



City of Culver City

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Staff Report Details (With Text)

File #: 23-135 **Version:** 1 **Name:** Approve a PSA with Willdan for the Microgrid
Type: Minutes **Status:** Consent Agenda
File created: 8/16/2022 **In control:** City Council Meeting Agenda
On agenda: 9/12/2022 **Final action:**
Title: (CC) - CONSENT ITEM: (1) Approval of a Professional Services Agreement with Willdan Energy Solutions in an Amount Not-to-Exceed \$60,745 to Develop Three Scenarios for the Veterans Memorial Complex and Senior Center Microgrid Project, to Prepare Technical Specifications for Insertion into a Request for Proposals (RFP), to Assist Staff with Evaluating the Proposals Received, and to Prepare a Power Purchase Agreement with the Energy Service Company Selected to Implement the Project; and (2) Authorization of the Release of an RFP to Energy Service Companies to Implement the Project.

Sponsors:

Indexes:

Code sections:

Attachments: 1. 22_09_12 ATT1 Diagram of Solar Panel Array.pdf

Date	Ver.	Action By	Action	Result
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Meeting Date: September 12, 2022

Contact Person/Dept.: Joe Susca/Public Works-Administration

Phone Number: 310-253-5636

Fiscal Impact: Yes ☒ No ☐ **General Fund:** Yes ☒ No ☐

Attachments: Yes ☒ No ☐

Commission Action Required: Yes ☐ No ☒

Public Notification: (E-Mail) Meetings and Agendas - City Council (09/07/2022); Willdan (08/17/2022)

Department Approval: Yanni Demitri, Director of Public Works/City Engineer (08/31/2022)

RECOMMENDATION

Staff recommends the City Council (1) approve a professional services agreement with Willdan Energy Solutions (“Willdan”) in an amount not-to-exceed a \$60,745 to prepare technical specifications for three development scenarios for the *Veterans Memorial Complex and Senior Center Microgrid* project CIP No. PF022 (“Project”), to prepare a Request for Proposals (“RFP”) for subsequent release to competing Energy Service Companies (“ESCOs”), to assist staff with evaluating the proposals received, and to prepare a Power Purchase Agreement to execute with the selected ESCO; and (2) authorize the release of the RFP to ESCOs to implement the Project.

BACKGROUND

One of the mitigation measures contained in the City’s Hazard Mitigation Plan is to build resilient facilities capable of withstanding a major disaster. In addition, the City’s 2016 Emergency Operations Plan includes a partnership with the American Red Cross to transform the Senior Center, Veterans Memorial Auditorium and Park, Teen Center, and Municipal Plunge (collectively, the “Campus”) into a 450-bed evacuation shelter. The shelter would be activated after a major disaster occurs, such as a large earthquake. The Campus is equipped with diesel backup generators that, unfortunately, are designed to only generate enough electricity to support approximately 15% of the total power needs. If a major earthquake strikes Southern California, utility poles and power lines may fail, depriving the Campus of electricity when it needs it the most to temporarily house members of the community who have been displaced as a result of their homes being red-tagged and rendered unoccupiable until repairs are made.

A microgrid is comprised of a series of connected power users who generate some or all of their electricity needs on-site that is operated by a central controller. The centralized controller optimizes the system by monitoring battery storage levels and determining when to use them, observing solar power generation levels at any given time, starting/stopping diesel generators, balancing and shifting load among power generation sources and the circuits they serve, and pulling power from the grid manually or automatically when necessary.

In addition to producing 100% renewable, carbon-free electricity on-site through a combination of photovoltaic solar panels and lithium-ion batteries, the objective of the Project is to generate enough on-site electricity to meet the Campus needs, both day and night, so it may operate independently as an “island” from the grid, although it will remain connected to the grid.

If a major disaster were to occur that triggered activation of the evacuation shelter, the microgrid controller would be equipped with the ability to shift power around the Campus to meet current demand. For example, the number of hours the Municipal Plunge water pump and/or its (electric) heater operates may be temporarily reduced and instead, that capacity could be shifted for use by evacuees to recharge their cell phones and to refrigerate, freeze and cook food in the Campus kitchens. The Project also includes use of heavy-duty hardware to install the system equipment that exceed building code requirements to enhance the system’s ability to withstand seismic activity and to continue to operate after a large earthquake occurs.

