



DATE: June 27, 2023

TO: Mayor and City Council

FROM: Director of Public Works

SUBJECT Adopt a Resolution Authorizing the City Manager to Amend the Professional Services Agreement with Carollo Engineers, Inc., to Increase the Contract Amount by \$276,746 for a Not-to-Exceed Amount of \$1,385,581 to Provide Additional Construction Support Services for the Water Pollution Control Facility (WPCF) Switchgear Rehabilitation Project No. 07656

RECOMMENDATION

That Council adopts a resolution (Attachment II) authorizing the City Manager to amend the professional services agreement (PSA) with Carollo Engineers, Inc., (Carollo) to increase the contract amount by \$276,746 for a not-to-exceed amount of \$1,385,581 to provide additional construction support services for the Water Pollution Control Facility (WPCF) Switchgear Rehabilitation Project No. 07656.

SUMMARY

The WPCF treats an annual average flow of approximately eleven million gallons per day (MGD) and meets current requirements to discharge treated effluent to the deep waters of the San Francisco Bay. Originally installed in 1982, the existing main switchgear (MSB) is a key component of the power distribution system at the WPCF. The MSB along with several related 480-volt motor control centers (MCCs) and 480-volt distribution panelboards have provided power and controls to vital plant facilities for nearly forty years. These include the headworks screening and pumping facilities, grit and scum removal through the vacuators, the primary treatment process, the secondary treatment process (west trickling filter), the anaerobic digesters, the fats, oils and grease (FOG) receiving station, the site waste pump station, site lighting, and various buildings including the Operations Control House and the Administration Building.

Concern over continued reliability of the switchgear due to obsolescence and availability of parts, as well as the current condition and continued deterioration from corrosive atmospheres, prompted staff to request that the electrical system be evaluated as part of the WPCF Phase II Facilities Plan. The 2020 Phase II Facilities Plan recommended replacing the existing MSB, several existing aged MCCs, an existing 12-kV to 480-volt transformer that is severely corroded and at risk of failure, as well as retrofitting the existing old Cogen Building to house the new electrical equipment.

On May 18, 2021, the City entered into a PSA with Carollo to provide engineering, design, and construction support services for the Switchgear Rehabilitation Project. Staff is requesting to amend the contract not-to-exceed amount of \$1,108,835 by \$276,746 to include additional construction support services in the scope of work. With the additional scope, the new not-to-exceed amount would be revised to \$1,385,581.

On November 15, 2016, Council passed a resolution authorizing a Community Workforce Agreement (CWA) with the Alameda County Building Trades Council (BTC), which applies to City projects with construction costs of \$1,000,000 or more. The agreement requires contractors to use local union hiring halls, encourages contractors to employ Hayward residents or Hayward Unified School District graduates, and requires hired workers to pay union dues and other benefit trust fund contributions, etc. The CWA agreement applies to this Switchgear Rehabilitation Project because the construction cost will be more than \$1,000,000.

BACKGROUND

The WPCF collects and treats wastewater from the City's residents and businesses. The original WPCF 480-volt MSB was designed to power the entire WPCF at the time of its construction and was connected directly to two cogeneration engines that satisfied part of the plant demand, and a standby generator as a backup power supply to PG&E. In 2008, the Phase 1 WPCF upgrade project was completed, which included a new electrical service entrance from PG&E, a new 12-kV switchgear building, a 12-kV power grid, several 12-kV substations to distribute power around the plant, and a new standby diesel generator. The electrical system upgrades were largely constructed to serve new loads added as part of the Phase 1 project and other than sub-feeding the power from the new 12-kV switchgear to the MSB, did not include improvements to the plant's existing 480-volt power distribution system. In 2014, a new 1,132 kW cogeneration engine was commissioned as part of the Cogeneration Upgrade Project, and the old cogeneration engines that previously supplied power to the plant through the MSB were decommissioned. The MSB continues to supply power to many vital loads throughout the plant including the headworks, north and south vacuators, the primary treatment process, the west trickling filter, the anaerobic digesters, the site waste pump station, the FOG receiving station, and various buildings and site lighting.

On February 27, 2018¹, Council authorized a professional services agreement (PSA) with Black and Veatch to perform prepare the WPCF Phase II Facilities Plan that serves as a comprehensive planning document for the WPCF infrastructure needs for the next twenty-five years. An evaluation of the MSB and the old cogeneration facility was performed as part of the planning effort. The Facilities Plan recommended replacing the MSB, several related motor control centers and distribution panel boards, a 12-kV to 480-volt transformer, and related electrical equipment, along with retrofitting the building to house the new electrical equipment.

¹ [CITY OF HAYWARD - File #: CONS 18-107 \(legistar.com\)](#)

On May 18, 2021², Council authorized a PSA with Carollo to perform final design services for the WPCF Switchgear Rehabilitation Project. The scope of work included preliminary and final design services of the switchgear and other related improvements.

The project is currently in the construction phase. Council awarded the construction contract to Blocka Construction on October 11, 2022³. The programmable logic computer (PLC) is currently in fabrication and will be ready for functional testing of the programming at the factory witness test in August 2023. Therefore, staff is requesting that programming services be added to Carollo's scope of work for engineering services during construction.

PROJECT SCOPE

The recommendations from the Phase II Facilities Plan are to replace the plant's existing MSB, several MCCs and distribution panelboards, and related equipment. A detailed description of the project elements is included in the staff report dated October 11, 2022⁴.

Programming is required to complete the installation and commissioning of the new electrical and mechanical equipment. The programming involves integrating the new signals and graphic screens into the WPCF's supervisory control and data acquisition (SCADA) network, which enables transmitting and displaying equipment controls, status, alarms, and process information. This functionality is integral for maintaining and monitoring plant performance to ensure that the WPCF continues to be operational and meet regulatory requirements.

