

Request for Proposals

NC GreenPower 2020 Solar+ Schools Program 5 kW Solar Photovoltaic (PV) System Construction

(Top-of-Pole-Mount or Roof-Mount)

June 1, 2020

I. Introduction

NC GreenPower is soliciting proposals from qualified applicants to serve as the sole-source solar installer (“Installer”) to construct 5 kW solar PV systems (“System”) at schools across North Carolina as part of its 2020-2022 **Solar+ Schools** program. Each program year’s duration is approximately 18 months. Ten schools have been selected to have a System installed beginning in 2021 (program year 2020), up to 15 schools will be selected for installation beginning in 2022 (program year 2021), and up to 20 schools will be selected for installation beginning in 2023 (program year 2022). Installations are expected to be completed by the end of June of each year. The locations and installation schedule for 2022 and 2023 will be based on a school application process for the applicable program year. The counties for the 2021 school installations are expected to be (but are subject to change):

- **Durham**
- **Macon**
- **Mecklenburg**
- **New Hanover**
- **Pasquotank**
- **Pitt**
- **Robeson**
- **Stanly**
- **Union**
- **Wake**

Each school will have a 5 kW top-of-pole-mounted or roof-mounted System installed on its grounds in a prominent location with good solar access in close proximity to the school.

Where permitted by the electric utility company, the electricity generated by the System will be consumed by the school; otherwise, it will be delivered to the utility grid. The System will include an internet-based data monitoring system that will allow students and interested parties to view and analyze power generation and weather data for educational purposes.

Installers interested in responding to the RFP should email their intent to bid to bids@ncgreenpower.org by **June 30, 2020**. All proposals are due by **Monday, August 3, 2020, by 5:00 PM** Eastern Daylight Time (EDT). The timeline for the RFP is:

RFP issued	June 1, 2020
Installer questions due	On or by June 15, 2020
NC GreenPower responses to questions	June 29, 2020
Installers email intent to bid	June 30, 2020
Proposals due	August 3, 2020 by 5:00 PM
Anticipated award notification	August 31, 2020
Installer agreement issued	On or by November 2, 2020
Expected installation completion for 2020 schools	June 30, 2021

II. Eligibility

NC GreenPower requires the following of installers participating in its program:

- Have current NC Limited, Intermediate, or Unlimited electrical contracting license
- Have one of the electrical contracting company's listed qualified individuals on-site to supervise and direct day-to-day PV electrical construction
- Have at least one full-time employee who is an NABCEP Certified PV Installation Professional who will oversee and direct day-to-day PV construction activity
- Company must be bonded and insured
- Have no unresolved complaints, investigations, or ratings below "B+" by the Better Business Bureau, if applicable
- Have experience working with electric utilities, the North Carolina Utilities Commission, etc. and be willing to file appropriate documentation (PPA, interconnection agreements, etc.)

III. Solar PV Systems Descriptions

This program allows for two system designs: a 5 kW single-pole, top-of-pole-mounted array or a 5 kW roof-mounted array. Regardless of design, the System will be installed in a prominent location with good monthly and annual solar access and agreed upon by NC GreenPower, the school and Installer. The System will face true south and be tilted between 10 and 35 degrees from horizontal to optimize energy generation. An 18" x 25" sign with stainless steel and galvanized steel mounting brackets will be provided for Installer to attach to the pole at 6.5'

above grade — a safe height that also allows for readability of the sign. All Systems shall fully comply with applicable federal, state, and local building codes and standards as well as specifications outlined under Section III and the Supplementary Technical Specifications that can be found in Appendix A.

The System will include a monitoring system. A weather station will be installed on the array and will be connected to the monitoring system and the school using a wired or wireless connection. The desire is to select a location that allows the System to be connected to one of the school's nearby electrical distribution panels of sufficient capacity and to minimize the electrical circuit lengths between the school building and the System. It is expected that all solar PV energy will be consumed by the school with none going back to the utility grid. The installations will be net-metered if allowed by the electric utility; if not, Installer will work with the electric utility and/or NC GreenPower to find a suitable metering option.

A. Top-of-pole-mounted Systems

This type of system must provide 10' of ground clearance from the leading edge of the array to keep PV modules and wiring out of reach of students and passersby. A Top-of-Pole Mount (TPM) is to be used on top of **one hot-dipped galvanized steel pole**. The mounting system must be designed to withstand wind loads specified by the NC Building Code and regulated by the city or county permitting department.

