Sacramento Regional County Sanitation District

Biogas Cogeneration System
DBoM Project

Industry Outreach Project Briefing

September 23, 2020
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Sacramento Regional County Sanitation District (Regional San) has prepared this document to notify prospective design-builders of its upcoming biogas cogeneration project at the Sacramento Regional Wastewater Treatment Plant (SRWTP). Regional San is currently in the planning stage of its biogas cogeneration project and this document provides high level information about its organization, the project background, goals for a successful project, anticipated funding sources, as well as the currently planned scope and schedule.

Information shared in this document is the best relevant information available to Regional San and its Owner’s Representative, Brown and Caldwell, at this point in time. All information is subject to change and revision as the project develops further.

About Sacramento Regional County Sanitation District

Regional San owns and operates the regional wastewater conveyance system and the SRWTP located near Elk Grove, California. It serves a population of about 1.6 million in the region.

Regional San provides wastewater conveyance and treatment services to residential, industrial and commercial customers throughout unincorporated Sacramento County; the cities of Citrus Heights, Elk Grove, Folsom, Rancho Cordova, Sacramento, and West Sacramento; and the communities of Courtland and Walnut Grove. See Figure 1 on the following page.

The wastewater is collected from customers’ homes and businesses via sewer collection pipes operated by one of four local sewer agencies. These pipes connect to its network of 169 miles of interceptor pipelines, which convey the wastewater to the SRWTP. There, approximately 124 million gallons of wastewater are treated each day and safely discharged to the Sacramento River.

Regional San was formed in 1973, and in 1982, after years of construction, the SRWTP began service. Regional San is governed by a 17-member Board of Directors representing all of the jurisdictions we serve throughout the region.

Regional San currently recycles its biogas. Biogas is a methane-rich, renewable by-product of the solids digestion process that is used as fuel to produce steam and electricity at the Carson Ice-Gen Project, a cogeneration facility owned by Sacramento Municipal Utility District (SMUD) and located at SRWTP.

The SMUD cogeneration plant has a capacity of 100 megawatts of power for local residential and industrial use. The electrical power produced with the SRWTP digester gas is enough to provide energy for approximately 5,800 households annually.

Regional San also buys some of the steam produced by the recycled biogas to heat the wastewater digesters at the treatment plant. In the event of a local power failure, the cogeneration plant serves as a backup power supply to keep the treatment plant running.

Mission

Regional San protects public health and the environment by conveying, treating, and recovering resources from wastewater responsibly and cost-effectively.

Vision

Regional San is a leader in environmental stewardship and a trusted partner in regional sustainability.
Figure 1. Regional San Service Area
Project Background

Regional San currently delivers renewable biogas to SMUD in exchange for reliable utility and backup power, steam for digester heating, and revenue according to the terms of the existing Commodity Agreement. The original driver for the agreement was the co-location of the Carson Cogeneration Plant on the SRWTP site, where digester gas helped fuel the power plant, and steam from the power plant could be returned for digester heating, but SMUD no longer combusts the digester gas on-site. Currently, SMUD sends Regional San’s biogas offsite to the Cosumnes Power Plant (via private pipeline), and steam for the digesters is produced by a natural-gas-fueled auxiliary boiler instead of the Carson Cogen Plant. With the Commodity Agreement expiring in 2025, Regional San is pursuing an alternative use for its biogas. Another driving force for a new biogas utilization project is to get Regional San exempted from “covered” process regulations via onsite biogas use. The level of effort associated with compliance with these regulations is significant.

Current Planned Project Scope

Regional San has decided to install a new biogas cogeneration engine system to utilize digester gas onsite to produce electricity and heat for the plant.

The proposed Biogas Cogeneration System project currently includes:

- Addition of internal combustion engine generators (12-megawatt capacity)
- Addition of a biogas conditioning system
- Addition of engine exhaust treatment (oxidation catalyst and selective catalytic reduction)
- Addition of hot water boilers (standby)
- New building to house engine and boiler systems

The engine generators would produce between 8 and 10 MW of power which will offset utility power purchases. Additional capacity would serve as standby. Analysis confirmed sufficient onsite power demand for this new system accounting for the existing onsite photovoltaic system and Regional San’s involvement in SMUD’s SolarShares program.

The biogas cogeneration system will have several major interfaces with existing SRWTP systems:

- Gas management system
- Digester heating system
- Electrical power distribution system
- Plant control system
- Site utilities

Interface requirements will be specified in the Project Technical Requirements which will be issued with the RFP.

Regional San’s goal is to design and construct the biogas cogeneration (or CHP) project prior to the Commodity Agreement expiration in October 2025. In addition, Regional San recognizes that early delivery of the project would accelerate exemption from “covered” process requirements and provide energy cost savings. As a result, Regional San is pursuing design-build project delivery.
Project Goals

Regional San’s goals for the project are listed below (but are not arranged in order of importance):

- Successful biogas cogeneration startup by October 2025 (when the SMUD commodity agreement expires)
- Cost and schedule efficiency and predictability
  - Develop solutions that offer the best value
  - Budget and schedule predictability (and ability to meet the October 2025 startup date)
- Achieve Best Value for Biogas
  - High cogeneration system efficiency
  - High uptime
- Lifecycle Cost Best Value
  - Design for ease of operations
  - Design for low lifecycle & maintenance costs
  - Predictable maintenance and repair costs
- Seamless startup, commissioning, first-year operations, and transition to Regional San operation
  - Development and implementation of a robust training program to ensure a smooth transition from the Design-Builder to operations staff.
  - Safety and maintenance are considered in design solutions
- Environmental Stewardship. Protect the environment through responsible stewardship of natural resources
– Meet CEQA and Air Permitting Requirements
– Implementation of Proven Technologies

**Funding Sources**

Regional San intends to fund the work under its Capital Project budget.

**Procurement Approach**

Regional San has selected fixed-price design-build delivery for its biogas cogeneration project, which will be procured in accordance with Senate Bill No. 785, which authorizes the use of the design-build procurement process.

The project will be delivered using a single contract for designing, constructing and maintaining the biogas cogeneration system, with 1 year of extended commissioning (DBoM). These responsibilities will include certain performance requirements to be validated via an acceptance test and certain warranty requirements that will extend beyond acceptance and final completion. Regional San intends to provide a draft contract during the procurement process, and will solicit input to ensure that expected risk transfer and performance accountability is clearly communicated prior to submittal of proposals and associated pricing.

The procurement will follow a two-step process, as described below.

1. **Step One** is the Request for Qualification (RFQ) process and is open to all interested parties. The RFQ is expected to be released in November 2020. Respondents’ SOQs will encompass team composition (firms and staff), organization and relevant experience on similar types and sizes of projects; resource availability and delivery capability; and financial capacity. No pricing will be requested at the RFQ step.

   SOQs will be reviewed based on specific evaluation criteria and are expected to shortlist respondents to proceed to Step Two.

2. **Step Two** is the Request for Proposals (RFP), which is expected to be issued in Spring of 2021 to the shortlisted respondents. Award is expected in Fall of 2021.

   The RFP may include the following:
   – Proposed cogeneration system solution, including an opportunity to provide innovative proposals within the context of the RFP-required boundaries.
   – Proposed design, selected equipment and drawings
   – Management and delivery approach, including construction, schedule, and permitting/approvals
   – Testing, training, extended commissioning, and acceptance
   – Fixed Design-Build and Lifecycle-Price for the Design-Build Project