

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. EMP-116, SUB 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of
Application of Juno Solar, LLC for a)
Conditional Certificate of Public)
Convenience and Necessity to Construct a) ORDER GRANTING CERTIFICATE
275-MW Solar Facility in)
Richmond County, North Carolina)

HEARD: Tuesday, November 30, 2021, at 10:00 a.m., in Commission Hearing Room 2115,
Dobbs Building, 430 North Salisbury Street, Raleigh, North Carolina

[Wednesday, March 2, 2023, at 9:00 a.m., in Commission Hearing Room 2115,
Dobbs Building, 430 North Salisbury Street, Raleigh, North Carolina](#)

BEFORE: Commissioner Kimberly W. Duffley, Presiding, Chair Charlotte A. Mitchell, and
Commissioner Daniel G. Clodfelter

APPEARANCES:

For Juno Solar, LLC:

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For the Using and Consuming Public:

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[For Duke Energy Progress, LLC:](#)

[Brett Breitschwerdt, Esq.](#)
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501 Fayetteville Street, Suite 500
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BY THE COMMISSION: On July 12, 2021, Juno Solar, LLC (Juno Solar or Applicant), filed an application pursuant to N.C. Gen. Stat. § 62-110.1 and Commission Rule R8-63 for a conditional certificate of public convenience and necessity (CPCN) to construct a 275-MWAC solar photovoltaic (PV) electric generating facility to be located in Richmond County, North Carolina (the Facility) (Conditional CPCN Application or Application). As part of Juno Solar's ~~Conditional~~ CPCN Application, Juno Solar pre-filed the direct testimony and exhibits of Piper Miller, the Vice President of Development for Pine Gate Renewables, LLC (Pine Gate Renewables).

On July 26, 2021, Juno Solar filed the revised direct testimony of Piper Miller with a revised site plan and supplemental exhibits.

On July 27, 2021, the Public Staff filed a Notice of Completeness and Motion to Stay. The Public Staff stated that it has reviewed the Application as required by Commission Rule R8-63(d) and that the Public Staff considers the Application to be complete. The Public Staff also requested that the Commission stay this proceeding pending the completion of interconnection studies by Duke Energy Progress, LLC (DEP) and any Affected System studies by potential Affected Systems.

On August 20, 2021, Juno Solar filed a Response to the Public Staff's Notice of Completeness and Motion to Stay.

On August 31, 2021, the Commission issued its Order Scheduling Hearing, Filing of Testimony, Establishing Procedural Guidelines, and Requiring Public Notice.

On September 14, 2021, Juno Solar filed the supplemental direct testimony of Piper Miller.

On October 12, 2021, DEP and Duke Energy Carolinas, LLC (Duke or Duke Energy) filed a petition to intervene that was granted by the Commission on October 26, 2021.

On October 18, 2021, Juno Solar filed an Affidavit of Publication from The Richmond County Daily Journal.

On October 18, 2021 Juno Solar filed its consent to the remote public witness hearing, and on October 20, 2021, the Public Staff filed its consent to the remote public witness hearing.

On October 19, 2021, Juno Solar filed its Statement of Need for the Facility.

On October 26, 2021, the Public Staff filed the testimony of Public Staff Witness Dustin Metz.

On October 28, 2021, the Public Staff filed a Motion to Cancel the Public Witness Hearing because the Public Staff had received no complaints regarding the proposed Facility and no complaints had been filed in the docket. By Order dated October 29, 2021, the Commission canceled the public witness hearing.

On November 9, 2021, Juno Solar filed the rebuttal testimony and exhibit of Piper Miller and the rebuttal testimony of Steven J. Levitas.

The [evidentiary](#) hearing took place as scheduled on November 30, 2021.

On December 1, 2021, Juno Solar filed a late-filed exhibit.

On December 2, 2021, the Public Staff filed a late-filed exhibit.

On February 11, 2022, Juno Solar filed a proposed order.

On February 11, 2022, the Public Staff filed a [proposed order](#).

[On January 28, 2022, the Commission issued an Order Scheduling Hearing that required Juno Solar to file the Transitional Cluster Study Phase 1 Report \(Phase 1 Report\) in the docket by March 31, 2022 and scheduled an evidentiary hearing on April 4, 2022 for the purposes of obtaining information about the Phase 1 Report. By Order Rescheduling Hearing that was issued on February 8, 2022, the Commission rescheduled the date for the evidentiary hearing to March 2, 2022 and required Juno Solar to file the Phase 1 Report by March 1, 2022.](#)

[On March 1, 2022, Juno Solar filed the Phase 1 Report dated February 28, 2022 in the docket.](#)

[The evidentiary hearing took place as scheduled on March 2, 2022.](#)

Based on the testimony presented at the hearing and the entire record of the proceeding, including matters of which judicial notice has been taken, the Commission makes the following:

FINDINGS OF FACT

1. Juno Solar is a limited liability company incorporated in the State of North Carolina since October 30, 2020. Juno Solar is wholly owned by Birch Creek Development, LLC (Birch Creek) and operated in collaboration with Pine Gate Renewables, which manages the development of Juno Solar's proposed utility-scale solar photovoltaic (PV) electric generation facility. [\(T. Vol. 1, pp. 15, 17\)](#)

2. Juno Solar plans to construct a 275-MWAC solar photovoltaic (PV) electric generation facility to be located along McFarland Road and Green Chapel Church Road in Marks Creek Township, Richmond County, North Carolina. The Facility will consist of a single-axis tracking solar array that is DC-coupled with an energy storage device that is expected to have an

aggregate power capacity of approximately 68.75 MW and 275 MWh (4-hour duration). [\(T. Vol. 1, pp. 25, 50-51\)](#)

3. In compliance with N.C. Gen. Stat. § 62-110.1(a) and Commission Rule R8-63, Juno Solar properly filed with the Commission a Conditional CPCN Application for authorization to construct and operate the 275-MWAC Facility. [\(Public Staff's Notice of Completeness and Motion to Stay filed on July 27, 2021\)](#)

4. Juno Solar will lease approximately 2,600 acres of the parent parcels that are currently being used for agricultural purposes for the proposed Facility. The area not included in the leased area will continue to be used for agricultural purposes. [\(T. Vol. 1, pp. 24, 49\)](#)

5. The Facility is a 275-MWAC PV array, and the source of its power is solar energy. [\(T. Vol. 1, p. 24\)](#)

6. In accordance with Commission Rule R8-63(b)(2), Juno Solar's Application lists the federal, state, and local permits and approvals required for the Facility and the status of those permits and approvals. [\(T. Vol. 1, pp. 28-29, 55\)](#)

7. Construction of the Facility is anticipated to begin in the second quarter of 2023, with commercial operation expected to occur in the third quarter of 2024. The Facility has an expected service life of 40 years. [\(T. Vol. 1, pp. 23, 48\)](#)

8. The anticipated construction costs of the Juno Solar generating facility is approximately \$370,690,000. [\(T. Vol. 1, pp. 23, 48\)](#)

9. Juno Solar has submitted an Interconnection Request to DEP and is currently a participant in the Transitional Cluster Study process approved by the Federal Energy Regulatory Commission (FERC) in its *Order Accepting Tariff Revisions* issued on August 16, 2021. [\(T. Vol. 1, p. 54\)](#)

10. [Juno Solar has two likely and viable options for selling the output of the Facility. The first option is for ~~Because Juno Solar currently envisions to~~ selling the output of the Facility into the PJM wholesale market, ~~it is a FERC-jurisdictional Interconnection Customer. As such, it is required to advance the cost of any Network Upgrades allocated to the Facility in the Transitional Cluster Study Process but, under FERC's "crediting policy," is entitled to have such payments reimbursed by DEP. DEP in turn would be able to recover a substantial portion of any such reimbursement from the North Carolina retail ratepayers. As a general matter, customers interconnecting under the provisions of the North Carolina Interconnection Procedures \(which includes PURPA Qualifying Facilities selling their output to Duke\) are not eligible to receive reimbursement of the costs of Network Upgrades, and the second option is for DEP to purchase the Juno Solar Facility in its 2022 procurement of utility-owned solar renewable assets or in a bilateral transaction.~~](#)

[141. The Transitional Cluster Study consists of a Phase 1 power and voltage study, a Phase 2 stability and short circuit study, followed by a Facilities Study for each project](#)

remaining in the process after the conclusion of the cluster study. DEP issued Phase 1 Report ~~study results from the Transitional Cluster Study process from Duke Energy~~ on February 28, 2022. (T. Vol. 1, p. 32) Juno Solar expects that DEP will issue the Transitional Cluster Study Phase 2 study results in September 2022, and the Facilities Study results in the first quarter of 2023. (T. Vol. 1, p. 69)

