



ADDENDUM #2
IFB # 2011-1794-0205, Martin Luther King Plaza

September 2, 2010

City of Newport News
OFFICE OF THE PURCHASING DIRECTOR
2400 Washington Avenue
Newport News, VA 23607
Phone: (757) 926-8042/ Fax: (757) 926-8038
www.nngov.com/purchasing

Sealed proposals, subject to the conditions and instructions contained herein, will be received at the above office of the Purchasing Director, 4th Floor, City Hall, 2400 Washington Avenue, Newport News, Virginia, 23607, until the time and date shown below (local prevailing time), for furnishing the items or services described in the request for proposal.

It is agreed and understood the following changes will constitute Addendum #2, and shall be made part of the original IFB document.

Note the following change:

1. Section 13650 is added to specifications. (See attached)
2. Sheet C2.1 – Demolition Plan, Existing bus shelter to be relocated.
3. Sheet C3.1 – Proposed Site Plan, Install a concrete pad 8'-0" x 16'-0" x 6" for the relocated bus shelter.
4. This IFB may be downloaded at no cost from the Department of Purchasing's website. Printed copies may be purchased for a non-refundable fee of **\$36.75** including tax per copy from the Office of the Department of Engineering, 8th Floor, City Hall.
5. Written questions submitted to the attention of the Contract Officer named below will be accepted through 5:00 PM, September 8, 2010.

The bid submittal deadline is changed to 2:00 PM, September 10, 2010.

Contract Officer: 
Greg Smith, CPPB, C.P.M, Business Analyst C, gsmith@nngov.com

Company Name: _____

Address: _____

City/State/Zip: _____

Telephone: _____ FAX No.: _____

E-mail: _____

Print Name: _____ Title: _____

Signature: _____ Date: _____

This Form Must Be Signed.

SECTION 13650

PHOTOVOLTAIC SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: Design build of a complete 3.6 kW, nominal, photovoltaic (PV), power grid-tied, net metering generation system complete, as specified herein and shown on the contract drawings. The system shall include pole mounted PV modules mounted to a metal frame system, inverters, disconnects, ground fault protection, bi-directional meters and appurtenances. Bid price for this section shall include an enlarge power panel enclosure with capacity to house the PV components (other than the solar panels) and the electrical equipment for the base project.
- B. The contractor shall apply for a utility interconnection permit and net metering rate agreement.
- C. **Related Sections:**
 - 1. Division 16000 – Electrical

1.2 REFERENCES

- A. National Electric Code (NEC)
 - 1. Article 690 – Solar Photovoltaic Systems
 - 2. Article 250 – Grounding and Bonding
 - 3. Article 110 – Requirements for Electrical Installations
- B. IEE Standards
 - 1. IEE 1262 – PV Module Qualification for Performance and Reliability
- C. Underwriter's Laboratories (UL) Standards
 - 1. UL1703 – PV Modules and Panels
 - 2. UL1741 – Standard for safety inverters, converters, controllers, and interconnection system equipment for use with distributed energy resources
- D. National Fire Protection Association Standards
- E. OSHA Standards

1.3 SUBMITTALS

- A. General: Contractor shall comply with the requirements of Section 01330.
- B. Product Data: Contractor shall submit the manufacturer's product specification sheet and the manufacturer's installation instructions for all materials to be used.
- C. Shop Drawings: Contractor shall submit shop drawings showing field connection details.
- D. Operation and Maintenance Manual: Contractor shall submit the operation, installation, and maintenance manuals/instructions for all equipment. The complete manual shall provide operating and maintenance instructions for the system as a whole, performance curves, warranty information, approved shop drawings, recommended and complete parts lists, wiring diagrams, and all other bulletins and brochures pertinent to the operation and maintenance of the equipment.

