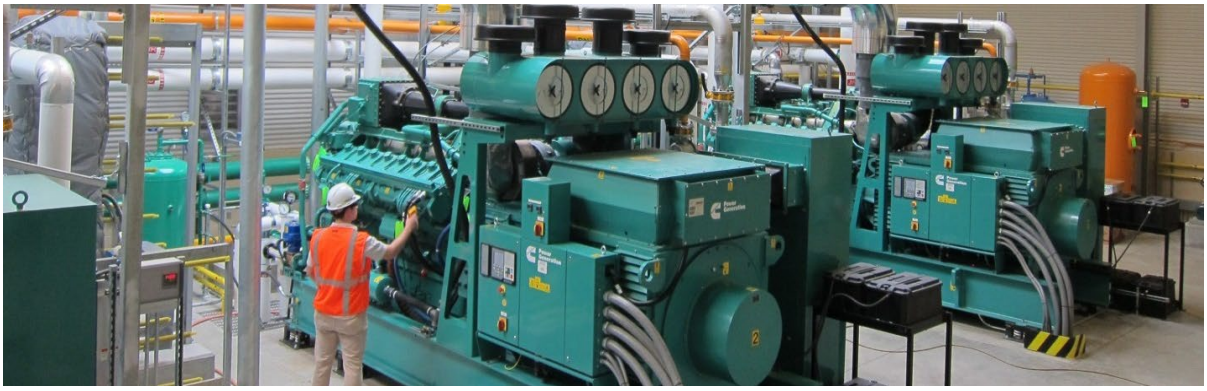
Sacramento Regional County Sanitation District

BioGeneration Project

Industry Outreach Project Briefing

September 8, 2022



Industry Outreach Project Briefing

Sacramento Regional County Sanitation District (Regional San) has prepared this document to notify prospective design-builders of its upcoming BioGeneration Project at the Sacramento Regional Wastewater Treatment Plant (SRWTP). Regional San is beginning a new procurement for the BioGeneration Project and this document provides summary information about its organization, the project background, goals for a successful project, anticipated funding sources, as well as the currently planned scope and schedule.

Regional San previously issued a request for qualifications (RFQ) for this project and shortlisted three design-build teams; however, that RFQ was based on a project that was to only include internal combustion engines and has been cancelled in favor of a new procurement that also allows fuel cell technology per direction from Regional San's Board.

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 Regional San's 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 biogas is enough to provide energy for approximately 5,800 households annually.

Regional San also buys some of the steam produced by the SMUD cogeneration plant to heat the wastewater digesters at SRWTP. 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.

