

Requirement Definition/Terms of Reference
Satellite Beach City Hall - Solar Array Installation



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Satellite Beach City Hall/Civic Center Rooftop Photovoltaic (PV) Design and Installation Request for Proposals

This RFP is organized into sections to better streamline the information needed to create your proposal.

Site Description:

Single Story Building

- Two flat roofs over City Hall and Civic Center are 14 feet, 10 inches above adjacent parking lot pavement
- Two roofs are steel reinforced concrete
- Two flat roofs over City Hall and Civic Center are watertight with an overlying granular white/grey rolling-roofing (tar down) over a 2 inch layer of board insulation membrane
- Undulating concrete center breezeway roof connects City Hall and Civic Center above an open plaza
- Breezeway roof is raised above level of two adjacent flat roofs
- Latitude: 28.171667°, Longitude: -80.604481°

Available installation spaces

Eastern flat roof (City Hall)

- Area: 96 feet N/S by 63 feet E/W
- Minimally shaded on the west by breezeway roof panels whose tops are 72 inches above the adjacent flat roofs
- Surrounded on north, east, and south sides by a 14 inch high parapet (impact should be minimal)

Breezeway roof

- Area: 100 feet N/S by 64 feet E/W
- Tops of roof panels are 72 inches above the two adjacent flat roofs
- Bottoms of roof panels are 44 inches above the two adjacent flat roofs

Western flat roof (Civic Center)

- Area: 96 feet N/S by 63 feet E/W
- Shaded on the east by breezeway roof panels whose tops are 72 inches above the adjacent flat roofs and by a row of adjacent trees bordering the west side of the Civic Center
- Surrounded on north, west, and south sides by a 14 inch high parapet

Conditions:

These conditions outline the minimum requirements that a PV system must have for a proposal to be considered.

Design of annual PV system output should aim to achieve average annual City Hall load demands of 150,000 kWh.

- Record of two years of electricity use. (Attachment 1)
- Components to be FSEC-certified
- System must be designed to withstand speeds and wind loading that comply with the prevailing building codes
- System must be designed for a salt air environment (components must be protected from oxidation, including support structures)
- System must comply with the following codes
 - Prevailing National Electric Codes
 - Prevailing International Fire Codes and Florida Fire Prevention Codes
- No permit or inspection fees will be charged
- Electric meter, input panel, and standby generator interconnect located on the west side of the Civic Center

Panels (provide panel data sheet with proposal):

1. Well known and financially strong manufacturer to ensure relevant long-term warranty.
2. Monocrystal or polycrystal cells.
3. Glass which covers panels should not reflect solar radiation.
4. Minimum efficiency value of 15% under standard testing conditions.
5. Same brand, power capacity and structure used throughout system.
6. A minimum of 10 year physical warranty. This should be provided by contractor.
7. At least 25 year linear power warranty, power warranty has to ensure 90% of rated power over 10 years and 80% rated power over 25 years.
8. Three bypass diodes in case of power loss due to shading and power drawbacks into system.
9. Solar module junction box proved by certificates such as TUV, SGS and UL, which are internationally accredited to prevent components from short circuiting.
10. Operating temperature range has to be between 20°C and 50°C.

Mounting Structure (provide data and schematic sheet with proposal):

1. Resistant against wind speeds of up to 130 mph (prevailing building codes).
2. Structural design minimally visible and aesthetically pleasing.
3. Minimum 25 year life span of system and resistant against oxidation, corrosion, and sand particles.
4. Connections must be water and dust resistant and withstand against impacts.
5. If glazing and color is damaged during construction, contractor is responsible for repairing.
6. Enough spacing between panels to facilitate cooling and accessibility.

Inverters (provide inverter data sheet with proposal):

1. Well known financially strong manufacturer
2. String type, preferred MPPT
3. High Efficiency at >98%
4. Outdoor capable and able to resist hurricanes (IP65)
5. Heat dissipating abilities
6. Have service capability in the US
7. Minimum inverter guarantee of 5 years and extended warranty of 15 years

Monitoring (provide data sheet with proposal):

1. Able to monitor system both locally and remotely.
2. Weather station equipment to monitor the sun.
3. Inverter shall give current data of the DC inputs, and if DC combiner boxes are used these boxes shall be assessed by the monitoring system.

If the system is designed with battery banks for power outages, all batteries used in the system should be able to withstand high temperatures within an appropriate temperature range for conditions relevant to East Central Florida. The batteries should also have low maintenance needs. Battery storage location should be near inverter in an electrical room. Create a system to reduce peak load of utility when readings taken (if possible).