In 2018, staff released a scope of work and interviewed five companies that offered a range of energy engineering, distributed energy resources, technical, and mechanical expertise. Willdan emerged as

the company that had the most relevant microgrid feasibility and implementation experience and staff administratively entered into an agreement with Willdan to complete a microgrid feasibility study (the “Study”).

The Study included three options ranging in cost from \$2.2 to \$4.5 million, each offering differing amounts of solar panels and battery storage. Upon reviewing the options, in 2019 the City Council instructed staff to pursue the \$4.5 million option since it was the only option that created a “true” microgrid whereby enough carbon-free, renewable electricity is generated on site to meet the Campus needs coupled with 10 hours of battery storage for use at night when the sun goes down. During the daylight hours, the batteries will be recharged by the on-site solar panels for use each night. The battery charging and depleting cycle would repeat daily. Although the system would be designed to operate as an “island” separate from the grid, it will continue to be connected to the grid and if the system were to fail, grid-supplied power will immediately kick-in with no service disruption.

Most of the Project’s solar panels and all of the batteries will be installed on the surface parking lots; however, some solar panels will be placed on the rooftop of the Senior Center and the Auditorium as depicted in dark blue in Attachment No. 1 - *Diagram of Solar Panel Array*. The “T” structures that the solar panels will be mounted upon in the parking lots will provide much appreciated shade to those who park beneath them.

The Study also includes eliminating three of the four existing SCE meters and using only one for the entire Campus. Using one meter provides the maximum amount of flexibility and functionality to the microgrid controller and its ability to shift the sources of electrical generation (solar, battery, diesel generators) around the Campus to meet demand. To use only one meter, the Project includes construction of an underground conduit containing an electrical cable buried beneath Culver Boulevard to physically connect the Veterans Memorial Complex to the Senior Center.

Given the high capital outlay, staff and the Sustainability Subcommittee (at the time Council Member Eriksson and former Council Member Sahli-Wells; current Subcommittee members are Mayor Lee and Council Member McMorrin) met with various ESCOs to purchase, install and maintain the Project in exchange for the City’s payment of a negotiated per kilowatt hour (kWh) rate for use of the electricity it generates over a 20 to 25-year term. The Project is financially appealing to ESCOs as they will receive a Federal income tax credit that the City would not receive by virtue of not paying income taxes. Although this investment tax credit provided to energy projects such as microgrids was poised to be reduced from 30% to 24% in 2023, passage of the *Inflation Reduction Act* restored the 30% income tax credit. The Self-Generation Incentive Program (“SGIP”) overseen by the California Public Utilities Commission, however, has recently eliminated all incentives for solar panels but still covers approximately 25% of the cost to acquire lithium-ion battery systems.

Pursuit of the Project was postponed in 2020 due to the uncertainty of City revenue streams during the COVID-19 pandemic.

DISCUSSION

In 2021, the Clean Power Alliance (“Alliance”) announced their no-cost Power Share program designed for each Alliance member city to install a photovoltaic solar panel system with enough battery backup capacity to support up to four hours of downtime at one critical facility. After evaluating the pros and cons of a few City-owned facilities, staff selected the Senior Center as the

most suitable site to pursue. During normal operations, the Power Share program is designed to allow the Alliance to tap the power stored in the batteries during peak demand, which is from 4:00 p.m. to 9:00 p.m. in the summertime. Without the ability to tap these batteries, the Alliance would be required to purchase the necessary electricity to meet demand on the spot market, whose prices are high, unpredictable and can fluctuate wildly, especially when temperatures exceed 100 degrees Fahrenheit in highly populated areas of California.

Staff paused pursuit of the Project to thoroughly evaluate the Power Share program and if it was determined to be worthwhile to participate, then the Project scope would be reduced to eliminate the Senior Center and instead, focus on the Veterans Memorial Complex alone (which is comprised of the Park, Auditorium, Teen Center and Municipal Plunge). Unfortunately, the offer by the Alliance would not meet the City's battery backup system objective without requiring the City to contribute \$645,000 to cover the cost to purchase the additional batteries necessary to increase their storage capacity from four to ten hours.