102. The Juno Solar Facility will connect to the ~~230 kV~~ Laurinburg-Richmond 230 kV Richmond-Laurel Hill DEP transmission line that is located on the Juno Solar site in Richmond County. (T. Vol. 1, p. 25) Juno Solar will require two new substations: a new Juno Solar substation constructed by Juno Solar and a new full transmission DEP switching station ~~ard with a three-ring breaker bus~~ constructed by DEP. (T. Vol. 1, p. 50; Phase 1 Report, p. 21) The Facility's substation and the DEP switchyard will be located within the Facility's parcel boundaries. (T. Vol. 1, p. 50) The Juno Solar substation will be located directly adjacent to the point of interconnection (POI). (T. Vol. 1, p. 50) The Juno Solar Facility will require a substantial number of Network Upgrades to DEP's transmission system, which will benefit many other proposed solar projects. (Phase 1 Report, pp. 24-25)

13. The Phase 1 Report shows that the cost of the Network Upgrades assigned to Juno Solar is \$89.682 million. (Phase 1 Report, p. 5) The Network Upgrades assigned to Juno Solar and other interdependent projects in the Transitional Cluster Study (Red Zone Upgrades) are needed to eliminate substantial transmission constraints in a large portion of DEP's service territory in the southeastern portion of the state that is particularly well suited to solar development, but where no new solar projects have been able to connect to DEP's transmission grid for several years (Red Zone). (Testimony of Duke Witnesses Finucane and Quintance at the March 2, 2022 hearing) The Phase 1 report shows that there is 1,200 to 1,300 megawatts of projects in the Transition Cluster Study that would benefit from and participate in funding the Red Zone Upgrades, which total around \$365 million. ~~(Testimony of Duke Witnesses Finucan and Quintane and Testimony of Juno Solar Witness Levitas at the March 2, 2022 hearing)~~ T. Vol. 5, p. 35) If Juno Solar were to have to withdraw from the Transitional Cluster Study, the other projects in the Transitional Cluster Study would likely withdraw, resulting in the collapse of the Transitional Cluster Study. (Testimony of Juno Solar Witness Levitas at the March 2, 2022 hearing)

124. A "catch-22" situation has been created for FERC-jurisdictional Interconnection Customers, like Juno Solar, in the Transitional Cluster Study process. (T. Vol. 1, pp. 12, 35, 112) Juno Solar has posted \$3 million for security to enter Phase 1 of the Transitional Cluster Study. (Testimony of Duke Witnesses Finucane and Quintance at the March 2, 2022 hearing) In order to proceed past Phase 1 of the Transitional Cluster Study process, they must make substantial financial commitments by paying \$2 million to enter Phase 2 of the Transitional Cluster Study, and face multi-million-dollar withdrawal penalties if they withdraw from the Transitional Cluster Study process. (Testimony of Duke Witnesses ~~Finucan~~ Finucane and Quintance at the March 2, 2022 hearing; T. Vol. pp. 35, 61) If Juno Solar were to withdraw from the Transitional Cluster Study Process after entering Phase 2, Juno Solar would have to pay nine times the study costs to exit the study process. However, if the Commission were to deem

the levelized cost of transmission (LCOT) resulting from Juno Solar's allocated Network Upgrade costs to be unreasonable and therefore deny or revoke Juno Solar's CPCN after it has entered Phase 2 of study, Juno Solar would have to withdraw from the Transitional Cluster Study and forfeit millions of dollars. [\(T. Vol. 1, pp. 61-62\)](#) But Juno Solar's final allocated Network Upgrade costs and its [final](#) LCOT will not be known until the completion of the Transitional Cluster Study process. [\(T. Vol. 1, p. 112\)](#)

153. Due to the proximity of Juno Solar's interconnection to PJM's service territory, PJM is likely to be identified as a potential Affected System during the study process. [\(T. Vol. 1, p. 69; testimony of Duke Witnesses Finucane and Quaintance at the March 2, 2022 hearing\)](#) Once PJM receives notification, the potential transmission owner in coordination with PJM will determine if further Affected System studies are required. [\(T. Vol. 1, p. 69\)](#) In the event that Affected System costs are triggered, Juno Solar has committed to not seek reimbursement for any Duke Energy Affected System Upgrade costs that might be incurred. [\(T. Vol. 1, p. 103\)](#)

164. It is estimated that Juno Solar and DEP will execute a Standard Large Generator Interconnection Agreement (LGIA) in January of 2023. [\(T. Vol. 1, p. 28\)](#)

175. Juno Solar has made a sufficient showing of need for the proposed Facility.

186. Juno Solar has made a sufficient showing of the public convenience of the proposed Facility, including the public benefits of the associated Network Upgrades [in removing a major impediment to North Carolina solar buildout](#), and point-to-point transmission spending [under a PJM offtake scenario in contributing substantial revenues toward Duke's transmissions system](#).

197. Juno Solar [has](#) proposed a CPCN with a condition based upon a reasonable LCOT value for any required Network Upgrades assigned to the Juno Solar Facility. It is reasonable and appropriate for the Commission to grant a Conditional CPCN to Juno Solar with the following conditions: (1) [Juno Solar agrees to pay for all Network Upgrade costs that are greater than the LCOT value for any required Network Upgrades assigned to Juno Solar will be no greater than of \\$4 per MWh and not seek or accept reimbursement for that overage from the ratepayers](#); (2) ~~the Conditional CPCN will automatically terminate if the LCOT for any required Network Upgrades is greater than \$4 per MWh~~; (3) Juno Solar ~~will agree to not to~~ seek reimbursement for any Duke Energy Affected System Upgrade costs that might be incurred; and (4) Juno Solar's CPCN will automatically terminate if Juno Solar does not either contract for the sale of the energy from the Facility or the sale of the Facility during the life of the CPCN. [\(T. Vol. 1, p. 103\)](#)

~~1820.~~ It is reasonable, appropriate, and in the public interest to grant a Conditional CPCN to Juno Solar.

EVIDENCE AND CONCLUSIONS FOR FINDINGS OF FACT NOS. 1-2

These findings of fact are essentially informational, procedural, or jurisdictional in nature, pertain to the identity of Juno Solar, and are not in dispute. They are supported by the Application and the exhibits thereto and the pre-filed testimony of Juno Solar Witness Miller.

Juno Solar's verified Conditional CPCN Application states that Juno Solar plans to construct a 275-MWAC solar photovoltaic (PV) electric generation facility to be located along McFarland Road and Green Chapel Church Road in Marks Creek Township, Richmond County, North Carolina. [\(T. pp. 24-25\)](#)

EVIDENCE AND CONCLUSIONS FOR FINDINGS OF FACT NO. 3-8

These findings are supported by the Application, the Notice of Completeness filed by the Public Staff on July 27, 2021, the testimony of Juno Solar Witness Miller, and the testimony of Public Staff Witness Metz.

N.C. Gen. Stat. § 62-110.1 and Commission Rule R8-83 provide that no person may begin construction of a facility for the generation of electricity to be directly or indirectly used for furnishing public utility service without first obtaining from the Commission a certificate that the public convenience and necessity requires or will require such construction.

The Public Staff notified the Commission on July 27, 2021 that it had reviewed the Application as required by Commission Rule R8-63(d) and that the Public Staff considers the Application to be complete. [See Public Staff's Notice of Completeness and Motion to Stay filed on July 27, 2021.](#)

Juno Solar's Application demonstrates, and Juno Solar Witness Miller testified, that the Application provides the following information:

- [Detailed information about Juno Solar.](#)
- [Balance sheet and income statement of Birch Creek, the parent company of Juno Solar.](#)
- [Information about the generating facilities in the Southeastern Electric Reliability Council region that Pine Gate Renewables—that manages the development of Juno Solar's proposed generating facility—has the ability to control through leases or contracts.](#)
- [Detailed information about the 275-MWAC solar electric generating facility.](#) Construction of the Facility is anticipated to begin in the second quarter of 2023, the expected commercial operation date is in the third quarter of 2024. The expected service life of the Facility is 40 years, and the anticipated construction cost of the generating Facility is approximately \$370,690,000.
- [Color maps of the Facility.](#) Color maps showing the proposed site boundary and layout, with all major equipment, roads, electric facilities, and the POI were included with the Application.
- [Description of all major equipment of the Facility.](#) The Facility will consist of a single-axis tracking solar array that is DC-coupled with an energy storage system connected behind a single POI to the DEP Richmond-Laurel Hill 230 kV

transmission line. Non-adjoining parcels will be connected via underground MV connections. Juno Solar will require two new substations: a new Juno Solar substation constructed by Juno Solar, and a new DEP switchyard constructed by DEP. The Facility's substation and the DEP switchyard will be located within the parcel boundaries. The solar array will consist of a maximum DC output of approximately 385 MWDC. The energy storage system will have an aggregate power capacity of approximately 68.75 MW and 275 MWh (4-hour duration). Juno Solar plans to deploy Eos Znyth Gen 3.0 battery blocks for its battery storage system, individually rated at 175 kW/700 kWh.

