without limitation, transformer, switchgear, meters, and other station equipment, (2) the nature and estimated cost of the Utility's Interconnection Facilities and Upgrades necessary to accomplish the interconnection, and (3) an estimate of the construction time required to complete the installation of such facilities.

If the study is for a Project B, the Sstudy shall assume the interdependent Project A is interconnected.

5. The Utility may propose to group facilities required for more than one Interconnection Customer in order to minimize facilities costs through economies of scale, but any Interconnection Customer may require the installation of facilities required for its own Generating Facility if it is willing to pay the costs of those facilities.

6. A deposit of the good faith estimated Ffacilities Sstudy cost is required from the Interconnection Customer. If the unexpended portion of the Interconnection Request deposit made for the Interconnection Request exceeds the estimated cost of the Ffacilities Sstudy, no payment will be required of the Interconnection Customer.

7. In cases where Upgrades are required, the Ffacilities Sstudy must be completed within 45 Business Days of the Utility's receipt of this Agreement, or completion of the Facilities Study for an Interdependent Project A whichever is later. In cases where no Upgrades are necessary, and the required facilities are limited to Interconnection Facilities, the Ffacilities Sstudy must be completed within 30 Business Days. The Utility reserves the right to request additional technical information from the Interconnection Customer as may reasonably become necessary consistent with Good Utility Practice during the course of the Facilities Study. If the information requested by the Utility is not provided by the Interconnection Customer within a reasonable timeframe to be identified by the Utility in writing, the Utility shall provide the Interconnection Customer written notice providing an opportunity to cure such failure by the close of business on the tenth (10^{th}) Business Day following the posted date of such notice, where failure to provide the information requested within this period shall result in the Sstudy being terminated and the Interconnection Request being deemed withdrawn. The period of time for the Utility to complete the Facilities Study shall be tolled during any period that the Utility has requested information in writing from the Interconnection Customer necessary to complete the Study and such request is outstanding.

8. Once the Ffacilities Sstudy is completed, a Ffacilities Sstudy Rreport shall be prepared and transmitted to the Interconnection Customer.

9. Any study fees shall be based on the Utility's actual costs and will be deducted from the Interconnection Request deposit made by the Interconnection Customer at the time of the Interconnection Request. After the Sstudy is

completed the Utility shall deliver a summary of costs incurred ~~professional time~~.

10. The Interconnection Customer must pay any S~~s~~tudy costs that exceed the Interconnection Request deposit without interest within 20 Business Days of receipt of the invoice. If the unexpended portion of the Interconnection Request deposit exceeds the invoiced fees and the Interconnection Customer withdraws the Interconnection Request, the Utility shall make refund to the Customer pursuant to Section 6.3 of the North Carolina Interconnection Procedures.

11. If the Interconnection Customer submitted prepayment or Financial Security reasonably acceptable to the Utility for Network Upgrades under Section 4.3.9 of the North Carolina Interconnection Procedures, the Parties agree that this pre-payment or Financial Security shall be held by the Utility as a non-refundable pre-payment for the estimated cost of Network Upgrades and Interconnection Customer expressly agrees this pre-payment amount shall be forfeited to the Utility to construct the Network Upgrades if the Interconnection Request is subsequently withdrawn. The Network Upgrades pre-payment amount shall be trued up by the Utility in the Detailed Estimated Upgrade Charges amount calculated during the Facilities Study and identified in a Facilities Study Report to be included in a future Interconnection Agreement.

~~11~~12. Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of North Carolina, without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

~~12~~13. Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties.

~~13~~14. No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

~~14~~15. Waiver

The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, or duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Utility. Any waiver of this Agreement shall, if requested, be provided in writing.

~~15~~16. Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

~~16~~17. No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

~~17~~18. Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

~~18~~19. Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Utility be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

~~19~~20. Reservation of Rights

The Utility shall have the right to make a unilateral filing with the Commission to modify this Agreement with respect to any rates, terms and conditions, charges, or classifications of service, and the Interconnection Customer shall have the right to make a unilateral filing with the Commission to modify this Agreement; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before the Commission in which such modifications may be considered. Nothing in this Agreement shall limit the rights of the Parties except to the extent that the Parties otherwise agree as provided herein.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be duly executed by their duly authorized officers or agents on the day and year first above written.

For the Utility

Name: _____

Print Name: _____

Title: _____

Date _____

For the Interconnection Customer

Name: _____

Print Name: _____

Title: _____

Date _____

Data to Be Provided by the Interconnection Customer with the Facilities Study Agreement

Provide location plan and simplified one-line diagram of the plant and station facilities. For staged projects, please indicate future generation, circuits, etc.

On the one-line diagram, indicate the Maximum Generating ~~generation c~~Capacity attached at each metering location. (Maximum load on CT/PT)

On the one-line diagram, indicate the location of auxiliary power. (Minimum load on CT/PT) Amps

One set of metering is required for each generation connection to the new ring bus or existing Utility station. Number of generation connections: _____

_____

Will an alternate source of auxiliary power be available during CT/PT maintenance?

Yes _____ No _____

Will a transfer bus on the generation side of the metering require that each meter set be designed for the total plant generation? Yes _____ No _____

(Please indicate on the one-line diagram).

What type of control system or PLC will be located at the Generating Facility?

_____

_____

What protocol does the control system or PLC use?

_____

_____

Please provide a 7.5-minute quadrangle map of the site. Indicate the plant, station, distribution line, and property lines.

Physical dimensions of the proposed interconnection station:

_____

Bus length from generation to interconnection station:

_____

Line length from interconnection station to Utility's System.

_____

Tower number observed in the field (Painted on tower leg)*:

_____

Number of third party easements required for lines*:

_____

* To be completed in coordination with Utility.

Is the Generating Facility located in Utility's service area?

