



- Board of Directors
Engineering and Operations Committee

5/14/2019 Board Meeting

7-3

Subject

Authorize agreement with Southern California Edison in an amount not to exceed \$421,932 to implement a relay coordination system on the Eagle Mountain-Iron Mountain 230kV transmission line to improve the reliability of the Colorado River Aqueduct 230kV transmission system; the General Manager has determined that the proposed action is exempt or otherwise not subject to CEQA

Executive Summary

This action authorizes the General Manager to enter into an agreement with Southern California Edison (SCE) to implement a relay coordination (aka "pilot") system on Metropolitan's Eagle Mountain-Iron Mountain 230kV transmission line to improve reliability and ensure compliance with North American Electric Reliability Corporation (NERC) reliability standards.

Timing and Urgency

Metropolitan's CRA 230kV system is integrated with other regional transmission systems by way of interconnections with SCE and the Western Area Power Administration at the Gene, Eagle Mountain and Hinds pumping plants. As such, the CRA 230kV system must maintain compliance with mandatory electric reliability standards as set forth by NERC. A recent technical assessment of Metropolitan's system, incorporating updates to more stringent NERC reliability standards, revealed the potential for system instability in the event of a fault on the Eagle Mountain-Iron Mountain 230kV transmission line. Upgrades to both SCE and Metropolitan equipment at Eagle Mountain and Iron Mountain 230kV substations are required in order to maintain compliance with NERC reliability standards and maintain reliability of the CRA 230kV system.

This project has been reviewed with Metropolitan's Capital Investment Plan (CIP) prioritization criteria and is included in the CRA Reliability Program. Funds for this action are available within the appropriation for planned biennial CIP expenditures for fiscal years 2018/19 and 2019/20.

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 placed into service in 1941. The pumping capacity along the aqueduct was increased three times over the years, with the most recent pump installation taking place in 1959.

The CRA has an extensive 230kV transmission system that includes approximately 305 miles of transmission lines that supply power to all five pumping plants. Two parallel lines extend from the Mead Substation near Hoover Dam to Metropolitan's Camino Switching Station near Needles, California. From the Camino Switching Station, the Camino West Line extends to the Iron Mountain, Eagle Mountain, and Hinds pumping plants. A second line, the Camino East Line, extends to the Gene Pumping Plant. Because of its interconnection with the regional high voltage electric system, Metropolitan's CRA 230kV system meets the criteria to require compliance with NERC reliability standards.

To maintain system reliability of Metropolitan's CRA 230kV system, circuit breakers are used to protect the transmission system during a fault condition. The circuit breakers open the transmission line and isolate the fault to avoid excessive voltage fluctuations that could cause system instability to the CRA 230kV system. A portion of the Camino West Line, from Iron Mountain to Eagle Mountain, includes both Metropolitan's circuit breaker (CB 307) at the Iron Mountain Substation and an SCE-owned circuit breaker (CB 407) at the Eagle Mountain Substation.

A recent transmission system reliability assessment conducted by SCE revealed that a fault on the Eagle Mountain-Iron Mountain 230kV transmission line near Iron Mountain Substation could result in excessive voltage fluctuations and system instability. Installation of a pilot relaying system is needed on both Metropolitan- and SCE-owned equipment to improve the response time of the circuit breakers, avoid adverse impacts to the reliability of Metropolitan's CRA 230kV system, and maintain compliance with NERC reliability standards. Staff recommends authorizing an agreement with SCE to collectively implement the pilot relaying project by March 2020, during Metropolitan's CRA shutdown.

Eagle Mountain-Iron Mountain Pilot Relay Protection System – Implementation

Metropolitan and SCE forces will be utilized to implement the Eagle Mountain-Iron Mountain pilot relaying system at Eagle Mountain and Iron Mountain pumping plants. The scope of the implementation includes: (1) design of the pilot relaying system by SCE; (2) installation of communications equipment and transceivers on CB 407 at Eagle Mountain by SCE; (3) installation of transceivers, a modem, and communications equipment on CB 307 at Iron Mountain pumping plant by Metropolitan; (4) testing and commissioning of the pilot relaying system during a planned CRA shutdown in 2020 by SCE and Metropolitan staff; and (5) preparation of record drawings.