1.4 QUALITY ASSURANCE

- A. PV Module Manufacturer Qualifications: Company specializing in the manufacture of PV modules, with a minimum of five (5) years of successful history and experience in this field.
- B. Installer Qualifications: The PV system described herein shall be built by a licensed solar contractor or a licensed electrical contractor.

1.5 UTILITY INTERCONNECTION REQUIREMENTS

- A. Contractor shall be responsible for acquiring the utility interconnection approval permit. This includes acquiring all forms, documents, permit applications, associated fees, and attending required meetings with the utility.

- B. The designed system shall comply with all utility interconnection requirements. Additional requirements deemed necessary by the utility not included by the system manufacturer will be provided by the Contractor at no cost to the client.
- C. The Contracting office shall be copied on all forms, documents, applications, permits, and correspondence between the PV power system provider and utility.

1.6 REBATE AND INCENTIVE PROGRAMS

- A. The Contractor shall be responsible for acquiring, completing, and submitting information to qualify and reserve funds from rebate and incentive programs offered by the power company, state and federal programs in the name of the Client.
- B. The Contractor shall coordinate all inspections and perform all follow-up work deemed necessary for the Client to receive rebate and incentive compensation.
- C. The Contracting office shall be copied on all forms, documents, applications, permits, and associated correspondence.

1.7 DESCRIPTION OF WORK

- A. The Contractor shall provide complete system design, equipment provision, installation, commissioning, and testing for a PV power generation system as described in these documents.
- B. The work includes furnishing and/or paying for all new materials, fees, permits not covered in the general building permit, labor, tools, equipment, transportation and services required for a complete installation.

1.8 SYSTEM OPERATION

- A. Operation
 - 1. The net metering PV generated electricity system shall be capable of feeding surplus power back into the utility grid for credit against future kWh use.
 - 2. The PV charge controllers shall optimize PV output by tracking the maximum power point of each PV source circuit.
 - 3. The modular inverters shall be wired for single phase 120/240 VAC output and shall be connected to and controlled by a central processor that insures proper phase alignment and operation mode and intelligently switches inverters on and off to match the load, thereby, minimizing idle power losses.
 - 4. A double pole, double throw inverter bypass switch with a center "off" position shall be provided as a means to bypass the inverter system for maintenance and as a means to completely disconnect all inverters from the electrical distribution system on site.
 - 5. The UPS shall have capacity to sustain full load power for 10 minutes prior to switching over to the commercial source.

1.9 WARRANTY

- A. Units and components offered shall be covered by a five (5) year parts and labor warranty for malfunctions resulting from defect in materials and workmanship. Warranty shall begin upon acceptance by the Client. The exception to this shall be the PV modules, which shall be covered by a 20 year parts and labor warranty.
- B. The PV power system supplier shall promptly correct any deficiencies in the materials and workmanship, which occur during the parts and labor warranty to the satisfaction of the Engineer at no additional cost the Client.
- C. PV modules or panels shall be warranted to be free from defective materials and workmanship. The PV power system supplier shall repair or replace, at their option, without charge to the Client, any PV module or panel that fails as a result of defective workmanship or materials within five (5) years from the date of Engineer's acceptance of the completed installation.
- D. In addition, PV power system supplier agrees to replace or repair at their option, on a prorated basis after the five (5) year parts and labor warranty, any PV module or panel that fails for the full twenty (2) years warranty period.

1.10 SYSTEM START-UP

- A. A factory trained dealer service representative shall perform initial start-up of the PV power system. Sufficient time shall be allowed to properly check the system and perform required adjustments.

PART 2 PRODUCTS

2.1 GENERAL

- A. PV equipment, all materials, fixtures, and equipment required for the work shall be new, and shall be furnished, delivered, erected, connected and finished in every detail, and shall be selected and arranged as to fit properly into the structural mounting frame or the electrical panel enclosures.
- B. All equipment shall be listed and labeled per recognized electrical testing laboratory and installed per the listing requirements and the manufacturer's instructions.
- C. All equipment shall be properly grounded per the requirements of the National Electric Code, Article 250.
- D. All outdoor equipment shall be NEMA 3R.
- E. PV modules shall be IEEE 1262 compliant and listed to UL Standard 1703.
- F. All inverters shall be listed to UL Standard 1741.
- G. Ratings: The minimum PV system kW rating shall be as indicated on the drawings. This PV system shall consist of the quantity of power converter modules and PV modules required to meet the indicated kW.

