

CITY OF SANTA ROSA  
BOARD OF PUBLIC UTILITIES

TO: BOARD OF PUBLIC UTILITIES  
FROM: EMMA WALTON, ASSOCIATE CIVIL ENGINEER  
TRANSPORTATION AND PUBLIC WORKS  
SUBJECT: AGREEMENT FOR DESIGN, INSTALLATION, OPERATION, AND  
OWNERSHIP OF A MICROGRID DEMONSTRATION SYSTEM AT  
THE SANTA ROSA LAGUNA TREATMENT PLANT

AGENDA ACTION: RESOLUTION

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RECOMMENDATION

It is recommended by the Water and Transportation and Public Works (TPW) Departments that the Board of Public Utilities, by resolution, approve the Agreement for the Design, Installation, Operation and Ownership of a Microgrid Demonstration System at the Santa Rosa Laguna Treatment Plant between Trane U.S. Inc. and the City of Santa Rosa (Agreement) and delegate signature authority to the Director of Santa Rosa Water to approve subsequent agreements related to the Agreement.

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EXECUTIVE SUMMARY

These proposed actions will allow for Trane to complete the design, construction, and testing of a microgrid demonstration project (the Project) at the Laguna Treatment Plant (LTP).

The Project includes three functional components:

- 1) Installation of a new 2-megawatt hour (Mwh) energy storage battery and associated communications, microgrid controller (MGC), and automation equipment;
- 2) Installation of post combustion exhaust treatment system, including a selective catalytic reduction (SCR) unit, on two of the four existing Cummins combined heat and power (CHP) engines and associated equipment;
- 3) Installation of a 125-kilowatt (kw) photovoltaic (PV) parking canopy system and associated equipment to be located above the LTP Administration Building Parking Lot.

This project will allow the California Energy Commission (CEC) to better understand how installations of advanced microgrids at wastewater treatment plants (WWTP) can help support expansion of renewable energy resources.

## BACKGROUND

California's electric grid is susceptible to the load fluctuations caused by the variability in renewable energy sources like solar. Advanced microgrids can help stabilize loads by reducing demands on the overall grid during critical times. Unfortunately, little real-world experience on the operation of these systems has been developed, particularly at WWTP facilities like the LTP.

In July of 2014 the CEC issued Grant Solicitation PON-14-301 Demonstrating Secure, Reliable Microgrids and Grid-Linked Electric Vehicles to Build Resilient, Low-Carbon Facilities and Communities. The purpose of the grant was twofold (1) fund the development and testing of an advanced microgrid that utilizes renewable electricity and battery energy storage and (2) show how advanced microgrids can enable participation in ancillary services energy markets, like being able to schedule a demand reduction during critical times, in advance.

In response, Trane, with approval from the City Council, submitted a grant application and listed the LTP as the proposed microgrid demonstration project site. Trane's application was accepted, and in April of 2015, Trane entered into an agreement (EPC-14-059) with the CEC for a \$4,999,804 grant with \$2,200,000 in matching funds for implementation of the Project.

In February of 2016, the Director of Santa Rosa Water, with authority delegated from the Council, signed a Nondisclosure Agreement (NDA) with Trane that allowed staff to participate in meetings and communications pertaining to the proprietary, technical aspects of the Project and ultimately negotiate a detailed, project implementation agreement.

In August of 2016, Trane began conversations with city staff regarding the Agreement. Since August, Trane and the City have been in close communication and have been working collaboratively to develop the Agreement for the Design, Installation, Operation and Ownership of an Advanced Microgrid Demonstration System at the LTP.

The Agreement will allow for Trane to complete the design and construction of the Project and begin collecting data for the CEC. The project consists of (1) the installation of a new 2-Mwh energy storage battery and MGC, (2) the installation of SCR units on two of the existing Cummins CHP engines, and (3) the installation of a 125-kw PV parking canopy system.

In addition to the physical/operational components of the project, the Project will trigger the need for a new Authority to Construct Permit, a new Permit to Operate, and a

modification to the LTP's existing Major Facility Review (Title V) Permit issued by the Bay Area Air Quality Management District (BAAQMD).

### PRIOR BOARD OF PUBLIC UTILITIES REVIEW

On October 21, 2014, the City Council, by motion, authorized the Mayor to sign a letter to the California Energy Commission authorizing Trane, through Rockwood Consulting, to list the Laguna Treatment Plant as a proposed Microgrid Project Demonstration site.

