

Committee Report

Environment Committee



Committee Meeting Date: April 11, 2023

For the Metropolitan Council: April 26, 2023

Business Item: 2023-83

Metro Plant Steam Turbine Sole Source

Proposed Action

That the Metropolitan Council authorize the Regional Administrator to execute a sole source contract 23P036 with Siemens-Energy to provide replacement parts, repair, installation, and commissioning services for a steam turbine generator in an amount not to exceed \$2,000,000.

Summary of Environment Committee Discussion/Questions

CM Cameron asked: What is the typical life span of a rotor and did the existing one meet the standard?

Staff responded: Typical lifespan would be longer than what we saw that is why some of the proposed improvements are there. Part of this project is to look at the issues and minimize them, maximizing the overall life span.

CM Cederberg asked: How often do you do inspections and is there some type of warranty?

Staff responded: I'm not sure of the warranty. We do preventive maintenance on a regular basis but that is usually external. There is a recommended internal inspection PM every 5 years even if it is running well. It was during this PM that discovered these issues.

CM Carter asked: Will the new turbine be made out of different materials or the same as the original?

Staff responded: It will be the same, sometimes in other equipment you can switch metals but this is an industry standard.

CM Osman asked: How old was this machine?

Staff responded: It is around 20 years old.

CM Wulff asked: Is this the only turbine or is there multiple?

Staff responded: This is the main turbine, we have a much smaller one that can be run when it's offline but this is the main turbine.

Motion by CM Morales, seconded by CM Carter. Motion carried.

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| District(s), Member(s): | District 13, Council Member Chai Lee |
| Policy/Legal Reference: | FM 14-2 Expenditures for the Procurement of Goods, Services, and Real Estate Policy |
| Staff Prepared/Presented: | Craig Edlund, Assistant General Manager, Treatment Services, 651-602-8383 Dan White, Director, Maintenance and Security, 651-602-8299 |
| Division/Department: | Environmental Services / Treatment Services; Maintenance and Security |

Proposed Action

That the Metropolitan Council authorize the Regional Administrator to execute a sole source contract 23P036 with Siemens-Energy to provide replacement parts, repair, installation, and commissioning services for a steam turbine generator in an amount not to exceed \$2,000,000.

Background

The G7 steam turbine generator, located in the solids management building (SMB) at the Metro Plant, generates electricity from heat energy recovered from the incineration process. The energy recovered from the steam turbine generator reduces purchased electricity and offsets carbon emissions from fossil fuel based electricity.

The G7 steam turbine generator was taken down for a five-year preventative maintenance inspection and requires rehabilitation to be brought back online. The inspection found internal corrosion, internal erosion, and a bowed rotor shaft. The cost of refurbishing the existing rotor has a greater cost and longer lead time than a new rotor. The recommended rehabilitation consists of repairing the turbine case, extraction case, diaphragms and replacing the rotor.

Based on observations during the preventative maintenance inspection, the following system improvements are being evaluated to increase service life and optimize performance of the steam turbine generator system:

- Steam trap improvements to minimize potential water carry over to the steam turbine.
- Automatic turning gear to keep the rotor turning during outages to minimize rotor bow.
- Moisture mitigation to keep the inside of the turbine dry to reduce corrosion during outages.
- Steam strainer to stop any potential metal shavings from boiler repairs or internal corrosion.
- Boiler feedwater quality control improvements to ensure quality steam to the steam turbine.

Siemens-Energy is the original equipment manufacturer (OEM) for the G7 steam turbine generator. Using non-OEM components would require re-engineering and there would be greater risk that these parts might not meet the form, fit, and function of original components. The price of the quoted parts and services are comparable to previous quotes, typical industry costs, and have been determined to be fair and reasonable.

This sole source contract with Siemens-Energy will complete the following services:

- Rehabilitation
- Repair and rehabilitate turbine casing, extraction case, and diaphragms.
- Replace rotor shaft, discs, blades, shrouds, and assemble rotor.
- Provide other replacement parts as required for reassembly.
- Installation
- Install new rotor and reassemble steam turbine.
- Provide commissioning services.

Rationale

The execution of goods and services contract in excess of \$500,000 requires Council approval.

Thrive Lens Analysis

This action advances the Thrive Outcome of Stewardship by efficiently and effectively preserving our regional wastewater treatment plant assets.

Funding

Funding is provided in the authorized capital program.

Small Business Inclusion

The Office of Equity and Equal Opportunity did not establish a goal for this project as this procurement utilizes an approved Sole Source.