- E911 address for the Facility. Richmond County has not yet assigned an E911 street address to the Facility, as the E911 address will not be obtained until Juno Solar enters the construction stage. The GPS coordinates of the approximate center of the proposed Facility site to the nearest second or one thousandth of a degree are: 34.841037° Long: -79.634080°.
- Land use. Juno Solar will lease approximately 2,600 acres of the parent parcels that are currently being used for agricultural purposes for the proposed Facility. The area not included in the leased area will continue to be used for agricultural purposes.
- List of all needed federal, state, and local permits. A Special Use Permit is required from Richmond County. In addition to the Special Use Permit, Richmond County will require Juno Solar to obtain a Building Permit from the County. From the State of North Carolina, the Facility will require a commercial driveway permit from the North Carolina Department of Transportation, and a stormwater permit and an erosion and sedimentation control plan from the North Carolina Department of Environmental Quality. In regard to federal permits and approvals, Environmental Impact Assessment-860 and EIA-923 are required. Also, a FAA Section 777.9 Notice has been completed.
- The Facility's interconnection to DEP's transmission grid. The Juno Solar Facility will connect to the 230 kV Richmond-Laurel Hill DEP transmission line that is located on the Juno Solar site. Juno Solar will require two new substations: a new Juno Solar substation constructed by Juno Solar and a new DEP switchyard constructed by DEP. The Facility's substation and the DEP switchyard will be located within the Facility's parcel boundaries. The Juno Solar substation will be located directly adjacent to the POI, and all connections to the substation will underground.

The Commission's examination of the Application, the exhibits attached thereto, and the Public Staff's Notice of Completeness confirms that Juno Solar has complied with all filing requirements of ~~the statute~~ N.C. Gen. Stat. § 62-110.1 and the Commission's merchant plant rule.

Based on the foregoing, the Commission finds and concludes that Juno Solar has filed a complete and sufficient application for a Conditional CPCN in accordance with the requirements of N.C. Gen. Stat. § 62-110.1 and Commission Rule R8-63.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 9

This finding is supported by the Application, the testimony of Juno Solar Witness Miller, and the testimony of Public Staff Witness Metz.

Juno Solar Witness Miller testified that Juno Solar is participating in the Transitional Cluster Study process [that was](#) approved by FERC on August 16, 2021. The Transitional Cluster Study ~~is~~ is part of the process approved by FERC and by this Commission in order to transition current Interconnection Customers from a serial interconnection study process to a cluster-based study process. Projects in Duke's interconnection queue as of the effective date of Duke's queue reform proposal (~~whether~~ under [either](#) FERC jurisdiction or state jurisdiction), which had not received a system impact study, could elect to enter the Transitional Cluster Study if the customer met certain criteria and made certain financial commitments. [\(T. Vol. 1, pp. 28, 66\)](#)

Under the Transitional Cluster Study process, Juno Solar may share cost responsibility for Network Upgrades with other Interconnection Customers, who may or may not be eligible to receive reimbursement for their share of the cost of the Network Upgrades, depending on their jurisdictional status. [\(T. Vol. 1, pp. 32, 58\)](#)

[EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 10](#)

[This finding is supported by the Application and the testimony of Juno Solar Witnesses Miller and Levitas.](#)

[Juno Solar Witnesses Miller and Levitas testified that Juno Solar has two likely and viable options for selling the output of the Facility. The first option is for Juno Solar to sell the output of the Facility into the PJM wholesale market. \(T. Vol. 1, pp. 28, 54\) As a FERC-jurisdictional Interconnection Customer, Juno Solar is required to advance the cost of the Network Upgrades allocated to the Facility in the Transitional Cluster Study Process but, under FERC's "crediting policy," is entitled to have such payments reimbursed by DEP. \(T. Vol. 1, pp. 62, 111\) DEP in turn would be able to recover a substantial portion of any such reimbursement from the North Carolina retail ratepayers. As a general matter, customers interconnecting under the provisions of the North Carolina Interconnection Procedures \(which includes PURPA Qualifying Facilities selling their output to Duke\) are not eligible to receive reimbursement of the costs of Network Upgrades.](#)

[Juno Solar Witness Levitas explained that the second option for the Facility would benefit the North Carolina ratepayers. Under this option, DEP would purchase the Juno Solar Facility in its 2022 procurement of utility-owned solar ~~renewable~~ assets under ~~in accordance~~ ~~with~~ House Bill 951 or in a bilateral transaction consistent with the goals of that legislation. Due to the large, 275-MW size of Juno Solar, DEP's purchase of Juno Solar would likely be a cost-effective way for DEP to add new renewable energy resources to its system to help achieve compliance with House Bill 951. Juno Solar Witness Levitas believes that this option would be an excellent outcome to North Carolina ratepayers. Juno Solar Witness Levitas pointed out that in the event that Juno Solar were to sell its output to a customer in the PJM market, the North Carolina ratepayers would contribute to the cost of Juno Solar's Network Upgrades under FERC's crediting policy without receiving any of the carbon-free output of the Facility.](#)

However, if DEP were to purchase the Juno Solar Facility ~~in its 2022 procurement~~, Juno Solar would not be required to advance the costs of the Network Upgrades assigned to the Facility in the Transitional Cluster Study Process. The North Carolina retail ratepayers would therefore not have to provide reimbursement for the Network Upgrade costs. (Testimony of Juno Witness Levitas at the March 2, 2022 hearing)

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 12¹

This finding is supported by the Application and the testimony of Juno Solar Witnesses Miller and Levitas.

Duke Energy filed its proposed revisions to Attachment J (Standard Large Generator Interconnection Procedures (LGIP)) to its Joint Open Access Transmission Tariff (OATT) with FERC in Docket No. ER-21-1579-000 on April 1, 2021 (FERC Queue Reform Proposal). In its filing, Duke Energy requested that FERC approve its FERC Queue Reform Proposal by June 1, 2021 so that Duke Energy could immediately “reform” its generator interconnection queueing, study process, and cost allocation process by transitioning to a Definitive Interconnection Study Process, and align the FERC-jurisdictional LGIP with queue reform revisions to the state-jurisdictional generator interconnection procedures already approved by this Commission and the Public Service Commission of South Carolina. (T. Vol. 1, pp. 31-32)

After FERC approved Duke Energy’s FERC Queue Reform Proposal, Juno Solar entered the Transitional Cluster Study, in which Juno Solar and other Interconnection Customers will be grouped together for the Transitional Cluster Study process and will be able to share any required Network Upgrade costs. (T. Vol. 1, p. 32)

There are substantial financial security requirements for both “ready” and “non-ready” Interconnection Customers to enter the Transitional Cluster Study and proceed through the Transitional Cluster Study process. To demonstrate readiness (or to establish security in lieu of readiness) for Phase 1 of the Transitional Cluster Study, an Interconnection Customer must provide one of the following:

- a. An executed term sheet (or comparable evidence) related to a contract, binding upon the parties to the contract, for sale of the Generating Facility’s energy, or the entire constructed Generating Facility, where the term of sale is not less than five (5) years, or
- b. Reasonable evidence that the Generating Facility is included in a Resource Planning Entity’s Resource Plan or Resource Solicitation Process, or
- c. An executed Provisional Large-Generator Interconnection Agreement filed with FERC that is not in suspension with 1) a commitment to construct the facility, 2) a Commercial Operation Date no later than 2024 and 3) a security deposit in addition to amount required under Section 4.1.2 where the total security deposit represents a reasonable estimation of the potential costs that could be ultimately allocated to the project in the Transitional Cluster Study, or

d. Security equal to three million dollars (\$3,000,000).¹

There is significant, and increasing, security required for both “ready” and “non-ready” Interconnection Customers progressing through Phase 1 and Phase 2 of the Transitional Cluster Study process. The total security required for the Transitional Cluster Study process if readiness is provided is as follows: (1) 1 times the study deposit to enter Phase 1, and (2) \$3 million to enter Phase 2. The total security for the study process if readiness is not provided is as follows: (1) 1 times the study deposit, plus \$3 million to enter Phase 1, and (2) an additional \$2 million (for a total of \$5 million) to enter Phase 2.² Therefore, “ready” projects will have to pay in excess of \$3 million to enter the Phase 2 study, and “non-ready” projects will have to pay in excess of \$5 million to be studied in Phase 2.