On December 17, 2015, the Board participated in a study session that gave an overview of how renewable energy sources (namely wind and solar) cause fluctuations in the grid and how the installations of microgrids throughout the system could help stabilize the grid. The presentation also described what a microgrid consists of and how the LTP could function as an advanced microgrid.

On February 23, 2016, the Council, by motion, approved an NDA between Trane and the City for development and implementation of the Project and delegated signature authority to the Director of Santa Rosa Water. The Director of Santa Rosa Water subsequently signed the NDA.

### ANALYSIS

For Trane to proceed with the design, construction, and testing of the Project, the City and Trane desire to execute a contractual agreement. Given the nature of the Agreement, Board approval is required.

The Agreement sets forth a chronological pathway for design, construction testing, operation and ultimately transfer of ownership of the project to the City. Trane is responsible for the design and construction of the project, with the approval and support of City staff. The Agreement provides that at all times during the process the City shall maintain ultimate control of the LTP to assure that it continues to perform its essential functions. The Agreement provides for Trane's indemnification of the City for its own negligence, but also contains a limitation of liability cap of \$5,000,000. Trane will be requesting a term extension from the CEC, but even with an extension the project will require need to meet an ambitious schedule. The Agreement further provides that the City will be responsible for the actual cost of any delays caused by the City.

Additionally, the execution of the Agreement may prompt the need to execute subsequent agreements to fully install, connect, and operate the Project. These subsequent agreements may include, but are not necessarily limited to, (1) an interconnection agreement with the local utility and (2) a demand response agreement with the California Independent System Operator (CAISO).

The Santa Rosa Water Department Director has not previously been delegated authority to sign agreements that may arise from execution of the Agreement and therefore, such authority is being requested by this action for subsequent agreements

necessary to implement the Agreement.

### FISCAL IMPACT

The Agreement includes language committing the City to providing Trane with \$750,000 in matching funds to support the design and installation of one of the SCR units. As part of the 2015-16 Capital Improvement Program Budget process, the City previously budgeted for and appropriated \$1.2M for the design and installation of one SCR unit. The \$750,000 in matching funds will be allocated from these previously appropriated funds. (Note that as a result of the project, the City will be obtaining two SCR units, with a capital investment equivalent to one unit.)

There are a roughly estimated \$480,000 (\$450,000 for the CHP engines and SCR units, \$5,000 for the PV system, and \$25,000 for the battery and MGC) in annual operations and maintenance (O&M) costs associated with maintaining the Project, however, the City's matching fund contribution and O&M costs will be more than offset by the cost savings realized from the Project.

With SCR units, all four CHP engines can be operated, at will, on up to 100% natural gas, which could save up to \$1M per year in electrical costs (depending on the difference in cost between natural gas and electricity). Currently, only two CHP engines can be operated at any given time and are permitted for digester gas fuel mixed with no more than 10% natural gas annually. (Note that the engines can currently be operated on 100% natural gas under emergency conditions only.) Additionally, the PV system will generate a small, about \$13,000, savings in electrical costs per year.

As a result of the implementation of the Project, a potential revenue generating opportunity may become possible through participation in the CAISO day-ahead load nomination market, known as flexible resource adequacy criteria and must offer obligations (FRAC MOO). Given this is a demonstration project, this potential revenue stream is unknown but, based on similar installations, could be upwards of \$150,000 per year.

### ENVIRONMENTAL IMPACT

To satisfy the requirements of the California Environmental Quality Act (CEQA), the CEC, as the Lead Agency, filed a Notice of Exemption (NOE) on May 1, 2015. The NOE cited a Categorical Exemption based on Title 14, Chapter 3, Article 19, Sections 15301 and 15303 of CEQA, as the Project consists of a minor alteration of an existing public sewerage facility and the improvements are all located within the developed area of the LTP. The City will file an NOE as a Responsible Agency subsequent to Project approval.

### BOARD/COMMISSION/COMMITTEE REVIEW AND RECOMMENDATIONS

On April 24, 2017, the Contract Review Subcommittee met with TPW and Water

Department staff, reviewed the project background and proposed agreement, and unanimously accepted Staff's recommendation that the Board approve the Agreement, and authorize the Director of Santa Rosa Water to execute associated operational agreements.

#### ATTACHMENTS

- Resolution
- Exhibit A – Attached to the proposed Resolution

#### CONTACT

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