2.2 COMPONENTS MANUFACTURERS

Equal products by the following manufacturers will be considered providing that all features of the specified product are provided:

- A. Modules and Panels: GE Energy Brilliance prepackaged, grid tie system, 3.6 kW with UPS backup, or approved equal.
- B. Inverters and Monitoring Equipment: Shall be furnished by the PV panel manufacturer. A certificate by the PV manufacturer stating inverters monitoring equipment furnished are compatible with the panels furnished and warrenteed by the PV manufacturer shall be submitted with the shop drawings.
- C. Bi-Direction Meter: As required or recommended by the power company.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that all structures and devices related to the PV systems are constructed in a manner that allows proper installation of the PV equipment.
- B. Beginning the installation means the Contractor has accepted the existing conditions.

3.2 COORDINATION

- A. The Contractor shall coordinate the installation for the PV systems with all related trades and the Project Schedule.
- B. The Contractor shall coordinate with the Contracting office on the locations and appearance of all exposed equipment, including but not limited to, PV modules, conduit, inverters, wireways, and control and monitoring equipment. All locations must be approved by the Contracting office prior to installation.
- C. The Contractor shall coordinate with the Electrical Contractor on the interconnection point between the PV system and the Main Distribution Panel. The Contractor shall coordinate with the General Contractor regarding physical mounting of all PV modules and equipment.

3.4 INSTALLATION

- A. All circuits connected to more than one electrical source shall have overcurrent devices located so as to provide overcurrent protection from all sources (NEC Article 690-9 (A)).
- B. Labels per NEC Article 690-17 and Article 690-53 shall be provided.
- C. Attachments: Support all work adequately and per code. All equipment shall be securely attached to the structure in an approved manner. Attachments shall be of a strong and durable nature.
- D. Shoring: The Contractor shall provide all permanent and temporary shoring, anchoring and bracing required by the nature of this work in order to make all parts absolutely stable and rigid, even when such shoring, anchoring and bracing are not explicitly called for.

3.4 POWER MAXIMIZATION

- A. Contractor shall measure shading effects from nearby trees at PV array sites and use this information to determine the optimum grouping of series strings. Strings shall be grouped so that major shaded areas cover the least number of panels possible between the hours of 10 am – 2 pm solar time.

3.5 COMMISSIONING

- A. Contractor shall provide complete testing and commissioning of the PV system.
 - 1. Verify that all equipment is installed and connected according to the requirements of the PV drawings, specifications, and manufacturer's written instructions and Dominion Virginia Power requirements. Perform startup checks for all equipment per manufacturer's written instructions.
 - 2. PV Module Test: During the daytime while the sun is shining on the PV array, measure the output current of each sub-array which has separate conductors to the battery station. Verify that current level is similar for sub-arrays of the same size and that the current level is within the range specified on the manufacture's IV curve given the battery voltage and current light level.
 - 3. Program and adjust all charge controllers, inverters, and monitoring equipment per the requirements of Part 1.7 of this specification (Section 13650) and in accordance with the manufacturer's recommendations.
 - 4. Replace all damaged and/or malfunctioning equipment.

3.6 DEMONSTRATION

- A. Provide a complete walk-through and training service for the PV systems.
 - 1. Train Client's maintenance personnel on procedures and schedules for starting and stopping, troubleshooting, servicing, and maintaining equipment.
 - 2. Schedule training with Contracting office, allowing at least seven days' advance notice.

END OF SECTION 13650