

INFORMATION SHEET

PRESIDING: Commissioner Duffley, Chair Mitchell, and Commissioner Clodfelter

PLACE: Dobbs Building, Raleigh, NC

DATE: Tuesday, November 30, 2021

TIME: 4:00 p.m. – 5:03 p.m.

DOCKET NOS.: EMP-116, Sub 0

COMPANY: Juno Solar, LLC

DESCRIPTION: Application for a Conditional Certificate of Public Convenience and Necessity to Construct a 275-MW Solar Facility in Richmond County, NC

VOLUME NUMBER: 4

APPEARANCES

See Attached

WITNESSES

See Attached

EXHIBITS

See Attached

CONFIDENTIAL COPIES OF TRANSCRIPTS AND EXHIBITS ORDERED BY: Karen Kemerait, Ben Snowden, Layla Cummings and Robert Josey

REPORTED BY: Kim Mitchell

TRANSCRIBED BY: Kim Mitchell

DATE FILED: January 12, 2022

TRANSCRIPT PAGES: 55

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TOTAL PAGES: 55

**NORTH CAROLINA UTILITIES COMMISSION
APPEARANCE SLIP**

DATE: 11/30/2021 DOCKET NO.: EMP-116

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APPEARANCE ON BEHALF OF: [Signature]
Juno Solar LLC

APPLICANT: ☒ COMPLAINANT: ☐ INTERVENOR: ☐

PROTESTANT: ☐ RESPONDENT: ☐ DEFENDANT: ☐

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**NORTH CAROLINA UTILITIES COMMISSION
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APPLICANT: ✓ COMPLAINANT: --- INTERVENOR: ---
PROTESTANT: --- RESPONDENT: --- DEFENDANT: ---

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NORTH CAROLINA UTILITIES COMMISSION
PUBLIC STAFF - APPEARANCE SLIP

DATE Nov 30, 2021 DOCKET #: EMP-116, Sub O

PUBLIC STAFF ATTORNEY Layla Cummings, Robert B. Josy

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COUNSEL/MEMBER(s) REQUESTING A **CONFIDENTIAL** TRANSCRIPT
WHO HAS SIGNED A CONFIDENTIALITY AGREEMENT WILL NEED TO
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Layla Cummings
[Signature]

1 PLACE: Dobbs Building, Raleigh, North Carolina
2 DATE: Tuesday, November 30, 2021
3 TIME: 4:00 p.m. - 5:03 p.m.
4 DOCKET NO.: EMP-116, Sub 0
5 BEFORE: Commissioner Kimberly W. Duffley, Presiding
6 Chair Charlotte A. Mitchell
7 Commissioner Daniel G. Clodfelter
8
9

10 IN THE MATTER OF:

11 Application of Juno Solar, LLC,
12 For Conditional Certification of Public
13 Convenience and Necessity to Construct a 275-MW
14 Solar Facility in Richmond County,
15 North Carolina

16
17 VOLUME 4
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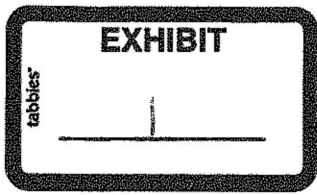
NORTH CAROLINA UTILITIES COMMISSION

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E X H I B I T S

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JUNO SOLAR, LLC
DOCKET NO. EMP-116, SUB 0
DATA REQUEST NO. 1 TO PUBLIC STAFF
DATE SENT: OCTOBER 27, 2021
DUE DATE: NOVEMBER 5, 2021

OFFICIAL COPY

Jan 12 2022

1. Please provide copies of all data requests or other discovery propounded on Duke Energy Carolina, LLC, Duke Energy Progress, LLC (together, "Duke Energy"), or any other person in this docket, and all responses thereto.

Response:

The Public Staff has sent two DRs to Duke in this docket. DR1 questions and responses are in the first attachment. DR2 questions are in the second attachment and we are waiting on responses.



DEP_s Response to EMP 116, Sub 0 -
PSDR1 (EMP-116 Sub PSDR 2 to Duke.doc

2. Does the Public Staff agree that there are "catch 22" issues because a FERC-jurisdictional Interconnection Customer that enters Phase 2 of the Transitional Cluster Study must make substantial performance security payments and face multi-million-dollar withdrawal penalties if it exits the study process if the Commission were to deny a CPCN application? If not, please explain why not.

Response:

No, for an explanation please see Metz Direct at p 5, lines 10 through 15. Witness Metz believes a "catch 22" in this situation would be if the Applicant could not enter the Transitional Cluster Study (TCS) without a CPCN (and could not get a CPCN without entering the TCS). The Applicant, however, does not need a CPCN to enter or progress in the TCS.

3. Is the Public Staff aware that a representative of Pine Gate raised the "catch 22" issue with Duke Energy during the FERC queue reform stakeholder process? If so, did the Public Staff indicate during the stakeholder process or otherwise that it would oppose proposed solutions to the "catch 22" issue? If not, why did the Public Staff fail to raise their objection at that time?

Response:

Witness Metz attended some of the queue reform stakeholder meetings as well as other members of the Public Staff. Witness Metz does recall in one of the meetings Steve Levitas raising the

concern regarding CPCN certainty during the transition cluster process. Witness Metz does not recall that any other party in that stakeholder meeting thought Mr. Levitas concern regarding CPCN certainty warranted a NCIP/LGIP revision, and the stakeholder group moved on. The Public Staff was not as involved in the queue reform stakeholder process as Duke and the solar developers were, as much of the discussion centered on study timelines and milestone payments. We monitored the process but many of the final details were worked out between the developers and Duke outside of the queue reform stakeholder meetings.

4. At the time Duke's FERC Queue Reform proposal was agreed to by stakeholders, had the Public Staff ever taken the position that the Commission should not grant a CPCN without knowing the full upgrade costs?

Response:

Note: The Public Staff asked the Applicant to clarify the date referred to in this question and received the response that the date is as of April 1, 2021, the date that Duke filed its queue reform proposal with FERC.

As of April 1, 2021, the Public Staff had taken the position in several EMP dockets that the developer must take cost responsibility for any unknown network upgrade costs consistent with Duke's affected system policy at that time. The Public Staff has been consistent in its position that costs to be borne by ratepayers should be known prior to issuing the CPCN. In Docket No. EMP-110, Sub 0, Public Staff witness Evan Lawrence stated the following in Supplemental Testimony filed November 16, 2020, at 15-16:

The Public Staff agrees that, if the new policy [Duke Affected System Policy] were challenged at FERC and the challenging parties were successful in shifting cost responsibility ultimately back to DEP's retail and wholesale ratepayers, it would be appropriate for the affected system costs to be considered by the Commission as part of a determination of whether a facility is in the public convenience and necessity. Given the recent changes to Duke Energy's Affected System process, the continued interest in solar development in North Carolina, and the current cost estimates or tools used to evaluate the reasonableness of the costs be passed onto ratepayers (e.g., LCOT benchmark), and the fact that an affected system study has not been completed or considered, if any path remains open that would place undue costs on to ratepayers, the Public Staff believes too much uncertainty exists regarding the magnitude and responsibility of these costs to make a determination as to whether the Facility is in the public convenience and necessity at this time.

Also, prior to the EMP-110 testimony cited above, in comments filed with the Commission in Docket No. E-100, Sub 170, the Public Staff stated that it recommended the following changes to the merchant CPCN application review process:

- 1) Requiring a CPCN applicant to file a copy of any completed interconnection studies, including affected system studies, that may impact the overall cost of construction of the facility.

2) Consideration of changes to the timing of the CPCN application process to potentially require a merchant applicant to have a completed system impact study and an affected system study, as applicable, as a precondition for the Public Staff to issue a notice that a CPCN application is considered complete under Rule R8-63(d).