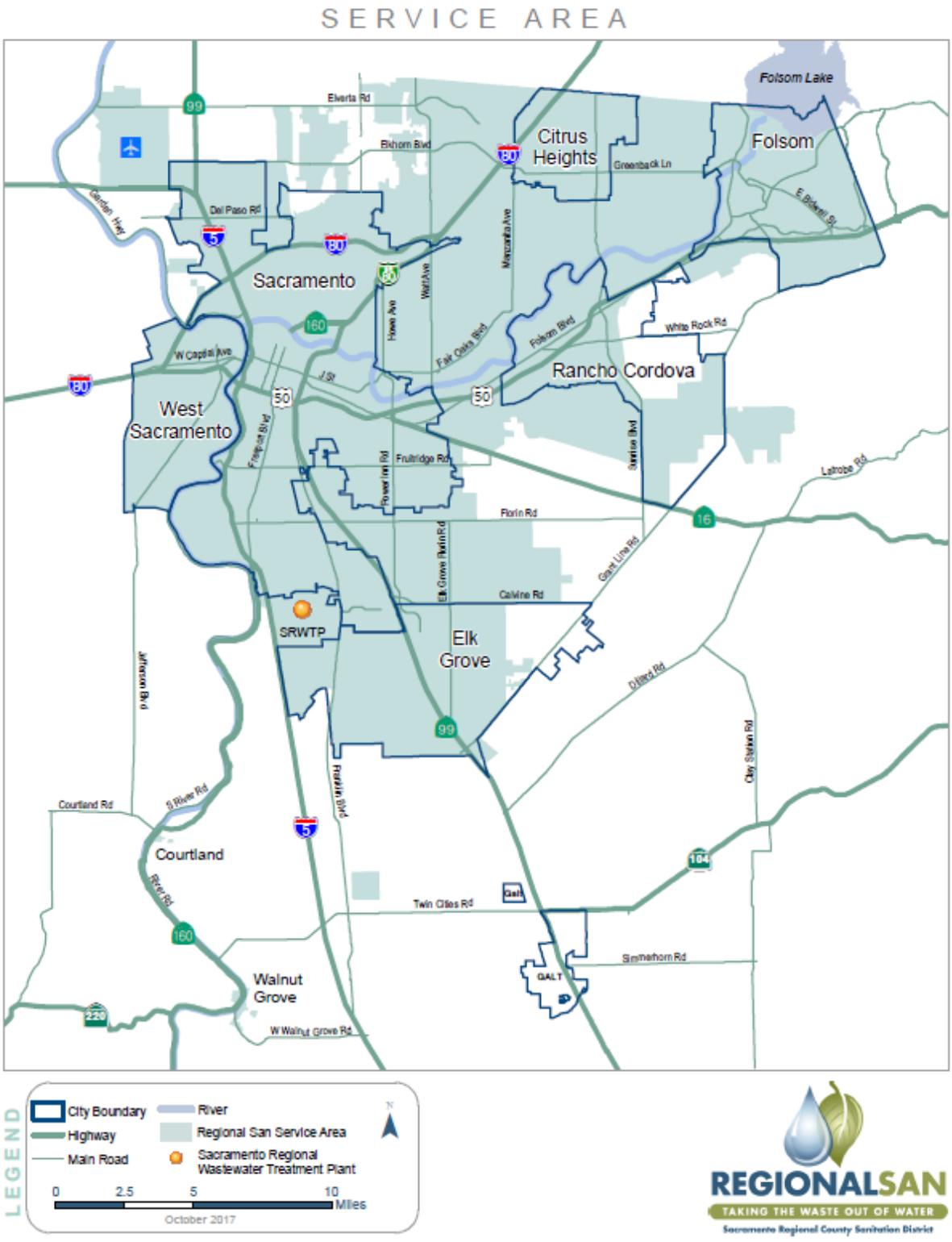


Figure 1. Regional San Service Area

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 biogas helped fuel the power plant, and steam from the power plant could be returned for digester heating, but SMUD no longer combusts the biogas 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 associated with the California Accidental Release Program and Federal Process Safety Management Program. Wastewater treatment plants that use all of their biogas onsite are exempt from this program – Regional San's involvement in these regulations is unique (for a wastewater treatment facility) due to the SMUD commodity agreement. Exemption from these requirements would save significant staff effort and costs in the future.

Current Planned Project Scope

Regional San has decided to install a new biogas combined heat and power system to utilize biogas onsite to produce renewable electricity and heat for the plant.

The proposed BioGen Project will include approximately 12 megawatts (MW) of total installed capacity of:

- Internal combustion engine generators, or
- Fuel cells, or
- A combination of internal combustion engines and fuel cells.

Regardless of the use of engines, fuel cells, or a hybrid solution, the overall, proposed solution must meet the following requirements:

- Use all of the biogas produced at the SRWTP
- Provide adequate heat for the SRWTP's anaerobic digesters and campus heating needs
- Produce electric power to offset the SRWTP's usage
- Include "N+1" redundancy for the generation technology that comprises the majority of the installed capacity
- Include a standby boiler for heating redundancy
- Include full redundancy for power distribution equipment
- Deliver the project using a Community Workforce Training Agreement that includes prevailing wages and apprenticeships.

The project is anticipated to initially produce between 7 and 10 MW of power which will offset utility power purchases. Additional generation capacity would serve as standby. Biogas production is expected to increase over time and generation technology shall account for daily fluctuation in biogas generation (without additional storage preferred). 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 project will include an optional hydrogen-producing technology to meet regional needs for hydrogen supply in alignment with Sacramento Air Quality Management District goals. Regional San has no onsite use for hydrogen and must limit hydrogen production and shipment to stay below threshold quantities that would re-enlist the plant in covered process regulations. Hydrogen production is expected to be limited to conversion of no more than 100 standard cubic feet per minute (scfm) of biogas to hydrogen for offsite uses.

The BioGeneration Project 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 BioGeneration Project prior to the Commodity Agreement expiration in October 2025, or soon thereafter.

