



- **Board of Directors**

- Engineering, Operations, and Technology Committee***

2/13/2024 Board Meeting

7-4

Subject

Award a \$544,501 procurement contract to Electric Machinery Company – A WEG Group to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1; the General Manager has determined that the proposed actions are exempt or otherwise not subject to CEQA

Executive Summary

The Colorado River Aqueduct's (CRA) 45 pump units and their accompanying motors were installed during the 1930s, 1940s, and 1950s. The CRA's synchronous pump motors use brush-type exciter systems to maintain motor speed. The existing motor exciter systems require extensive maintenance, and the reoccurring refurbishment cycle requires that a pump motor be shut down for several weeks when this work is conducted. Instead of refurbishing existing motor exciter systems as part of a larger multi-year program to rehabilitate the 45 CRA motors and pumps, staff is planning to conduct a pilot project to install a new modern motor exciter in an existing pump motor. Upon achieving successful results from the pilot project, the overall pump rehabilitation program can be streamlined and may allow the CRA pumps and motors to take advantage of current motor exciter technology.

This action awards a procurement contract to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1 as a pilot project for a multi-year program to rehabilitate the 45 CRA motors and pump units. See **Attachment 1** for the Allocation of Funds, **Attachment 2** for the Abstract of Bids, and **Attachment 3** for the Location Map.

Proposed Action(s)/Recommendation(s) and Options

Staff Recommendation: Option #1

Option #1

Award a procurement contract to Electric Machinery Company – A WEG Group in an amount not to exceed \$544,501 to furnish a brushless motor exciter system for Gene Pumping Plant Unit No. 1.

Fiscal Impact: Expenditure of \$785,000 in capital funds. Approximately \$35,000 will be incurred in the current biennium and has been previously authorized.

Business Analysis: This option will enhance the reliability of the CRA and reduce the potential for capacity limitations or unplanned shutdowns. The remaining funds for this action will be accounted for in the Capital Investment Plan (CIP) budget for the next biennium following board approval of the budget.

Option #2

Do not proceed with the project at this time.

Fiscal Impact: None

Business Analysis: This option will forego an opportunity to enhance CRA reliability and may lead to increased risk over time of capacity limitations or unplanned outages of the CRA.

Alternatives Considered

During the planning and design phase, staff considered refurbishing the existing brush-type motor exciter system. This alternative requires ongoing training for pumping plant personnel to optimize the use of the aging system and a high level of continuous maintenance. In addition, some motor exciter components would need to be manufactured by staff as needed replacement parts are no longer available. The selected option takes advantage of current technology and decreases long-term maintenance of the system while providing an opportunity to evaluate current technology in this application.

Applicable Policy

Metropolitan Water District Administrative Code Section 8121: General Authority of the General Manager to Enter Contracts

Metropolitan Water District Administrative Code Section 11104: Delegation of Responsibilities

Related Board Actions(s)/Future Action(s)

By Minute Item 50610, dated October 10, 2016, the Board authorized preliminary investigations to rehabilitate the Colorado River Aqueduct main pumps.

By Minute Item 52778, dated April 12, 2022, the Board appropriated a total of \$600 million for projects identified in the CIP for Fiscal Year 2022/2023 and 2023/2024.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

On October 11, 2016, the Board approved the CRA Main Pump Rehabilitation project. The Board determined the project to be exempt from CEQA pursuant to Section 15301, Section 15302, Section 15306, and Section 15309 of the State CEQA Guidelines. The current board action does not result in any substantial change to the project. Accordingly, no further CEQA determinations or documentation are necessary.

CEQA determination for Option #2:

None required

Details and Background

Background

The CRA is a 242-mile-long conveyance system that transports water from the Colorado River to Lake Mathews. It consists of five pumping plants, 124 miles of tunnels, siphons, and reservoirs, 63 miles of canals, and 55 miles of cut-and-cover conduits. The aqueduct was constructed in the late 1930s and placed into service in 1941.

Each of Metropolitan's five pumping plants has nine main pump units. At each of the 45 pumping units, an exciter is housed inside each pump motor. The excitation systems provide the direct current power to maintain the synchronous motors at synchronous speed. The original equipment installed in the 1940s has experienced normal wear and tear over 80 years. The exciters require significant maintenance due to brush wear that generates carbon dust contamination. In addition, extensive refurbishment is needed every few years in order to keep the equipment operational. When refurbishment is required, a pump motor is shut down and taken offline for several weeks due to the many excitation components that need to be replaced and adjusted. These extended outage periods could lead to a potential impact on CRA water deliveries if unexpected problems arise with multiple exciter systems and their corresponding motors.