If an Interconnection Customer withdraws prior to Phase 2 of the Transitional Cluster Study process commencing, no Withdrawal Penalty is imposed and the Interconnection Customer will only be assigned its allocated study costs. If the Interconnection Customer withdraws after entering Phase 2 and prior to executing an LGIA, the Interconnection Customer will face a withdrawal penalty equal to nine times its allocated study costs—an amount that in the case of Juno Solar is expected to approach if not exceed \$2 million. Among the reasons that an Interconnection Customer might need to withdraw from the study process is if the Commission were to deny a CPCN application or revoke an issued CPCN. Therefore, the “catch 22” is as follows: (i) Duke cannot provide the finalized Network Upgrade costs of a FERC jurisdictional project in the Transitional Cluster Study until after completion of the Phase 2 study, but (ii) if the Commission’s CPCN decision for the project is not made until after those costs have been determined in the Phase 2 study (and the remainder of the study process) and the Commission denies the CPCN because it deems such costs to be unreasonable, the Interconnection Customer runs the risk of having to pay a withdrawal penalty. The Commission agrees that this places an unreasonable burden on Juno Solar and that a reasonable solution is for the Commission to issue a Conditional CPCN that will remain in effect so long as the LCOT for any required Network Upgrades assigned to Juno Solar is at or below an acceptable defined amount.

In addition, the withdrawal of a relatively large project like Juno Solar from the Transitional Cluster after Phase 2 may significantly change the results of the study, including the allocation of cost responsibility for Network Upgrades, may lead to further withdrawals, and may trigger the need for a re-study. This would be even more likely if Juno Solar were allocated cost responsibility for significant Network Upgrades.

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EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 102

This finding is supported by the Application, ~~and~~ the testimony of Juno Solar Witnesses Miller and Levitas, the testimony of Duke Witnesses Finucane and Quintance, and the Phase 1 Report.

¹ See LGIP, § 7.2.1.e.

² See LGIP, § 7.2.3.

Juno Solar Witness Miller testified that the Facility will consist of a single-axis tracking solar array that is DC-coupled with an energy storage system connected behind a single POI to the DEP Richmond-Laurel Hill 230 kV transmission line. (T. Vol. 1, p. 25) Non-adjointing parcels will be connected via underground MV connections. (T. Vol. 1, p. 51) Juno Solar will require two new substations: a new Juno Solar substation constructed by Juno Solar, and a new full transmission DEP-switching station yard with a three-ring breaker bus constructed by DEP. (T. Vol. 1, p. 50; Phase 1 Report, p. 21) The Facility's substation and the DEP switchyard will be located within the parcel boundaries. (T. Vol. 1, p. 50) The solar array will consist of a maximum DC output of approximately 385 MWDC. The energy storage system will have an aggregate power capacity of approximately 68.75 MW and 275 MWh (4-hour duration). (T. Vol. 1, p. 51) Juno Solar plans to deploy Eos Znyth Gen 3.0 battery blocks for its battery storage system, individually rated at 175 kW/700 kWh. (T. Vol. 1, p. 51)

The Phase 1 Report shows that the Juno Solar Facility and other solar projects in the Transitional Cluster Study will require substantial upgrades to DEP's transmission system. Specifically, these include ~~the Juno Solar Facility will trigger~~ the following Network Upgrades for the DEP's transmission system: Badin 115/100 Transformer #1 (Cube Hydro owned); Badin 115/100 Transformer #2 (Cube Hydro owned); reconductor Blewett – Rockingham 115 kV line; reconductor Cape Fear – West End 230 kV line (Sanford US 1 – Sanford Garden St.); reconductor Cape Fear – West End 230 kV line (Sanford Garden St. – CEMC Center Church); raise Cape Fear – West End 230 kV Line; reconductor Erwin – Fayetteville 115 kV (Erwin Mills Tap – Godwin); reconductor Erwin – Fayetteville 115 kV (SREMC Wade -- Beard); reconductor Erwin – Fayetteville 115 kV (Beard -- Fay Solcomb Tap; reconductor Erwin – Fayetteville 115 kV (Erwin 115 – Erwin Mills Tap); reconductor Erwin – Fayetteville 115 kV (Linden – Fay East); reconductor Erwin – Fayetteville 115 kV (Erwin – Linden); reconductor Fayetteville – Fay Dupont 115 kV (Fayetteville – Hope Mills Church Rd.); reconductor Laurinburg – Raeford 115 kV; reconductor Robinson – Rockingham 115 kV; raise Rockingham – West End 230 kV West; and raise Weatherspoon – Marion 115 kV. (Phase 1 Report, pp. 24-25)

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 13

This finding is supported by the testimony of Juno Solar Witness Levitas, the testimony of Duke Witnesses Finucane and Quaintance, and the Phase 1 Report.

The Phase 1 Report shows that projects totaling 2,094 MW were studied in the DEP Transitional Cluster Study. Of the total 2,094 MW of projects studied in the Transitional Cluster Study, 1,677 MW are for solar-only projects, 345 MW are for solar-plus-energy storage projects, and 72 MW of stand-alone energy storage projects. (Testimony of Duke Witnesses Finucane and Quaintance at the March 2, 2022 hearing) The Phase 1 Report shows that the cost of the Network Upgrades assigned to Juno Solar is \$89.682 million. (Phase 1 Report, p. 5)

Juno Solar Witness Levitas and Duke Witnesses Finucane and Quaintance testified that the majority of the Network Upgrades assigned to Juno Solar and other interdependent projects in the Transitional Cluster Study are the same upgrades that were discussed during the Friesian Holdings, LLC proceeding in Docket No. EMP-105, Sub 0. (Testimony of Juno Solar Witness Levitas and testimony of Duke Witnesses Finucane and Quaintance at the March 2, 2022

hearing) It remains the case that these Upgrades are needed to eliminate transmission constraints in a large portion of DEP's service territory that is particularly well suited to solar development, but where no new solar projects have been able to connect to the grid for several years. (Testimony of Juno Solar Witness Levitas and Testimony of Duke Witnesses Finucane and Quaintance at the March 2, 2022 hearing) This area is often referred to as the Red Zone and these upgrades as the Red Zone Upgrades. The Network Upgrades assigned to Juno Solar and other interdependent projects in the Transitional Cluster Study are needed to eliminate substantial transmission constraints in a large portion of DEP's service territory in the southeastern portion of the state that is particularly well suited to solar development, but where no new solar projects have been able to connect to DEP's transmission grid for several years. (Testimony of Duke Witnesses Finucane and Quaintance at the March 2, 2022 hearing) The Phase 1 report shows that there is more than 1,200 megawatts of projects in the Transitional Cluster Study that would benefit from and participate in funding the Red Zone Upgrades, which total around \$365 million. (Testimony of Duke Witnesses Finucane and Quaintance at the March 2, 2022 hearing)

Juno Solar Witness Levitas and Duke Witnesses Finucane and Quaintance stated that the withdrawal of Juno Solar—the largest project in the Transitional Cluster Study³—from the Transitional Cluster Study after Phase 2 will certainly change the results of the study, including the allocation of cost responsibility for Network Upgrades. Thus, restudy would be required if Juno Solar had to withdraw from the Transitional Cluster Study. (Phase 1 Report; T. Vol. 4, p. 34) If Juno Solar were to withdraw from the Transitional Cluster Study, the Network Upgrade cost assigned to Juno Solar would be allocated proportionally to the remaining projects in the Transitional Cluster Study that ~~require~~ share the same Network Upgrades as Juno Solar. (Testimony of Duke Witnesses Finucane and Quaintance at the March 2, 2022 hearing) It is unlikely that the remaining projects in the Transitional Cluster Study would be able to absorb the Network Upgrade cost that had been assigned to Juno Solar. Therefore, the likely result would be withdrawals from the Transitional Cluster Study causing a collapse of the Transitional Cluster Study. (Testimony of Juno Solar Witness Levitas at the March 2, 2022 hearing)

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 14

This finding is supported by the testimony of Juno Solar Witnesses Miller and Levitas, the testimony of Public Staff Witness Metz, and Juno Solar's Motion to Modify Hearing Schedule filed on February 3, 2022.