DISCUSSION

In order to complete the installation and commissioning of the new electrical and mechanical equipment, including the new motor control centers, new distributed programmable logic controllers (PLCs), and heating, ventilation, and air conditioning (HVAC) equipment, they must be integrated into the WPCF's supervisory control and data acquisition (SCADA) network. The SCADA network enables transmitting and displaying equipment operational status, alarms, and process information to the Operations Control House operator interface terminal (OIT), as well as providing the ability for the Operators to initiate control commands from the OIT to various process equipment. The new PLCs as well as the operator interface system will require programming to incorporate the new signals and graphic screens. In addition, the two new PLCs will need to be configured and programmed to be compatible with the City's current PLC/SCADA network. New screens for the PLCs will be prepared by the programmer to monitor and control various plant equipment and communicate with the SCADA network. Finally, the existing program in the existing Administration Building will be updated to reflect the changes required to move the program from the Administration Building to the new PLC locations at the Primary Substation Building and the Site Wastes Pump Station Electrical Room.

² [CITY OF HAYWARD - File #: CONS 21-246 \(legistar.com\)](#)

³ [CITY OF HAYWARD - File #: CONS 22-542 \(legistar.com\)](#)

Traditionally, programming at the WPCF is performed in-house for most projects. However, due to the programming's complexity and large scope, and recent retirement of WPCF maintenance staff who typically performed the programming on projects, staff reached out for third-party programming support. The City initially planned on issuing a request for proposal (RFP) in Fall 2022 to the following consultants for programming services: KBL, Worksmart Automation, and Tesco Controls. However, the RFP was deferred to a later date after programming was scheduled for 2024. As staff prepared to issue the RFP in Spring 2023, staff were informed that the three consultants were no longer able to prepare a proposal. KBL is no longer in business. Tesco entered into an agreement with Blocka Construction to provide electrical equipment, integration, and start-up services. In addition, Worksmart Automation declined to prepare a proposal because they did not have the capacity and staffing to work on this project. Therefore, staff reached out to design engineer of record, Carollo, for additional construction services support.

Carollo's team includes specialized programming staff who are trained and have expertise in the City's SCADA software. Carollo is also a local engineering firm who can come to the WPCF on short notice for the start-up and testing phase. Furthermore, because Carollo prepared the project plans and specifications, they are knowledgeable with the complex constraints involved with the required project testing, programming requirements, and plant shutdowns. Therefore, staff are requesting to amend the professional services agreement with Carollo by \$276,746 for a new not-to-exceed amount of \$1,385,581 for additional construction support services.

Carollo's cost proposal of \$276,746 includes the following breakdown:

| | |
|------------------------------|-----------|
| Base Scope | \$244,290 |
| Optional Services | |
| Programming Review Workshops | \$10,550 |
| Contingency | \$23,254 |

Carollo's base scope proposal is comparable to the Beecher Engineering cost estimate that was prepared before the project was advertised for public bidding in April 2022. Beecher Engineering estimated \$221,577 in programming fees, which excluded optional services and contingency. Carollo's base scope proposal is approximately 10% above the engineer's estimate. It is of note that the estimate was prepared before the City was informed of the prolonged equipment lead times and that the programming services would be extended through 2025.

On November 15, 2016, Council passed a resolution authorizing a Community Workforce Agreement (CWA) with the Alameda County Building Trades Council (BTC), which applies to City projects with construction costs of \$1,000,000 or more. The agreement requires contractors to use local union hiring halls, encourages contractors to employ Hayward residents or Hayward Unified School District graduates, and requires hired workers to pay union dues and other benefit trust fund contributions, etc. The CWA agreement applies to this Switchgear Rehabilitation Project because the construction cost will be more than \$1,000,000.

ECONOMIC IMPACT

Replacing the MSB, MCCs, and related electrical equipment is part of an effort to modernize and upgrade existing facilities. The project will greatly improve reliability by reducing staff time associated with breakers tripping causing unplanned outages and staff time attending to issues otherwise related to component failures. The community will enjoy the benefits of the Project, including maintaining effective treatment that provides environmental protection of the San Francisco Bay.

FISCAL IMPACT

The adopted FY24 CIP includes a total of \$14,929,000 for the WPCF Main 480V MCC Electrical Distribution Rehabilitation Project No. 07656, across both the Sewer System Capital Replacement Fund (Fund 611) and the Sewer System Capital Improvement Fund (Fund 612). There are sufficient funds in the project to support this request.

STRATEGIC ROADMAP

This agenda item supports the Strategic Roadmap of Improve Infrastructure.

SUSTAINABILITY FEATURES

This project will help the City maintain its ability to treat wastewater efficiently and adequately before discharging into San Francisco Bay.

PUBLIC CONTACT

All project work will be within the WPCF plant boundary and should have no impact on area businesses or the public at large; therefore, no public contact is necessary for this project.

NEXT STEPS

If Council adopts the resolution, staff will prepare an amendment for execution to increase the contract amount with Carollo Engineers, Inc., by \$276,746 for a not-to-exceed amount of \$1,385,581 for additional construction support services. Staff will return to Council for the award of a specialty electrical inspection contract when installation of the major electrical improvements commence in 2025.

Prepared by: Mariza Sibal, Associate Civil Engineer

Reviewed by: Suzan England, Utilities Engineering Manager

Recommended by: Alex Ameri, Director of Public Works

Approved by:

A handwritten signature in black ink, appearing to read 'Kelly McAdoo', with a long horizontal stroke extending to the right.

Kelly McAdoo, City Manager