A total of \$525,000 is required for the recommended activities. The planned costs, described below and shown in **Attachment 1**, include the following: \$421,932 for the agreement with SCE shown in **Attachment 2**; \$45,500 for the Metropolitan force activities described above; \$16,000 for submittals review and preparation of record drawings; \$21,500 for project management; and \$20,068 for remaining budget.

Summary

This action authorizes an agreement with SCE, for a not-to-exceed amount of \$421,932, for implementation of the Eagle Mountain-Iron Mountain pilot relaying system. See **Attachment 1** for the Allocation of Budgeted Funds, **Attachment 2** for the agreement between SCE and Metropolitan, and **Attachment 3** for the Location Map.

A total of \$525,000 is required for this work. This project has been evaluated and recommended by Metropolitan's CIP Evaluation Team. Funds for this action are available within the appropriation for planned biennial CIP expenditures for fiscal years 2018/19 and 2019/20.

Project Milestone

March 2020 – Completion of implementation of the Eagle Mountain-Iron Mountain Pilot Relay Protection System

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 51353, dated October 9, 2018, the Board appropriated a total of \$290 million for projects identified in the Capital Investment Plan for Fiscal Years 2018/19 and 2019/20.

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 overall activities involve the funding, design, minor alterations and replacement of existing public facilities with negligible or no expansion of use and no possibility of significantly impacting the physical environment. Accordingly, the proposed action qualifies under Class 1 and Class 2 Categorical Exemptions (Sections 15301 and 15302 of the State CEQA Guidelines).

CEQA determination for Option #2:

None required

Board Options

Option #1

Authorize an agreement with Southern California Edison for a not-to-exceed amount of \$421,932 to implement a pilot relaying system on the Eagle Mountain-Iron Mountain 230kV transmission line.

Fiscal Impact: \$525,000 in capital funds

Business Analysis: This option will enhance the safety and reliability of the CRA 230kV system and ensure compliance with NERC reliability standards.

Option #2

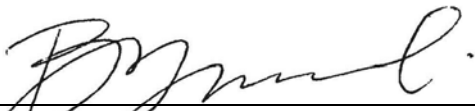
Do not proceed with the project at this time.


Fiscal Impact: Potential financial penalties due to failure to comply with NERC reliability standards.

Business Analysis: This option may result in non-compliance with NERC reliability standards and would forego an opportunity to reduce the risk of unplanned regional power grid outages in the event that a fault occurs along the Eagle Mountain-Iron Mountain 230kV transmission line.

Staff Recommendation

Option #1


 _____ 4/25/2019
 Brent Yamasaki Date
 Interim Manager, Water System
 Operations


 _____ 4/30/2019
 Jeffrey Kightlinger Date
 General Manager

Attachment 1 – Allocation of Budgeted Funds

Attachment 2 – SCE-MWD Agreement Relating to Eagle Mountain to Iron Mountain Pilot Relay Project

Attachment 3 – Location Map

Allocation of Budgeted Funds for Eagle Mountain-Iron Mountain Pilot Relay Protection System

	Current Board Action (May 2019)
Labor	
Studies & Investigations	\$ -
Final Design	-
Owner Costs (Program mgmt., envir. monitoring)	21,500
Submittals Review & Record Drwgs.	16,000
Construction Inspection & Support	-
Metropolitan Force Construction	45,500
Materials & Supplies	-
Incidental Expenses	-
Professional/Technical Services	-
Right-of-Way	-
Equipment Use	-
Contracts	-
Southern California Edison	421,932
Remaining Budget	20,068
Total	\$ 525,000

This is the initial action for the Iron-Eagle 230kV transmission line pilot relaying project. The total estimated cost to complete this project, including the funds requested with this action, is \$525,000. No future funding requests are currently anticipated for this project.

