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Title: ENGINE AND GENERATOR OVERHAULS AT PLANT NO. 1 AND 2, PROJECT NO. J-135B

Sponsors: Kathy Millea

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Attachments: 1. Agenda Report, 2. J-135B Service Contract, 3. Presentation - J-135B_Engine and Generator Overhauls

Date	Ver.	Action By	Action	Result
7/27/2022	1	BOARD OF DIRECTORS		
7/6/2022	1	OPERATIONS COMMITTEE	Recommended for Approval	

FROM: James D. Herberg, General Manager
Originator: Kathy Millea, Director of Engineering

SUBJECT:

ENGINE AND GENERATOR OVERHAULS AT PLANT NO. 1 AND 2, PROJECT NO. J-135B

GENERAL MANAGER'S RECOMMENDATION

RECOMMENDATION:

- A. Award a Sole Source Service Contract to Cooper Machinery Services LLC for Engine and Generator Overhauls at Plant No. 1 and 2, Project No. J-135B, for a total amount not to exceed \$29,361,029; and
- B. Approve a contingency of \$2,936,103 (10%).

BACKGROUND

In the early 1990s, Orange County Sanitation District (OC San) installed eight internal combustion engines manufactured by Cooper Bessemer at the Central Generation (Cen Gen) facilities at Plant Nos. 1 and 2 to generate electricity using digester gas. During normal operating conditions, the Cen Gen facilities supply approximately 60% of the electricity at Plant No. 1 and 95% of the electricity at Plant No. 2.

OC San staff performs routine and regular maintenance based on hours of runtime per the manufacturer's recommendations. Complete overhaul of an engine is needed after 120,000 hours of runtime. A complete overhaul was successfully completed recently by Cooper Machinery Services

LLC (Cooper) for an engine at Plant No. 1 after a series of failures by another vendor.

Cooper holds the original equipment manufacturer (OEM) proprietary part fabrication information and service “know-how” to rebuild these legacy machines. Machining fabrication problems in non-Cooper supplied parts and reassembly technique errors led to catastrophic engine failure during the initial run-in period for a prior vendor.

RELEVANT STANDARDS

- Protect OC San assets
- Maintain a proactive asset management program
- 24/7/365 treatment plant reliability
- Comply with environmental permit requirements
- Use all practical and effective means for resource recovery

PROBLEM

Of the seven remaining engines that have not been completely overhauled, four are showing signs of degradation, consuming large quantities of oil, and exceeding manufacturer’s recommended runtime of 120,000 hours. The consumption of oil results in the generation of particulate matter that potentially impacts the ability to meet South Coast Air Quality Management District (SCAQMD) requirements. Proper maintenance of Cen Gen is critical to providing reliable and resilient plant operations and to beneficially reuse biogas created by the treatment process.

OC San has been through four unsuccessful procurement attempts to overhaul Cen Gen engines between 2016 and 2021. A successful overhaul only occurred for an engine when Cooper was sole sourced for the reassembly and their OEM parts were used.

PROPOSED SOLUTION

Staff recommends awarding a sole source Service Contract to Cooper to overhaul four Cen Gen engines and five generators at Plant Nos. 1 and 2. Overhauling four engines, plus the recently overhauled engine at Plant No. 1, provides sufficient capacity to reliably process the current levels of digester gas generated by the solids digestion process. The intent is to overhaul the remaining engines in the future as they show signs of degradation, such as oil consumption and other wear indicators.

TIMING CONCERNS

Engines will continue to consume increasing amounts of oil, engine emissions will rise, and system availability will decrease until they go through a complete overhaul.

RAMIFICATIONS OF NOT TAKING ACTION

If the engines fail, digester gas will need to be burned using flares, additional utility power will be required, and the Cen Gen facilities will not be able to provide supplemental standby power to the two treatment plants during a utility power outage, resulting in a reduction of overall reliability of the treatment plants. In addition, OC San could face potential SCAQMD permit violations.

PRIOR COMMITTEE/BOARD ACTIONS

March 2021 - Board of Directors awarded a Sole Source Service Contract to Cooper Machinery Services to provide a Cen Gen Engine No. 1 Overhaul at Plant No.1, per Proposal 210204-839, for a total amount of not to exceed \$3,705,932; and approved a contingency of \$741,186 (20%).

ADDITIONAL INFORMATION

OC San's first procurement attempt to completely overhaul all eight engines was in 2016. In 2018, there were two additional procurement attempts to overhaul one engine. All three procurements were cancelled because the bidders could not meet the required commercial terms and conditions.

In 2019, OC San awarded a contract to overhaul two engines. The overhaul of one engine was completed in October 2020. During testing, a crankcase explosion occurred. The engine was rebuilt again and resulted in another crankcase explosion. A third-party engineer and OC San staff concluded that the parts and services supplied by the vendor did not meet the requirements of the Service Contract. The contract was terminated in 2021.

In March 2021, with the engine in a failed state and OC San facing a potential SCAQMD citation, OC San awarded a sole source contract, under Project J-135A Central Generation Engine Overhaul at Plant No. 1, to Cooper to overhaul the failed engine. The overhaul on the engine was successfully completed in February 2022.

OC San has continued to search for additional qualified service providers to perform overhauling the Cen Gen engines. In June 2021, OC San completed a Planning Study, PS20-04 Power Generation Overhaul Feasibility Study. This study investigated the marketplace for engine service providers that can reliably rebuild these unique engines. The Consultant surveyed five service providers and compared the responses. Three had very little experience with Cooper Bessemer engines, could not provide bonding, and/or lacked adequate staffing. The fourth service provider did not have an adequate facility to perform the work. The study concluded that Cooper is the only viable service provider that can provide the required knowledgeable staff and OEM parts with an acceptable financial health.

Later in November 2021, OC San sent out a Request for Information to find other service providers that have adequate technical qualifications and can also perform under OC San's Contract terms and conditions and received two responses including one from Cooper. The other responder did not demonstrate adequate staffing and similar engine overhaul experience. OC San staff determined that Cooper was the only viable Service provider.

In April 2022, OC San requested a proposal from Cooper based on specified scope of work and terms and conditions. The proposal was received on May 13, 2022. Staff reviewed the proposal and met with Cooper over several meetings. The cost proposal was compared with the cost to overhaul Engine No. 1 and previous proposals, factoring in escalation. It is also important to understand that three of the engines to be rebuilt are at Plant No. 2 which have 16 cylinders rather than 12 cylinders at Plant No. 1. In addition, this contract includes rebuilding the attached generators which was not included in the prior rebuild effort. Based on the above, staff has determined that the final negotiated price is fair and reasonable for this Project.

CEQA

The project is exempt from CEQA under the Class 1 categorical exemptions set forth in California Code of Regulations Section 15301.

FINANCIAL CONSIDERATIONS

This request complies with authority levels of OC San's Purchasing Ordinance. This item has been budgeted (Adopted Budget, Fiscal Years 2022-2023 and 2023-2024, Section 8, Page 42, Central Generation Engine Overhauls at Plant Nos. 1 and 2).

ATTACHMENT

The following attachment(s) may be viewed on-line at the OC San website (www.ocsan.gov) with the complete agenda package:

- Service Contract
- Presentation

SN: jw