Yes _____ No _____ If No, please provide name of local provider:

_____

Please provide the following proposed schedule dates:

Begin Construction	Date: _____
Generator step-up transformers receive back feed power	Date: _____
Generation Testing	Date: _____
Commercial Operation	Date: _____

ATTACHMENT 9

NORTH CAROLINA

INTERCONNECTION AGREEMENT

For State-Jurisdictional Generator Interconnections

Effective June ___, 2019
Docket No. E-100, Sub 101

Between

Utility Name
And
Customer Name
"Project Name"

TABLE OF CONTENTS

Page No.

Article 1. Scope and Limitations of Agreement 1
1.1 Applicability 1
1.2 Purpose 2
1.3 No Agreement to Purchase or Deliver Power or RECs 2
1.4 Limitations 2
1.5 Responsibilities of the Parties 2
1.6 Parallel Operation Obligations 3
1.7 Metering 3
1.8 Reactive Power 4
1.9 Capitalized Terms 4
Article 2. Inspection, Testing, Authorization, and Right of Access 4
2.1 Equipment Testing and Inspection 4
2.2 Authorization Required Prior to Parallel Operation 5
2.3 Right of Access 5
Article 3. Effective Date, Term, Termination, and Disconnection 6
3.1 Effective Date 6
3.2 Term of Agreement 6
3.3 Termination 6
3.4 Temporary Disconnection 7
Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades 9
4.1 Interconnection Facilities 9
4.2 Distribution Upgrades 9
Article 5. Cost Responsibility for Network Upgrades 9
5.1 Applicability 9
5.2 Network Upgrades 9
Article 6. Billing, Payment, Milestones, and Financial Security 10
6.1 Billing and Payment Procedures and Final Accounting 10
6.2 Milestones 10
6.3 Financial Security Arrangements 11
Article 7. Assignment, Liability, Indemnity, Force Majeure, Consequential Damages, and Default 11
7.1 Assignment 11
7.2 Limitation of Liability 12
7.3 Indemnity 13
7.4 Consequential Damages 13
7.5 Force Majeure 14
7.6 Default 14
Article 8. Insurance 15
Article 9. Confidentiality 16
Article 10. Disputes 17
Article 11. Taxes 17
Article 12. Miscellaneous 17
12.1 Governing Law, Regulatory Authority, and Rules 17
12.2 Amendment 17

Page No.

12.3 No Third-Party Beneficiaries 18
12.4 Waiver 18
12.5 Entire Agreement 18
12.6 Multiple Counterparts 18
12.7 No Partnership 18
12.8 Severability 19
12.9 Security Arrangements 19
12.10 Environmental Releases 19
12.11 Subcontractors 19
12.12 Reservation of Rights 20
Article 13. Notices 21
13.1 General 21
13.2 Billing and Payment 23
13.3 Alternative Forms of Notice 24
13.4 Designated Operating Representative 25
13.5 Changes to the Notice Information 25

Appendix 1 – Glossary of Terms

Appendix 2 – Description and Costs of the Generating Facility, Interconnection Facilities, and Metering Equipment

Appendix 3 – One-line Diagram Depicting the Generating Facility, Interconnection Facilities, Metering Equipment, and Upgrades

Appendix 4 – Milestones

Appendix 5 – Additional Operating Requirements for the Utility's System and Affected Systems Needed to Support the Interconnection Customer's Needs

Appendix 6 – Utility's Description of its Upgrades and Best Estimate of Upgrade Costs

This Interconnection Agreement ("Agreement") is made and entered into this ____ day of _____, 20__, by

_____ ("Utility"), and

_____

("Interconnection Customer") each hereinafter sometimes referred to individually as "Party" or both referred to collectively as the "Parties."

Utility Information

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Interconnection Customer Information

Name: _____

Project Name: _____ _

Attention: _____

E911 Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

County: _____

In consideration of the mutual covenants set forth herein, the Parties agree as follows:

Article 1. Scope and Limitations of Agreement

1.1 Applicability

This Agreement shall be used for all Interconnection Requests submitted under the North Carolina Interconnection Procedures except for those submitted under the 20 kW Inverter Process in Section 2 of the Interconnection Procedures.

1.2 Purpose

~~If an Interim Interconnection Agreement, this Agreement documents the Utility's ability to interconnect the Generating Facility and provides the Preliminary Estimated Interconnection Facilities Charge and the Preliminary Estimated System Upgrade Charge that was developed in the System Impact Study. Milestones have not been established and the Utility offers no estimate on when the required facilities might be installed.~~

~~If a Final t~~This Agreement governs the terms and conditions under which the Interconnection Customer's Generating Facility will interconnect with, and operate in parallel with, the Utility's System.

1.3 No Agreement to Purchase or Deliver Power or RECs

This Agreement does not constitute an agreement to purchase or deliver the Interconnection Customer's power or Renewable Energy Certificates (RECs). The purchase or delivery of power, RECs that might result from the operation of the Generating Facility, and other services that the Interconnection Customer may require will be covered under separate agreements, if any. The Interconnection Customer will be responsible for separately making all necessary arrangements (including scheduling) for delivery of electricity with the applicable Utility.

1.4 Limitations

Nothing in this Agreement is intended to affect any other agreement between the Utility and the Interconnection Customer.

1.5 Responsibilities of the Parties

1.5.1 The Parties shall perform all obligations of this Agreement in accordance with all Applicable Laws and Regulations, Operating Requirements, and Good Utility Practice.

1.5.2 The Interconnection Customer shall construct, interconnect, operate and maintain its Generating Facility and construct, operate, and maintain its

Interconnection Facilities in accordance with the applicable manufacturer's recommended maintenance schedule, and in accordance with this Agreement, and with Good Utility Practice.

1.5.3 The Utility shall construct, operate, and maintain its System and Interconnection Facilities in accordance with this Agreement, and with Good Utility Practice.

1.5.4 The Interconnection Customer agrees to construct its facilities or systems in accordance with applicable specifications that meet or exceed those provided by the National Electrical Safety Code, the American National Standards Institute, IEEE, Underwriters' Laboratories, and Operating Requirements in effect at the time of construction and other applicable national and state codes and standards. The Interconnection Customer agrees to design, install, maintain, and operate its Generating Facility so as to reasonably minimize the likelihood of a disturbance adversely affecting or impairing the System or equipment of the Utility and any Affected Systems.