3) Addressing concerns regarding potential operational impacts of the merchant generation on the interconnecting system or potential affected systems beyond those normally captured in a transmission interconnection study, requiring an Applicant to submit a statement from the interconnecting utility and/or affected system, similar to the statement currently required under Commission Rule R8-64(b)(6) for larger qualifying facility CPCNs regarding any potential operational impacts or constraints associated with the additional generation being added to their system in such a way as to reduce operational efficiencies or increase costs. These may include such factors as operations and maintenance; fuel utilization; increases or decreases in the cycling of traditional thermal assets; and whether the additional capacity will drive further need for future capital investments like static VAR compensators, energy storage, or locational voltage support to account for ramp restraints or intermittency.

Reply Comments of the Public Staff, Docket No. E-100, Sub 170 (Oct. 28, 2020).

5. Does the Public Staff dispute that uncertainty as to whether a CPCN would be granted may dissuade FERC-jurisdictional Interconnection Customers from entering Phase 2 of Duke's Transitional Cluster Study, given that an Interconnection Customer must make substantial performance security payments and will face multi-million-dollar withdrawal penalties if it exits the study process after the beginning of Phase 2? If the Public Staff disputes this contention, please explain why.

Response:

The Public Staff does not dispute that uncertainty regarding whether a CPCN would be granted may lead a potential Interconnection Customer to decide not to enter the Transitional Cluster Study.

6. Public Staff Witness Metz states that Juno Solar's requested conditional CPCN will not solve the "supposed 'catch 22'" issue because Juno Solar would still be subject to the same financial risk of withdrawal from the Transitional Cluster Study if the upgrade costs are higher than \$4/MWh. Since Juno Solar has performed a power flow analysis of the expected Levelized Cost of Transmission ("LCOT") value for the facility, please explain why you believe that a conditional CPCN approval would not be a solution to address Juno Solar's financial risk.

Response:

The power flow analysis Juno completed may be helpful to the Applicant's assessment of risk but does not guarantee Juno will be below a \$4.00/MWh LCOT. That will only be known at the time studies are completed by the utility(ies).

7. Please explain the basis for the Public Staff's position that Juno Solar is seeking to shift risk from itself to DEP ratepayers with the proposed conditional CPCN.

Response:

If the CPCN is granted consistent with the Applicant's request, DEP ratepayers may ultimately be responsible for any network upgrade costs up to the \$4.00/MWh LCOT, or \$51.7 million for the facility. They may also be responsible for other facilities in the cluster that incur similar costs, without knowing the magnitude of those costs at the time the CPCN is granted.

8. Public Staff Witness Metz states that "the Commission cannot make a full informed decision on the Application until it has been studied by the interconnecting utility and potential affected system costs are known." Please identify all CPCN proceedings, including applications for utility-constructed facilities, in which the Public Staff has taken the position that Commission should not render a decision until the project has completed all interconnection studies, including affected system studies.

Response:

Witness Metz provided a list of EMP dockets in which the Public Staff has made similar recommendations. See Metz Direct Testimony p 12, fn 9.

Also, with regard to merchant plants, see:

EMP-92, NTE Reidsville Combined Cycle Plant:

See Witness Metz's initial 2016 testimony, November 2020 testimony, February 2021 testimony.

<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=2a59dff8-57e2-45dc-acda-ac598a95b492>

<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=6de74ffb-0d4d-4332-9618-598095f784b0>

<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=46634e93-1416-48f1-824f-8e498cd59743>

Also, please see the following dockets with regard to utility CPCN applications:

E-2 Sub 1066 Sutton Fast Start Combustion Turbines:

See Public Staff Witness Floyd Notice of Affidavit on his discussion of transmission and existing transmission facilities.

<https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=16a0609c-d7cd-4681-ae9d-a84e912663ec>

E-2 Sub 1089 Asheville Combined Cycle Plant, Proposed Single Cycle Turbine and the Foothills Transmission line:

The Asheville combined cycle and single cycle plants went through multiple revisions and proposal and ultimately Session Law 2015-110 (Mountain Energy Act), transmission was evaluated as part of the Application. See summary of Public Staff's Agenda Items and

Comments, p. 14-15, <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=50df4b08-ae5f-41c9-a1bd-8c26685673c2>

E-7 Sub 1134, Lincoln County CT:

See Public Staff Witness Metz Testimony on Transmission and Transmission Tie-In, <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=7e525e52-fecc-415d-8a52-908ef7ddbfa4>

9. Is it the Public Staff's position that the Commission should not grant a CPCN for a utility-constructed generating facility until all interconnection costs associated with such a generating facility are known? If not, what is the justification for applying a different standard to merchant plants than to utility-owned generating facilities?

Response:

As with merchant plants, reviews of utility CPCNs are completed on a case-by-case basis. The facts and circumstances vary for utility-owned generation. For example, there could be legislation that directs the building or replacement of a generation asset and then requires an accelerated CPCN proceeding (Asheville Coal Plant retirement and CC replacement).

In the case of a utility CPCN application, as with an EMP application, the Public Staff would not want to recommend approval of a CPCN until all costs can be reviewed to ensure that other least reasonable cost options were explored. The Public Staff is not applying a different standard with regard to costs to interconnect. For example, see Metz testimony filed in Docket No. E-7, Sub 1134 on transmission for the requested utility-owned generation.

In many cases, utility CPCN applications may require a more rigorous review than EMP CPCN applications. As the Commission noted in the Friesian Order when discussing utility CPCN applications, "an electric public utility under Rule R8-61(b)(1) must, in addition to demonstrating need for a facility in its IRP, submit additional information supporting the need for the facility related to resource and fuel diversity, information on energy and capacity forecasts, and an explanation of how the proposed facility meets the identified energy and capacity needs." See EMP-105, Sub 0 Order Denying Certificate for Merchant Generating Facility (N.C.U.C June 11, 2020) (Friesian Order), at 10, fn. 1.

It should also be noted that, in the case of a utility building its own generation and the accompanying transmission, the Public Staff has the opportunity to review the reasonableness and prudence of those costs in a rate case.

10. Has the Public Staff ever taken the position that the Commission should not grant a CPCN without knowing the full upgrade costs?

Response:

See the response to Question No. 4 above and Metz Direct Testimony, at p 12, fn 9.

11. Public Staff Witness Metz states that “the network upgrade costs for the facility should not be reviewed in isolation, but rather, in context of other facilities likely to interconnect in the same cluster.” Please describe in detail how “the other facilities likely to interconnect in the same cluster” should impact the Commission’s analysis of the network upgrade costs for the facility.

Response:

The Commission should take into account the total potential costs to ratepayers from the cluster study. Once those costs are known, the Commission can factor that into its analysis of the reasonableness of the cost for each facility.

12. Public Staff Witness Metz states that he is concerned that if the costs go over \$4/MWh, withdrawals and delays may occur while the Commission rehears the CPCN application. Does the Public Staff believe it would be less disruptive to the Transitional Cluster if the project were to terminate after the Facilities Study, and any associated upgrades were not built, because it was denied a CPCN?

Response:

It is not possible to know if Juno’s termination would be more or less disruptive to the Transitional Cluster until we know what projects are included in the Transitional Cluster Study and how far each of them make it through the study process.

13. Is it the Public Staff’s position that the Facility is likely to trigger Affected System Upgrades on the DEC System? If so, please describe in detail the factual basis for this position.

Response:

See Metz Direct Testimony, page 23, line 19, through page 24, line 3.

At the filing of Witness Metz’s testimony, it is unknown how many state and federal queued projects were seeking interconnection, the location of their interconnection, and the size or nameplate rating of the facility. Based on discovery from Duke, it is unknown what affected system impacts will or could occur until after a study is completed. See response to question 1 above and the attached DR 1 responses. It is noteworthy that an affected system study will be impacted by the number of retirements, reduction in existing generation to solve for new load, given the timing of needs in the 2020 IRP and the currently unsolved analysis, and Commission approval of the H951 Carbon Plan.

