



Memorandum

TO: HONORABLE MAYOR
AND CITY COUNCIL

FROM: Barry Ng
Kerrie Romanow

SUBJECT: SEE BELOW

DATE: June 7, 2016

Approved

D. D. Sy L

Date

6/9/16

INFORMATION

**SUBJECT: DESIGN-BUILD CONTRACT WITH CH2M HILL ENGINEERS, INC.,
FOR THE COGENERATION FACILITY AT THE SAN JOSE-SANTA
CLARA REGIONAL WASTEWATER FACILITY**

BACKGROUND

On April 26, 2016, City Council approved (Agenda Item 7.3) the design-build contract with CH2M HILL Engineers, Inc. (CH2M HILL) for the Cogeneration Facility Project (Project) at the San José-Santa Clara Regional Wastewater Facility (RWF). During discussion of the item, the City Council requested staff to provide comparable project costs and provide the design-builder's experience in constructing cogeneration facilities.

The purpose of this memorandum is to provide information on comparable costs to construct new cogeneration facilities at wastewater treatment plants and to list similar construction experience of CH2M HILL. CH2M HILL has engaged locally based C. Overaa & Company (Overaa) as the key contractor partner for the Project.

ANALYSIS

Comparable Construction Costs

The actual cost of a cogeneration facility project varies depending on a number of characteristics, including facility size, location, system capacity, type of engine, and overall system configuration (gas treatment, gas storage, back-up systems such as boilers). The Project at the RWF includes gas treatment, emissions controls, additional hot water supply elements, boilers, utility interface work with other projects, and the Supplemental Project Work and Proposal Scope Changes listed in the staff report for the April 26, 2016, City Council Meeting.

June 7, 2016

Subject: Design-Build Contract with CH2M HILL for the Cogeneration Facility

Page 2

The current estimated cost for Preliminary Services, Design-Build Work, and design and construction contingency, including Supplemental Project Work and Proposal Scope Changes, is \$88,539,000 (not including contingency and project delivery costs). In order to compare the Project costs to other cogeneration facilities, removing these optional costs (Supplemental Project Work and Proposal Scope Changes) yields a comparable base project cost of \$69,000,000. With a projected capacity to produce 16.6 MW, the comparable project cost is \$4,156 per installed kW.

The 2014 U.S. Environmental Protection Agency report on Combined Heat and Power (CHP) stated that a typical cogeneration facility could cost between \$1,000 and \$5,000 per kW of installed capacity. Provided below is a comparison of cogeneration facility project costs, which City staff compiled from the Cogeneration Facility Project RFQ qualification statements:

Facility Name	Year Completed	Project Cost	Electrical Output	Cost per kW
WPCF Hayward – Cogeneration Upgrade Project	2014	\$ 9,500,000	1.0 MW	\$9,500
Durham WWTF – Brown Grease Receiving & Cogen Facility	2015	\$ 15,000,000	1.7 MW	\$8,824
Philadelphia Northeast Treatment Plant – Biogas Utilization CHP	2014	\$ 47,500,000	5.6 MW	\$8,482
Columbia Blvd Treatment Plant (Portland, OR) Cogen Facility	2008	\$ 10,000,000	1.7 MW	\$5,882
City of Los Angeles Hyperion CHP Plant	2016	\$120,000,000	25.0 MW	\$4,800
City of Great Falls, MO WWTP Digester Gas Cogen Project	2007	\$ 2,500,000	0.54 MW	\$4,630
RM Clayton Treatment Plant (Atlanta) Cogeneration Project	2012	\$ 7,000,000	1.6 MW	\$4,375
San Jose/ Santa Clara RWF Cogen Facility Project	Planned 2019	\$ 69,000,000	16.6 MW	\$4,156
Victor Valley Wastewater Biogas Facility	2015	\$ 5,000,000	1.6 MW	\$3,125
Llano Road Treatment Plant (Santa Rosa) Cogeneration Facility	2012	\$ 10,500,000	4.4 MW	\$2,386

CH2M Cogeneration Facility Project Experience

The City selected the design-build team of CH2M HILL and Overaa for the Project due in large part to their extensive project experience at wastewater and water facilities, including their current joint effort to design-build the \$141,000,000 Woodland-Davis Regional Water Treatment Facility. The CH2M HILL design team has experience with designing the Durham Wastewater Treatment Facility (WWTF) Brown Grease Receiving and Cogen Facility (two engines - 1.7 MW), Jones Island (Milwaukee, WI) Gas Turbine Replacement Project (three gas turbines - 13.8

HONORABLE MAYOR AND CITY COUNCIL

June 7, 2016

Subject: Design-Build Contract with CH2M HILL for the Cogeneration Facility

Page 3

MW), and the Dan Region (Tel Aviv, Israel) WWTF Digestion and Cogeneration Facility (eight engines - 11.2 MW). Overaa brings to the team the experience of building locally, including the Santa Rosa (CA) Cogeneration Facility (four engines - 4.4 MW) and the East Bay Municipal Utility District Power Generation Station (4.5 MW turbine-generator). Together these two firms have deep experience in designing and building cogeneration projects at wastewater treatment facilities such as the RWF.

/s/
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Director of Public Works

/s/ Ashwini Kantak for
KERRIE ROMANOW
Director, Environmental Services

For questions, please contact John Cannon, Principal Engineer, Department of Public Works, at (408) 635-4006.