



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

9/14/2021 Board Meeting

7-3

Subject

Authorize an agreement with HDR Engineering, Inc., in an amount not to exceed \$635,000 for engineering design services to upgrade the 2.4 kV power line that serves the Black Metal Mountain communications site; the General Manager has determined that this proposed action is exempt or otherwise not subject to CEQA

Executive Summary

The Black Metal Mountain communications site is situated on top of a mountain and provides clear line-of-site connectivity to other Colorado River Aqueduct (CRA) communications sites. Given its prime location, the communications site also houses communications equipment from several other agencies which lease space from Metropolitan. The Black Metal Mountain communications site's power demand has increased over time, and an upgrade of both the 2.4 kV power line cables and supporting poles are recommended in order to maintain reliable communications service at the Black Metal Mountain site. This action authorizes an agreement for engineering design services to upgrade the 2.4 kV power line that serves the Black Metal Mountain communications site.

Details

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 conduits. The aqueduct was constructed in the late 1930s and was placed into service in 1941.

The Black Metal Mountain communications site is located on a prominent peak between the Gene and Intake pumping plants. The site serves as a critical link in the microwave communications system for Metropolitan's desert facilities. The site houses Metropolitan's wide-area communications equipment, as well as communications equipment for various government agencies such as the San Bernardino County Sheriff's Department, the California Highway Patrol, Cal Trans, and the San Bernardino County Fire Department.

The power usage at the Black Metal Mountain communications site has increased over the years, and today the peak power demand at the site has grown larger than the existing one-mile-long power line can support. During the summer months, air conditioners run constantly to keep the enclosed electronic equipment from overheating. During the hottest desert conditions, the circuit breakers trip on a regular basis, and these events interrupt communications operations at the site. The existing power line conductors to the site will be replaced with higher capacity 2.4kV conductors to ensure that the required electrical supplies can be provided to the communications equipment under all weather conditions.

In addition to the conductor upgrades, the poles that support the existing electrical power line are deteriorated due to age and weathering in the harsh desert environment. Some poles are currently held in place by multiple guy wires, leaving them vulnerable to collapse, while pole cross arms and extensions require frequent repairs. The new poles will be fabricated of galvanized steel and will be approximately 40 feet in height. Metal poles are recommended for this project due to the new high voltage distribution lines that will be supported. This recommendation contrasts to the wooden poles that are primarily used for lighter weight, lower voltage communications lines, such as fiber-optic lines.

Metropolitan staff has completed the study phase for this project and recommends that the project advance into preliminary design. This action authorizes a new agreement for engineering services to conduct preliminary design for replacement of the 2.4 kV power distribution line.

In accordance with the April 2020 action on the biennial budget for Fiscal Years 2020/21 and 2021/22, the General Manager will authorize staff to proceed with the actions described herein, pending board authorization of the design services agreement described below. Based on the current Capital Investment Plan (CIP) expenditure forecast, funds for the work to be performed pursuant to this action during the current biennium are available within the Capital Investment Plan Appropriation for Fiscal Years 2020/21 and 2021/22 (Appropriation No. 15517). This project has been reviewed in accordance with Metropolitan's CIP prioritization criteria and was approved by Metropolitan's CIP Evaluation Team to be included in the CRA Reliability Program.

Black Metal Mountain 2.4 kV Electrical Power Upgrade – Preliminary Design

Planned upgrades to the existing power line include new power poles, larger electrical conductors, and improvements to the maintenance road. The new power line will be approximately one mile long. Alternatives will also be investigated during preliminary design to improve site access to enhance efficiency and safety related to construction and long-term maintenance activities. Improvements to the existing access road may include reducing road slopes, improving drainage, paving parts of the roadway to improve traction, installing guardrails, and stabilizing adjacent slopes.

Planned preliminary design phase activities include: development of design criteria; conducting site surveys and geotechnical investigations including geologic mapping and geophysical testing for assessing constructability of excavation and earthwork; preparation of environmental documentation including performing technical studies to address issues such as air quality, biological resources, cultural resources, and noise, and initiation of permits, as needed; preparation of a preliminary design report including electrical system load calculations, selection of electrical equipment, development of interconnections to existing systems, identification of needed outages; and planning and coordination with the facility's other users. The preliminary design phase activities will be conducted with a hybrid effort of consultants and Metropolitan staff as described below. Metropolitan staff will perform overall project management and consultant oversight.

A total of \$1.7 million is required for this work. Allocated funds include \$635,000 for preliminary design by HDR Engineering, Inc. (HDR), as described below, and a total of \$515,000 for value engineering, environmental documentation, and geotechnical investigation activities, as described above. Each of these activities will be performed by specialty firms under separate contracts planned to be executed under the General Manager's Administrative Code authority to award contracts of \$250,000 or less. Allocated funds for Metropolitan staff activities include \$188,000 for technical oversight and review of consultant's work; \$295,000 for surveying, right-of-way assessments, project management, and project controls; and \$67,000 for remaining budget.

The total cost of the project to replace and upgrade the existing 2.4 kV power line system to the Black Metal Mountain communications site will be re-evaluated during preliminary design. Currently, the future construction contract is estimated to range from \$7 million to \$8 million. **Attachment 1** provides the allocation of the required funds.