Juno Solar Witness Miller and Public Staff Witness Metz ~~provided information~~ explained that the Transitional Cluster Study is the first cluster study that commenced in 2021 as part of Duke Energy's queue reform effort to move away from an interconnection serial study process to a cluster study approach that allows Duke Energy to allocate costs among multiple projects triggering the need for Network Upgrades. (T. Vol. 3, p. 9) There are multiple phases to the Transitional Cluster Study: Phase 1 is the power flow and voltage study, ~~estimated to be~~ that was

³ Most projects in the Transitional Cluster Study are 80 megawatts or less. With a size of 275 MW, Juno Solar is the largest project in the Transitional Cluster Study. The next largest project is a 165 MW project located in South Carolina. (See Phase 1 Report; Duke Witness Testimony at March 2, 2022 Hearing)

completed by February 28, 2022; Phase 2 is a stability and short circuit study, estimated to be completed by August 28, 2022; and a Facilities Study, estimated to be completed in the first quarter of 2023. (T. Vol. 1, p. 32) The Transitional Cluster Study timeline for study concludes with the awarding of Interconnection Agreements in 2023, which could be extended an additional 150 days or more depending on the need for restudy.

There are substantial financial security requirements for both “ready” and “non-ready” Interconnection Customers to enter the Transitional Cluster Study and proceed through the Transitional Cluster Study process. To demonstrate readiness (or to establish security in lieu of readiness) for Phase 1 of the Transitional Cluster Study, an Interconnection Customer must provide one of the following:

- a. An executed term sheet (or comparable evidence) related to a contract, binding upon the parties to the contract, for sale of the Generating Facility’s energy, or the entire constructed Generating Facility, where the term of sale is not less than five (5) years, or
- b. Reasonable evidence that the Generating Facility is included in a Resource Planning Entity’s Resource Plan or Resource Solicitation Process, or
- c. An executed Provisional Large Generator Interconnection Agreement filed with FERC that is not in suspension with 1) a commitment to construct the facility, 2) a Commercial Operation Date no later than 2024 and 3) a security deposit in addition to amount required under Section 4.1.2 where the total security deposit represents a reasonable estimation of the potential costs that could be ultimately allocated to the project in the Transitional Cluster Study, or
- d. Security equal to three million dollars (\$3,000,000).⁴ (T. Vol. 1, pp. 32-33)

There is significant, and increasing, security required for both “ready” and “non-ready” Interconnection Customers progressing through Phase 1 and Phase 2 of the Transitional Cluster Study process. The total security required for the Transitional Cluster Study process if readiness is provided is as follows: (1) 1 times the study deposit to enter Phase 1, and (2) \$3 million to enter Phase 2. The total security for the study process if readiness is not provided is as follows: (1) 1 times the study deposit, plus \$3 million to enter Phase 1, and (2) an additional \$2 million (for a total of \$5 million) to enter Phase 2.⁵ Therefore, “ready” projects will have to pay in excess of \$3 million to enter the Phase 2 study, and “non-ready” projects will have to pay in excess of \$5 million to be studied in Phase 2. (T. Vol. 1, pp. 33-34)

If an Interconnection Customer withdraws prior to Phase 2 of the Transitional Cluster Study process commencing, no Withdrawal Penalty is imposed and the Interconnection Customer will only be assigned its allocated study costs. (T. Vol. 1, p. 34) If the Interconnection Customer withdraws after entering Phase 2 and prior to executing an LGIA, the Interconnection Customer will face a withdrawal penalty equal to nine times its allocated study costs—an amount that in the case of Juno Solar is expected to approach if not exceed \$2 million.

⁴ See LGIP, § 7.2.1.e.

⁵ See LGIP, § 7.2.3.

Among the reasons that an Interconnection Customer might need to withdraw from the study process is if the Commission were to deny a CPCN application or revoke an issued CPCN. (T. Vol. 1, pp. 34-35)

Therefore, the “catch-22” is as follows: (i) Duke cannot provide the finalized Network Upgrade costs of a FERC-jurisdictional project in the Transitional Cluster Study until after completion of the Phase 2 study, but (ii) if the Commission’s CPCN decision for the project is not made until after those costs have been determined in the Phase 2 study (and the remainder of the study process) and the Commission denies the CPCN because it deems such costs to be unreasonable, the Interconnection Customer runs the risk of having to pay a substantial withdrawal penalty. The Commission agrees that this places an unreasonable burden on Juno Solar and that a reasonable solution is for the Commission to issue a CPCN conditioned upon Juno Solar paying for all Network Upgrade costs that are greater than an LCOT value of \$4 per MWh and Juno Solar agreeing to not seek reimbursement for that overage from the ratepayers. (T. Vol. 1, pp. 34-35)

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 15

This finding is supported by the testimony of Juno Solar Witness Miller and the testimony of Public Staff Witness Metz. ~~EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 12~~

~~This finding is supported by the Application and the testimony of Juno Solar Witnesses Miller and Levitas.~~

~~Duke Energy filed its proposed revisions to Attachment J (Standard Large Generator Interconnection Procedures (LGIP)) to its Joint Open Access Transmission Tariff (OATT) with FERC in Docket No. ER-21-1579-000 on April 1, 2021 (FERC Queue Reform Proposal). In its filing, Duke Energy requested that FERC approve its FERC Queue Reform Proposal by June 1, 2021 so that Duke Energy could immediately “reform” its generator interconnection queueing, study process, and cost allocation process by transitioning to a Definitive Interconnection Study Process, and align the FERC-jurisdictional LGIP with queue reform revisions to the state-jurisdictional generator interconnection procedures already approved by this Commission and the Public Service Commission of South Carolina.~~

~~After FERC approved Duke Energy’s FERC Queue Reform Proposal, Juno Solar entered the Transitional Cluster Study, in which Juno Solar and other Interconnection Customers will be grouped together for the Transitional Cluster Study process and will be able to share any required Network Upgrade costs.~~

~~There are substantial financial security requirements for both “ready” and “non-ready” Interconnection Customers to enter the Transitional Cluster Study and proceed through the Transitional Cluster Study process. To demonstrate readiness (or to establish security in lieu of~~

readiness) for Phase 1 of the Transitional Cluster Study, an Interconnection Customer must provide one of the following:

- ~~a. An executed term sheet (or comparable evidence) related to a contract, binding upon the parties to the contract, for sale of the Generating Facility's energy, or the entire constructed Generating Facility, where the term of sale is not less than five (5) years, or~~
- ~~b. Reasonable evidence that the Generating Facility is included in a Resource Planning Entity's Resource Plan or Resource Solicitation Process, or~~
- ~~c. An executed Provisional Large Generator Interconnection Agreement filed with FERC that is not in suspension with 1) a commitment to construct the facility, 2) a Commercial Operation Date no later than 2024 and 3) a security deposit in addition to amount required under Section 4.1.2 where the total security deposit represents a reasonable estimation of the potential costs that could be ultimately allocated to the project in the Transitional Cluster Study, or~~
- ~~d. Security equal to three million dollars (\$3,000,000).⁶~~

~~There is significant, and increasing, security required for both "ready" and "non-ready" Interconnection Customers progressing through Phase 1 and Phase 2 of the Transitional Cluster Study process. The total security required for the Transitional Cluster Study process if readiness is provided is as follows: (1) 1 times the study deposit to enter Phase 1, and (2) \$3 million to enter Phase 2. The total security for the study process if readiness is not provided is as follows: (1) 1 times the study deposit, plus \$3 million to enter Phase 1, and (2) an additional \$2 million (for a total of \$5 million) to enter Phase 2.⁷ Therefore, "ready" projects will have to pay in excess of \$3 million to enter the Phase 2 study, and "non-ready" projects will have to pay in excess of \$5 million to be studied in Phase 2.~~

~~If an Interconnection Customer withdraws prior to Phase 2 of the Transitional Cluster Study process commencing, no Withdrawal Penalty is imposed and the Interconnection Customer will only be assigned its allocated study costs. If the Interconnection Customer withdraws after entering Phase 2 and prior to executing an LGIA, the Interconnection Customer will face a withdrawal penalty equal to nine times its allocated study costs—an amount that in the case of Juno Solar is expected to approach if not exceed \$2 million. Among the reasons that an Interconnection Customer might need to withdraw from the study process is if the Commission were to deny a CPCN application or revoke an issued CPCN. Therefore, the "catch-22" is as follows: (i) Duke cannot provide the finalized Network Upgrade costs of a FERC-jurisdictional project in the Transitional Cluster Study until after completion of the Phase 2 study, but (ii) if the Commission's CPCN decision for the project is not made until after those costs have been determined in the Phase 2 study (and the remainder of the study process) and the Commission denies the CPCN because it deems such costs to be unreasonable, the Interconnection Customer runs the risk of having to pay a withdrawal penalty. The Commission agrees that this places an unreasonable burden on Juno Solar and that a reasonable solution is for~~

⁶ See LGIP, § 7.2.1.e.

