

RIVERSIDE PUBLIC UTILITIES

Board Memorandum

BOARD OF PUBLIC UTILITIES

DATE: April 13, 2020

ITEM NO: 8

SUBJECT: JOINT PROJECT BETWEEN RIVERSIDE PUBLIC UTILITIES AND RIVERSIDE PUBLIC WORKS DEPARTMENT TO DEVELOP A BIOGAS MICROTURBINE FACILITY WITH A GENERATION CAPACITY OF UP TO 3.6 MEGAWATTS LOCATED AT RIVERSIDE REGIONAL WATER QUALITY CONTROL PLANT

ISSUE:

Recommend that the City Council approve the conceptual plan for a joint project between Riverside Public Utilities and Riverside Public Works Department to develop a biogas microturbine facility of up to 3.6 megawatts located at the Riverside Regional Water Quality Control Plant.

RECOMMENDATION:

That the Board of Public Utilities recommend that the City Council approve the conceptual plan for a joint project between Riverside Public Utilities and Riverside Public Works Department to develop a biogas microturbine facility of 2.2 megawatts, with the future potential to expand the facility up to 3.6 megawatts, located at the Riverside Regional Water Quality Control Plant.

LEGISLATIVE HISTORY:

In 2011, the California Renewable Energy Resources Act, Senate Bill (SB) X 1-2, was signed into law by the Governor, which mandated that all electric utilities, including Riverside Public Utilities (RPU), procure increasing amounts of renewable energy primarily from in-state resources to serve its retail needs during specified compliance periods. SB X1-2, which officially created the first set of tiered Renewable Portfolio Standard (RPS) targets, requires RPU to supply 20%, 25% and 33% of retail energy needs using renewable resources by 2010, 2015 and 2020, respectively.

In 2015, the Governor signed into law, the Clean Energy and Pollution Reduction Act, SB 350, which further increased the RPS goal to 50% by 2030. This was followed in 2016 with the Governor's approval of SB 32, which required the state board to ensure that statewide greenhouse gas emissions are reduced to 40% below the 1990 level by 2030.

The Governor signed SB 100 into law in 2018, maintaining the target of 33% RPS by 2020 and setting compliance targets to 44% by 2024, 52% by 2027 and 60% by 2030. SB 100 is also known as "The 100 Percent Clean Energy Act of 2018" because it created the policy of meeting all the State's retail electricity supply with a mix of RPS-eligible and zero-carbon resources by December 31, 2045.

BACKGROUND:

The City of Riverside has been extremely supportive of the existing renewable targets set by the State and

is committed to serving its retail electricity requirement using more renewable energy. Since 2012, the Board of Public Utilities (Board) and City Council have approved 274 megawatts (MW) of renewable resource contracts/extensions. The City is currently receiving 86 MW of clean geothermal, 46 MW of wind, and 98 MW of solar energy. As a result, the City expects to serve 44% of its retail load with renewable resources in 2020.

Riverside Public Works Department owns and operates the Riverside Water Quality Control Plant (RWQCP) and expects to receive an increasing amount of digestible waste streams in the coming years, which would lead to an increase in biogas production. As the plant's ability to flare digester gas is being curtailed by State regulations, Public Works desires to convert the biogas into renewable power generation and create a new revenue stream to offset costs at the RWQCP.

DISCUSSION:

RPU is in a unique position to use the biogas produced at the RWQCP for renewable energy generation. RPU desires to collaborate with Public Works on a biogas-to-energy project by using the biogas produced by the RWQCP and using it as a fuel to run a set of microturbines to produce renewable electricity and generate renewable energy credits. The project is expected to produce tangible benefits to RPU, Public Works and the Riverside community while helping both departments to meet State and local requirements.

The initial capacity of the biogas-to-energy project would be 2.2 MW, with a future expansion potential up to 3.6 MW. The project will also include heat recovery capability, which would provide additional benefit to the RWQCP. The microturbines will be installed inside the existing engine building located at the RWQCP, utilizing as much existing infrastructure as possible to reduce project costs. The project will be interconnected to RPU's distribution system at 12 kV, and RPU will be responsible for the cost and labor to complete any necessary interconnection work.



Figure 1: Capstone C1000 Turbine Package

Upon Board and Council's conceptual approval, RPU will enter into one or multiple agreements with qualified vendors and contractors for the design, construction, operation and maintenance of the project. The contracting strategy will include a purchase option that would allow the City to acquire the project facilities in a future year; if the option is exercised, RPU would own, operate and maintain the project thereafter.

The conceptual project will have the following characteristics:

Project Term: Twenty years with anticipated commercial operation starting in the summer of 2021.

Purchase Option: RPU will have the option to acquire the project facilities, during the project term.

Equipment: The initial project will consist of two Capstone C1000 turbine packages (or equivalent) with one (1) heat recovery module and one Capstone C200 turbine (or equivalent) for serving parasitic load. Public Works will be able to use the heat recovery module as a secondary, back-up heat source for its burners.

Inter-departmental Memorandum of Understanding: Public Works and RPU will sign a Memorandum of Understanding that would delineate each party's roles and responsibilities in the project and emphasize the benefit-sharing principle behind this partnership.

Inter-departmental Partnership Benefits: Public Works would benefit from the guaranteed off-take of its digester gas production by RPU, which would result in a steady revenue stream for 20 years. RPU would benefit from the energy generation and associated renewable benefits from the project.

ECONOMIC ANALYSIS:

The long-term economic Proforma attached to this report shows that both Public Works and RPU are expected to obtain nearly equivalent economic benefits from the deployment and operation of this renewable energy generation project. Public Works is expected to receive approximately \$5.47 million in revenue over 20 years from the sale of its excess digester gas to RPU. Likewise, RPU is expected to capture approximately \$5.62 million in both excess revenue and/or avoided costs by monetizing the project in the California Independent System Operator market, as summarized in Table 1 below.

Table 1. Expected gross 20-year revenues and costs for the proposed micro-turbine project.

Gross 20-Year Expected Revenue (M\$)	
RA-Value (avoided local RA costs)	\$4.35
PCC-1 Renewable Energy Credits	\$8.98
Wholesale Energy	\$18.72
Total expected gross revenue	\$32.05
Gross 20-Year Expected Cost (M\$)	
Debt Service	\$11.13
Turbine O&M and Overhauls	\$5.33
Biogas conditioning & clean-up	\$4.15
Biogas cost (paid to PWD)	\$5.47
Interconnection costs	\$0.35
Total expected gross cost	\$26.43
Net expected revenue	\$5.62

Further details pertaining to the economic pro-forma assumptions and forecasts are presented in Attachment 1. The economic analysis is subject to change based on forthcoming contract negotiations.

Upon the successful completion of all necessary project planning and contracting, staff will present all the project agreements, Inter-departmental Memorandum of Understanding, and fiscal impact for Board and City Council approvals before the end of 2020.

FISCAL IMPACT:

There is no fiscal impact associated with this report.

Approved by: Todd M. Corbin, Utilities General Manager
Approved by: Al Zelinka, FAICP, City Manager
Approved as to form: Gary G. Geuss, City Attorney

Certifies availability
of funds: Brian Seinturier, Utilities Fiscal Manager

Attachments:

1. RPU-PWD Biogas Proforma
2. Presentation