1.5.5 Each Party shall operate, maintain, repair, and inspect, and shall be fully responsible for the facilities that it now or subsequently may own unless otherwise specified in the Appendices to this Agreement. Each Party shall be responsible for the safe installation, maintenance, repair and condition of their respective lines and appurtenances on their respective sides of the point of change of ownership. The Utility and the Interconnection Customer, as appropriate, shall provide Interconnection Facilities that adequately protect the Utility's System, personnel, and other persons from damage and injury. The allocation of responsibility for the design, installation, operation, maintenance and ownership of Interconnection Facilities shall be delineated in the Appendices to this Agreement.

1.5.6 The Utility shall coordinate with all Affected Systems to support the interconnection.

1.5.7 The Customer shall not operate the Generating Facility in such a way that the Generating Facility would exceed the Maximum Generating Capacity.

1.6 Parallel Operation Obligations

Once the Generating Facility has been authorized to commence parallel operation, the Interconnection Customer shall abide by all rules and procedures pertaining to the parallel operation of the Generating Facility in the applicable control area, including, but not limited to: 1) any rules and procedures concerning the operation of generation set forth in Commission-approved tariffs or by the applicable system operator(s) for the Utility's System and; 2) the Operating Requirements set forth in Appendix 5 of this Agreement.

1.7 Metering

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 metering and data acquisition equipment specified in Appendices 2 and 3 of this Agreement. The Interconnection Customer's metering (and data acquisition, as required) equipment shall conform to applicable industry rules and Operating Requirements.

1.8 Reactive Power

1.8.1 The Interconnection Customer shall design its Generating Facility to maintain a composite power delivery at continuous rated power output at the Point of Interconnection at a power factor within the range of 0.95 leading to 0.95 lagging, unless the Utility has established different requirements that apply to all similarly situated generators in the control area on a comparable basis. The requirements of this paragraph shall not apply to wind generators.

1.8.2 The Utility is required to pay the Interconnection Customer for reactive power that the Interconnection Customer provides or absorbs from the Generating Facility when the Utility requests the Interconnection Customer to operate its Generating Facility outside the range specified in Article 1.8.1 or outside the range established by the Utility that applies to all similarly situated generators in the control area. In addition, if the Utility pays its own or affiliated generators for reactive power service within the specified range, it must also pay the Interconnection Customer.

1.8.3 Payments shall be in accordance with the Utility's applicable rate schedule then in effect unless the provision of such service(s) is subject to a regional transmission organization or independent system operator FERC-approved rate schedule. To the extent that no rate schedule is in effect at the time the Interconnection Customer is required to provide or absorb reactive power under this Agreement, the Parties agree to expeditiously file such rate schedule and agree to support any request for waiver of any prior notice requirement in order to compensate the Interconnection Customer from the time service commenced.

1.9 Capitalized Terms

Capitalized terms used herein shall have the meanings specified in the Glossary of Terms in Attachment 1 of the North Carolina Interconnection Procedures or the body of this Agreement.

Article 2. Inspection, Testing, Authorization, and Right of Access

2.1 Equipment Testing and Inspection

2.1.1 The Interconnection Customer shall test and inspect its Generating Facility and Interconnection Facilities prior to interconnection. The Interconnection Customer shall notify the Utility of such activities no fewer than ten (10) Business Days (or as may be agreed to by the Parties) prior to such testing and inspection. Testing and inspection shall occur on a Business Day, unless otherwise agreed to by the Parties. The Utility may, at its own expense, send qualified personnel to the Generating Facility site to inspect the interconnection and observe the testing. The Interconnection Customer shall provide the Utility a written test report when such testing and inspection is completed.

2.1.2 The Utility shall provide the Interconnection Customer written acknowledgment that it has received the Interconnection Customer's written test report. Such written acknowledgment shall not be deemed to be or construed as any representation, assurance, guarantee, or warranty by the Utility of the safety, durability, suitability, or reliability of the Generating Facility or any associated control, protective, and safety devices owned or controlled by the Interconnection Customer or the quality of power produced by the Generating Facility.

2.1.3 In addition to the Utility's observation of the Interconnection Customer's testing and inspection of its Generating Facility and Interconnection Facilities pursuant to this Section, the Utility may also require inspection and testing of Interconnection Facilities that can impact the integrity or safety of the Utility's System or otherwise cause adverse operating effects, as described in Section 3.4.4. Such inspection and testing activities will be performed by the Utility or a third-party independent contractor approved by the Utility and at a time mutually agreed to by the Interconnection Customer and will be performed at the Interconnection Customer's expense. The scope of required inspection and testing will be consistent across similar types of generating facilities.

2.2 Authorization Required Prior to Parallel Operation

2.2.1 The Utility shall use Reasonable Efforts to list applicable parallel operation requirements in Appendix 5 of this Agreement. Additionally, the Utility shall notify the Interconnection Customer of any changes to these requirements as soon as they are known. The Utility shall make Reasonable Efforts to cooperate with the Interconnection Customer in meeting requirements necessary for the Interconnection Customer to commence parallel operations by the in-service date.

2.2.2 The Interconnection Customer shall not operate its Generating Facility in parallel with the Utility's System without prior written authorization of the Utility. The Utility will provide such authorization once the Utility receives notification that the Interconnection Customer has complied with all applicable parallel operation requirements. Such authorization shall not be unreasonably withheld, conditioned, or delayed.

2.3 Right of Access

2.3.1 Upon reasonable notice, the Utility may send a qualified person to the premises of the Interconnection Customer at or ~~immediately~~ before the time the Generating Facility first produces energy to inspect the interconnection~~, and observe the commission of the Generating Facility (including required testing), startup, and operation for a period of up to three (3) Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Utility at least (5) Business Days prior to conducting any on-site verification testing of the Generating Facility.~~ and those Interconnection Customer facilities which can impact the integrity or safety of the Utility's System or otherwise cause adverse operating effects, as described in Section 3.4.4, and observe the commissioning of the Generating Facility (including any required testing), startup, and operation for a period of up to three (3) Business Days after initial start-up of the unit. In addition, the Interconnection Customer shall notify the Utility at least five (5) Business Days prior to conducting any on-site verification testing of the Generating Facility.