The Applicant is seeking interconnection on a known constrained section of the system. Generally speaking, if more generation is added in an already constrained section of the system and either load does not match generation or new transmission is not built, the constrained section will not sit idle, but will likely expand depending on the topology or configuration of the transmission/distribution electrical system. This potential expansion is supported by the numerous system impact studies and facilities studies filed in PJM of generation seeking to interconnect in North Carolina. The system impact studies and facilities studies with listed affected system upgrades can be found on PJM's website. Geographically, the Juno facility is close to the seam (boundary or tie point) between DEC and DEP.

14. Please describe all instances of which the Public Staff is aware in which DEC has conducted an Affected System Study with respect to a customer interconnecting in DEP territory, or vice versa.

Response:

Given the time allowed to respond to this data request, the Public Staff is not able to fully research and answer this question, as the term "customer" is overly broad. All load and generation are customer interconnection(s).

Listed below are DEC and DEP studies (system impacts studies, facility studies, feasibility studies, affected system studies, etc.) that identified and/or studied Affected Systems or the need or request for an Affected System study found on the utility's OASIS web portals. It is important to note that based on the projects listed below, as well as the projects not listed, the studies are a snapshot in time and may require restudy for multiple reasons.

Q461-DEP to AEP/PJM
 Q442-DEP to Camp Lejune
 Q428-DEP to Wholesale Customers
 Q399-DEP to Wholesale Customers
 Q398-DEP to Wholesale Customers
 Q2020-11-16 19:19:00-DEC to Surry-Yadkin EMC
 181220_1159 DEC to Dominion Energy South Carolina (DESC)
 Queue number unknown-SCPSA to DEC-Anderson
 Queue number unknown-SCPSA to DEC-Rainey
 2020-03-06 10:27:00 DEC to DESC
 Queue number unknown-Central Electric Power Coop to DEC
 Queue number unknown-Lockhart Power Company System to DEC
 170914_1054-DEC to SCPSA and SCEG
 2020-03-06 10:27:00 DEC to DEP
 180214_1604 DEC to SCEG
 180130_0836 DEC to DEP
 171121_1407 DEC to DEP

171215_1059 DEC to SCEG
171206_1532 DEC to SCEG
171115_1436 DEC to SCEG
171031_1350 DEC to SCEG
170914_1054 DEC to SCEG and SOCO
92951-01_DEC to SCEG
42858-01_DEC to SCEG

15. Please describe all instances of which the Public Staff is aware in which a customer interconnecting in DEP territory has triggered an Affected System Upgrade on the DEC system, or vice versa.

Response:

See response to Question No. 14.

16. Is there a specific LCOT value below which the cost of a proposed project is reasonable, or a value above which the cost is unreasonable?

Response:

The Public Staff is not taking a position on a specific LCOT dollar value that is or is not reasonable. We believe that each facility must be evaluated on a case-by-case basis and the LCOT is not a pass or fail criteria. However, as we testified in the Friesian case and witness Miller cited to regarding the use of the 2019 LBNL study, looking to other market and national data informs our analysis. The magnitude of the cost, timing, safety & reliability of the electrical system and the nature of the upgrades also have to be considered.

17. Has the Public Staff recommended a test other than, or in addition to, LCOT to be utilized by the Commission in making CPCN determinations for FERC-jurisdictional projects? If so, what other test has the Public Staff recommended to the Commission?

Response:

See response to Question Nos. 16 and 18.

18. Does the Public Staff believe that the Commission should utilize a test other than, or in addition to, LCOT in making CPCN determinations for merchant plants? If so, please describe with specificity the other or additional test that the Public Staff believes that the Commission should utilize.

Response:

The Public Staff does not recommend a test. The North Carolina Supreme Court has stated that “[t]he doctrine of convenience and necessity has been the subject of much judicial consideration. No set rule can be used as a yardstick and applied to all cases alike. This doctrine is a relative or elastic theory rather than an abstract or absolute rule.” *State ex rel. Utils. Comm’n v. Casey*, 245 N.C. 297, 302, 96 S.E.2d 8, 12 (1957). This case and the principle established therein have been cited by the Commission in considering an EMP CPCN application. *Friesian Order*, at 8.

19. Is it the Public Staff’s position that the Commission has the legal authority to deny a merchant plant CPCN application based upon the total network upgrade costs to ratepayers coming out of the Transitional Cluster Study or DISIS? If so, please provide the basis for that position.

Response:

Yes. The Public Staff’s basis for the position that the Commission can consider total network upgrade costs for a merchant plant is primarily in G.S. § 62-110.1, specifically G.S. § 62-110.1(e), which provides:

As a condition for receiving a certificate, the applicant shall file an estimate of construction costs in such detail as the Commission may require. The Commission shall hold a public hearing on each application and no certificate shall be granted unless the Commission has approved the estimated construction costs and made a finding that construction will be consistent with the Commission’s plan for expansion of electric generating capacity [G.S. 62-110.1(c)].

The Public Staff also notes the Commission’s thorough analysis of this issue and its conclusion that it may consider the total cost of constructing a facility, including any network upgrade costs. *Friesian Order*, at pp 6, 16-25

20. Is the Public Staff aware of any test other than, or in addition to, LCOT that has been utilized by state utilities commissions in making determinations about the reasonableness of network upgrade costs and/or affected system costs for FERC-jurisdictional projects? If so, describe the name of the test, the nature of the test, and the state utilities commission(s) that utilize the test, and identify any proceedings in which such tests have been used.

Response:

No, the Public Staff is not aware of any other test used by other state commissions. We also have not done any search or survey of other state Commission approaches. The Commission’s authority to grant or deny a CPCN is specific to State law, G.S. § 62-110.1.

21. Please state the LCOT value of upgrades and affected system upgrades (if it has been calculated) for each merchant plant that the Public has recommended that the Commission issue a CPCN to in the last 24 months.

Given the time allowed to respond to this data request, the Public Staff is unable to summarize all the initial, supplemental, and second supplemental testimonies with LCOT values calculated, calculated with sensitivities, and otherwise addressed. In many dockets, it is important to note that the Public Staff had concerns about the accuracy of LCOT values due to incomplete and/or shifting study timelines and cost responsibility among projects, primarily in the DENC service territory.

Below is a chart listing the dates of testimony filed in these dockets over the last 24 months.



EMP - PS
testimony-affidavit f

22. Does the Public Staff believe that the Commission should not adopt a “bright-line” standard for an acceptable LCOT for FERC-jurisdictional customers? If so, please explain with specificity why the Public Staff believes that a “bright-line” standard should not be adopted.

Response:

The Public Staff does not believe that a “bright-line” standard should be adopted. Please see the response to Question No. 18 above.

23. Is it the Public Staff’s position that an LCOT value of no greater than \$4/MWh is unreasonable to North Carolina ratepayers? If so, please describe with specificity why an LCOT value of no greater than \$4/MWh would be unreasonable.

Response:

Please see the response to Question No. 16 above.

24. Does the Public Staff believe that the North Carolina ratepayers would not be adequately protected from unreasonable network upgrade costs and affected system upgrade costs by Juno Solar’s proposed conditions to the CPCN? If so, please describe why the Public Staff believes that Juno Solar’s proposed condition would not adequately protect the ratepayers. Also, please describe why Juno Solar’s proposed condition (that the CPCN will terminate if the combined network upgrade costs and affected system upgrade costs exceed the value of \$4.00 per MWh) would not adequately protect the ratepayers.

Response:

The Public Staff believes that the best approach to protect ratepayers is to wait until interconnection study costs are known. For a discussion of the Public Staff’s position on the \$4.00/MWh cap, please see Metz Direct Testimony, at 32-33.

25. Public Staff Witness Metz states that Juno Solar's assertion that it will displace carbon-emitting resources is not convincing, as there was not an evaluation provided to it would displace carbon-emitting resources in DEP or PJM. Please explain why the Public Staff believes that Juno Solar would not be expected to displace CO2-emitting resources.

