



- **Board of Directors**
Engineering, Operations, and Technology Committee

6/10/2025 Board Meeting

7-2

Subject

Authorize \$1,500,000 increase to existing on-call agreements with Mangan Inc., and Burns & McDonnell Western Enterprises Inc., for new not-to-exceed amounts of \$3,750,000, to provide technical services to enhance arc flash protection at Metropolitan's facilities; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

Metropolitan utilizes an extensive electrical power distribution system to safely direct and deliver electrical power to operate its facilities. Safe operation of these facilities is essential to protect staff from a sudden, unanticipated release of electric energy, commonly known as arc flash hazards. Consistent with recent provisions of the National Fire Protection Association (NFPA), requiring formal risk assessments of facilities at intervals not to exceed every five years, staff initiated a program to assess the potential hazards and develop risk mitigation strategies for electrical power systems at Metropolitan's facilities. The work is being executed in two phases. The first phase is nearly complete and addresses 41 facilities, including the water treatment plants, Colorado River Aqueduct (CRA) pumping plants, and hydroelectric power plants. The second phase, which is the subject of this action, will provide arc flash risk assessments for 25 facilities, including dams, reservoirs, and pressure control structures.

This action authorizes an increase of \$1,500,00 to extend existing on-call agreements with Mangan Inc. (Mangan) and Burns & McDonnell Western Enterprises Inc. (Burns & McDonnell), for new not-to-exceed amounts of \$3,750,000 to provide technical services to complete the second phase of arc flash risk assessment and mitigation at Metropolitan's facilities. See **Attachment 1** for the List of Subconsultants.

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

Staff Recommendation: Option #1

Option #1

Authorize \$1,500,000 increases to existing on-call agreements with Mangan Inc., and Burns & McDonnell Western Enterprises Inc., for new not-to-exceed amounts of \$3,750,000, to provide technical services to complete arc flash risk assessment and mitigation at Metropolitan's facilities.

Fiscal Impact: Expenditure of \$3 million in capital funds. Approximately \$1.5 million will be incurred in the current biennium and has been previously authorized. The remaining funds from this action will be accounted for under the next biennial budget.

Business Analysis: This option enhances operational safety of Metropolitan's high-voltage power distribution systems with the appropriate level of expertise and within a reasonable timeframe.

Option #2

Do not proceed with the consulting agreements at this time.

Fiscal Impact: None

Business Analysis: This option may delay or forgo safety improvements to Metropolitan's power distribution systems, risking non-compliance with regulatory requirements.

Alternatives Considered

Upon completion of the arc flash assessment for the first 13 facilities, staff reassessed the availability and capability of in-house Metropolitan staff to complete the work, considering: (1) current work assignments for in-house staff; and (2) specialized technical expertise needs.

After assessing the current workload for in-house staff and the relative priority of this project, the staff has determined that there is not sufficient electrical engineering staff available to ensure completion of all the work in a timely manner. Staff recommends continuing the use of both consultants and Metropolitan staff to complete this work. The consultants will perform the majority of arc flash assessment and mitigation work, and Metropolitan staff will provide needed site support and perform project reviews and oversight. The existing on-call agreements are structured as multi-year contracts with annual not-to-exceed limits, offering the flexibility to issue work assignments to consultants through task orders on a facility-by-facility basis. This approach will allow for the completion of this program and other budgeted capital projects within their current schedules and ensure that the work is conducted in the most efficient manner possible.

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 Action(s)/Future Action(s)

By Minute Item 52860, dated June 14, 2022, the Board authorized agreements for a period of three years to assess arc flash risks for Metropolitan's facilities.

By Minute Item 53598, dated April 9, 2024, the Board appropriated a total of \$636.5 million for projects identified in the Capital Investment Plan for Fiscal Years 2024/25 and 2025/26.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is exempt from CEQA because it involves only feasibility or planning studies for possible future actions which the Board has not approved, adopted, or funded. (Public Resources Code Section 21080.21; State CEQA Guidelines Section 15262.)

CEQA determination for Option #2:

None required

Details and Background

Background

Metropolitan relies on an extensive high-energy electrical power distribution system to operate its water treatment, conveyance, and hydroelectric facilities. As these facilities have expanded and grown in complexity, the supporting electrical systems have also become more intricate. The high-voltage electric distribution equipment at many of Metropolitan's facilities is inherently dangerous. A sudden, large release of unexpected electrical energy, commonly known as arc flash, may occur when electric current leaves its intended path and travels through the air between one conductor and another or to the ground. Metropolitan adheres to all applicable safety standards established by the NFPA, the National Electrical Code, and the Occupational Safety and Health Administration.

In compliance with the recent revisions to the NFPA code, Metropolitan has undertaken formal arc flash risk assessments across its facilities at intervals not to exceed five years. These assessments require coordination with electrical utilities, comprehensive field data collection on electrical components, and the development of detailed computerized system models. The electrical system models include one-line electrical diagrams, protective device settings, voltage levels, and ratings of electrical distribution equipment and transformers. This information serves as the foundational basis for arc flash analyses, which provide detailed recommendations for mitigating risks, including establishing updated safety work zones, identifying appropriate personal protective equipment, and the enhancement of equipment labeling to accurately reflect hazard levels. While the initial development of the model involves significant efforts, subsequent analyses for future updates can utilize the previously created model to incorporate any changes that have occurred in the subject equipment over the intervening five-year period.

