



Agenda Report

December 14, 2020

TO: Honorable Mayor and City Council
FROM: Water and Power Department
SUBJECT: AUTHORIZATION TO ENTER INTO A GRANT AGREEMENT THROUGH MARCH 15, 2022 WITH THE AMERICAN PUBLIC POWER ASSOCIATION FOR THE DISTRIBUTION BATTERY PROJECT

RECOMMENDATION:

It is recommended that the City Council:

1. Find that the proposed authorization is exempt from the California Environmental Quality Act ("CEQA") pursuant to State CEQA guidelines, Section 15301 (a) Existing Facilities, and that there are no features that distinguish this project from others in the exempt class and, therefore, there are no unusual circumstances;
2. Authorize the City Manager, or his designee, to enter into a grant agreement contract with the American Public Power Association ("APPA") to receive grant funds in the amount of \$125,000, for the Distribution Battery Project; and,
3. Designate the City Manager, or his designee, as the authorized representative with signature authority for the grant agreement and all contract documents pursuant to the grant.

BACKGROUND:

Pasadena Water and Power ("PWP") is looking into a new technology to manage voltage fluctuations in the electric distribution system as more customers install solar systems. Typically, a customer owning a solar electric generation system injects excess power into the PWP electric distribution system and draws power back when needed. Solar systems generate power based on the exposure to sun rays whose intensity fluctuates based on cloud cover, dust in the air, sun's orientation, and other environmental factors. PWP does not have control over the timing nor the quantity of power that a customer injects into and draws from the PWP electric system. Thus, the power flows two ways compared to the initial design meant for one-way power flow to the customer. With the growing number of customer-owned solar systems it is a challenge for the utilities like PWP to maintain acceptable levels of voltage, frequency, and other parameters ("power quality") in their electric systems. To mitigate power quality problem, generally electric distribution system capacity is increased to absorb greater amounts of variations of injection or drawn power from the utility's electric system.

Increasing capacity involves installing larger size transformers, switches, cables, and other equipment, which is expensive and time consuming.

PWP, in collaboration with California Institute of Technology ("Caltech"), plans to undertake an alternative pilot project to deploy distributed battery storage systems on existing distribution circuits rather than upgrading city block's worth of conductors, transformers and other equipment. The batteries for this pilot project will be installed on a distribution circuit located on the blocks immediately north and south of Del Mar Blvd., between Allen Ave. and Craig Ave. This project is expected to improve electric system reliability and power quality in a shorter time and at a lower cost. This system, if successful, can be replicated by PWP and other utilities. In recognition of innovation and a likely larger benefit to the electric utility industry, APPA has approved a grant for \$125,000 to PWP. The additional cost of the project, \$298,000, will be borne by PWP. Caltech would bear its own cost, as discussed below.

Distribution Battery Project

This project will solve power quality issues that are experienced on one of the distribution circuits during peak loading, and provide a framework for evaluating its applicability to other circuits. This project will install 15 5kW / 28kWhr commercially available battery storage and communication systems on existing power poles within the circuit. This project will develop a comprehensive set of technologies for real-time optimization of distribution battery system charging/discharging jointly with grid operations and the operation of other DERs.

Even without the grant, the voltage mitigation provided by this project is 80% less expensive than a traditional utility solution. Additional project benefits include enabling provisions of grid services such as peak load shaving, load demand mitigation, voltage support, frequency support, renewable integration, and demand response programs. It will also develop a framework for market-driven scaling of adaptive charging networks.

This project is being implemented through a collaboration with Caltech and PWP's current Supervisory and Data Acquisition ("SCADA") vendor. Caltech provided the modeling for battery placement and recommended operation. The project will be completed in 12 months, and the grant agreement extends through March 15, 2022. The project cost estimate is \$423,000, of which \$298,000 will be funded from the Power Capital Fund, and \$125,000 will be funded from the APPA grant.

COUNCIL POLICY CONSIDERATION:

The recommended grant authorization is consistent with the City Council's Strategic Planning Goals to maintain fiscal responsibility and stability, and increase reliability. Implementation of the project will contribute to enhanced power quality and additional options on managing demand on this distribution circuit. The project serves as a demonstration to test this new method and develop criteria to cost effectively deploy it elsewhere.

ENVIRONMENTAL ANALYSIS:

The financial assistance agreement for utilization of grant funds for this project is exempt from CEQA. The project entails installing batteries on power poles within the distribution network. There are no features that distinguish this project from others in the exempt class and, therefore, there are no unusual circumstances.

FISCAL IMPACT:

The cost of this action will be \$423,000 of which \$125,000 will be reimbursed by grant funds from the APPA. Funding will be addressed by the utilization of existing and future budgeted appropriations in the Power Capital Fund 411, CIP 3252 Distribution Volt/Var Enhancements.

Respectfully submitted,



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