The major components of the **5 kW single-pole, top-of-pole-mounted** System will be:

- 12 SunPower SPR-435NE-WHT-D PV (or approved equivalent) modules making the array 5.22 kW (DC at STC)
- Hot-dipped galvanized steel pole and pole top PV mounting system by Performed Line Product's (formerly "DPW Solar") TPM (or approved equivalent) for mounting System with leading edge 10' above grade
- Fronius Primo 5.0-1, 5 kW, (or approved equivalent) utility interactive inverter with AFCI, GFP, and rapid shutdown capability

B. Roof-mounted Systems

The major components of the **5 kW roof-mounted** PV System will be:

- 12 SunPower SPR-435NE-WHT-D PV (or approved equivalent) modules making the array 5.22 kW (DC at STC)
- UL 2703 listed rooftop PV mounting system for flat or sloped south-facing roof
- Fronius Primo 5.0-1 5 kW (or approved equivalent) utility interactive inverter with AFCI, GFP, and rapid shutdown capability

C. Monitoring System

A Fronius Solar internet monitoring system and web portal are required for logging and displaying real-time and historical data from the following devices:

- Inverter communications modules
- Plane of array solar irradiance sensor
- Ambient air temperature sensor for measuring air temperature in the shade away from the heat of the PV modules or roof
- Back of solar PV module temperature
- Inverter integrated AC and DC voltage, current, and power meters

The System must include a fully operational internet-based monitoring system that includes a weather station, internal inverter electrical metering, internet connection equipment, internet-based data collection, and a connection to the internet through the school's LAN.

Weather Station

The weather station must include sensors for weather and array conditions, including:

- Ambient air temperature
- Plane of array solar irradiance
- Back of solar PV module temperature

Inverter Metering

The internal inverter electrical power metering must report electrical parameters, including:

- AC power
- AC voltage
- AC current
- AC kWh
- DC power
- DC voltage
- DC current

D. Solar PV Modules

NC GreenPower has donated SunPower solar PV modules (SPR-435NE-WHT-D) in inventory to complete 22 school Systems. NC GreenPower will continue to seek sponsorships for additional modules; however, it may request that Installer procure the SunPower SPR-435NE-WHT-D PV (or approved equivalent) modules for the remaining projects.

IV. Other Information

Installer Responsibilities

Installer will be responsible for obtaining, submitting, and paying for all required documents and approvals related to utility interconnection requests, reports of proposed construction, permits, city or county inspections, and certificates of completion. Installer will follow all applicable federal and state laws county, local, and municipal ordinances, and the orders, rules, and regulations of all authorities having jurisdiction over this work. Installer will provide all professional engineer (PE)-sealed design drawings, shop drawings, tools, equipment (except donated PV modules), materials, Installer commissioning testing and reports, Solar Project Checklist Documentation, IEC 62446-1 Annex C: Model PV Array Test Report (commissioning test report), and labor to deliver a fully operational System and internet-based monitoring system. Throughout the installation, Installer will photograph work being done to address Supplementary Technical Specifications. Installer may be responsible for installing and configuring the monitoring system connection to the school's network, configuring the monitoring portal display pages, and setting up the user account for the project's lead educator and administrator account for NC GreenPower. In addition, Installer will provide an owner's manual and a one- to two-hour owner orientation and operation and maintenance (O&M) training session at the time of commissioning.

Warranty

Minimum 10-year standard manufacturer's warranties are required for inverter and a graduated 20-year warranty on Installer-provided solar PV modules. In addition to manufacturer warranties for equipment, Installer shall provide a five-year workmanship warranty for all work, materials, and equipment except the donated SunPower solar PV modules. NC GreenPower and/or the school will require Installer to attend a site-walk near the end of the five-year workmanship warranty to ensure any issues have been corrected and the system is operating properly.

Site Walk

It is required for Installer to visit the schools for an installation assessment before submitting design drawings. NC GreenPower may provide an engineer to attend the site walk to discuss site-specific installation details with Installer.

Operation and Maintenance

NC GreenPower requires Installer to provide five-year O&M service agreements for all solar installations.