Response:

Juno has failed to provide any analysis of currently operating CO2 emitting resources that the facility would displace in either DEP or PJM. Juno also failed to address system stability given the resource is an intermittent generation and the proposed battery storage, based on Juno's application, is subject to change and CO2-emitting resources may have to be cycled more to address ramping and intermittency (see Docket No. E-100 Sub 158 and Dominion Energy's Dispatch Charge Methodology and comments of the Public Staff).

26. Public Staff Witness Metz states that "[e]nergy and capacity are needed for continued load growth, as well as for retiring generation (carbon emitting or not)." Is the Public Staff aware of the planned retirement of any non-carbon emitting generation resources in DEP or DEC territory, or elsewhere in North Carolina?

Response:

All generation has a service life, and, therefore, retirements are expected to be consistent with each facility's service life. Witness Metz did not complete a survey of non-carbon emitting resources that will be retiring in North Carolina, inclusive of DEP, DEC, or PJM.

27. Is it the Public Staff's view that because "[t]he PJM interconnection queue, inclusive of Virginia and North Carolina, has voluminous amounts of generation, particularly carbon free generation, seeking to interconnect," there is no need for new generation in PJM?

Response:

No, Witness Metz's testimony at p 28 acknowledges that PJM has identified a need for new generation. The CPCN standard requires a demonstration of need more than just a need for energy and capacity identified by the utility or market. G.S. § 62-110.1(c) requires "[i]n acting upon any petition for the construction of any facility for the generation of electricity, the Commission shall take into account the applicant's arrangements with other electric utilities for interchange of power, pooling of plant, purchase of power and other methods for providing reliable, efficient, and economical electric service."

Thus, the Public Staff believes it is appropriate for the Commission to take into account the amount of carbon free generation seeking to interconnect in the PJM queue in determining whether this facility has demonstrated a need.

28. Other than the Friesian Holdings, LLC CPCN application, has the Public Staff ever taken the position that a merchant plant applicant has not demonstrated a need for the

facility? If so, please provide the docket number for all merchant plant CPCN applications in the past 10 years in which the Public Staff has taken the position that the applicant has not demonstrated a need for the facility.

Response:

The Public Staff has not taken that position in any recent docket other than the Friesian CPCN application and given the time allowed to respond to this data request, is not able to research the question beyond the last 24 months (as provided in chart in response to Question No. 21). However, the Public Staff has taken various positions in EMP dockets based upon circumstances at the time it filed testimony in these dockets. These positions have ranged from recommendations for approval with conditions addressing updated networking upgrade costs to recommendations to hold the application in abeyance until study costs are known. The Public Staff's recommendation for the need for a generating facility is based on many factors to include location, generating capacity, generation technology, and commercial operation date

29. Has the Public Staff ever previously found that a merchant plant has not demonstrated the need for the facility when PJM has demonstrated the need for new generation, both energy and capacity? If so, please provide the docket number for all merchant plant CPCN applications in which the Public Staff has taken that position.

Response:

See the response to Question No. 28 above.

30. Public Staff Witness Metz states that a more detailed site map is warranted. Please explain why the Public Staff believes that a more detailed site map is necessary when the Public Staff filed a Notice of Completeness of Juno Solar's CPCN application, which includes the site plan, on July 27, 2021.

Response:

The Applicant filed a revised site plan since the notice of completeness. See Metz testimony at pp 8-9. The Applicant's revised site plan removed a section of land from the northwest area of the map. The revised site plan also further identified additional wetlands that were not specified in the original Application. Given the Applicant is requesting a conditional CPCN on a \$/MWh metric, one would need to evaluate the ability of the facility to produce the Applicant's proposed MWh (energy output). The revised site map highlights numerous wetlands within and beyond the 100 year flood plain, which when coupled with the proposed acreage of the facility (~2600 acres) raises concerns regarding whether the facility at commercial operation will be capable of producing the estimated MWh output stated in the Application.

R8-63(d) requires that the Public Staff shall file with the Commission no later than 10 business days after the application is filed and identify if the Application is complete. R8-63(b)(2)(ii) lists the requirements of Exhibit 2, which include a color map and identification of multiple items that appear to be related to a boundary, equipment, and services (electrical and water).

The Public Staff cannot complete a detailed investigation in 10 days per R8-63(d). Furthermore, R8-63 does not include Juno's proposed condition of \$4/MWh LCOT. In addition, given the unique facts and circumstances in this case, Juno's revised site map that identified wetlands, the Public Staff's own review during the investigation period of topographic maps, Juno's proposed conditions, and entering the TCS are all reasons that a more detailed site map is appropriate.

For example, the applicant in Docket No. SP-8210 filed a Notification of Jurisdictional Determination as CPCN Exhibit (4)(ii) on Sept. 20, 2021. The map filed in SP-8210 Exhibit (4)(ii) illustrates the type of survey Witness Metz thinks would be appropriate to submit, because it can confirm whether the proposed areas on which the facility is to be built are indeed suitable or not.

The Public Staff is also concerned that if the Commission were to issue Juno the CPCN, with or without conditions, Juno may have to come back in for an amended CPCN during the TCS process potentially changing the site plan again and/or causing disruptions to the TCS process due to the need to add land to the site plan or decrease the estimated output of the facility.

31. Public Staff Witness Metz states that "The Public Staff has serious concerns that the Applicant, during the construction process, may experience reasonable, but unexpected circumstances that will reduce the nameplate capacity and production profile."

- a. Please state with particularity what "unexpected circumstances" the Public Staff is referring to, and what the factual basis is for the Public Staff's concern that such circumstances exist with respect to the Facility.

Response:

See response to Question No. 30.

The applicant may find wetlands or other areas that would inhibit construction (roads, mounting pads, pilings, routing of interconnection of the parcels, road way crossings, etc.). The factual basis: solar generation is heavily dependent on usable land to locate solar panels/arrays, Witness Metz has reviewed numerous CPCN applications that have been revised due to the addition of new land and reduction in nameplate capacity.

- b. In the past 24 months, has the Public Staff ever expressed similar concerns with respect to any other merchant plant CPCN application? If not, what about the Juno facility triggers these concerns on the part of the Public Staff?

Response:

The condition requested by the Applicant is dependent on the total estimated output of the Facility being achieved. See Witness Metz supplemental testimony in EMP-102 Sub 1, Witness Metz evaluates the LCOT with multiple sensitivities, which include a reduction in annual capacity factor. A reduction in annual capacity factor could represent many topics but, simplified, if the amount of solar panels are decreased while being able to maintain the 275MW capacity output rating, the production output would decrease.

c. Please describe in detail Witness Metz's experience and qualifications with respect to assessing the impact of site conditions on the potential output of a solar generating facility.

Response:

Parts of Witness Metz's career has included a review of maps, inclusive of wetlands and reconnaissance as he worked for a land surveying company and when he served in the United States Marine Corp.

Witness Metz also successfully completed North Carolina State's graduate course on Renewable Electric Energy Systems (ECE 552). The final class project was a design of a solar generation facility which included: topographical review of low lands, land zoning, interconnection location, panel or string builds, buffer and setbacks, shading, panel mismatch losses, feeder losses, soil conditions, access rows, and software modeling for optimization.

Witness Metz has also reviewed SPs for solar facilities in his current role for over five years and has seen numerous revisions, often with revisions highlighting unknown or not previously listed lowlands/marshlands. A good example to illustrate this concern was the most recent revision in EMP 102 Sub 1 bifurcation and the identification of numerous amounts of area of the project area that could not be built on. See Docket No. EMP-102, Sub 1, Application Site Map filed on Aug. 10, 2020 and updated on Sept. 28, 2021.

Witness Metz has reviewed numerous solar applications and amendments to CPCNs over the course of his employment with the Public Staff. As he testified, he has observed that changes to site plans and estimated capacity are frequent. Often, the estimated capacity decreases as the facility is developed.