Title Page

Southern California Edison Company
Tariff Title: Rate Schedules
Tariff Record Title: Rate Schedule FERC No. 522

FERC FPA Electric Tariff

AGREEMENT
RELATING TO THE EAGLE MOUNTAIN TO IRON MOUNTAIN 230-KV LINE
PILOT RELAY PROJECT

BETWEEN

SOUTHERN CALIFORNIA EDISON COMPANY

AND

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

UAB-044

Contract Effective Date: **May/xx/2019**
488.0.0

Tariff Record Proposed Effective Date: **May/xx/2019**
Version Number: 0.0.0
Option Code: A

April 1, 2019

Deven Upadhyay
Assistant General Manager/Chief Operating Officer
Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA 90012

Re: Agreement Relating to the Eagle Mountain - Iron Mountain Pilot Relay Project

Dear Mr. Upadhyay:

This letter sets forth the mutual understanding and agreement of Southern California Edison Company (“SCE”) and the Metropolitan Water District of Southern California (“MWD”) (together, the “Parties”), regarding the process by which SCE shall perform certain work, as identified in Exhibit A, relating to the construction of facilities at Eagle Mountain and Iron Mountain Substations and associated communication infrastructure for the pilot relaying work on MWD’s Eagle Mountain – Iron Mountain 230 kV Line (“Eagle-Iron Mountain Line”); and MWD shall pay the costs incurred by SCE associated with the construction of these facilities.

This Agreement is made with reference to the following facts:

- A. MWD is a California governmental entity created for the purpose of providing a water supply to its service area in Southern California. MWD owns an electric system that is primarily used to deliver power to MWD’s five pumping plants along its Colorado River Aqueduct (“CRA Electric System”). The CRA Electric System includes one 230 kV switching station and four 230 kV substations with transformation to 69 kV or 6.9 kV serving up to nine pumping units at each location.
- B. SCE is a California electric utility engaged in the business of generating, transmitting, and delivering electric energy. As part of this business, SCE owns, operates and maintains an electric system.
- C. MWD’s 230 kV transmission facilities are interconnected with SCE’s 230 kV transmission facilities at SCE’s Julian Hinds Switchyard, SCE’s Eagle Mountain Substation, SCE’s Camino Substation, and SCE’s assets at Gene. In addition, MWD’s 6.9 kV facilities are connected with SCE’s Iron Mountain 6.9/16 kV substation.
- D. In 2015, as part of SCE’s responsibility as the registered Transmission Planner (“TP”) for its Bulk Electric System (“BES”) facilities, and pursuant to a delegation agreement between the Parties (which henceforth has terminated), SCE performed an Annual Transmission Reliability Assessment (“ATRA”) in coordination with MWD to

demonstrate compliance with the North American Electric Reliability Corporation (“NERC”)’s Transmission Planning Standard TPL-001-4.

- E. On December 22, 2015, SCE identified, through its ATRA, necessary upgrades between SCE and MWD breakers to maintain compliance with NERC’s Transmission Planning Standard TPL-001-4. With MWD’s CRA Electrical System pumps fully dispatched, 3-phase faults near the remote terminals of the Eagle-Iron Mountain Line were simulated such that MWD’s circuit breaker (CB #307) clears swiftly at zone one protection scheme at 6 cycles; whereas SCE circuit breaker (CB #407) clears in a delayed zone two protection scheme at 29 cycles. A fault with this delayed clearing time at 29 cycles results in transient instability. The recommended Corrective Action Plan¹ was for SCE to work with MWD to install a pilot relaying between both breakers on Eagle-Iron Mountain Line to mitigate this problem.
- F. MWD and SCE are parties to the Interconnected Facilities Agreement For SCE’s Circuit Breakers and Substation at Eagle Mountain (MWD Agreement #AR1183, SCE Agreement #UAB038), executed as of September 27, 2017 (hereinafter, “IFA”). Pursuant to the IFA, SCE shall ensure that its relays, circuit breakers and other necessary devices at SCE’s Eagle Mountain Substation and CB #405 and CB #407 prevent or protect against imposing adverse conditions on MWD’s Eagle Mountain Substation and Eagle-Iron Mountain Line, including voltage or frequency deviations beyond normal ranges and faults, in accordance with Good Utility Practice² and applicable Reliability Standards. The Parties agree that the pilot relaying project pursuant to this Agreement is required for MWD to maintain the reliability and safety of MWD’s Eagle-Iron Mountain Line.