V. Proposal Requirements

For the proposal, Installer shall submit the following:

A. General Information About Company

1. Company name
2. Primary contact name
3. Primary contact telephone (office and cell)
4. Primary contact email(s)
5. Mailing address
6. Ratings from Better Business Bureau, if applicable
7. Proof of bonding and insurance
8. Current NC Limited, Intermediate, or Unlimited electrical contracting license number
9. Names of company's listed qualified individuals who will be on-site to supervise and direct day-to-day solar PV electrical construction
10. Names of all full-time employees who are NABCEP Certified PV Installation Professionals and will oversee and direct day-to-day solar PV construction

B. Example Work and References

1. Provide examples of three projects on commercial businesses. For one of these examples, provide:
 - a. Copies of PE-sealed electrical and structural design drawings
 - b. Copies of the city or county permit and inspection certificate of compliance
 - c. Copy of the PV system commissioning report, including system documentation and verification tests and inspection results. At a minimum, the commissioning report should include the documentation outlined in the *IEC 62446 International Standard: Grid connected photovoltaic systems – Minimum requirements for system documentation, commissioning tests and inspection*
2. Provide examples and temporary login credentials to view at least one monitoring system demonstrating experience with internet-based solar PV system weather and AC power monitoring systems
3. Provide references from owners of three previous solar PV projects
4. Provide list of North Carolina utilities worked with on interconnected solar PV projects
5. Provide North Carolina Utilities Commission docket numbers for three past solar PV projects
6. Provide sample O&M service agreement

C. Price

Pricing breakout shall include the following details for both a top-of-pole-mounted System and roof-mounted System as outlined in Sections III and IV.

Scope	Top-of-Pole-Mounted Price	Roof-Mounted Price
01. Labor (design/engineering, permitting, installation, interconnection, etc.)		
02. IT/Monitoring System Configuration		
03. Materials (hardware, site-work equipment, enclosures, etc.)		
04. Modules (if not provided by NC GreenPower)		
05. O&M service agreement (five years)		
06. Site Visits (price based on distance traveled)		
Subtotal		
Estimated Sales/Use Tax		
Standard Project Total		

- a. Standard Project Total assumes:
 - i. System will be located 100’ from school interconnection point.
 - ii. There will be no significant soil obstructions to hinder trenching or top-of-pole racking installation.
- b. Standard Project Total price should be guaranteed through the length of the three-year program.
- c. NC GreenPower may consider and approve, on a project-by-project basis, extenuating circumstances that may increase or decrease the Standard Project Total. Provide details of any factors that may affect Standard Project Total.
- d. NC GreenPower may provide solar PV modules for some or all projects. In this case, NC GreenPower will not pay for the “Modules” line item.

VI. Proposal Process Information

A. Information Requested

Installers interested in participating in this NC GreenPower **Solar+ Schools** RFP process shall provide all the information requested in Section V. The proposal will be reviewed by NC GreenPower and treated as confidential.

B. Proposal Procedure

Installers must follow the submission instructions and timeline below. NC GreenPower reserves the right to reject any proposals that are not complete, contain irregularities, or are not received prior to the due date and time specified. NC GreenPower may contact Installers to obtain clarification regarding submitted proposals.

NC GreenPower requires that proposals be submitted via email to bids@ncgreenpower.org by 5:00 PM EDT on **Monday, August 3, 2020**.

Questions about the proposal process must be sent in writing by **Monday, June 15, 2020** to bids@ncgreenpower.org. As this is a competitive proposal process, NC GreenPower will not share any cost information or guide bidders on pricing. Responses to inquiries will be posted online under the [Resources tab on NC GreenPower's FAQ webpage](#) for all interested parties to view. The posting date will be noted but the source of the inquiry will not be identified. *Phone calls will not be accepted.*

C. Awards Process

In reviewing proposals, NC GreenPower may request that respondents provide more information or speak with the review committee via conference calls. It is anticipated that Installer selection will be made and announced late August 2020. NC GreenPower will enter into an agreement with the selected Installer for the school PV projects on or by **November 2, 2020**.

D. Disclaimer

THIS PROPOSAL PROCESS IS NOT A PROCUREMENT. THIS PROPOSAL PROCESS IS NOT A COMMITMENT BY NC GREENPOWER OR ANY UTILITY OR ELECTRIC POWER PROVIDER TO PURCHASE ANY PRODUCT OR SERVICE OR TO TAKE ANY SPECIFIC ACTION. NC GREENPOWER RESERVES THE RIGHT NOT TO AWARD ANY AGREEMENTS AS A RESULT OF THIS RFP AND, IN THE EVENT AN AGREEMENT IS ENTERED INTO FOR THE INSTALLATION OF A SOLAR PV ARRAY, TO TERMINATE THE AGREEMENT AT ANY TIME.