32. In the testimony of Jay Lucas, filed on April 14, 2021 in Docket NS. EMP-115, sub 0, the Public Staff recommended that the Commission approve a CPCN for the facility, with the following condition:

If, at any time, the Applicant seeks reimbursement for any interconnection facilities, network upgrade costs, affected system costs, or other costs required to allow energization and operation of the Facility, including as a result of any change

to the DEP/DEC/DEF OATT or any other governing document(s), the Commission shall weigh the costs to be borne by DEP's retail and wholesale customers with the generation needs in the state or region consistent with its ruling in its Order Denying Application for a Certificate of Public Convenience and Necessity for a Merchant Generating Facility requested by Friesian Holdings, LLC, in Docket No. EMP-105, Sub 0.

The Public Staff has recommended similar conditions be imposed on CPCNs in other dockets.

- a. Is it the Public Staff's view that the Commission should re-open and review a CPCN, weighing costs and needs as described above, if there is any increase in the amount of reimbursable upgrade costs for merchant plant that occurs after a CPCN is granted? If not, what magnitude of increase should trigger a re-opening of a CPCN, in the public staff's view?

Response:

The Public Staff believes that if costs increase by a significant amount the Commission should re-open and reconsider the CPCN decision to determine if it is still in the public interest consistent with N.C.G.S. § 62-110.1. That does not mean, however, that the Public Staff believes it is appropriate to grant a CPCN with insufficient cost information in the first place.

To the extent the costs are not reimbursable to the merchant generator, the Public Staff would not recommend that the CPCN decision be reconsidered. Witness Lucas's recommendations in his direct testimony in Docket No. EMP-115, Sub 0, have additional context on page 14:

"...subject to the Public Staff's understanding that DEP and DENC's current interconnection procedures applicable to merchant generation do not provide for reimbursement for interconnection facilities, network upgrade costs, affected system costs, or other costs required to allow energization and operation of the Facility..."

- b. Is it the Public Staff's view that the same standard of cost reasonableness (e.g. LCOT or other metric) should apply, whether a CPCN is initially under review by the Commission or whether it is "re-opened" as described above? Please describe with specificity the reason for your position.

Response:

It is the Public Staff's view that the same standard of cost reasonableness should apply. However, the Public Staff recognizes the possibility that once a certificate is granted, the Commission may require that a higher standard of proof be demonstrated regarding cost reasonableness to rescind an order granting a CPCN due to the equities involved. *See* EMP-107, Sub 0, Order on Reconsideration (N.C.U.C. Sept. 2, 2020). In EMP-107, Sub 0, the Commission, in its decision not to rescind its Order granting the CPCN to the Applicant, based its decision on the facts of record and "in balancing the equities involved." The Public Staff acknowledges that the EMP-107 Order expressly stated that the Order was based on the unique facts and circumstances in the docket, and the Commission shall not be bound by it as precedent in any other proceeding.

33. Please reference page 33 lines 12-16 of Witness Metz's testimony. Is it the Public Staff's view that the applicant could change the design of the project (e.g., adding a battery) or reduce its nameplate capacity without notifying the Commission of that change?

Response:

No, the Applicant should notify the Commission of any significant change to the design of the Facility.

34. Is it the Public Staff's understanding that any affected system upgrade costs on the PJM system would be reimbursed to Juno? If so, please describe in detail the factual basis for this understanding.

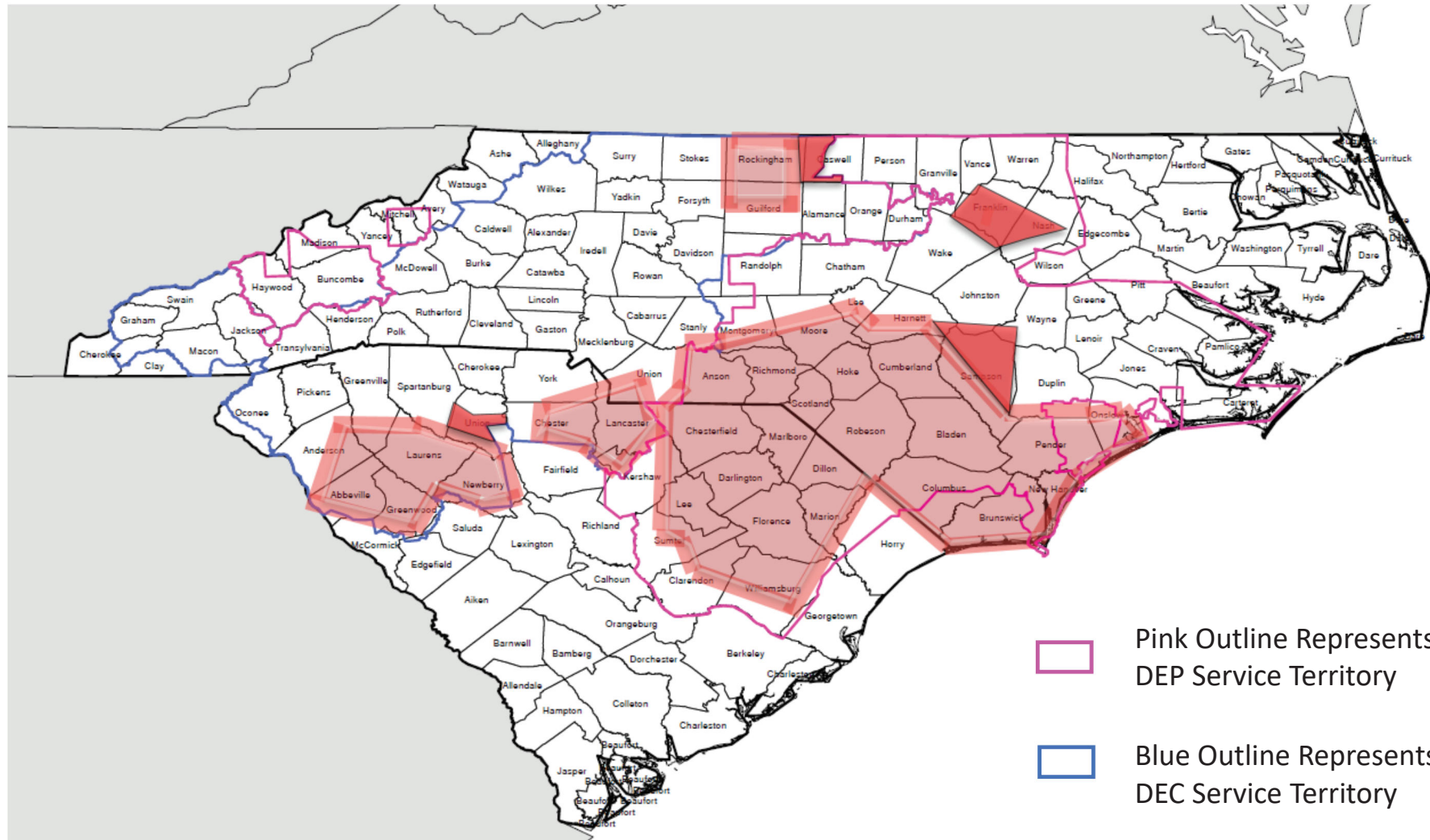
Response:

No, it is the Public Staff's understanding that Juno would pay for the Affected Systems Upgrades on the PJM system in accordance with PJM's OATT Section VI, Administration and Study of New Service Request; Rights Associated With Customer-Funded Upgrades, 217 Cost Responsibility for Necessary Facilities, and Upgrades, 217.3 Local and Network Upgrades and 217.4 Additional Upgrades.

See Comments of Dominion Energy North Carolina, Docket No. E-100, Sub 170 (Oct. 7, 2020), at 4.

