



Los Angeles  
Department of  
Water & Power

RESOLUTION NO. \_\_\_\_\_

BOARD LETTER APPROVAL

Handwritten signature of Reiko A. Kerr in blue ink.

**REIKO A. KERR**

Senior Assistant General Manager – Power System  
Engineering, Planning, and Technical Services

Handwritten signature of Martin L. Adams in blue ink.

**MARTIN L. ADAMS**

Chief Operating Officer

Handwritten signature of David H. Wright in blue ink.

**DAVID H. WRIGHT**

General Manager

**DATE:** March 17, 2017

**SUBJECT:** Approval of the California Independent System Operator Energy  
Imbalance Market Implementation Agreement (LADWP No. BP 17-001)

**SUMMARY**

The California Independent System Operator (CAISO) Energy Imbalance Market (EIM) Implementation Agreement (Agreement) establishes terms and conditions to integrate the Los Angeles Department of Water and Power (LADWP) electric system into CAISO's real-time market as an EIM Entity. The Agreement stipulates payments to the CAISO and scheduled milestones for the required work between LADWP and CAISO for the EIM implementation. Participation in EIM is voluntary and is within LADWP's sole discretion.

Based on the experience of other EIM entities, the implementation process is estimated to take a minimum of 24 months to complete with an expected go-live date of Spring 2019. Due to LADWP's unique system configuration and the required upgrades from a pending gap analysis, the timeline outlined in Exhibit A may need to be extended beyond three years. This Agreement shall terminate upon the completion of the implementation process or at the request of either or both parties.

Upon successfully implementing LADWP's system into the CAISO's EIM system, a separate agreement is required prior to LADWP's active participation as an EIM Entity. Such agreement will be presented at a later date for approval by the Board of Water and Power Commissioners (Board) and subject to further approval by the Los Angeles City Council (City Council).

City Council approval of the Implementation Agreement is required per Charter Section 373.

## **RECOMMENDATION**

In order to realize the benefits to LADWP ratepayers from participating in the CAISO EIM market, it is requested that the Board adopt the attached Resolution recommending City Council's approval of the CAISO EIM Implementation Agreement.

## **ALTERNATIVES CONSIDERED**

There are no alternatives to this Agreement if LADWP desires to become an EIM Entity.

## **FINANCIAL INFORMATION**

CAISO EIM Implementation Agreement reflects payments to CAISO of approximately \$925,000; however, since the cost may exceed the estimate, a twenty-five percent (25%) contingency is added for a total of \$1,156,250. All payments to CAISO are subject to review and approval by LADWP. The following table shows the estimated payment schedule. The payments cover costs incurred by CAISO in working directly with LADWP in completing each milestone.

Upon completion of each of the milestones identified in Exhibit A of the Agreement, the Implementation Fee to CAISO is as follows:

Milestone 1	\$155,000 upon the Effective Date of the Agreement;
Milestone 2	\$155,000 upon deployment into the CAISO full network model database that includes the topology of the LADWP system
Milestone 3	\$155,000 upon CAISO promotion of market network model including LADWP area to non-production in advance of market simulation
Milestone 4	\$155,000 upon commencement of EIM market simulation
Milestone 5	\$155,000 upon start of parallel operations
Milestone 6	\$150,000 upon the Implementation Go-live date

## **BACKGROUND**

CAISO EIM is a method by which Balancing Authority Areas (BAAs) in the West enter the CAISO's real-time energy market.

The CAISO EIM Implementation Agreement identifies activities and responsibilities for LADWP and CAISO. While LADWP presently has a resource mix capable of responding to its system variability and imbalance, the CAISO EIM presents opportunities, allowing further optimization of the LADWP's resources.

On November 1, 2014, the CAISO went "live" with its EIM, together with PacifiCorp East and PacifiCorp West BAAs as the initial market participants. Participation in EIM will

provide better reliability and more efficient renewable resource integration for participating EIM Entities-- and the region as a whole-- by sharing and economically dispatching a broad array of resources throughout the West. Since 2014, CAISO EIM has expanded to other western entities, such as NV Energy, Arizona Public Service Company, and Puget Sound Energy. Other entities also have pledged future participation in the EIM, including Portland General Electric, Idaho power, Sacramento Municipal Utility District, Balancing Authority of Northern California, and Seattle City Light.

CAISO continues to refine a long-term governance structure over EIM matters, and make enhancements based on experience from implementation with the various participants.

As a neighboring BAA, LADWP began to evaluate potential ratepayer advantages and disadvantages should it elect participation in the EIM in January of 2016, and using an independent third party, confirmed the net positive benefits associated with LADWP's participation. These benefits include:

- Better integration of intermittent renewable resources over a larger geographic territory (especially important with LADWP's aggressive Renewable Portfolio Standard [RPS] targets);
- Voluntary participation when the market is most beneficial to LADWP's ratepayers (estimated range between \$2 and \$5 million per year at inception, with even higher amounts projected as California's RPS increases);
- Increasing the amount of renewable resources remaining in California assists the state in reducing its overall greenhouse gas emission levels;
- Allows LADWP to monetize its idle capacity to assist the state; and
- Allows "sharing" flexible reserves to reduce the overall system need

The total amount needed during the EIM implementation period due to infrastructure, communications, and information technology upgrades is estimated to range between \$15 and \$20 million. After final implementation, recurring annual expenses are estimated at \$2.3 million per year. Based on an independent third-party analysis, the net benefits are estimated to range between \$2 and \$5 million per year.

#### **Definition and General Requirements of the EIM**

EIM is a voluntary market, with a set of processes that provides better reliability and more efficient renewable resource integration to EIM participants by sharing and economically dispatching a broad array of resources throughout the West. CAISO proposes to address imbalances by expanding their existing real-time market, allowing BAAs to participate in the EIM. Responsibility for operating the BAAs remains with the participating EIM entity, thus allowing LADWP to retain control of, and prioritize foremost, local reliability. The CAISO EIM is available to all BAAs in the Western Electricity Coordinating Council (WECC) region.

In essence, EIM is an extension of the CAISO footprint in the CAISO real-time/intra - hour (five and fifteen minute) energy market. In these CAISO markets, EIM entities can buy or sell energy from their resources which are dispatched in an economically optimized manner.

The participating BAAs are called EIM Entities. An EIM Entities' entire system is included in CAISO's Full Network Model. The CAISO EIM utilizes proprietary market optimization software and resource modeling of their entire footprint, which includes the participating EIM Entities electric system, and a required telemetry infrastructure into all participating BAAs to enable the CAISO EIM to effectively monitor and dispatch all participating resources and have situational awareness of grid conditions.

The EIM is a voluntary market, with the unilateral ability to terminate the contract. If LADWP were to terminate the contract, the majority of costs incurred for meter replacements or system and communication upgrades and equipment could still be used to facilitate better operations and visibility into its system or potential future markets that may be developed.

The City Administrative Officer (CAO) Report is attached.

### **ENVIRONMENTAL DETERMINATION**

In accordance with Section 15060 (c)(2) of the California Environmental Quality Act (CEQA) Guidelines, an activity is not subject to CEQA if it will not result in a direct or reasonably foreseeable indirect physical change in the environment. The implementation of this Agreement for payment milestones will not result in any physical change in the environment, therefore, this activity is not subject to CEQA.

### **CITY ATTORNEY**

The Office of the City Attorney reviewed and approved the Agreement and Resolution as to form and legality.

### **ATTACHMENTS**

- Resolution
- Implementation Agreement with Exhibit A
- CAO Report