⁷ See LGIP, § 7.2.3.

~~the Commission to issue a Conditional CPCN that will remain in effect so long as the LCOT for any required Network Upgrades assigned to Juno Solar is at or below an acceptable defined amount.~~

~~— In addition, the withdrawal of a relatively large project like Juno Solar from the Transitional Cluster after Phase 2 may significantly change the results of the study, including the allocation of cost responsibility for Network Upgrades, may lead to further withdrawals, and may trigger the need for a re-study. This would be even more likely if Juno Solar were allocated cost responsibility for significant Network Upgrades.~~

Public Staff Witness Metz testified that an Affected System is an adjacent utility to the interconnecting utility, in this case DEP, where the output of a generation facility located in DEP territory negatively impacts the Affected System (i.e., causes an overload or another reliability issue). Each Balancing Area reviews its own interconnection queues to determine whether it is an Affected System. Affected System studies between DEP and DEC are treated similarly to the manner in which PJM and DEP coordinate Affected System studies. (T. Vol. 3, p. 28)

Juno Solar Witness Miller testified that due to the proximity of the Facility to PJM's service territory that ties DEP with Dominion Virginia Power, PJM is likely to be notified as a potential Affected System during the study process. Once PJM is notified, the potential transmission owner in coordination with PJM will determine whether any Affected System studies are required. (T. Vol. 1, p. 69)

Public Staff Witness Metz stated that Duke's LGIA governs the Affected System study process and that Duke had provided the following description of the process in response to a Data Request:

Coming into Phase 1, Juno Solar will not have any indication of affected system requirements or cost, since the project will not have been studied. After the release of the Phase 1 Study results but before the end of Phase 2 customer engagement, Juno Solar would be notified that an affected system study may be required. However, the timeline does not support receiving affected system requirements and cost before Phase 2 milestones are due. The preferred timeline would be for affected system studies to occur during the Phase 2 Study so that the costs and requirements would be known before posting M3 milestones prior to Facilities Study. In the case where a potential affected system was identified during Phase 2 study, this may not be possible. (T. Vol. 3, pp. 29-30)

Witness Metz stated that uncertainty about Affected System Upgrade costs associated with Juno Solar would make it difficult for the Commission to resolve Juno Solar's Application until after an Affected System study was concluded. (T. Vol. 3, pp. 29-30) However, the Commission finds and concludes that Affected System costs are not relevant in this proceeding. Juno Solar Witness Miller committed that Juno Solar will not seek reimbursement for any Duke

Energy Affected System Upgrade costs that might be incurred, meaning that Juno Solar will pay for all such costs and no ~~such~~ e costs would be reimbursed by North Carolina ratepayers. (T. Vol. 1, p. 82)

EVIDENCE AND CONCLUSIONS FOR FINDINGS OF FACT NO. 146

This finding is supported by the testimony of Juno Solar Witness Miller.

~~Public Staff Witness Metz testified that an Affected System is an adjacent utility to the interconnecting utility, in this case DEP, where the output of a generation facility located in DEP territory negatively impacts the Affected System (i.e., causes an overload or another reliability issue). Each Balancing Area reviews its own interconnection queues to determine whether it is an Affected System. Affected System studies between DEP and DEC are treated similarly to the manner in which PJM and DEP coordinate Affected System studies.~~

~~Juno Solar Witness Miller testified that due to the proximity of the Facility to PJM's service territory that ties DEP with Dominion Virginia Power, PJM is likely to be notified as a potential Affected System during the study process. Once PJM is notified, the potential transmission owner in coordination with PJM will determine whether any Affected System studies are required.~~

EVIDENCE AND CONCLUSIONS FOR FINDINGS OF FACT NO. 157

This finding is supported by the Application, the testimony of Juno Solar Witnesses es Miller and Levitas, and the testimony of Public Staff Witness Metz.

N.C. Gen. Stat. § 62-110.1 provides that “no public utility or other person shall begin the construction of any steam, water, or other facility for the generation of electricity to be directly or indirectly used for the furnishing of public utility service . . . without first obtaining from the Commission a certificate that public convenience and necessity requires, or will require, such construction.” The General Assembly used the term “public convenience and necessity” to define the standard to be applied by the Commission to proposed facilities, and it is based on an “element of need for the proposed service.”

Juno Solar Witnesses Miller and Levitas provided substantial evidence about the clear need for the renewable energy that will be provided by the Juno Solar Facility. Juno Solar Witnesses Miller and Levitas testified about Juno Solar's two viable options for selling the output of the Facility. The first option is for Juno Solar to sell the output of the Facility into the PJM wholesale market. (T. Vol. 1, pp. 28, 54) The second option is that DEP would purchase the Juno Solar Facility as part of DEP's 2022 procurement of utility-owned solar renewable assets under ~~in accordance with~~ House Bill 951 or in a bilateral transaction in furtherance of its

[efforts to meet the goals of House Bill 951. \(Testimony of Juno Solar Witness Levitas at the March 2, 2022 hearing\)](#)

[In regard to the first option in which Juno Solar will sell the output of the Facility to a customer in the PJM market.](#) ~~The~~ Commission finds Juno Solar Witness Miller's testimony [about that there is a](#) need for the Juno Solar Facility in the state and the region to be persuasive and sufficient. Juno Solar has executed a PPA term sheet with a large, investment-grade retail and wholesale energy provider in PJM. [\(T. Vol. 1, p. 86\)](#) The off-taker has expressed a strong desire to contract for Juno Solar's full volume of power, as renewable energy facilities of this size are not presently available to the many renewable energy buyers in PJM. [\(T. Vol. 1, p. 88\)](#) [The Commission recognizes that](#) ~~The~~ term sheet represents an equal or greater burden of proof for the need for the Facility than has been met in recently approved CPCN applications, including those of Fern Solar, LLC (Docket No. EMP-104, Sub 0), Halifax Solar, LLC (Docket No. EMP-107, Sub 0), American Beech Solar, LLC (Docket No. EMP-108, Sub 0), Sumac Solar, LLC (Docket No. EMP-110, Sub 0), and Shawboro Solar, LLC (Docket No. EMP-117, Sub 0). [\(T. Vol. 1, p. 87; testimony of Juno Solar Witness Levitas at the March 2, 2022 hearing\)](#)

[The Commission finds and concludes that Juno Solar has further demonstrated the need for the Facility in the PJM market.](#) ~~As further demonstration of the need for the Facility, with~~ PJM's 2021 Load Forecast Report. [PJM's 2021 Load Forecast Report](#) shows the need for new generation for energy and capacity in PJM. Commercial and Industrial (C&I) demand for clean energy in the PJM market is stronger than ever in the market's history and continues to grow. The year 2020 saw yet another increase in C&I demand for renewable energy, despite the challenges of the Covid-19 pandemic. LevelTen Energy, which matches renewable energy buyers and sellers and provides insight into nationwide renewable PPA pricing, noted an increase in solar PPA prices in PJM over the past two years, with a steady escalation in price from Q1 2019 to Q4 2020. Rob Collier, Vice President of Developer Relations at LevelTen, reported in LevelTen's Q4 2020 Energy PPA Price Index: "The convergence of more challenging local and state permitting regimes, prohibitively high grid upgrade costs, and a surge in buyer demand has resulted in a PJM market that is short in project supply, which has in turn led to rising PPA prices." The report found PJM solar PPA prices to be the highest of any ISO or RTO in the country. This finding remains constant in subsequent reports, with the most recent (released in October 2021) finding the highest 25th percentile price at \$37.50/MWh, and noting that even this price was depressed by a clustering of projects in AEP-Dayton Hub region, and that PJM's Dominion Hub is almost certainly experiencing higher pricing. [\(T. Vol. 1, pp. 83-84\)](#) Furthermore, Public Staff Witness Metz reports that PJM is expecting peak load growth of 0.3% for the next 10 years and 0.2% over the next 15 years, with a summer forecasted peak of 153,759 MW in 2031 and winter forecasted peak of 135,568 MW in 2030/2031. [\(T. Vol. 3, p. 34\)](#)

[The Commission notes that](#) Public Staff Witness Metz [has confirmed](#) ~~ed~~ that there is need in PJM territory for new generation, both for energy and capacity, although he disputes whether that is sufficient to establish a need for the Juno Solar Facility. [\(T. Vol. 3, p. 33\)](#) [The Commission considered the evidence about the need for the Facility from Juno Solar Witness Miller along with](#) ~~and also considered~~ [the Public Staff's general statement that PJM's energy](#)

and capacity needs are not dependent on the Juno Solar Facility. The Commission finds and concludes that Juno Solar's burden to show the need for the generating Facility does not require Juno Solar to show that an electric public utility's need for energy must be met solely by the proposed merchant plant generating facility. As such, the Commission places no weight in the Public Staff's suggestion that PJM's energy and capacity needs must be dependent upon the Juno Solar Facility.