Metz Exhibit 1

DEC and DEP Constrained Areas – Tranche 2



I/A

Metz Exhibit 2

DEP Constrained Infrastructure

Line Name	kV	Substation	Type
Barnard Creek - Carolina Beach 115kV Feeder	115	Carolina Beach	T-D
Barnard Creek - Carolina Beach 115kV Feeder	115	Wilmington River Road	T-D
Barnard Creek - Town Creek Overhead 230kV	230	-	-
Barnard Creek - Town Creek UG 230kV	230	-	-
Barnard Creek - Wilmington Corning SS 230kV	230	Wilmington Cedar Ave	T-D
Barnard Creek - Wilmington Corning SS 230kV	230	Wilmington Corning	T-D
Barnard Creek - Wilmington Corning SS 230kV	230	Wilmington Winter Park	T-D
Barnard Creek - Wilmington Sunset Park 115kV Feeder	115	Wilmington Sunset Park	T-D
Bennettsville SS - Laurinburg 230kV	230	McColl	T-D
Biscoe - Rockingham 230kV	230	Rockingham Aberdeen Rd	T-D
Blewett Falls Plant - Rockingham 115kV	115	Rockingham West	T-D
Blewett Falls Plant - Tillery Plant 115kV	115	-	-
Brunswick Plant Unit 1 - Castle Hayne 230kV East	230	Brunswick EMC Daws Creek POD	POD
Brunswick Plant Unit 1 - Castle Hayne 230kV East	230	Masonboro	T-D
Brunswick Plant Unit 1 - Castle Hayne 230kV East	230	Wilmington Ogden	T-D
Brunswick Plant Unit 1 - Castle Hayne 230kV East	230	Wrightsville Beach	T-D
Brunswick Plant Unit 1 - Delco 230kV East	230	Brunswick EMC Bolivia POD	POD
Brunswick Plant Unit 1 - Delco 230kV East	230	Southport 230	T-D
Brunswick Plant Unit 1 - Delco 230kV East	230	Southport ADM	T-D
Brunswick Plant Unit 1 - Delco 230kV East	230	Southport Cogentrix	Gen
Brunswick Plant Unit 1 - Jacksonville 230kV	230	Jones-Onslow EMC Meadowview POD	POD
Brunswick Plant Unit 1 - Jacksonville 230kV	230	Rocky Point	T-D
Brunswick Plant Unit 1 - Weatherspoon Plant 230kV	230	-	-
Brunswick Plant Unit 2 - Delco 230kV West	230	Brunswick EMC Southport POD	POD
Brunswick Plant Unit 2 - Town Creek 230kV	230	-	-
Brunswick Plant Unit 2 - Wallace 230kV	230	-	-
Brunswick Plant Unit 2 - Whiteville 230kV	230	Brunswick EMC Prospect POD	POD
Cape Fear Plant - West End 230kV	230	Central EMC Center Church POD	POD
Cape Fear Plant - West End 230kV	230	Sanford Garden St	T-D
Cape Fear Plant - West End 230kV	230	Sanford Horner Blvd	T-D
Cape Fear Plant - West End 230kV	230	Sanford US1	T-D
Castle Hayne - Folkstone 115kV	115	Holly Ridge	T-D
Castle Hayne - Folkstone 115kV	115	Jones-Onslow EMC Folkstone POD	POD
Castle Hayne - Folkstone 115kV	115	Jones-Onslow EMC Hugh Batts POD	POD
Castle Hayne - Folkstone 115kV	115	Jones-Onslow EMC Morris Landing POD	POD
Castle Hayne - Folkstone 115kV	115	Jones-Onslow EMC Topsail POD	POD
Castle Hayne - Folkstone 115kV	115	Vista	T-D
Castle Hayne - Wallace 115kV	115	Burgaw	T-D
Castle Hayne - Wallace 115kV	115	Castle Hayne Carolinas Cement	T-D
Castle Hayne - Wallace 115kV	115	Wilmington Elementis	T-D
Castle Hayne - Wilmington Corning SS 230kV	230	-	-
Clinton - Mt. Olive 115kV	115	Faison Highway Industrial	T-D
Clinton - Mt. Olive 115kV	115	South River EMC Hargrove POD	POD
Clinton - Mt. Olive 230kV	230	-	-
Clinton - Vander 115kV	115	Roseboro	T-D
Clinton - Vander 115kV	115	South River EMC Roseboro POD	POD

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Clinton - Vander 115kV	115	South River EMC Stedman POD	POD
Clinton - Vander 115kV	115	Vander DAK	T-D
Cumberland - Delco 230kV	230	Four County EMC Kelly POD	POD
Cumberland - Delco 230kV	230	Four County EMC York POD	POD
Cumberland - Delco 230kV	230	Garland	T-D
Cumberland - Delco 230kV	230	Rowan Creek Solar	Gen
Cumberland - Delco 230kV	230	Turnbull Creek Solar	Gen
Cumberland - Fayetteville 230kV North	230	-	-
Cumberland - Fayetteville 230kV South	230	-	-
Cumberland - Richmond 500kV	500	-	-
Cumberland - Wake 500kV	500	-	-
Cumberland - Whiteville 230kV	230	Bladenboro Solar	Gen
Cumberland - Whiteville 230kV	230	Four County EMC Powell POD	POD
Cumberland - Whiteville 230kV	230	Four County EMC Tarheel POD	POD
Darlington County Plant - Bennettsville SS 230kV	230	Bennettsville Sub	T-D
Darlington County Plant - Bennettsville SS 230kV	230	Society Hill	T-D
Darlington County Plant - Florence 230kV	230	-	-
Darlington County Plant - Robinson Plant 230kV North	230	-	-
Darlington County Plant - Robinson Plant 230kV South	230	-	-
Darlington County Plant - SCPSA South Bethune 230kV	230	-	-
Darlington County Plant - Sumter 230kV	230	Bishopville	T-D
Darlington County Plant - Sumter 230kV	230	Sumter Alice Drive	T-D
Darlington County Plant - Sumter 230kV	230	Sumter North	T-D
Darlington County Plant - Sumter 230kV	230	Sumter Wedgefield Road	T-D
Delco - Riegelwood Intl Paper 115kV Feeder	115	Riegelwood Intl Paper	T-D
Delco - Whiteville 115kV	115	Brunswick EMC Hallsboro POD	POD
Delco - Whiteville 115kV	115	Brunswick EMC South Whiteville POD	POD
Delco - Whiteville 115kV	115	Lake Waccamaw	T-D
Delco - Whiteville 115kV	115	Whiteville 115	T-D
Erwin - Fayetteville 115kV	115	Beard	T-D
Erwin - Fayetteville 115kV	115	Erwin Mills	T-D
Erwin - Fayetteville 115kV	115	Fayetteville Slocomb	T-D
Erwin - Fayetteville 115kV	115	Godwin	T-D
Erwin - Fayetteville 115kV	115	South River EMC Beard POD	POD
Erwin - Fayetteville 115kV	115	South River EMC Wade POD	POD
Erwin - Fayetteville East 230kV	230	Linden	T-D
Fayetteville - Fayetteville Dupont SS 115kV	115	Fayetteville DuPont	T-D
Fayetteville - Fayetteville Dupont SS 115kV	115	Hope Mills Church St	T-D
Fayetteville - Fayetteville Dupont SS 115kV	115	Roslin Solar	Gen
Fayetteville - Fayetteville Dupont SS 115kV	115	South River EMC Grays Creek POD	POD
Fayetteville - Fayetteville East 230kV	230	-	-
Fayetteville - Ft. Bragg Woodruff St. 230kV	230	Clifdale	T-D
Fayetteville - Ft. Bragg Woodruff St. 230kV	230	Fayetteville PWC Reilly Rd POD	POD
Fayetteville - Ft. Bragg Woodruff St. 230kV	230	Fort Bragg Knox St	T-D
Fayetteville - Ft. Bragg Woodruff St. 230kV	230	Fort Bragg Main	T-D
Fayetteville - Ft. Bragg Woodruff St. 230kV	230	Sandhills Utilities Knox St POD	POD
Fayetteville - Raeford 230kV	230	Hope Mills Rockfish Rd	T-D