Therefore, in order for both Parties to facilitate and administer the timely compliance with NERC Transmission Planning Standard 001-4, MWD desires to install pilot relaying on the Eagle-Iron Mountain Line. SCE and MWD thus understand and agree as follows:

¹ As defined in NERC’s Glossary of Terms Used in NERC Reliability Standards (July 3, 2018).

² Any of the practices, methods, and acts engaged in or approved by a significant portion of the electric utility industry during the relevant time period, or any of the practices, methods, and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at a reasonable cost consistent with good business practices, reliability, safety, and expedition. Good Utility Practice is not intended to be any one of a number of the optimum practices, methods, or acts to the exclusion of all others, but rather to be acceptable practices, methods, or acts generally accepted in the region.

1. SCE shall design, engineer, and construct the relay for line protection (“Pilot Relaying”) for its own CB #407 at the Eagle Mountain Substation and associated buildings as identified in Exhibit A: Transmission Subs. SCE shall commence such design, engineering and construction upon receipt from MWD of the estimated \$421,932 in accordance with Section 3 herein. MWD shall design, engineer, and construct associated communication infrastructure in support of the line protection for its own CB #307. Subject to Section 14 below, upon completion of this work SCE will own, set, and maintain the Pilot Relaying equipment related to its own CB #407. MWD shall own, set, and maintain the Pilot Relaying equipment related to its own CB #307. Each Party shall be responsible for all NERC compliance associated with the Pilot Relaying equipment for its own circuit breaker.
2. As part of the preliminary engineering, SCE shall establish a completion schedule with suitable milestones to accurately track SCE’s progress on the scope of work identified in Exhibit A. If SCE learns at any time that such schedule has been delayed, SCE shall promptly notify MWD of such delay and will provide a revised completion schedule within thirty (30) calendar days of such notice.
3. Upon execution of this Agreement and receipt of the corresponding invoice from SCE, MWD shall, within thirty (30) calendar days of receipt of such invoice, pay to SCE the estimated amount of \$421,932 for SCE to perform the scope of work identified in Exhibit A. SCE shall not begin work until full payment has been received from MWD. If MWD does not pay any invoiced amount due in full within the above time frames, SCE shall tender a cure notice to MWD of such non-payment and specify a final deadline for making such payment, which shall be fifteen (15) business days from the receipt of the notice. Upon the passing of such deadline, if payment has not been made in full by MWD, SCE may, at its discretion, elect to terminate this Agreement. MWD will be responsible for the Income Tax Component of Contribution (“ITCC”) associated with any work performed under this Agreement.
4. Subject to Sections 6 and 7 below, this Agreement shall terminate on the earliest of the following to occur: (i) notice by SCE that this Agreement was not accepted for filing by the Federal Energy Regulatory Commission (“FERC”); (ii) written notice of termination by MWD; (iii) termination by SCE pursuant to Section 3 of this Agreement; (iv) completion of the scope of work identified in Exhibit A; (v) by mutual agreement of the Parties; or (vi) MWD acquires SCE’s CB #407. .
5. Upon termination of this Agreement pursuant to Section 4 above, SCE shall timely provide MWD a detailing accounting of the costs incurred pursuant to this Agreement. MWD’s obligations to pay all reasonably incurred actual charges and expenses by SCE in performing the scope of work identified in Exhibit A shall survive termination of this Agreement. In the event of termination of this Agreement pursuant to Section 3, 4(i), 4(ii), 4(iii), or 4(v) above prior to the completion of the scope of work identified in Exhibit A, SCE will undertake commercially reasonable efforts to mitigate costs

associated with any costs of termination as identified in Exhibit A related to SCE's scope of work, including, but not limited to, timely cancelling of equipment orders, or otherwise mitigating costs.