Line items to be completed by contractor:

Fill out these line items as specifically as possible, attaching data sheets as needed to fit any additional information

Basic PV system:

- Minimum system size at quoted price
- Price break point(s)
- Systems loads (kW DC output)
- System payback period
- Reduction in price at the price break point(s) (\$ per Watt DC output)
- Expected Capacity Factor of system

Panels:

- Price
- Manufacturer
- Model
- Manufactured in which country (ies)
- Warranty available in which country/state
- Rated DC output per panel
- Design operational life
- Please attach data sheets*

Mounting hardware:

- Price
- Manufacturer
- Model
- Manufactured in which country (ies)
- Warranty available in which country/State
- Number of rails
- Please attach data sheets*

Inverters/Microinverters:

Invertors Microinverters

- Price
- Manufacturer
- Model
- Manufactured in which country (ies) (Y/N)
- Warranty available in which country/state (Y/N)
- Inverter(s) only: design DC input/AC output per inverter (kW)
- Emergency AC output power (if any) per inverter when off-grid (kW)
- Design operational life
- If less than that of the solar panels, the current installed replacement cost (\$ per unit per replacement cycle)
- Please attach data sheets*

Optimizers:

Manufacturer
Model
Manufactured in which country (ies)
Design operational life
If less than that of the solar panels, the current installed
replacement cost (\$ per unit per replacement cycle)

Please attach data sheets

Monitoring:

Monitoring provider
Cost of monitoring
Initial cost (\$)
Recurring cost (\$/year)

Please attach description of monitoring interface

Other significant component(s) (identify):

Manufacturer
Model
Manufactured in which country (ies)
Design DC or AC input/DC or AC output (kW) per unit
Design operational life
If less than that of the solar panels, the current installed
replacement cost (\$ per unit per replacement cycle)

Please attach data sheets

Suggested System

Panel location(s)

City Hall Breezeway Civic Center

Provide the following for your design

- Shading analysis report
- State Number of panels
- Please provide a planning-level schematic for the panels
- Number of inverters/microinverters
- Number of optimizers
- Rated DC output (kW)
- First year's estimated AC output (kWh)
- Cost of full system (\$)
- Cost of system per month (\$)
- Payback period with incentives/ financial plan
Payback period (Cost / (First year's AC output * \$0.11))

Potential component / system alternatives

Same information as for the basic components / system, as appropriate

Future removal and replacement

Do you offer this option?

For what period?

At what cost?

Payment schedule

% of project payment due at contract signing

% of project payment due midway through the project

Milestone at which the mid-term payment is due

% of project payment due at project completion

Milestone that constitutes "project completion"

Warranties:

- Details of warranties on each major system component
- Details of warranty on installation workmanship
- Details of warranty on roof leaks
- Details of any other warranties offered
- If there is an option to extend any warranties, for how long is this extension and at what additional cost?

Reliability:

- Listing status of the company with Better Business Bureau and other rating entities
- Number of years the company has been in business
- Number of years the company has been designing and installing photovoltaic systems
- Number of years the company has been designing and installing 20-plus kW DC output photovoltaic systems
- Number of rooftop photovoltaic systems the company has installed in the past three years
- Number of 20-plus kW DC output rooftop photovoltaic systems the company has installed in the past three years
 - Smallest commercial system installed (kW DC output)
 - Largest commercial system installed (kW DC output)
- Has the company worked with any hybrid systems?
- Is the company tied with any manufacturing companies, if so state
- Number of photovoltaic systems (residential or commercial) the company has installed on barrier islands in the past three years
- Total DC output of photovoltaic systems the company has installed in the past three years
- Photographs and locations of representative commercial-size photovoltaic systems the company has installed in the past three years
- References (name, address, telephone, email) for commercial size rooftop photovoltaic systems installed in the past three years
- Nature of any complaints or post-installation adjustments/repairs made to PV systems installed in the past three years
- Key personnel and certifications
- Licenses and bonding

Community:

- Please describe any In-kind photovoltaic system / component donations to nonprofits and local governments in the past three years
- Please describe any other relevant community involvement on the part of the company or its principals

Other:

- Earliest the project start date
- Length of time to complete the project once contract is signed
- Anything not covered by the rest of this RFP

Appendix 1:



Figure 1. Civic Center (left) and City Hall (right) looking northeast.



Figure 2. Satellite view of Civic Center and City Hall. The parking lot is directly south of the building.