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Appendix A

Supplementary Technical Specifications

Systems are intended to be show pieces; therefore, the program has some additional requirements and design specifications. These requirements must be adhered to in the design and construction of each System.

1. The System shall incorporate rapid shutdown if PV system DC circuits are installed in or on the building.
2. The pole height must be selected so that the leading edge of the array is 10' above grade. If grade is variable, the lowest point on the array must be a minimum of 10' above grade.
3. The array pole conduit routing must allow for the NC GreenPower sign to be attached to the pole with Unistrut and strut pipe clamps. NC GreenPower will provide an 18" x 24" sign with all hardware and mounting brackets for Installer to attach to the pole at 6.5' above grade. 6.5' is specified so it will not be a head-bumping hazard and will be visible from the south side of the array. Installation of the sign and its mounting bracket must be considered when planning conduit runs and equipment attachment to the pole.
4. All outdoor fasteners, other than those provided by the racking manufacturer, must be stainless steel or hot-dipped galvanized steel. This includes hardware used to mount equipment and conduits. Zinc plated fasteners will not be accepted.
5. All outdoor conduit straps, clamps, strut channels, and mounting brackets must be of corrosion-resistant material suitable for outdoors. Galvanized steel, aluminum, or stainless steel are suitable for outdoor use.
6. The SunPower PV modules have factory-installed Amphenol H4 PV connectors. Only PV connectors of the same manufacturer and type may be mated together. This may require Installer to provide short adapter cables to transition between different types. For all connections (module to module, module to MLPEs, and field-made home run wiring), only like connectors may be mated.
7. The factory-installed module connectors must not be cut off of the PV module interconnects to shorten the cables. If different connectors are needed, adapter cables must be used.
8. The module mounting bolts must be stainless steel.
9. Module frames must be bonded to the rack with UL-listed manufacturer-approved hardware.
10. When grounding and bonding the array, all copper grounding conductors shall be routed and secured in a way that they will not come into contact with aluminum racking components or module frames.
11. Array wire management is to be neat and tidy. Conductors must be secured and supported as close as possible to the module junction box, within 12" of all PV connectors, and within 12" of entrance to an enclosure or conduit. (Note: If modules are wired in landscape extension, cables may be needed between modules to meet these requirements.)
12. Plastic cable ties shall not be used as the sole means of support for PV circuit conductors or array sensor cables. Approved means of support include stainless steel cable clips and vinyl or plastic-coated stainless-steel cable ties.

13. Where exterior run PV circuit conductors and/or sensor cables enter conduits or enclosures, drip loops must be installed to minimize the possibility of moisture ingress.
14. All metallic communications and power raceways must be bonded and grounded. If metallic conduits are attached to a nonmetallic enclosure, bonding bushings must be installed on the conduits inside the nonmetallic enclosure.
15. Conduits exposed to physical damage from vehicles or lawn maintenance equipment must be Schedule 80 PVC, Rigid Metal Conduit, or Intermediate Metal Conduit.
16. EMT raceway must not be used at or below grade without approved supplementary corrosion protection. EMT must not be used where exposed to physical damage from lawn maintenance equipment.
17. All outdoor raceway fittings must be rain tight or made rain tight with listed sealing washers.
18. All raceways emerging from grade must be duct sealed to prevent moist air from entering and condensing in the enclosure.
19. Enclosures used for NEMA 3R applications must have 3/16" weep holes in at least one low point corner.
20. In outdoor enclosures, all factory- or field-drilled fastener holes must be sealed with bonded rubber-sealing washers and fasteners. The exception is for 3/16" weep holes at enclosure low points.
21. All raceways passing between indoors and outdoors must be duct sealed to prevent moist air circulation due to temperature differentials.
22. Follow manufacturer installation instructions for the sensors and communications devices. Unless manufacturer instructions state otherwise, the following shall be adhered to: The irradiance sensor shall not be mounted on the low edge of the array; the ambient temperature sensor will be mounted out of direct sunlight and at least 18" away from the module back sheets; the module temperature sensor shall be attached to the module back sheet in the center of a cell.
23. The communications cables array sensors must be sunlight resistant and shielded, and the shield must be grounded in accordance with the sensor and communication device instruction manuals.
24. Array sensor and communication cable must not be installed in the same raceway or junction box as power circuit conductors.
25. All labels shall be printed or engraved, not handwritten, and suitable for the environment in which they are installed. Variations in specific installations may require additional labeling per the National Electrical Code.