In regard to the second option for the output of Juno Solar in which DEP would purchase the Facility in its 2022 procurement, the Commission finds statements from Juno Solar Witnesses Miller and Levitas—that DEP's purchase of Juno Solar would be a cost-effective way of meeting the carbon-reduction goals of House Bill 951—both sufficient and persuasive. In addition, Juno Solar Witness Miller emphasized that the enactment of House Bill 951 creates additional need a new dimension to the need for renewable energy facilities, especially facilities with large generating capacities, such as the Juno Solar Facility. (T. Vol. 1, pp. 87-88; testimony of Juno Solar Witness Levitas at the March 2, 2022 hearing). The 70% decarbonization by 2030 mandate established by the General Assembly means that a tremendous amount of solar energy resources will have to be added to Duke's system over the next nine years. Under House Bill 951, 55% of that amount will be owned by Duke and procured through facility purchases from third parties or by self-development. In addition, there is no size cap on Duke-owned solar resources, which means that the least-cost mandate of House Bill 951 will almost certainly drive the procurement of larger facilities with greater economies of scale. There are currently only five solar facilities in DEP's and DEC's combined interconnection queues with a capacity greater than 150 MW. In light of transmission and other development constraints, it is very likely that purchase of the Juno Solar Facility would be one of the most cost-effective options for Duke to achieve compliance with House Bill 951. (Testimony of Juno Solar Witness Levitas at the March 2, 2022 hearing)

~~The Commission considered the evidence about the need for the Facility from Juno Solar Witness Miller, and also considered the Public Staff's general statement that PJM's energy and capacity needs are not dependent on the Juno Solar Facility. The Commission finds and concludes that Juno Solar's burden to show the need for the generating Facility does not require Juno Solar to show that an electric public utility's need for energy must be met solely by the proposed merchant plant generating facility. As such, the Commission places no weight in the Public Staff's suggestion that PJM's energy and capacity needs must be dependent upon the Juno Solar Facility.~~

Juno Solar Witness Levitas explained that the second option in which DEP would purchase Juno Solar would benefit the North Carolina ratepayers. Under this option, DEP would purchase the Juno Solar Facility to advance compliance with the mandates of in its 2022 procurement of utility-owned renewable assets in accordance with House Bill 951. Due to the large, 275-MW size of Juno Solar, DEP's purchase of Juno Solar would be a cost-effective way for DEP to add new renewable energy resources to its system to help achieve compliance with House Bill 951. Juno Solar Witness Levitas believes that this option would be an excellent outcome to North Carolina ratepayers.

The Commission takes notice that no customer complaints have been filed in the docket.

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After considering the evidence submitted by the parties, the Commission finds and concludes that Juno Solar has demonstrated a need for the Facility.

EVIDENCE FOR FINDING OF FACT NO. 186

This finding is supported by the Application, the testimony of Juno Solar Witnesses Miller and Levitas, and the testimony of Public Staff Witness Metz.

In *State of North Carolina ex rel. Utilities Commission v. Casey*, 245 N.C. 297, 96 S.E.2d 8 (1957), our Supreme Court stated that the public convenience standard is a “relative or elastic theory rather than an abstract or absolute rule” and that “[n]o set rule can be used a yardstick and applied to all cases alike.” The Supreme Court instructed that the facts in each case must be separately considered, and from those facts it must be determined whether the public convenience has been met. In addition, the Court of Appeals has instructed that the “public convenience and necessity” standard should be read “*in pari materia* with N.C.G.S. § 62-2, which contains ten [now twelve] specific policies” In other words, the state energy policies established by the General Assembly must be considered when considering whether the public convenience is served.

In the event that Juno Solar were to sell its output to a customer in the PJM wholesale market, Juno Solar Witness Miller and Public Staff Witness Metz described the substantial benefit that the Juno Solar Facility will provide to DEP ratepayers—a benefit that distinguishes the Facility from other merchant solar projects interconnecting in the Dominion PJM region of North Carolina. In order for Juno Solar to “wheel” its output from its location in DEP territory to PJM, Juno Solar must procure point-to-point transmission service across the DEP system. This purchased transmission service is the only means by which Juno can deliver power to the PJM marketplace. This process is known and transparent, with current and forecasted rates being published by Duke periodically. The currently posted rate for firm point-to-point transmission service across the DEP system is \$1,738 per MW-month. Reserving transmission capacity of 250 MW would result in approximately \$5.2 million per year in new point-to-point transmission revenues to DEP. These revenues contribute towards DEP’s Annual Transmission Revenue Requirement (ATRR), and are used by DEP to operate, maintain, and upgrade its transmission system. By contributing substantial revenues toward the ATRR, Juno Solar can be expected to reduce the burden for transmission spending that would otherwise ultimately fall on DEP’s various load customers. (T. Vol. 1, pp. 73-75)

These transmission rates are forecasted by Duke to rise substantially in the coming years, and Birch Creek projects that Juno Solar will spend over \$275 million on point-to-point transmission over the life of the project. (T. Vol. 1, p. 74) Public Staff Witness Metz provided a conservative analysis for Juno Solar’s transmission spending by assuming that Juno Solar might reserve only 175 MW (rather than 250 MW) of transmission capacity. Under the Public Staff’s conservative analysis, DEP would receive transmission revenues of \$286,445,211 over 40 years with a net present value of \$88,263,326. These costs, not in any way reimbursable by ratepayers, will far exceed the cost of the Network Upgrades to which ratepayers might be subject. Even at the high end of a \$4 per MWh LCOT, Juno Solar’s projected contribution of point-to-point

transmission revenues to DEP still far exceeds its reimbursable Network Upgrade costs by roughly a factor of five. (T. Vol. 1, p. 74)

In addition, Juno Solar Witness Levitas provided substantial evidence about the importance and public benefit of constructing the Network Upgrades required for Juno Solar and solving the transmission constraints in the Red Zone. Juno Solar Witness Levitas maintained that the benefits of constructing the Red Zone Upgrades are even more important today in light of the passage of House Bill 951. (T. Vol. 1, pp. 112, 122; testimony of Juno Solar Levitas at the March 2, 2022 hearing. In Duke's 2020 IRP, Duke represented that 4.6 GW of solar additions above the baseline would be needed to achieve 70% decarbonization by 2030.