Engineering Services (HDR Engineering, Inc.) – New Agreement

HDR is recommended to provide engineering services for preliminary design of the Black Metal Mountain 2.4 kV electrical power line upgrade. HDR was prequalified through a competitive process via Request for Proposals No. 1252. They were selected based on the firm's expertise in high-voltage electrical systems, technical approach, and methodology.

The planned activities for HDR in the preliminary design of the Black Metal Mountain 2.4 kV electrical power upgrade include: power line and access road alignment and site assessment; electrical load calculations; preparation of preliminary designs for the power line installation and access road improvements; development of design criteria, and preliminary construction cost estimates.

This action authorizes an agreement with HDR for a not-to-exceed amount of \$635,000 to provide engineering design services to upgrade the Black Metal Mountain 2.4 kV electrical power line. For this agreement, Metropolitan has established a Small Business Enterprise (SBE) participation level of 25 percent. HDR has

agreed to meet this level of participation. The sole subconsultant planned for this agreement is TJC and Associates, Inc.

Alternatives Considered

At the outset of this project, staff also considered removing some of the electrical loads from the site so that the existing electrical supply capacities would be sufficient for Metropolitan's communication equipment. This alternative would potentially include terminating leases with California Highway Patrol or others. This approach is not recommended as it runs counter to the collaborative nature of radio communications sites, which are often uniquely situated. Historically, under this collaborative approach, agencies with strategic sites have leased space to other agencies seeking line-of-sight communications capabilities. Often these types of leases are essential to ensure public safety communication. Additionally, this alternative does not address the deteriorating condition of the electrical system poles, which need to be replaced. Staff will take into account the cost of the recommended upgrades when the current leases are renewed, and new leases are negotiated.

Summary

This action authorizes an agreement with HDR Engineering, Inc. for a not-to-exceed amount of \$635,000 to provide engineering services to upgrade the 2.4 kV power line to the Black Metal Mountain communications site.

This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team, and funds are available within the fiscal year 2020/21 capital expenditure plan. See **Attachment 1** for the Allocation of Funds and **Attachment 2** for the Location Map.

Project Milestone

October 2022 – Complete preliminary design

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

By Minute Item 51963, dated April 14, 2020 the Board appropriated a total of \$500 million for projects identified in the Capital Investment Plan for Fiscal Years 2020/21 and 2021/22.

California Environmental Quality Act (CEQA)

CEQA determination for Option #1:

The proposed action is categorically exempt under the provisions of CEQA and the State CEQA Guidelines. The proposed action consists of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. Accordingly, the proposed action qualifies as a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Authorize an agreement with HDR Engineering, Inc. in an amount not to exceed \$635,000 for engineering services to replace the 2.4 kV power line to Black Metal Mountain communications site.

Fiscal Impact: \$1.7 million in capital funds for preliminary design. Approximately \$1 million in capital funds will be incurred in the current biennium and has been previously authorized. The remaining funds from this action and future construction costs will be accounted for and appropriated under the next biennial budget.

Business Analysis: This option will enhance the reliability of Black Metal Mountain communications site by replacing key elements of its electric power systems.

Option #2

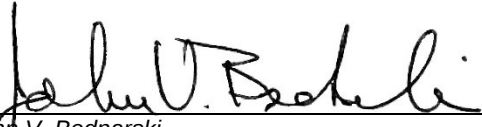
Do not proceed with the project at this time, and staff will continue to monitor the operational status of the 2.4 kV power line.

Fiscal Impact: None

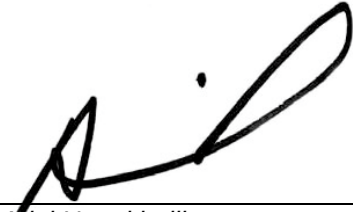
Business Analysis: This option would defer the replacement of the 2.4 kV power line, which would forego an opportunity to reduce the risk of unplanned outages of the Black Metal Mountain communications site.

Staff Recommendation

Option # 1



John V. Bednarski
Manager/Chief Engineer
Engineering Services
8/12/2021
Date



Adel Hagekhalil
General Manager
9/1/2021
Date

Attachment 1 – Allocation of Budgeted Funds

Attachment 2 – Location Map

Ref# es09142021

Allocation of Funds for Black Metal Mountain 2.4 kV Electrical Power Upgrade

	Current Board Action (Sept. 2021)
Labor	
Studies & Investigations	\$ 188,000
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	288,000
Submittals Review & Record Drwgs.	-
Construction Inspection & Support	-
Metropolitan Force Construction	-
Materials & Supplies	-
Incidental Expenses	7,000
Professional/Technical Services	-
HDR Engineering, Inc.	635,000
VE Consultant	45,000
Specialized Environmental Services (Aspen Enviromental)	240,000
Specialized Geotechnical Services (Kleinfelder)	230,000
Right-of-Way	-
Equipment Use	-
Contracts	-
Remaining Budget	67,000
Total	\$ 1,700,000

The total amount expended to date for the Black Metal Mountain 2.4 kV Electrical Power Upgrade is approximately \$249,000. The total estimated cost to complete this project, including the amount appropriated to date, funds allocated for the work described in this action, and future final design and construction costs, is anticipated to range from \$11.5 million to \$12.5 million.

Location Map