6. Upon termination of this Agreement pursuant to Section 4 above, if MWD's payment in accordance with Section 3 of this Agreement exceeds the amount of SCE's actual charges and expenses incurred or which following commercially reasonable efforts could not be mitigated, SCE shall return the excess amount to MWD, without interest, within ninety (90) calendar days after the date of the notice of termination. In the event of a dispute regarding the amount due, SCE shall provide MWD with an invoice without offset for any amount which may be in dispute. In the event of any such dispute, the Parties shall promptly meet and attempt to resolve the dispute. In the event the Parties determine that MWD did not owe SCE the full amount paid, then SCE shall refund, without interest, the amount overpaid by MWD within thirty (30) calendar days of such determination. In the event the Parties are unable to resolve their dispute, they may pursue any legal actions then available to them.
7. Upon termination of this Agreement pursuant to Section 4 above, if MWD's payment in accordance with Section 3 of this Agreement is less than the amount of SCE's actual charges and expenses incurred or which following commercially reasonable efforts could not be mitigated, then MWD shall pay the difference without interest, as reflected in an invoice from SCE, within thirty (30) calendar days of receipt of such invoice. In the event of dispute regarding the amount due, the Parties shall promptly meet and attempt to resolve the dispute, and MWD shall pay the invoice without offset for any amount which may be in dispute. In the event the Parties determine that MWD did not owe SCE the full amount paid, then SCE shall refund, without interest, the amount overpaid by MWD within thirty (30) calendar days of such determination. In the event the Parties are unable to resolve their dispute, they may pursue any legal actions then available to them.
8. SCE will maintain records and accounts of all costs incurred in sufficient detail to allow verification of all such costs, including, but not limited to, labor and associated labor overheads, material and supplies, outside services, and administrative and general expenses. MWD or its designee, at its own or such designee's expense, will have the right, upon reasonable notice and at a reasonable time at SCE's offices, to audit SCE's records and accounts as necessary and as appropriate in order to verify the costs incurred by SCE. Any audit requested by MWD will be limited to the costs reflected in the final invoice provided in accordance with Section 6 or 7, unless an audit with a broader scope is otherwise required by law. Any audit will be completed within two (2) years following receipt by MWD of the final invoice for funds due SCE or the refund of excess funds to MWD by SCE.
9. No Party shall be considered to be in breach with respect to any obligation hereunder, other than the obligation to pay money when due, if prevented from fulfilling such

- obligation by Force Majeure, as defined in Section 10 below. A Party unable to fulfill any obligation hereunder (other than an obligation to pay money when due) by reason of Force Majeure shall give notice and the full particulars of such Force Majeure to the other Party in writing or by telephone as soon as reasonably possible after the occurrence of the cause relied upon. Telephone notices given pursuant to this Section shall be confirmed in writing as soon as reasonably possible and shall specifically state full particulars of the Force Majeure, the time and date when the Force Majeure occurred and when the Force Majeure is reasonably expected to cease. The Party affected shall exercise due diligence to remove such disability with reasonable dispatch, but shall not be required to accede or agree to any provision not satisfactory to it in order to settle and terminate a strike or other labor disturbance.
10. For the purposes of this Agreement, Force Majeure shall mean any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities, or any other cause beyond a Party's control. A Force Majeure event does not include acts of negligence or intentional wrongdoing by the Party claiming Force Majeure. Economic hardship is not considered a Force Majeure event.
 11. Each Party shall at all times indemnify, defend, and hold harmless the other Party from any and all damages, losses, claims, expenses, penalties, and costs arising out of or resulting from the other Party's performance of its obligations under this Agreement, with the exception of damages, losses, claims, expenses, penalties, and costs arising from the negligence or intentional wrongdoing of the indemnified Party.
 12. Except for the reimbursement of costs incurred as a result of third party claims, in no event shall a Party be liable under any provision of this Agreement, or under any legal or equitable theory or claim for any special, indirect, incidental, consequential, or punitive damages, including but not limited to loss of profit or revenue, loss of the use of equipment, cost of capital, cost of temporary equipment or services.
 13. With the exception of modifications to its exhibits, this Agreement may only be modified with a written amendment executed by both Parties. The exhibits may be modified by mutual agreement of the representatives of the Parties indicated in Section 24; except that no costs shall be incurred by SCE above \$500,000 without a prior written amendment to the Agreement executed by both Parties.
 14. The ownership, setting, maintenance, and responsibilities for all NERC compliance associated with Pilot Relaying contained in Section 1 of this Agreement shall survive the termination of this Agreement. In the event MWD acquires CB #407, MWD shall assume ownership of all equipment/assets identified in Exhibit A with no additional costs and shall be responsible for the setting, maintenance, and all NERC compliance associated with Pilot Relaying of CB #407.