2.3.2 Following the initial inspection process described above, at reasonable hours, and upon reasonable notice, or at any time without notice in the event of an emergency or hazardous condition, the Utility shall have access to the Interconnection Customer's premises for any reasonable purpose in connection with the performance of the obligations imposed on it by this Agreement or if necessary to meet its legal obligation to provide service to its customers.

2.3.3 Each Party shall be responsible for its own costs associated with following this Article, with the exception of Utility-required inspection and testing described in Section 2.1.3, the costs for which shall be the responsibility of the Interconnection Customer.

Article 3. Effective Date, Term, Termination, and Disconnection

3.1 Effective Date

This Agreement shall become effective upon execution by the Parties.

3.2 Term of Agreement

This Agreement shall become effective on the Effective Date and shall remain in effect for a period of ten (10) years from the Effective Date or such other longer period as the Interconnection Customer may request and shall be automatically renewed for each successive one-year period thereafter, unless terminated earlier in accordance with Article 3.3 of this Agreement.

3.3 Termination

No termination shall become effective until the Parties have complied with all Applicable Laws and Regulations applicable to such termination.

3.3.1 The Interconnection Customer may terminate this Agreement at any time by giving the Utility 20 Business Days written notice and physically and permanently disconnecting the Generating Facility from the Utility's System.

3.3.2 The Utility may terminate this Aagreement ~~for~~ upon the Interconnection Customer's failure to timely make the payment(s) required by Article 6.1.1 pursuant to the milestones specified in Appendix 4, or to comply with the requirements of Article 7.1.2 or Article 7.1.3.

3.3.3 Either Party may terminate this Agreement after Default pursuant to Article 7.6.

3.3.4 Upon termination of this Agreement, the Generating Facility will be disconnected from the Utility's System. All costs required to effectuate such disconnection shall be borne by the terminating Party, unless such termination resulted from the non-terminating Party's Default of this Agreement or such non-terminating Party otherwise is responsible for these costs under this Agreement.

3.3.5 The termination of this Agreement shall not relieve either Party of its liabilities and obligations, owed or continuing at the time of the termination, including any remaining term requirements for payment of Charges that are billed under a monthly payment option as prescribed in Article 6.

3.3.6 The provisions of this article shall survive termination or expiration of this Agreement.

3.4 Temporary Disconnection

Temporary disconnection shall continue only for so long as reasonably necessary under Good Utility Practice.

3.4.1 Emergency Conditions

"Emergency Condition" shall mean a condition or situation: (1) that in the judgment of the Party making the claim is imminently likely to endanger life or property; or (2) that, in the case of the Utility, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security of, or damage to the Utility's System, the Utility's Interconnection Facilities or the systems of others to which the Utility's System is directly connected; or (3) that, in the case of the Interconnection Customer, is imminently likely (as determined in a non-discriminatory manner) to cause a material adverse effect on the security

of, or damage to, the Generating Facility or the Interconnection Customer's Interconnection Facilities.

Under Emergency Conditions, the Utility may immediately suspend interconnection service and temporarily disconnect the Generating Facility. The Utility shall notify the Interconnection Customer promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Interconnection Customer's operation of the Generating Facility. The Interconnection Customer shall notify the Utility promptly when it becomes aware of an Emergency Condition that may reasonably be expected to affect the Utility's System or any Affected Systems. To the extent information is known, the notification shall describe the Emergency Condition, the extent of the damage or deficiency, the expected effect on the operation of both Parties' facilities and operations, its anticipated duration, and the necessary corrective action.

3.4.2 Routine Maintenance, Construction, and Repair

The Utility may interrupt interconnection service or curtail the output of the Generating Facility and temporarily disconnect the Generating Facility from the Utility's System when necessary for routine maintenance, construction, and repairs on the Utility's System. The Utility shall provide the Interconnection Customer with two (2) Business Days notice prior to such interruption. The Utility shall use Reasonable Efforts to coordinate such reduction or temporary disconnection with the Interconnection Customer.

3.4.3 Forced Outages

During any forced outage, the Utility may suspend interconnection service to effect immediate repairs on the Utility's System. The Utility shall use Reasonable Efforts to provide the Interconnection Customer with prior notice. If prior notice is not given, the Utility shall, upon request, provide the Interconnection Customer written documentation after the fact explaining the circumstances of the disconnection.

3.4.4 Adverse Operating Effects

The Utility shall notify the Interconnection Customer as soon as practicable if, based on Good Utility Practice, operation of the Generating Facility may cause disruption or deterioration of service to other customers served from the same electric Ssystem, or if operating the Generating Facility could cause damage to the Utility's System or Affected Systems. Supporting documentation used to reach the decision to disconnect shall be provided to the Interconnection Customer upon request. If, after notice, the Interconnection Customer fails to remedy the adverse operating effect within a reasonable time, the Utility may disconnect the Generating Facility. The Utility shall provide the Interconnection Customer with five (5) Business Day notice of such disconnection, unless the provisions of Article 3.4.1 apply.

3.4.5 Modification of the Generating Facility

The Interconnection Customer must receive written authorization from the Utility before making a Material Modification or any other change to the Generating Facility that may have a material impact on the safety or reliability of the Utility's System. Such authorization shall not be unreasonably withheld. Modifications shall be done in accordance with Good Utility Practice. If the Interconnection Customer makes such modification without the Utility's prior written authorization, the latter shall have the right to temporarily disconnect the Generating Facility.

3.4.6 Reconnection

The Parties shall cooperate with each other to restore the Generating Facility, Interconnection Facilities, and the Utility's System to their normal operating state as soon as reasonably practicable following a temporary or emergency disconnection.