In 2022, staff obtained a consulting proposal from Willdan to assist with procuring an ESCO to implement the Project as originally designed. Willdan responded with a \$60,745 proposal to update their prior Study's equipment cost estimates, to prepare technical specifications to insert into a Request for Proposals ("RFP") for release to competing ESCOs, to assist staff with reviewing the proposals received, and to prepare a Power Purchase Agreement to execute with the selected ESCO. The RFP will require the ESCO to cover all of the capital cost to purchase, install and maintain the Project in exchange for the City agreeing to pay a per kWh rate to use the electricity it generates most likely over a 20 to 25-year term. Staff, however, will be fully trained by the ESCO to operate the microgrid controller.

In recognition of the reduced funding available from the SGIP program, staff requested Willdan prepare technical specifications to insert into the RFP that would require each ESCO to respond with a per kWh electricity rate offer to the City for each of the following scenarios:

1. Break Even: In this scenario, Willdan will use their updated equipment costs to design the Project's technical specifications in a manner that will include all the solar panels necessary to meet existing daytime demand however, the number of batteries purchased and the number of hours they will operate at night will be an amount Willdan determines to be equivalent to what the City currently pays for its use of electricity. In this option, when the battery supply is exhausted each evening, the microgrid controller will automatically pull electricity from the grid to meet the facilities demand. The intent of this option is to buy as much battery capacity as possible without increasing the cost the City now pays for its use of electricity.
2. Full Resiliency for Existing Uses: This is the choice the City Council selected after reviewing the options contained in the original Study. In this scenario, it includes Willdan designing the system to include enough solar panels to meet existing demand during the day and provide a battery system designed to operate for 10 hours of use every night. As a result of reduced SGIP funding, staff anticipates the per kWh rate offers received from the competing ESCOs will likely be slightly higher than what the City now pays for its use of electricity.
3. Full Resiliency with Decarbonization: In this scenario, Willdan will first determine the amount of electricity needed at the Campus if all the existing natural gas equipment used for space heating and water heating were to eventually be replaced with all-electric equipment. (As part of replacing the Auditorium Heating, Ventilation and Air Conditioning system now underway, the existing natural gas space heating is already being replaced with electric.) The biggest user of natural gas on the Campus is the boiler located at the Municipal Plunge, which heats

the pool water to the desired temperature right after it is pre-heated by circulating through a series of thermal solar panels located on the locker room rooftop. Willdan will design the system to provide enough solar panels and battery capacity to include this additional electrical load, coupled with 10 hours of battery backup for use each night. If selected, this option will further the City's building electrification and decarbonization objectives to reduce greenhouse gases however, staff anticipates the per kWh rates the ESCOs offer for this option will be higher than what the City currently pays for its use of electricity.

Per Culver City Municipal Code Section 3.07.065.A these services are exempt from formal bidding procedures provided the contract is based on competitive quotes, whenever practical, as determined by the City Manager. Given Willdan's significant work and knowledge regarding this project thus far, it is not practical to obtain additional quotes in this case.

Next Steps:

Once Willdan updates the equipment pricing and prepares technical specifications for each of the three options above, staff will insert them into an RFP and release it to competing ESCOs. Staff will then return to the City Council with a recommendation on which ESCO to select to implement the Project.

FISCAL ANALYSIS

There are sufficient funds available in CIP No. PF-022 - *Veterans Memorial Complex/Senior Center Microgrid* to fund the \$60,745 cost of the Willdan agreement.

Future costs associated with energy pricing will be included in the staff recommendation following the RFP process.

ATTACHMENTS

22_09_12 ATT1 Diagram of Solar Panel Array

MOTIONS

That the City Council:

1. Approve a professional services agreement with Willdan Energy Solutions in an amount not-to-exceed \$60,745 to develop technical specifications for three different scenarios for the microgrid, to assist staff with preparation of a Request for Proposals and to evaluate the responses received, and to prepare a Power Purchase Agreement to execute with the selected Energy Service Company to implement the Project; and,
2. Authorize staff to release a Request for Proposals to competing Energy Service Companies to implement the Project; and
3. Authorize the City Attorney to review/prepare the necessary documents; and,

4. Authorize the City Manager to execute such documents on behalf of the City.