15. This Agreement constitutes the complete and final expression of the agreement between the Parties and is intended as a complete and exclusive statement of the terms of their agreement which supersedes all prior and contemporaneous offers, promises, representations, negotiations, discussions, communications, and other agreements which may have been made in connection with the subject matter of this Agreement.
16. Any waiver at any time by a Party of its rights with respect to a breach by the other Party of its obligations under this Agreement shall not be deemed a waiver with respect to any other breach or other matter arising in connection therewith. Any delay, with the exception of the statutory period of limitation in assessing or enforcing any right, shall not be deemed a waiver of such right.
17. The covenants, obligations, and liabilities of the Parties are intended to be several and not joint or collective, and nothing contained in this Agreement shall ever be construed to create an association, joint venture, trust or partnership, or to impose a trust or partnership covenant, obligation, or liability on or with regard to either Party. Each Party shall be individually responsible for its own covenants, obligations, and liabilities as provided in this Agreement. Neither Party shall be under the control of the other Party. Neither Party shall be the agent of or have a right or power to bind the other Party without such other Party's express written consent.
18. The Parties do not intend to create rights in, or to grant remedies to, any third party as a beneficiary either of this Agreement or of any duty, covenant, obligation, or undertaking established herein.
19. This Agreement shall be interpreted by and in accordance with the laws of the State of California, without regard to the principles of conflict of laws thereof, or the laws of the United States, as applicable, as if executed and to be performed wholly within the United States.
20. This Agreement shall be binding upon the Parties and their successors and assigns. No Party shall assign this Agreement without the other Party's prior written consent, which shall not be unreasonably withheld.
21. SCE shall promptly file this Agreement for acceptance by FERC. MWD shall take all actions as may reasonably be requested by SCE to support the approval of this Agreement as filed. To the extent that FERC, by order, materially modifies the terms and conditions of this Agreement, MWD shall be entitled to terminate the Agreement within fifteen (15) days of the issuance of such order.
22. Ambiguities or uncertainties in the wording of this Agreement shall not be construed for or against any Party, but shall be construed in the manner that most accurately reflects the Parties' intent as of the date they executed this Agreement.

23. This Agreement shall become effective on the date that it is executed by both Parties, subject to acceptance by FERC.
24. Notices hereunder shall be provided to the Parties as specified below. Notices shall, unless otherwise specified herein, be in writing and may be delivered by hand delivery, first class United States mail, overnight courier or email.

To MWD:

Mr. Shawn Bailey
Section Manager of Power Operations and Planning
The Metropolitan Water District of Southern California
700 North Alameda Street
Los Angeles, CA 90012
Office: (213) 217-7381
Facsimile: (213) 830-4529
Email: sbailey@mwdh2o.com

To SCE:

Southern California Edison Company
Attn: Manager, Grid Contracts Management
2244 Walnut Grove Ave
Rosemead, CA 91770
Office: (626) 302-9640
Facsimile: (626) 302-1152
Email: GridContractManagement@sce.com

Notices shall be deemed given as follows:

- a. Notice by email or hand delivery shall be deemed given at the close of business on the day actually received, if received during business hours on a business day, and otherwise shall be deemed given at the close of business on the next business day.
- b. Notice by overnight United States mail or courier services shall be deemed given on the next business day after such notice was sent out.
- c. Notice by first class United States mail shall be deemed given two (2) business days after the postmarked date.
- d. Notices shall be effective on the date deemed given, unless a different date for the notice to go into effect is stated in another section of this Agreement.
- e. A Party may change its designated representatives, addresses, and other contact information by providing notice of same in accordance herewith.