Article 4. Cost Responsibility for Interconnection Facilities and Distribution Upgrades

4.1 Interconnection Facilities

4.1.1 The Interconnection Customer shall pay for the cost of the Interconnection Facilities itemized in Appendix 2 of this Agreement. The Utility shall provide a best estimate cost, including overheads, for the purchase and construction of its Interconnection Facilities and provide a detailed itemization of such costs. Costs associated with Interconnection Facilities may be shared with other entities that may benefit from such facilities by agreement of the Interconnection Customer, such other entities, and the Utility.

4.1.2 The Interconnection Customer shall be responsible for its share of all reasonable expenses, including overheads, associated with (1) owning, operating, maintaining, repairing, and replacing its own Interconnection Facilities, and (2) operating, maintaining, repairing, and replacing the Utility's Interconnection Facilities.

4.2 Distribution Upgrades

The Utility shall design, procure, construct, install, and own the Distribution Upgrades described in Appendix 6 of this Agreement. If the Utility and the Interconnection Customer agree, the Interconnection Customer may construct Distribution Upgrades that are located on land owned by the Interconnection Customer. The actual cost of the Distribution Upgrades, including overheads, on-going operations, maintenance, repair, and replacement, shall be directly assigned to the Interconnection Customer.

Article 5. Cost Responsibility for Network Upgrades

5.1 Applicability

No portion of this Article 5 shall apply unless the interconnection of the Generating Facility requires Network Upgrades.

5.2 Network Upgrades

The Utility shall design, procure, construct, install, and own the Network Upgrades described in Appendix 6 of this Agreement. If the Utility and the Interconnection Customer agree, the Interconnection Customer may construct Network Upgrades that are located on land owned by the Interconnection Customer. Unless the Utility elects to pay for Network Upgrades, the actual cost of the Network Upgrades, including overheads, on-going operations, maintenance, repair, and replacement shall be borne by the Interconnection Customer.

Article 6. Billing, Payment, Milestones, and Financial Security

6.1 Billing and Payment Procedures and Final Accounting

6.1.1 The Interconnection Customer shall pay 100% of required Interconnection Facilities and any other charges as required in Appendix 2 pursuant to the milestones specified in Appendix 4.

The Interconnection Customer shall pay 100% of required Upgrades and any other charges as required in Appendix 6 pursuant to the milestones specified in Appendix 4.

Upon receipt of 100% of the foregoing pre-payment charges for Upgrades, the payment is not refundable due to cancellation of the Interconnection Request for any reason. However, if an Interconnection Customer terminates its Interconnection Agreement and cancels its facility, it shall be entitled to a refund of any unspent amounts that had been collected by the Utility for the Interconnection Customer's Interconnection Facilities.

6.1.2 If implemented by the Utility or requested by the Interconnection Customer in writing within 15 Business Days of the Interconnection Facilities Delivery Date, the Utility shall provide the Interconnection Customer a final accounting report within 120 Business Days addressing any difference between (1) the Interconnection Customer's cost responsibility for the actual cost of such facilities or Upgrades, and (2) the Interconnection Customer's previous aggregate payments to the Utility for such facilities or Upgrades. If the Interconnection Customer's cost responsibility exceeds its previous aggregate payments, the Utility shall invoice the Interconnection Customer for the amount due and the Interconnection Customer shall make payment to the Utility within 20 Business Days. If the Interconnection Customer's previous aggregate payments exceed its cost responsibility under this Agreement, the Utility shall refund to the Interconnection Customer an amount equal to the difference within 20 Business Days of the final accounting report. If necessary and appropriate as a result of the final accounting, the Utility may also adjust the monthly charges set forth in Appendix 2 of the Interconnection Agreement.

6.1.3 The Utility shall also bill the Interconnection Customer for the costs associated with operating, maintaining, repairing and replacing the Utility's System Upgrades, as set forth in Appendix 6 of this Agreement. The Utility shall bill the Interconnection Customer for the costs of providing the Utility's Interconnection Facilities including the costs for on-going operations, maintenance, repair and replacement of the Utility's Interconnection Facilities under a Utility rate schedule, tariff, rider or service regulation providing for extra facilities or additional facilities charges, as set forth in Appendix 2 of this Agreement, such monthly charges to continue throughout the entire life of the interconnection.

6.2 Milestones

The Parties shall agree on milestones for which each Party is responsible and list them in Appendix 4 of this Agreement. A Party's obligations under this provision may be extended by agreement, except for timing for Payment or Financial Security-related requirements set forth in the milestones, which shall adhere to Section 5.2.4 of the Standards. If a Party anticipates that it will be unable to meet a milestone for any reason other than a Force Majeure Event, it shall immediately notify the other Party of the reason(s) for not meeting the milestone and (1) propose the earliest reasonable alternate date by which it can attain this and future milestones, and (2) request appropriate amendments to Appendix 4. The Party affected by the failure to meet a milestone shall not unreasonably withhold agreement to such an amendment unless (1) it will suffer significant uncompensated economic or operational harm from the delay, (2) the delay will materially affect the schedule of another Interconnection Customer with subordinate Queue Position, (3) attainment of the same milestone has previously been delayed, or (4) it has reason to believe that the delay in meeting the milestone is intentional or unwarranted notwithstanding the circumstances explained by the Party proposing the amendment.

6.3 Financial Security Arrangements

Pursuant to the Interconnection Agreement Milestones Appendix 4, the Interconnection Customer shall provide the Utility a letter of credit or other financial security arrangement that is reasonably acceptable to the Utility and is consistent with the Uniform Commercial Code of North Carolina. Such security for payment shall be in an amount sufficient to cover the costs for constructing, designing, procuring, and installing the applicable portion of the Utility's Interconnection Facilities and shall be reduced on a dollar-for-dollar basis for payments made to the Utility under this Agreement during its term. In addition:

6.3.1 The guarantee must be made by an entity that meets the creditworthiness requirements of the Utility, and contain terms and conditions that guarantee payment of any amount that may be due from the Interconnection Customer, up to an agreed-to maximum amount.

6.3.2 The letter of credit must be issued by a financial institution or insurer reasonably acceptable to the Utility and must specify a reasonable expiration date.

