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June 28, 2022

Ms. Albi Balliu - Senior Project Manager
City of Key West Engineering Department
1300 White Street
Key West, FL 33040
(305) 809-3962

Re: Proposal for Solar Engineering and Consulting Services
KOTS – Keys Overnight Temporary Shelter Project, Key West, Florida

Dear Ms. Balliu:

Wood Environment & Infrastructure solutions, Inc. (Wood) is pleased to submit this proposal to the City of Key West (City) for professional services associated with design and construction of a solar generating facility planned for the proposed KOTS – Keys Overnight Temporary Shelter Project to be constructed in Key West, Florida. Wood's understanding is that the City is seeking engineering and consulting services to facilitate the design and construction of a net-metered rooftop solar generating facility to offset grid energy consumption for the planned 10,422 ft2 single story building. In addition, our understanding also is that the primary objective of this project is to further advance the City's sustainability achievements while simultaneously reducing the facilities long term operating costs.

PROPOSED SCOPE OF WORK

In preparation of this scope of work, Wood has assumed that the City is planning on direct ownership of the solar generating system asset along with the building. As the current 26% Federal Investment Tax Credit (ITC) and 5 year Modified Accelerated Cost Recovery System (MACRS) incentives for solar are only of value to entities with sufficient federal tax liability, the City may want to consider a long term Power Purchase Agreement (PPA) or equipment leasing arrangement with a solar provider (with sufficient tax appetite) who would retain ownership of the asset and thus be able to take advantage of the Federal Incentives and pass a portion of this value onto the City in the form of reduced long term PPA energy costs or reduced lease pricing. These are significant incentives which greatly improve the project economics. As such, Wood can discuss this in more detail in the event the City wants to explore pursue these options as compared to direct asset ownership.

Task 1 – Data Collection and MEP Coordination

This task includes gathering key information for the proposed building from the City or their building design consultant such as the estimated electric consumption, building site plan and building mechanical, electrical and plumbing (MEP) drawings and specifications for the new facility to be served. This will allow Wood to understand the proposed utility service details (voltage, phase, capacity, service

entrance location, switchgear location, etc.) and building rooftop constraints such as the location of packaged rooftop heating ventilation and air conditioning (HVAC) units, ventilation, plumbing vent risers, and other proposed rooftop equipment/obstructions. This task also includes researching state, local and utility requirements for net-metering projects including capacity & production limitations (i.e. solar generating capacity is typically limited to producing no greater than 100% to 120% of the facilities' estimated electrical consumption). Also included is working with the building structural designer and racking system vendors to prepare for extra roof structural bracing as may be required to allow for anchorage of commercially available roof top racking systems and obtaining preliminary reactions for these anchors in addition to number, location and spacing as well as flexibility to accommodate various proposed systems by bidders.

Task 2 – Conceptual Design

Wood recommends that a 30% design is prepared as part of a procurement request for proposal (RFP) package to provide Solar engineer, procure and construct (EPC) Contractor bidders with the flexibility to propose a variety of equipment solutions and layout approaches that can achieve the performance and quality objectives specified by the design. Such flexibility will result in more competitive bids as most solar EPC Contractors are aligned as authorized dealer/installers for specific solar equipment product lines and may not be as competitive if meeting specific equipment specifications are required. In addition, the industry culture is already configured as a design/build delivery model.

- ***Array Design -*** Develop a 30% conceptual right-sized roof-top solar generating facility design configured to generate approximately 100% of the building's estimated energy consumption. A conceptual array layout will be produced which will take into account proper building edge setbacks and access lanes as required for maintenance of rooftop equipment as well as for compliance with applicable fire codes. Helioscope^{tm} Software will be utilized to model the system and estimate energy production and will account for inter-row, near and far shading constraints (e.g. roof-top mechanical equipment, adjacent buildings, etc.) as well as guide in string configuration and inverter selection. The conceptual design model will also generate an estimate of:

    - Annual Energy Production – kilowatt hours per year (kWh/year) and per month;
    - Annual Solar Renewable Energy Credit (SREC) production – megawatt hours per year (MWh/yr);
    - Annual Carbon Dioxide ($CO^{2)}$ emission offsets resulting from the Solar Project (Tons/Yr);
    - Specific Production – kilowatt hours per kilowatt of installed peak power capacity (kWh/kWp) – an indicator of system production efficiency; and
    - Performance Ratio (PR) – an indicator of overall system quality.

- ***Financial Summary -*** Wood will estimate the solar generating facility construction cost, based on the most recent National Renewable Energy Laboratory (NREL) cost data, as well as estimate the avoided utility cost revenue stream (Wood has assumed that Federal, State and Local incentives will not be applicable for a City owned asset). A financial summary will then be prepared that will include the calculated:

    - Levelized Cost of Energy (LCOE);
    - Return on Investment (ROI)/Simple Payback calculations; and
    - Cash flow and end of life cash position.

- ***Electrical Design*** - A conceptual electrical 1-line diagram will be prepared for both direct current (DC) string wiring and the behind the meter alternating current (AC) utility interconnection and will include combiners, inverters, switchgear and transformers as required for a net-metered solar generating facility. The 1-line diagram will be coordinated with the building's proposed electrical plans and utility service connection prepared by others.