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Fayetteville - Rockingham 230kV	230	Hamlet	T-D
Fayetteville - Rockingham 230kV	230	Shoe Heel Creek Solar	Gen
Fayetteville - Vander 115kV North	115	South River EMC Vander POD	POD
Fayetteville - Vander 115kV South	115	Vander DAK	T-D
Fayetteville East - Ft. Bragg Woodruff St. 230kV	230	-	-
Florence - Florence Mount Hope 115kV Feeder	115	Florence Mt Hope	T-D
Florence - Florence Roche Carolinas 115kV	115	Florence Mars Bluff	T-D
Florence - Kingstree 230kV	230	Florence Cashua	T-D
Florence - Kingstree 230kV	230	Florence Ebenezer	T-D
Florence - Kingstree 230kV	230	Kingstree North	T-D
Florence - Kingstree 230kV	230	Lake City	T-D
Florence - Kingstree 230kV	230	Olanta	T-D
Florence - Kingstree 230kV	230	Sardis	T-D
Florence - Latta 230kV	230	-	-
Florence - Marion 115kV	115	Florence Burch's Crossroads	T-D
Florence - Marion 115kV	115	Florence General Electric	T-D
Florence - Marion 115kV	115	Florence Johnson Controls	T-D
Florence - Marion 115kV	115	Florence L-TEC	T-D
Florence - Marion 115kV	115	Florence South	T-D
Florence - SCPSA Darlington 230kV	230	Florence West	T-D
Florence Dupont - Florence Roche Carolinas 115kV	115	-	-
Florence Dupont - Marion 115kV	115	Marion Bypass	T-D
Florence Dupont - SCPSA Hemingway 115kV	115	Florence Stone Container	T-D
Florence Dupont - SCPSA Hemingway 115kV	115	Hemingway 115	T-D
Florence Dupont - SCPSA Hemingway 115kV	115	Hemingway Tupperware	T-D
Florence Dupont - SCPSA Hemingway 115kV	115	Pamplico 115	T-D
Florence Dupont - SCPSA Hemingway 115kV	115	Pamplico Delta Mills	T-D
Folkstone - Jacksonville City 115kV	115	Jacksonville Blue Creek	T-D
Folkstone - Jacksonville City 115kV	115	Jones-Onslow EMC Morton POD	POD
Folkstone - Jacksonville City 115kV	115	Jones-Onslow EMC Southwest POD	POD
Franklinton - Spring Hope 115kV	115	Franklinton Novo	T-D
Franklinton - Spring Hope 115kV	115	Louisburg 115	T-D
Franklinton - Spring Hope 115kV	115	Louisburg Fox Creek Solar	Gen
Franklinton - Spring Hope 115kV	115	Spring Hope Sub	T-D
Franklinton - Spring Hope 115kV	115	Stallings Crossroads	T-D
Franklinton - Spring Hope 115kV	115	Wake EMC Louisburg POD	POD
Ft. Bragg Woodruff St - Richmond Sub 230kV	230	Fort Bragg Longstreet Rd	T-D
Ft. Bragg Woodruff St - Richmond Sub 230kV	230	Sandhills Utilities Fort Bragg 3rd Brigade POD	POD
Ft. Bragg Woodruff St. - Manchester 115kV Feeder	115	Central EMC Spout Springs POD	POD
Ft. Bragg Woodruff St. - Manchester 115kV Feeder	115	South River EMC Eureka Springs POD	POD
Ft. Bragg Woodruff St. - Manchester 115kV Feeder	115	South River EMC Manchester POD	POD
Harris Plant - Ft. Bragg Woodruff St. 230kV	230	Central EMC Docs Rd POD	POD
Harris Plant - Ft. Bragg Woodruff St. 230kV	230	Spring Lake	T-D
Kingstree - Andrews 115kV Feeder	115	Andrews	T-D
Kingstree - Sumter 115kV	115	Alcolu Grant	T-D
Kingstree - Sumter 115kV	115	Manning	T-D
Latta - Marion 230kV	230	-	-

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Laurinburg - Libbey Owens Ford 115kV North	115	Libbey Owens Ford	T-D
Laurinburg - Libbey Owens Ford 115kV North	115	Lumbee River EMC Laurinburg POD	POD
Laurinburg - Libbey Owens Ford 115kV South	115	-	-
Laurinburg - Raeford 115kV	115	Maxton Airport	T-D
Laurinburg - Raeford 115kV	115	Maxton Solar	Gen
Laurinburg - Raeford 115kV	115	Wagram JP Stevens	T-D
Laurinburg - Richmond 230kV	230	Laurel Hill	T-D
Laurinburg - Richmond 230kV	230	Laurinburg City	T-D
Lee - Mt. Olive 115kV	115	Mt. Olive 115	T-D
Lee - Mt. Olive 115kV	115	Mt. Olive Industrial	T-D
Lee - Mt. Olive 115kV	115	Mt. Olive West	T-D
Lee - Mt. Olive 115kV	115	Tri-County EMC Dudley POD	POD
Lee - Mt. Olive 115kV	115	Tri-County EMC Genoa POD	POD
Lee - Mt. Olive 115kV	115	Tri-County EMC Mt. Olive POD	POD
Lee - Mt. Olive 230kV	230	-	-
Lilesville - DPC Oakboro 230kV Black	230	Ansonville	T-D
Lilesville - DPC Oakboro 230kV White	230	-	-
Lilesville - Rockingham 230kV Black	230	-	-
Lilesville - Rockingham 230kV South	230	-	-
Lilesville - Rockingham 230kV White	230	-	-
Marion - SCPSA Marion 230kV North	230	-	-
Marion - SCPSA Marion 230kV South	230	-	-
Marion - Whiteville 115kV	115	Brunswick EMC Cherry Grove POD	POD
Marion - Whiteville 115kV	115	Brunswick EMC Tabor City POD	POD
Marion - Whiteville 115kV	115	Chadbourn	T-D
Marion - Whiteville 115kV	115	Fair Bluff	T-D
Marion - Whiteville 115kV	115	Mullins	T-D
Marion - Whiteville 115kV	115	Nichols	T-D
Marion - Whiteville 115kV	115	Tabor City	T-D
Marion - Whiteville 115kV	115	Whiteville GA Pacific	T-D
Marion - Whiteville 115kV	115	Whiteville SE Regional Park	T-D
Marion - Whiteville 230kV	230	Brunswick EMC Chadbourn-Peacock POD	POD
Raeford - Lumbee River EMC Rockfish 115kV Feeder	115	Lumbee River EMC Arabia POD	POD
Raeford - Lumbee River EMC Rockfish 115kV Feeder	115	Lumbee River EMC Rockfish POD	POD
Raeford - Raeford 115kV Feeder	115	Lumbee River EMC Raeford POD	POD
Raeford - Raeford 115kV Feeder	115	Raeford 115	T-D
Raeford - Raeford 115kV Feeder	115	Raeford South	T-D
Raeford - Richmond 230kV	230	-	-
Richmond - DPC Newport 500kV	500	-	-
Richmond - Rockingham 230kV East	230	-	-
Richmond - Rockingham 230kV West	230	-	-
Robinson Plant - Camden Junction 115kV	115	Bethune	T-D
Robinson Plant - Florence 115kV	115	Darlington 115	T-D
Robinson Plant - Florence 115kV	115	Darlington Pineville Road	T-D
Robinson Plant - Florence 115kV	115	Hartsville 115	T-D
Robinson Plant - Florence 230kV	230	Dovesville Nucor	T-D
Robinson Plant - Rockingham 115kV	115	Cheraw 115	T-D