6.3.3 The Utility may waive the security requirements if its credit policies show that the financial risks involved are de minimus, or if the Utility's policies allow the acceptance of an alternative showing of credit-worthiness from the Interconnection Customer.

Article 7. Assignment, Liability, Indemnity, Force Majeure, Consequential Damages, and Default

7.1 Assignment

7.1.1 The Interconnection Customer shall notify the Utility of the pending sale of an existing Generati~~on~~ng Facility in writing. The Interconnection Customer shall provide the Utility with information regarding whether the sale is a change of ownership of the Generati~~on~~ng Facility to a new legal entity, or a change of control of the existing legal entity.

7.1.2 The Interconnection Customer shall promptly notify the Utility of the final date of sale and transfer date of ownership in writing. The purchaser of the Generati~~on~~ng Facility shall confirm to the Utility the final date of sale and transfer date of ownership in writing

7.1.3 This Agreement shall not survive the transfer of ownership of the Generating Facility to a new legal entity owner. The new owner must complete a new Interconnection Request and submit it to the Utility within 20 Business Days of the transfer of ownership or the Utility's Interconnection Facilities shall be removed or disabled and the Generating Facility disconnected from the Utility's System. The Utility shall not study or inspect the Generating Facility unless the new owner's Interconnection Request indicates that a Material Modification has occurred or is proposed.

7.1.4 This Agreement shall survive a change of control of the Generating Facility' legal entity owner, where only the contact information in the Interconnection Agreement must be modified. The new owner must complete a new Interconnection Request and submit it to the Utility within 20 Business Days of the change of control and provide the new contact information. The Utility shall not study or inspect the Generating Facility unless the new owner's Interconnection Request indicates that a Material Modification has occurred or is proposed.

7.1.5 The Interconnection Customer shall have the right to assign this Agreement, without the consent of the Utility, for collateral security purposes to aid in providing financing for the Generating Facility, provided that the Interconnection Customer will promptly notify the Utility of any such assignment. Assignment shall not relieve a Party of its obligations, nor shall a Party's obligations be enlarged, in whole or in part, by reason thereof.

7.1.6 Any attempted assignment that violates this article is void and ineffective.

7.2 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, special, incidental, consequential, or punitive damages of any kind, except as authorized by this Agreement.

7.3 Indemnity

7.3.1 This provision protects each Party from liability incurred to third parties as a result of carrying out the provisions of this Agreement. Liability under this provision is exempt from the general limitations on liability found in Article 7.2.

7.3.2 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 inaction 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.

7.3.3 If an indemnified Party is entitled to indemnification under this Article as a result of a claim by a third party, and the indemnifying Party fails, after notice and reasonable opportunity to proceed under this Article, to assume the defense of such claim, such indemnified Party may at the expense of the indemnifying Party contest, settle or consent to the entry of any judgment with respect to, or pay in full, such claim.

7.3.4 If an indemnifying Party is obligated to indemnify and hold any indemnified Party harmless under this Article, the amount owing to the indemnified Party shall be the amount of such indemnified Party's actual loss, net of any insurance or other recovery.

7.3.5 Promptly after receipt by an indemnified Party of any claim or notice of the commencement of any action or administrative or legal proceeding or investigation as to which the indemnity provided for in this Article may apply, the indemnified Party shall notify the indemnifying Party of such fact. Any failure of or delay in such notification shall not affect a Party's indemnification obligation unless such failure or delay is materially prejudicial to the indemnifying Party.

7.4 Consequential Damages

Other than as expressly provided for in this Agreement, neither Party shall be liable under any provision of this Agreement for any losses, damages, costs or expenses for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services, whether based in whole or in part in contract, in tort, including negligence, strict liability, or any other theory of liability; provided, however, that damages for which a Party may be liable to the

other Party under another agreement will not be considered to be special, indirect, incidental, or consequential damages hereunder.

7.5 Force Majeure

7.5.1 As used in this article, a Force Majeure Event shall mean any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure Event does not include an act of negligence or intentional wrongdoing.

7.5.2 If a Force Majeure Event prevents a Party from fulfilling any obligations under this Agreement, the Party affected by the Force Majeure Event (Affected Party) shall promptly notify the other Party, either in writing or via the telephone, of the existence of the Force Majeure Event. The notification must specify in reasonable detail the circumstances of the Force Majeure Event, its expected duration, and the steps that the Affected Party is taking to mitigate the effects of the event on its performance. The Affected Party shall keep the other Party informed on a continuing basis of developments relating to the Force Majeure Event until the event ends. The Affected Party will be entitled to suspend or modify its performance of obligations under this Agreement (other than the obligation to make payments) only to the extent that the effect of the Force Majeure Event cannot be mitigated by the use of Reasonable Efforts. The Affected Party will use Reasonable Efforts to resume its performance as soon as possible.

7.6 Default

7.6.1 No Default shall exist where such failure to discharge an obligation (other than the payment of money or provision of Financial Security) is the result of a Force Majeure Event as defined in this Agreement or the result of an act or omission of the other Party. Upon a Default, the non-defaulting Party shall give written notice of such Default to the defaulting Party. Except as provided in Article 7.6.2, the defaulting Party shall have five (5) Business Days from receipt of the Default notice within which to cure such Default.

7.6.2 If a Default is not cured as provided in this Article, the non-defaulting Party shall have the right to terminate this Agreement by written notice at any time until cure occurs, and be relieved of any further obligation hereunder and, whether or not that Party terminates this Agreement, to recover from the defaulting Party all amounts due hereunder, plus all other damages and remedies to which it is entitled at law or in equity. The provisions of this article will survive termination of this Agreement.

Article 8. Insurance

8.1 The Interconnection Customer shall obtain and retain, for as long as the Generating Facility is interconnected with the Utility's System, liability insurance which protects the Interconnection Customer from claims for bodily injury and/or property damage. The amount of such insurance shall be sufficient to insure against all reasonably foreseeable direct liabilities given the size and nature of the generating equipment being interconnected, the interconnection itself, and the characteristics of the system to which the interconnection is made. This insurance shall be primary for all purposes. The Interconnection Customer shall provide certificates evidencing this coverage as required by the Utility. Such insurance shall be obtained from an insurance provider authorized to do business in North Carolina. The Utility reserves the right to refuse to establish or continue the interconnection of the Generating Facility with the Utility's System, if such insurance is not in effect.