In June 2022, Metropolitan's Board authorized three-year agreements with four prequalified firms to provide specialized technical services to enhance arc flash protection across Metropolitan facilities. Staff recommends amending two of these agreements for the second phase of the arc flash assessment work. These firms were selected due to their performance on the first phase of the program. Both firms showed high efficiency when assigning the resources required to complete the field investigations and arc flash assessments for critical Metropolitan facilities with intricate electrical systems and numerous configurations, and potential fault scenarios.

Arc Flash Assessment and Mitigation

Under Metropolitan's arc flash assessment program, staff identified a total of 66 key facilities that require arc flash risk assessment and mitigation. This work is being executed in two phases. Under the first phase, studies and system models have been completed for 13 critical facilities, including four of the five water treatment plants, all five CRA pumping plants, and four hydroelectric power plants. In addition, arc flash model implementation for 28 facilities is currently 95 percent complete and is scheduled to be completed by July 2025. The planned second phase will provide assessments for 25 facilities, including dams, reservoirs, lakes, and pressure control structures.

The arc flash assessment and mitigation work has been conducted jointly by Metropolitan staff and consultants. Metropolitan staff compiles existing record drawings, isolates equipment for data gathering when required, reactivates electrical systems upon completion of data gathering, performs overall project management, and provides consultant oversight. Consultants collect appropriate data, develop computer models, conduct analyses, prepare recommendations, and other activities as described below.

Previously allocated funds will be sufficient for Metropolitan staff activities, including shutting down and reactivating electrical systems, record drawing compilation, technical oversight, and project management. The total cost to mitigate risks of arc flash events at Metropolitan facilities will be evaluated during performance of the assessments.

Engineering Support for Arc Flash Assessment and Mitigation (Mangan Inc. and Burns & McDonnell Western Enterprises Inc.) – Amendment to Agreements

In June 2022, Metropolitan's Board authorized specialized on-call agreements with Mangan and Burns & McDonnell, each for a not-to-exceed amount of \$2,250,00 for a period of three years, to assess and mitigate arc flash risks for Metropolitan facilities. The current expiration date for both agreements is July 31, 2025. Mangan and Burns & McDonnell were prequalified through Request for Qualifications No. 1301 based upon their extensive expertise in arc flash model development. Mangan and Burns & McDonnell have successfully completed arc flash assessment work for 13 facilities and are now recommended to provide engineering services for the remaining work described above. Work will be assigned to the consultants after specific tasks are identified by staff, ensuring efficient resource allocation while upholding compliance and safety standards.

The planned scope of work includes: (1) site investigations and data collection; (2) developing/verifying single-line electrical diagrams of Metropolitan facilities under study; (3) developing computerized electrical system models; (4) conducting arc flash assessment and analysis; (5) identifying recommendations for equipment safety or operational improvements; (6) preparing arc flash warning/safety labels; and (7) providing support for label affixing.

This action authorizes \$1,500,000 increases to existing on-call agreements with Mangan Inc. and Burns & McDonnell Western Enterprises Inc. for new not-to-exceed amounts of \$3,750,000, to provide technical services to complete the second phase of arc flash risk assessment and mitigation at Metropolitan's facilities. The period of performance of these agreements will also be extended from three years to five years. For both agreements, Metropolitan has established a Small Business Enterprise participation level of 25 percent. Both firms have committed to meeting this level of participation. The planned subconsultants for this work are listed in **Attachment 1**.

Project Milestone

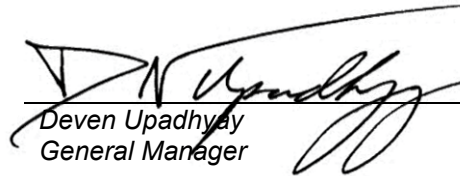
June 2027 – Completion of arc flash assessment and mitigation for Metropolitan's power distribution systems



Mai M. Hattar
Interim Chief Engineer
Engineering Services

5/28/2025

Date



Deven Upadhyay
General Manager

5/28/2025

Date

Attachment 1 – Listing of Subconsultants

Ref# es12707605

The Metropolitan Water District of Southern California**Subconsultants for Agreement with Mangan Inc.
Agreement No. 208158**

Subconsultant and Location	Service Category; Specialty
Smaart Power LLC Irvine, CA	Arc Flash Incident Energy Analysis
Enercom Eng. Corp. Irvine, CA !	Short Circuit Analysis Arc Flash Incident Energy Analysis Protective Device Coordination Study

The Metropolitan Water District of Southern California**Subconsultants for Agreement with Burns & McDonnell Western Enterprises Inc.
Agreement No. 208159**

Subconsultant and Location	Service Category; Specialty
MEP California Engineering Corp Irvine, CA	Arc Flash Incident Energy Analysis