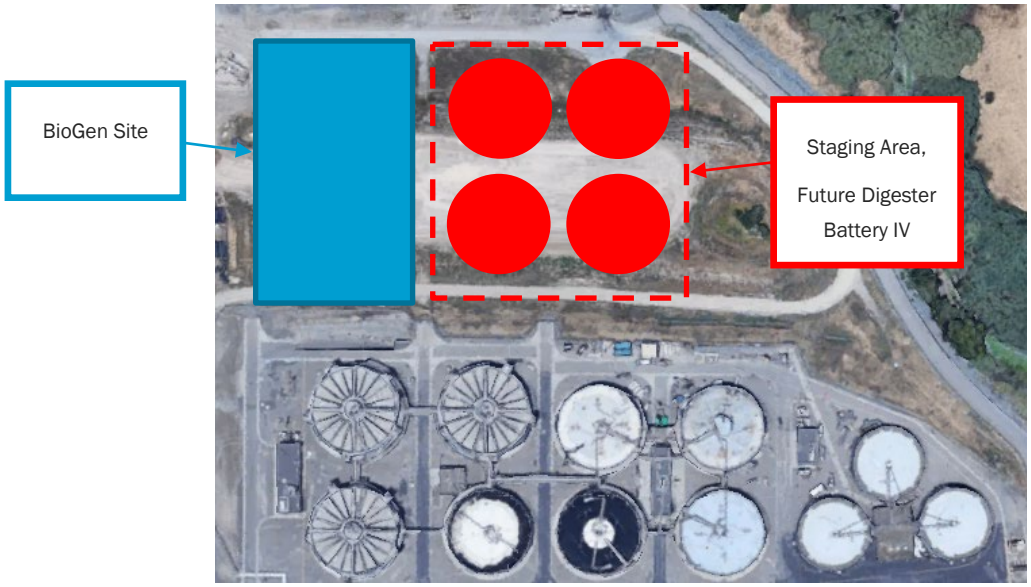


Figure 2. Current planned footprint for new system

Project Goals

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

- Successful BioGen project startup by October 2025, or soon thereafter
- System footprint to stay within allocated BioGen Site boundary
- Cost and schedule efficiency and predictability
- Achieve Best Value for Biogas
  - High total system efficiency using biogas
  - High uptime/ Reliable

- 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

Biogas Production and Heat Demands

Biogas is produced in SRWTP's existing anaerobic digesters. Biogas production is variable based on digester loading. Table 1 shows current and projected biogas production rates and flow variability. Regional San has an existing fats, oil and grease (FOG) receiving facility which is not currently utilized, but is planned to receive organics for codigestion and increased biogas production in the future.

Table 1. Current and Projected Biogas Quantities

Year	Production from Sludge, scfm	Production from FOG, scfm	Total Production, scfm
2022 (current)	1,600	N/A	1,600
2025 (startup)	1,700	0-600	1,700 - 2,300
Projected Daily Gas Flow Variability			
2025 minimum flow	800	0	800
Future maximum flow	2,400	600	3,000

The raw biogas contains moisture, hydrogen sulfides (H2S), siloxanes and other impurities as shown in Table 2.

Table 2. Biogas Quality

Criteria	Recent Sample Results
H_2S, ppmv	288
Moisture	Saturated gas
Total siloxanes[4], ppbv	1,372
VOCs[4], ppbv	4,622
H_2, % dry basis	<1.5
O_2, % dry basis	<0.17
N_2, % dry basis	.9
CO, % dry basis	<0.17
CO_2, % dry basis	39.2
CH_4, % dry basis	60.0
Lower Heating Value, BTU/ft3	560

1. *ppmv = parts per million by volume*
2. *ppbv = parts per billion by volume*
3. *psia = pounds per square inch, absolute*
4. *For analytes with results below the sample reporting limit, the sample reporting limit was used to calculate the total values.*

The current average campus heat demand is 19 million BTU/hr, with the projected future maximum heat demand being 38 million BTU/hr.

Funding Sources

Regional San intends to fund the work under its Capital Project budget. Regional San intends to own the facility in order to achieve covered process exemption. Regional San intends to align the project with grant funding opportunities or credits as they arise, if applicable and beneficial.

Procurement Approach

Regional San has selected fixed-price design-build delivery for its BioGeneration Project, which will be procured in accordance with Public Contract Code 22160 - 22169, which authorizes the use of the design-build procurement process.

The project will be delivered using a single contract for designing, constructing and maintaining certain components of the BioGeneration Project for a period of 10 years (extended warranty and maintenance agreement), with 1 year of extended commissioning (operation and maintenance for demonstration of system performance). 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 October 2022. 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. Respondents will be asked to submit qualifications that support their proposed technology (engines or fuel cells) and submit relevant experience for that technology. Respondents proposing an engine/fuel cell hybrid solution will be asked to submit qualifications for both technologies.

   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 early 2023 to the qualified respondents. Award is expected in mid-2023.

   The RFP may include the following:

   – Proposed combined heat and power 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 (including price for 10-year extended warranty and maintenance agreement) for the Design-Build Project
- Supplemental statement of qualifications may be required at the RFP stage for secondary technologies (i.e. hybrid engine/fuel cell or hydrogen solutions)

Regional San's Board will conduct a discussion about this BioGen project at its upcoming meeting on September 14, 2022. More information can be found at: https://www.regionalsan.com/board-directors