8.1.1 For an Interconnection Customer that is a residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be a standard homeowner's insurance policy with liability coverage in the amount of at least $100,000 per occurrence.

8.1.2 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility no larger than 250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least $300,000 per occurrence.

8.1.3 For an Interconnection Customer that is a non-residential customer of the Utility proposing to interconnect a Generating Facility greater than 250 kW, the required coverage shall be comprehensive general liability insurance with coverage in the amount of at least $1,000,000 per occurrence.

8.1.4 An Interconnection Customer of sufficient credit-worthiness may propose to provide this insurance via a self-insurance program if it has a self-insurance program established in accordance with commercially acceptable risk management practices, and such a proposal shall not be unreasonably rejected.

8.2 The Utility agrees to maintain general liability insurance or self-insurance consistent with the Utility's commercial practice. Such insurance or self-insurance shall not exclude coverage for the Utility's liabilities undertaken pursuant to this Agreement.

8.3 The Parties further agree to notify each other whenever an accident or incident occurs resulting in any injuries or damages that are included within the scope of coverage of such insurance, whether or not such coverage is sought.

Article 9. Confidentiality

9.1 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." For purposes of this Agreement all design, operating specifications, and metering data provided by the Interconnection Customer shall be deemed Confidential Information regardless of whether it is clearly marked or otherwise designated as such.

9.2 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 this Agreement. 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 this Agreement, or to fulfill legal or regulatory requirements.

9.2.1 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.

9.2.2 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.

9.2.3 All information pertaining to a project will be provided to the new owner in the case of a change of control of the existing legal entity or a change of ownership to a new legal entity.

9.3 If information is requested by the Commission from one of the Parties that is otherwise required to be maintained in confidence pursuant to this Agreement, 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 in accordance with North Carolina law and that the information be withheld from public disclosure.

Article 10. Disputes

10.1 The Parties agree to attempt to resolve all disputes arising out of the interconnection process according to the provisions of this Article.

10.2 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.

10.3 If the dispute has not been resolved within 20 Business Days after receipt of the notice, either Party may contact the Public Staff for assistance in informally resolving the dispute~~.~~, or the Parties may mutually agree to continue negotiations for up to an additional 20 Business Days. In the alternative, the Parties may, upon mutual agreement, seek the assistance of a dispute resolution service to resolve the dispute within 20 Business Days, with the opportunity to extend this timeline upon mutual agreement. If the Parties are unable to informally resolve the dispute, either Party may then file a formal complaint with the Commission.

10.4 Each Party agrees to conduct all negotiations in good faith.

Article 11. Taxes

11.1 The Parties agree to follow all applicable tax laws and regulations, consistent with North Carolina and federal policy and revenue requirements.

11.2 Each Party shall cooperate with the other to maintain the other Party's tax status. Nothing in this Agreement is intended to adversely affect the Utility's tax exempt status with respect to the issuance of bonds including, but not limited to, local furnishing bonds.

Article 12. Miscellaneous

12.1 Governing Law, Regulatory Authority, and Rules

The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of North Carolina, without regard to its conflicts of law principles. This Agreement is subject to all Applicable Laws and Regulations. Each Party expressly reserves the right to seek changes in, appeal, or otherwise contest any laws, orders, or regulations of a Governmental Authority.

12.2 Amendment

The Parties may amend this Agreement by a written instrument duly executed by both Parties, or under Article 12.12 of this Agreement.

12.3 No Third-Party Beneficiaries

This Agreement is not intended to and does not create rights, remedies, or benefits of any character whatsoever in favor of any persons, corporations, associations, or entities other than the Parties, and the obligations herein assumed are solely for the use and benefit of the Parties, their successors in interest and where permitted, their assigns.

12.4 Waiver

12.4.1 The failure of a Party to this Agreement to insist, on any occasion, upon strict performance of any provision of this Agreement will not be

considered a waiver of any obligation, right, or duty of, or imposed upon, such Party.

12.4.2.~~1~~ Any waiver at any time by either Party of its rights with respect to this Agreement shall not be deemed a continuing waiver or a waiver with respect to any other failure to comply with any other obligation, right, or duty of this Agreement. Termination or default of this Agreement for any reason by Interconnection Customer shall not constitute a waiver of the Interconnection Customer's legal rights to obtain an interconnection from the Utility. Any waiver of this Agreement shall, if requested, be provided in writing.

12.5 Entire Agreement

This Agreement, including all Appendices, constitutes the entire agreement between the Parties with reference to the subject matter hereof, and supersedes all prior and contemporaneous understandings or agreements, oral or written, between the Parties with respect to the subject matter of this Agreement. There are no other agreements, representations, warranties, or covenants which constitute any part of the consideration for, or any condition to, either Party's compliance with its obligations under this Agreement.

12.6 Multiple Counterparts

This Agreement may be executed in two or more counterparts, each of which is deemed an original but all constitute one and the same instrument.

12.7 No Partnership

This Agreement shall not be interpreted or construed to create an association, joint venture, agency relationship, or partnership between the Parties or to impose any partnership obligation or partnership liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

12.8 Severability

If any provision or portion of this Agreement shall for any reason be held or adjudged to be invalid or illegal or unenforceable by any court of competent jurisdiction or other Governmental Authority, (1) such portion or provision shall be deemed separate and independent, (2) the Parties shall negotiate in good faith to restore insofar as practicable the benefits to each Party that were affected by such ruling, and (3) the remainder of this Agreement shall remain in full force and effect.

12.9 Security Arrangements

Infrastructure security of electric system equipment and operations and control hardware and software is essential to ensure day-to-day reliability and operational

security. All Utilities are expected to meet basic standards for electric system infrastructure and operational security, including physical, operational, and cyber-security practices.