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Robinson Plant - Rockingham 115kV	115	Chesterfield	T-T
Robinson Plant - Rockingham 115kV	115	Cordova Burlington Ind	T-D
Robinson Plant - Rockingham 115kV	115	Hartsville Sonoco	T-D
Robinson Plant - Rockingham 115kV	115	Jefferson	T-D
Robinson Plant - Rockingham 115kV	115	Pageland	T-D
Robinson Plant - Rockingham 115kV	115	Sneedsboro Solar	Gen
Robinson Plant - Rockingham 230kV	230	Cheraw Cash Road	T-D
Robinson Plant - Rockingham 230kV	230	Cheraw Reid Park	T-D
Robinson Plant - SCPSA Darlington 230kV	230	Hartsville Segars Mill	T-D
Robinson Plant - Sumter 230kV	230	Elliott	T-D
Rockingham - Rockingham 115kV Tie	115	Pee Dee EMC Rockingham POD	POD
Rockingham - Rockingham 115kV Tie	115	Rockingham 115	T-D
Rockingham - West End 230kV East	230	Pee Dee EMC Derby POD	POD
Rockingham - West End 230kV East	230	West End	T-D
Rockingham - West End 230kV West	230	Eden Solar	Gen
Rockingham - West End 230kV West	230	Ellerbe	T-D
Rockingham - West End 230kV West	230	Pee Dee EMC Patterson POD	POD
Rockingham - West End 230kV West	230	Wadesboro 230	T-D
Rockingham - West End 230kV West	230	Wadesboro Bowman School	T-D
Rocky Mount - Spring Hope 115kV	115	Nashville	T-D
Spring Hope - Zebulon 115kV	115	Frazier Solar	Gen
Spring Hope - Zebulon 115kV	115	Samaria	T-D
Sutton Plant - Castle Hayne 115kV North	115	Castle Hayne	T-D
Sutton Plant - Castle Hayne 115kV South	115	-	-
Sutton Plant - Castle Hayne 230kV	230	Murraysville	T-D
Sutton Plant - Castle Hayne 230kV	230	Wilmington East	T-D
Sutton Plant - Castle Hayne 230kV	230	Wilmington Ninth & Orange	T-D
Sutton Plant - Delco 115kV North	115	Delco 115	T-D
Sutton Plant - Delco 115kV South	115	Brunswick EMC Wilmington POD	POD
Sutton Plant - Delco 115kV South	115	Eagle Island	T-D
Sutton Plant - Delco 115kV South	115	Leland 115	T-D
Sutton Plant - Delco 115kV South	115	Leland Industrial	T-D
Sutton Plant - Delco 115kV South	115	Wilmington Atlantic Scrap Metal	T-D
Sutton Plant - Delco 115kV South	115	Wilmington PCS/LA Pacificorp	T-D
Sutton Plant - Delco 230kV	230	-	-
Sutton Plant - Wallace 230kV	230	Wilmington BASF	T-D
Sutton Plant - Wallace 230kV	230	Wilmington Invista	T-D
Sutton Plant - Wallace 230kV	230	Wilmington Praxair	T-D
Sutton Plant - Wilmington GNF 115kV Feeder	115	Wilmington GNF	T-D
Weatherspoon Plant - Delco 115kV	115	Bladenboro Sub	T-D
Weatherspoon Plant - Delco 115kV	115	Clarkton	T-D
Weatherspoon Plant - Delco 115kV	115	Elizabethtown Cogentrix	Gen
Weatherspoon Plant - Delco 115kV	115	Elizabethtown Sub	T-D
Weatherspoon Plant - Delco 115kV	115	Kings Bluff	T-D
Weatherspoon Plant - Fayetteville 230kV	230	County Line Solar	Gen
Weatherspoon Plant - Fayetteville Dupont SS 115kV	115	Fayetteville DuPont	T-D
Weatherspoon Plant - Fayetteville Dupont SS 115kV	115	Fayetteville Solar	Gen

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Weatherspoon Plant - Fayetteville Dupont SS 115kV	115	St Pauls	T-D
Weatherspoon Plant - Latta 230kV	230	Dillon Maple	T-D
Weatherspoon Plant - Latta 230kV	230	Dillon North	T-D
Weatherspoon Plant - Laurinburg 230kV	230	City of Lumberton POD #3	POD
Weatherspoon Plant - Laurinburg 230kV	230	Rowland	T-D
Weatherspoon Plant - Laurinburg 230kV	230	Weatherspoon Sub	T-D
Weatherspoon Plant - Libbey Owens Ford 115kV	115	Butler	T-D
Weatherspoon Plant - Libbey Owens Ford 115kV	115	Lumbee River EMC Pembroke POD	POD
Weatherspoon Plant - Libbey Owens Ford 115kV	115	Lumbee River EMC West Lumberton POD	POD
Weatherspoon Plant - Libbey Owens Ford 115kV	115	Maxton 115	T-D
Weatherspoon Plant - Lumberton 115kV	115	City of Lumberton POD #4	POD
Weatherspoon Plant - Lumberton 115kV	115	Lumberton 115	T-D
Weatherspoon Plant - Lumberton 115kV	115	Lumberton Cogentrix	Gen
Weatherspoon Plant - Marion 115kV	115	Dillon 115	T-D
Weatherspoon Plant - Marion 115kV	115	Fairmont	T-D
Weatherspoon Plant - Marion 115kV	115	Lumbee River EMC Hog Swamp POD	POD
Weatherspoon Plant - Raeford 115kV	115	City of Lumberton POD #2	POD
Weatherspoon Plant - Raeford 115kV	115	Lumbee River EMC Red Springs POD	POD
Weatherspoon Plant - Raeford 115kV	115	Lumbee River EMC Rennert POD	POD
Weatherspoon Plant - Raeford 115kV	115	Red Springs	T-D
Weatherspoon Plant - Raeford 115kV	115	Shannon	T-D
West End - Pinehurst 115kV Feeder	115	Pinehurst	T-D
West End - Southern Pines 115kV Feeder	115	Carthage	T-D
West End - Southern Pines 115kV Feeder	115	Lakeview	T-D
West End - Southern Pines 115kV Feeder	115	Randolph EMC Eastwood POD	POD
West End - Southern Pines 115kV Feeder	115	Southern Pines 115	T-D
West End - Southern Pines Center Park 115kV Feeder	115	Aberdeen	T-D
West End - Southern Pines Center Park 115kV Feeder	115	Southern Pines Center Park	T-D
-	-	Barnard Creek	T-T
-	-	Bennettsville SS	T-T
-	-	Biscoe	T-T
-	-	Blewett Falls Plant	T-T
-	-	Brunswick Plant Unit 1	T-T
-	-	Brunswick Plant Unit 2	T-T
-	-	Camden Junction	T-T
-	-	Castle Hayne	T-T
-	-	Clinton 230	T-T
-	-	Cumberland	T-T
-	-	Darlington County Plant	T-T
-	-	Delco 230	T-T
-	-	Erwin 115	T-T
-	-	Fayetteville 230	T-T
-	-	Fayetteville Dupont SS	T-T
-	-	Florence 230	T-T
-	-	Florence Dupont	T-T
-	-	Florence Roche Carolinas	T-T
-	-	Folkstone	T-T

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-	- Franklinton 115	T-T
-	- Ft. Bragg Woodruff St.	T-T
-	- Harris Plant	T-T
-	- Jacksonville 230	T-T
-	- Jacksonville City	T-T
-	- Kingtree 230	T-T
-	- Latta	T-T
-	- Laurinburg 230	T-T
-	- Libbey Owens Ford	T-T
-	- Lilesville	T-T
-	- Manchester	T-T
-	- Marion 230	T-T
-	- Mt. Olive 230	T-T
-	- Raeford 230	T-T
-	- Richmond	T-T
-	- Robinson Plant	T-T
-	- Rockingham 230	T-T
-	- Spring Hope SS	T-T
-	- Sumter 230	T-T
-	- Sutton Plant	T-T
-	- Tillery Plant	T-T
-	- Town Creek	T-T
-	- Vander 115	T-T
-	- Wallace	T-T
-	- Weatherspoon Plant	T-T
-	- West End	T-T
-	- Whiteville 230	T-T
-	- Wilmington Corning SS	T-T
-	- Zebulon	T-T

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