Juno Solar Witness Levitas explained that granting the CPCN to Juno Solar and allowing the Red Zone Upgrades to be constructed sooner rather than later is in the public interest. (Testimony of Juno Solar Levitas at the March 2, 2022 hearing) Juno Solar Witness Levitas provided evidence that delaying the construction of these Upgrades would be detrimental to ratepayers and would significantly delay achievement of the 951 mandates. Juno Solar Witness Levitas referenced uncontroverted evidence in the Friesian case that Network Upgrade costs can be expected to go up by as much 15% per year—evidence that was provided at a time of much lower inflation than the current inflation. Therefore, delays in constructing these needed Network Upgrades could increase the construction cost for the Network Upgrades by tens of millions of dollars. (Testimony of Juno Solar Levitas at the March 2, 2022 hearing)

Also, Duke Energy has repeatedly stated that there are limits on the quantity of Upgrades it can construct in any given year. (Testimony of Juno Solar Levitas at the March 2, 2022 hearing) The longer the delay in starting to build the Upgrades needed to achieve the goals of House Bill 951, the less likely it will be that Duke Energy will be able to achieve the goals of House Bill 951. It is important to note that Duke provided Lead Time estimates for construction of Network Upgrades in the Phase 1 Report. (Phase 1 Report, p. 24) The lead time for construction of Network Upgrades after issuance of an Interconnection Agreement to Juno Solar is 66 months. (Phase 1 Report, p. 24; testimony of Duke Witnesses Finucane and ~~Quaintene~~ Quaintance at the March 2, 2022 hearing) If the Network Upgrades are constructed for the projects in the Transitional Cluster Study, the facilities would be able to be in operation to meet House Bill 951's 70% carbon reduction goal by 2030. However, any delay in construction of those Network Upgrades, such as having them fall to projects in a later study cluster, could jeopardize Duke Energy's ability to meet the 2030 carbon reduction goal. (Testimony of Juno Solar Levitas at the March 2, 2022 hearing)

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Juno Solar Witness Miller pointed out that the Juno Solar Facility will bring a variety of financial benefits to Richmond County. Juno Solar anticipates that the County will realize property and real estate tax revenues. Also, the site's landowners will receive revenue in the form of lease

payments each year for the life of the Facility, and this revenue will assist them in maintaining agricultural operations on their land. In addition to these financial benefits, Juno Solar will create community benefits. Local contractors and businesses such as installation, fencing, landscaping, and machine rental companies will receive sales opportunities from the Facility's construction and operations. During the construction process, the Facility will offer construction jobs. Juno Solar generally enjoys strong local support, as evidenced by its unanimous and uncontested November 2021 zoning approval by the Richmond County Board of Adjustment. [\(T. Vol. 1, p. 56\)](#)

After considering the evidence submitted by the parties, the Commission finds and concludes that the Juno Solar Facility and the associated Network Upgrades [will be required for Duke Energy to be able to achieve the goals of House Bill 951](#), will provide substantial public benefits, and are therefore in the public convenience.

EVIDENCE FOR FINDING OF FACT NO. 179

This finding is supported by the Application and the testimony of Juno Solar Witnesses Miller and Levitas.

The Commission finds and concludes that Juno Solar properly proposed a Conditional CPCN with a reasonable LCOT value [of \\$4 per MWh](#) for ~~any~~the required Network Upgrades assigned to the Juno Solar Facility.

In light of the "catch 22" situation, Juno Solar proposed a CPCN with a condition that the LCOT for any required Network Upgrades assigned to the Facility will be a reasonable amount of ~~no greater than~~ \$4.00 per MWh. Juno Solar Witness Levitas testified that Juno Solar proposed a CPCN conditioned upon a reasonable LCOT value because both the Public Staff and the Commission have identified LCOT as the appropriate test for evaluating the reasonableness of reimbursable Network Upgrade costs for FERC-jurisdictional Interconnection Customers. [\(T. Vol. 1, p. 115\)](#) Specifically, in the *Order Denying Certificate for Merchant Generating Facility* (Friesian Order) issued on June 11, 2020 in Docket No. EMP-105, Sub 0, the Commission noted: "Public Staff witnesses Lawrence and Metz argued that a levelized cost of transmission (LCOT) analysis provides a tool to evaluate the reasonableness of the upgrade costs associated with certain generating technologies. They cited to a 2019 study by Lawrence Berkeley National Laboratory (LBNL Study) that reviewed interconnection cost studies for renewable energy facilities on a nationwide basis, doing so by calculating LCOT value."⁸ The Commission proceeded to state that "the Commission views the LCOT analysis performed by the Public Staff as a benchmark of the reasonableness of the network upgrades relative to other similar transmission investments made to interconnect generating facilities in North Carolina."⁹

In addition, in the Commission's November 13, 2020 Order granting a CPCN to the proposed Edgcombe Solar, LLC merchant plant in Docket No. EMP-101, Sub 0, the Commission again used the LCOT metric to assess the reasonableness of Network Upgrades required for the DEP system by the project. The Commission concluded that an LCOT of \$6.00

⁸ Friesian Order, p. 15.

⁹ Friesian Order, p. 23.

per MWh for such Network Upgrades (plus the cost of unreimbursed Upgrades in PJM) was “not unreasonably out of line with the 2019 Lawrence Berkeley National Laboratory interconnection cost study (LBNL Study), on which the Commission has relied to place LCOT calculations in perspective with data from other balancing authorities.” The Commission further concluded that “[i]n view of the total cost of the Facility, ... the siting of the Applicant’s facility in this area is not inconsistent with the Commission’s obligation under N.C. Gen. Stat. § 62-110.1(d) for the provisions of ‘reliable, efficient and economical service’ in the state.” (*See Order Issuing Certificate for Merchant Generating Facility*, Docket No. EMP-101, Sub 0 (Nov. 13, 2020)). The Commission also relied on an LCOT analysis to determine the reasonableness of Network Upgrade costs in orders granting a CPCN to a merchant plant in Docket No. EMP-114, Sub 0 (*Order Issuing Certificate for Merchant Generating Facility* (Oct. 8, 2021)) and renewing a merchant plant CPCN in Docket No. EMP-92, Sub 0 (Aug. 3, 2021). The Commission did not consider the cost of Network Upgrades that might be associated with other proposed projects, except to note where Network Upgrade costs might be shared with such projects. (*T. Vol. 1, pp. 116-17*)

Public Staff Witness Metz acknowledged that the Commission frequently issues CPCNs with conditions to applicants. Issuance of a Conditional CPCN will allow Juno Solar to enter Phase 2 of the Transitional Cluster Study process and incur the associated financial exposure without the untenable risk of being subject to extremely large financial penalties in the event of denial of the CPCN in the future.

The Commission finds that the conditions to the CPCN proposed by Juno Solar will protect the ratepayers from unreasonable Network Upgrade costs. In light of the reasonableness of the conditions, the Commission determines that the CPCN should be granted with the following conditions: (1) ~~the LCOT for any required Network Upgrades allocated to Juno Solar, will be no greater than \$4 per MWh Juno Solar agrees to pay for all Network Upgrade costs that are greater than an LCOT value of \$4 per MWh and not seek or accept reimbursement for that overage from the ratepayers;~~ (2) ~~the Conditional CPCN will automatically terminate if the LCOT for Juno’s allocated share of any required Network Upgrades is greater than \$4 per MWh;~~ (3) Juno Solar will agree to not seek reimbursement for any Duke Affected System Upgrade costs that might be incurred; and (43) Juno Solar’s CPCN will automatically terminate if Juno Solar does not either contract for the sale of the energy from the Facility or the sale of the Facility during the life of the CPCN. The Commission points out that because of the unique nature of each CPCN application and evolving transmission costs in North Carolina and other markets, the Commission’s finding of reasonableness with respect to Juno Solar’s LCOT condition is not intended to have any precedential value or to be relied on by future CPCN applicants.

IT IS THEREFORE, ORDERED as follows:

1. That a Certificate of Public Convenience and Necessity shall be, and is hereby, issued to Juno Solar, LLC, for the construction of a 275-MWAC solar photovoltaic (PV) electric generation facility to be located along McFarland Road and Green Chapel Church Road, in Marks Creek Township, Richmond County, North Carolina with the following conditions:

(1) ~~The LCOT for any required Network Upgrades assigned to Juno Solar will be no greater than \$4 per MWh.~~ Juno Solar agrees to pay for all Network Upgrade costs that are greater than an LCOT value of \$4 per MWh and not seek or accept reimbursement for that overage from the ratepayers;

(2) ~~The Conditional CPCN will automatically terminate if the LCOT for any required Network Upgrades is greater than \$4 per MWh;~~

~~(3)~~ Juno Solar will agree to not seek reimbursement for any Duke Affected System Upgrade costs that might be incurred; and

~~(4)~~ Juno Solar's CPCN will automatically terminate if Juno Solar does not either contract for the sale of the energy from the Facility or the sale of the Facility during the life of the CPCN.

2. That Appendix A hereto shall constitute the Certificate of Public Convenience and Necessity issued for the Facility.

ISSUED BY ORDER OF THE COMMISSION.

This the ____ day of _____, 2022.

NORTH CAROLINA UTILITIES COMMISSION

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. EMP-116, SUB 0

Juno Solar, LLC
880 Apollo St., Suite 333
El Segundo, CA 90245

CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY
PURSUANT TO G.S. 62-110.1

for construction of a 275 MWAC solar photovoltaic electric generation facility located on McFarland Road and Green Chapel Church Road, in Marks Creek Township, Richmond County, North Carolina.

ISSUED BY ORDER OF THE COMMISSION

This the ____ day of _____, 2022.

NORTH CAROLINA UTILITIES COMMISSION