12.10 Environmental Releases

Each Party shall notify the other Party, first orally and then in writing, of the release of any hazardous substances, any asbestos or lead abatement activities, or any type of remediation activities related to the Generating Facility or the Interconnection Facilities, each of which may reasonably be expected to affect the other Party. The notifying Party shall (1) provide the notice as soon as practicable, provided such Party makes a good faith effort to provide the notice no later than 24 hours after such Party becomes aware of the occurrence, and (2) promptly furnish to the other Party copies of any publicly available reports filed with any Governmental Authorities addressing such events.

12.11 Subcontractors

Nothing in this Agreement shall prevent a Party from utilizing the services of any subcontractor as it deems appropriate to perform its obligations under this Agreement; provided, however, that each Party shall require its subcontractors to comply with all applicable terms and conditions of this Agreement in providing such services and each Party shall remain primarily liable to the other Party for the performance of such subcontractor.

12.11.2 The creation of any subcontract relationship shall not relieve the hiring Party of any of its obligations under this Agreement. The hiring Party shall be fully responsible to the other Party for the acts or omissions of any subcontractor the hiring Party hires as if no subcontract had been made; provided, however, that in no event shall the Utility be liable for the actions or inactions of the Interconnection Customer or its subcontractors with respect to obligations of the Interconnection Customer under this Agreement. Any applicable obligation imposed by this Agreement upon the hiring Party shall be equally binding upon, and shall be construed as having application to, any subcontractor of such Party.

12.11.3 The obligations under this article will not be limited in any way by any limitation of subcontractor's insurance.

12.12 Reservation of Rights

The Utility shall have the right to make a unilateral filing with the Commission to modify this Agreement with respect to any rates, terms and conditions, charges, or classifications of service, and the Interconnection Customer shall have the right to make a unilateral filing with the Commission to modify this Agreement; provided that each Party shall have the right to protest any such filing by the other Party and to participate fully in any proceeding before the Commission in which such modifications may be considered. Nothing in this Agreement shall

limit the rights of the Parties except to the extent that the Parties otherwise agree as provided herein.

Article 13. Notices

13.1 General

Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement (Notice) shall be deemed properly given if delivered in person, delivered by recognized national courier service, sent by first class mail, postage prepaid, or sent electronically to the person specified below:

If to the Interconnection Customer:

Interconnection Customer: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail Address: _____

Phone: _____ Fax: _____

If to the Utility:

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail Address: _____

Phone: _____ Fax: _____

13.2 Billing and Payment

Billings and payments shall be sent to the addresses set out below: If to the Interconnection Customer:

Interconnection Customer: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail Address: _____

If to the Utility:

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

E-Mail Address: _____

13.3 Alternative Forms of Notice

Any notice or request required or permitted to be given by either Party to the other and not required by this Agreement to be given in writing may be so given by telephone, facsimile or e-mail to the telephone numbers and e-mail addresses set out below:

If to the Interconnection Customer:

Interconnection Customer: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

E-Mail Address: _____

If to the Utility:

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

E-Mail Address: _____

13.4 Designated Operating Representative

The Parties may also designate operating representatives to conduct the communications which may be necessary or convenient for the administration of this Agreement. This person will also serve as the point of contact with respect to operations and maintenance of the Party's facilities.

Interconnection Customer's Operating Representative:

Interconnection Customer: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

E-Mail Address: _____

Utility's Operating Representative:

Utility: _____

Attention: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

E-Mail Address: _____

13.5 Changes to the Notice Information

Either Party may change this information by giving five Business Days written notice prior to the effective date of the change.

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their respective duly authorized representatives.

For the Utility

Name:_____

Print Name: _____

Title: _____

Date: _____

For the Interconnection Customer

Name:_____

Print Name: _____

Title: _____

Date: _____

Glossary of Terms

See Glossary of Terms, Attachment 1 to the North Carolina Interconnection Procedures.

Description and Costs of the Generating Facility, Interconnection Facilities, and Metering Equipment

Equipment, including the Generating Facility, Interconnection Facilities, and metering equipment shall be itemized and identified as being owned by the Interconnection Customer, or the Utility. The Utility will provide a best estimate itemized cost, including overheads, of its Interconnection Facilities and metering equipment, and a best estimate itemized cost of the annual operation and maintenance expenses associated with its Interconnection Facilities and metering equipment.

One-line Diagram Depicting the Generating Facility, Interconnection Facilities, Metering Equipment, and Upgrades

This agreement will incorporate by reference the one-line diagram submitted by the Customer on _____ , dated _____, with file name "_____" as part of the Interconnection Request, or as subsequently updated and provided to the Company.

Milestones

Requested Upgrade In-Service Date: _____

Requested Interconnection Facilities In-Service Date _____

~~For an Interim Interconnection Agreement, this Appendix 4 is null and void.~~

Critical milestones and responsibility as agreed to by the Parties:

The build-out schedule does not include contingencies for deployment of Utility personnel to assist in outage restoration efforts on the Utility's S~~s~~ystem or the systems of other utilities with whom the Utility has a mutual assistance agreement. Consequently, the Requested In-S~~s~~ervice D~~d~~ate may be delayed to the extent outage restoration work interrupts the design, procurement and construction of the requested facilities.

	Milestone	Completion Date	Responsible Party
1)			
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)	Expand as needed		

Signatures on next page

Agreed to for the Utility:

Name: _____

Print Name: _____

Date: _____

Agreed to for the Interconnection Customer:

Name: _____

Print Name: _____

Date: _____

Additional Operating Requirements for the Utility's System and Affected Systems Needed to Support the Interconnection Customer's Needs

The Utility shall also provide requirements that must be met by the Interconnection Customer prior to initiating parallel operation with the Utility's System.

Utility's Description of its Upgrades and Best Estimate of Upgrade Costs

The Utility shall describe Upgrades and provide an itemized best estimate of the cost, including overheads, of the Upgrades and annual operation and maintenance expenses associated with such Upgrades. The Utility shall functionalize Upgrade costs and annual expenses as either transmission or distribution related.