The last time a major effort was undertaken to rehabilitate and refurbish the CRA pump units was in the mid-1980s. Staff has now initiated a comprehensive, multi-year program to rehabilitate the pump units, including the motor exciters, at all five CRA pumping plants to extend the service life and maintain the overall reliability of the CRA system. In the planning efforts for this rehabilitation program, staff has been evaluating various current technologies and recommends a pilot project to assess the use of a brushless exciter system to modernize operations and decrease long-term maintenance of the pump motors.

This action awards a procurement contract to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1. Staff plans to install the new exciter system as a pilot project. This strategy will allow staff to validate the installation, assess system compatibility, determine run-time performance, and establish maintenance frequencies before installing them across the other 44 units. Metropolitan forces will install the system with guidance from the manufacturer's engineer.

Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System – Procurement

A total of \$785,000 is required to perform this work. In addition to the amount of the procurement contract, the allocated funds include \$65,000 for factory fabrication inspection and functional testing; \$78,000 for submittals review, technical support, and responding to manufacturer requests for information; \$64,000 for contract administration and project management; and \$33,499 for remaining budget. **Attachment 1** provides the allocation of required funds.

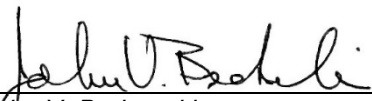
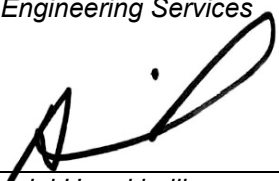
Award of Procurement Contract (Electric Machinery Company – A WEG Group)

Specifications No. 2056 for furnishing one brushless motor exciter system at Gene Pumping Plant's Motor Unit No. 1 was advertised for bids on October 5, 2023. As shown in **Attachment 2**, one bid was received and opened on December 19, 2023. Staff investigated the reasons for the single bid and attributed it to the limited number of vendors currently manufacturing such specialty equipment. The bid from Electric Machinery Company – A WEG Group in the amount of \$544,501 complies with the requirements of the specifications. This amount includes all sales and use taxes imposed by the State of California.

This action awards a \$544,501 procurement contract to Electric Machinery Company – A WEG Group to furnish one brushless motor exciter system for Gene Pumping Plant Unit No. 1. As a procurement contract, there are no subcontracting opportunities.

Project Milestone

November 2024 – Delivery of motor exciter

 _____ John V. Bednarski Manager/Chief Engineer Engineering Services	1/18/2024 Date
 _____ Adel Hagekhalil General Manager	1/23/2024 Date

Attachment 1 – Allocation of Funds

Attachment 2 – Abstract of Bids

Attachment 3 – Location Map

Allocation of Funds for Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System

	Current Board Action (Feb. 2024)
Labor	
Studies & Investigations	\$ -
Final Design	-
Owner Costs (Program mgmt., contract admin.)	64,000
Submittals Review & Record Drwgs.	78,000
Construction Inspection & Support	65,000
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	
Electric Machinery Company - A WEG Group	544,501
Remaining Budget	33,499
Total	\$ 785,000

The total amount expended to date to replace the Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System is approximately \$60,000. The total estimated cost to complete the Gene Pumping Plant Unit No. 1 Brushless Motor Exciter System, including the amount appropriated to date, funds allocated for the work described in this action, and future construction costs, is anticipated to range from \$1.1 million to \$1.3 million.

The Metropolitan Water District of Southern California**Abstract of Bids Received on December 19, 2023, at 2:00 P.M.****Specifications No. 2056****Furnishing a Brushless Motor Exciter System for Gene Pumping Plant Unit No. 1**

The work includes furnishing one brushless motor exciter system and field services of the manufacturer or manufacturer's representative for Gene Pumping Plant Unit No. 1.

Budgetary estimate: \$350,000 to \$400,000

Bidder and Location	Base Bid Price Total^{1,2}
Electric Machinery Company – A WEG Group Minneapolis, MN	\$544,501

¹ Includes sales and use taxes of 7.75 percent imposed by the state of California.

² As a procurement contract, there are no subcontracting opportunities.

Location Map