- ***Racking/Structural –*** A Wood structural engineer will also review code required wind load requirements and provide performance specifications for the array racking structural anchorage system (as ballasted solar racking systems are generally not compatible with >160 miles per hour (mph) ultimate wind loads without adding significant dead load to the roof structure). Our Structural Engineer will also coordinate with the building project's structural engineer in order to achieve compatibility with the planned roof structural design and/or provide recommendations for modifications in order to achieve the most cost-effective racking system anchorage approach. The proposed roofing system manual and warranty will also be reviewed to ensure compatibility of the anchorage solution with the selected roofing system. The result will be a conceptual racking system and roof anchorage approach that will serve to guide solar EPC bidders who may propose racking based on a wide range of racking system vendors.

- ***Technical Specifications -*** Minimum technical and performance requirements will be specified in order to ensure that a minimum level of system component, wiring and installation quality and performance will be achieved. Performance requirements such as minimum/maximum energy production tolerance, performance ratio (PR) and specific energy production (kWh/KWp) will be specified. A solar monitoring system will also be specified in order to provide users with real-time energy production data, data logging, alarm conditions and early indication of system operating problems to maximize system productivity and project economics. The monitoring system specification will also include a revenue grade energy meter for logging energy production as required for sustainability claims and/or for selling SRECs to out of state programs or voluntary SREC markets (Florida currently does not have an SREC incentive program).

Task 3 – Procurement Support

Wood proposes to provide the following procurement phase services as required to assist the City with incorporating the net-metered solar generating facility to the Keys Overnight Temporary Shelter (KOTS) building project:

- Prepare a Statement of Work detailing the scope of work for Solar EPC Contractors.
- The bid package will include the 30% design drawings and minimum technical requirement specification developed during the Conceptual Design Phase. This will also include minimum requirements for commissioning activities and system acceptance.
- Develop a bid schedule as required to strategically evaluate bidder's financial and system performance submissions.
- Address bidder requests for information (RFIs).
- Review Solar EPC Contractor bids which includes both financial and technical submissions.

Task 4 – Permitting Support

Wood will review the selected Solar EPC Contractor's permit applications for local permitting (Building, Electrical, possibly Fire Department)/EMT) prior to submission. Wood will also review the utility interconnection application which will be prepared by the Solar EPC Contractor and signed by the City. Any identified issues, comments and recommendations will be provided to the contractor and City.

In the event zoning or planning board expert testimony or other support is required, Wood can provide these additional services upon request.

Task 5 – Construction Phase Submittal Review

The following construction phase submittal review services have also been included:

- Address RFIs
- Review Technical Submittals; and
- Review commissioning plans and commissioning documentation

Construction inspection, as-built certification and record drawing review services can also be provided upon request.

PROPOSED BUDGET

Wood proposes to perform this work on a not to exceed time and materials (T&M) basis. Wood's estimated budget for our proposed scope of work is summarized below:

Task No.	Task	Estimated Cost
1	Data Collection/MEP Coordination	$ 7,766
2	Conceptual Design	$22,231
3	Procurement Support	$9,649
4	Permitting Support	$3,520
5	Construction Phase Submittal Review	$4,420
	TOTAL:	**$47,585**

The applicable billing rates and terms and conditions to be utilized will be as specified by the General Engineering Services Agreement (#17-207) between The City of Key West and Wood Environment & Infrastructure Solutions, Inc. dated April 16, 2018.

SCHEDULE

Wood estimates that it can complete the proposed scope of work within 6-8 weeks upon written authorization to proceed.

ASSUMPTIONS/EXCLUSIONS

- Wood assumes that the City is planning on direct ownership of the solar generating system asset. In the event the City is interested in a long term PPA or lease approach for this project, Wood can provide guidance to support a decision and revise our proposed scope of work to support such an alternate approach.
- The City will provide access to the proposed building's site plans, MEP plans, including AutoCAD files

- Wood assumes we will have access to work with the City's building structural engineer with respect to coordinating the solar racking system with the roof structural system in order to develop a cost-efficient approach.
- The City's consultant will also provide an estimate of the building's energy consumption and provide access to their structural engineer to coordinate the racking system anchorage approach described above.
- The City will indicate to Wood their intended grid energy supplier and selected rate schedule to be utilized for this facility.
- Wood has not included the cost of attending the bid walk for the Solar EPC Contractor RFP, but can provide a proposal to do so upon request.
- Construction phase services such as contractor oversight, Construction Management, or site inspections during key construction milestones or at project close-out have not been included in Wood's scope and pricing. A proposal to provide these services can be provided upon request.
- Wood can also provide a proposal for solar performance monitoring services upon request.
- A battery energy storage (BESS) evaluation for demand charge reduction or emergency backup power has been excluded from our proposed scope of work and pricing but a proposal to provide such an evaluation and engineering design can be provided upon request.
- The utility Interconnection application will be prepared by the Solar EPC Contractor and signed by the City. Wood will review the completed application for technical accuracy and completeness.
- Wood has assumed that the Solar EPC Contractor will provide signed sealed Engineer's design drawings for the complete installation (electrical, racking).

Wood appreciates the opportunity to work with you on this project. Please feel free to contact Greg Corning @ 314-920-8359 or Tim Kessler @ 215-704-6592 if you have any questions regarding this proposal.

Sincerely,
WOOD ENVIRONMENT &
INFRASTRUCTURE SOLUTIONS, INC.

Greg Corning
Senior 2 Engineer - Civil

Timothy C. Kessler, PE, REP
Senior Associate Engineer/Senior PM

David Sterling, CEM
Senior 2 Project Manager