Please indicate your agreement with the foregoing by signing in the appropriate space below on the two originals provided. Upon execution, please retain one execution original for your records and return the other execution original to SCE as provided in Section 24.

Sincerely,

By: _____

Name: Jill Horswell

Title: Director, Contracts & Reliability Standards Operations.

Agreed to this _____ day of _____, 2019

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

By: _____

Name: Deven Upadhyay

Title: Assistant General Manager/Chief Operating Officer _____

EXHIBIT A

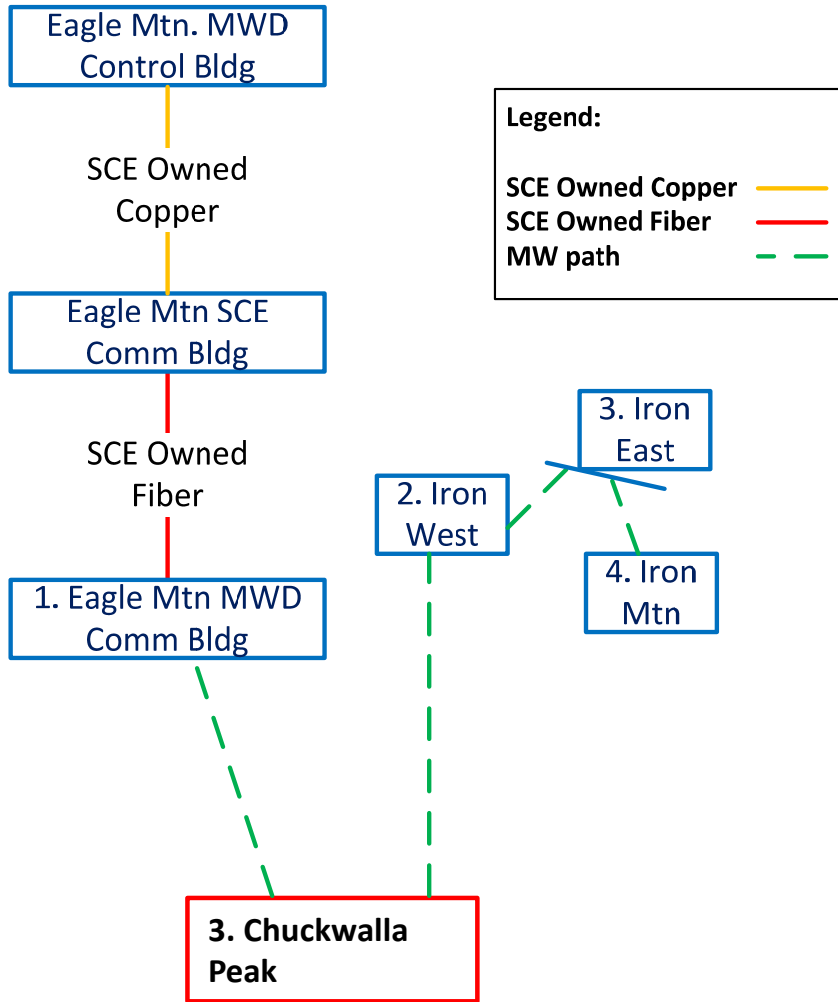
**SCOPE OF WORK AND ESTIMATED COSTS
FOR WORK TO BE PERFORMED BY SCE**

As part of the necessary Pilot Relaying work at the Eagle-Iron Mountain Line, SCE will perform the following:

SCOPE OF WORK	ESTIMATED COST
<p><u>Transmission Subs – SCE’s scope of work:</u></p> <p>Eagle Mountain Sub - Installing a single high speed relaying on the Eagle Mountain-Iron Mountain Line Protection</p> <ul style="list-style-type: none"> • SCE to remove SEL-2030, modem, associated DC cutout switch and communication cables. • SCE to install manual-operated communication channel cutout switch for primary SEL-311C. • SCE to install two (2) SEL-2894 fiber-optic transceiver/modem. • SCE to install new 1088B Arbiter clock. • SCE to install a new 1073 distribution amplifier on the top section of the relay rack if required. • SCE to provide IRIG-B connection to each relay. • SCE to install GPS antenna on the exterior of the building • SCE to perform core drill 1-1/4 hole into the building to route • SCE to provide digital input card for the existing RTU. • SCE to install control cable between MWD&SCE control rooms using existing conduits • SCE to install Fiber Optic jumpers between patch panel and relays as needed 	<p style="text-align: center;">\$231,574</p>
<p><u>Transmission Subs – MWD’s scope of work:</u></p> <ul style="list-style-type: none"> • Iron Mountain Sub –MWD to install a single high speed relaying on the Eagle Mountain-Iron Mountain Line Protection, owned by MWD • MWD to install manual-operated communication channel cutout switch for primary SEL-311C relay. • MWD to install one (1) SEL-2894 fiber-optic transceiver/modem. • MWD to provide IRIG-B connection to primary and secondary relays • MWD to provide communication cutout switch status to RTU 	<p style="text-align: center;">MWD is responsible for its portion of the cost</p>
<p><u>Subtotal for Transmission Subs</u></p>	<p style="text-align: center;"><u>\$231,574</u></p>

<p><u>IT/Telecom (If required)</u></p> <p>Eagle Mountain Sub - Install single high speed relaying on the Eagle Mountain-Iron Mountain Line</p> <ul style="list-style-type: none"> • SCE to add new channel equipment with C37.94 interface at Eagle Mountain Substation • MWD to provide T1 via existing microwave path from Eagle Mountain MWD communication building to Chuckwalla communication site to Iron Mountain Substation see Exhibit B. Demarcation is the DSX-1 panel to be designated. • SCE builds T1 circuit using MWD provided T1 link to provide point to point T1 connection between SCE provided new channel equipment at Eagle Mountain Substation and Iron Mountain Substation. • SCE builds one C37.94 protection circuit via the new T1 circuit and new channel equipment at both locations using existing tie cable to the relay room. <p>Iron Mountain Sub - Install single high speed relaying on the Eagle Mountain-Iron Mountain Line</p> <ul style="list-style-type: none"> • SCE to add new channel equipment with C37.94 interface at Iron Mountain Substation • MWD to provide T1 via existing microwave path from Iron Mountain MWD communication building to Chuckwalla communication site to Eagle Mountain Substation see Exhibit B. Demarcation is the DSX-1 panel to be designated. • SCE builds T1 circuit using MWD provided T1 link to provide point to point T1 connection between SCE provided new channel equipment at Eagle Mountain Substation and Iron Mountain Substation. • SCE builds one C37.94 protection circuit via the new T1 circuit and new channel equipment at both locations using existing tie cable to the relay room. <p><u>Subtotal for IT/Telecom</u></p>	<p>\$54,347</p> <p>\$54,347</p> <p><u>\$108,694</u></p>
Total:	\$340,268
ITCC (24%)	\$81,664
Total + ITCC	\$421,932

EXHIBIT B
SCE and MWD Systems Diagram



Shared Locations (Bldg Owner)

- 1. Eagle Mtn. Pump Plant – N of Desert Center (MWD)
- 2. Iron West Repeater (MWD)
- 3. Iron East Passive Repeater (MWD)
- 4. Iron Mtn. Pump Plant – E of 29 Palms (MWD)

Location Map

Metropolitan Water District CRA 230 kV Transmission System

