

July 21, 2017

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Re: California Independent System Operator Corporation
Filing of CAISO Rate Schedule No. 93
Docket No. ER17-____-000**

Dear Secretary Bose:

The California Independent System Operator Corporation (“CAISO”) submits for filing and acceptance an implementation agreement dated May 24, 2017, between the CAISO and the City of Los Angeles, acting by and through the Department of Water and Power (“DWP”) (“Implementation Agreement”).¹ The Implementation Agreement sets forth the terms under which the CAISO will extend its existing real-time energy market systems to provide imbalance energy service to DWP, pursuant to the CAISO’s Energy Imbalance Market (“EIM”) tariff. Under the Implementation Agreement, DWP will compensate the CAISO for its share of the costs of system changes, software costs, and other configuration activities. The CAISO requests that the Commission accept the Implementation Agreement effective October 1, 2017, so that the extension of the real-time energy market to include DWP may proceed towards implementation on April 1, 2019.²

I. Background

The EIM enables entities outside the CAISO balancing authority area to participate in the real-time market for imbalance energy that the CAISO operates in its own balancing authority area. PacifiCorp’s balancing authority areas (PacifiCorp East and PacifiCorp West) were the first to join the EIM, under market rules that went into effect on October 24, 2014, with the first trading day November 1, 2014. NV Energy was the next entity to join the EIM on December 1, 2015. Puget Sound Energy and Arizona Public Service Company began participation in the EIM on October 1, 2016.

¹ The CAISO submits the Implementation Agreement pursuant to Section 205 of the Federal Power Act, 16 U.S.C. § 824d.

² See Implementation Agreement, Section 1.

The EIM continues to develop and attract the interest of a diverse array of participants throughout the Western Interconnection. Portland General Electric will be the sixth balancing authority area to participate in the EIM commencing October 1, 2017, and the Idaho Power Company will be the seventh, starting in April 2018. The most recent entities committing to join the EIM are municipal utilities. The City of Seattle, by and through its City Light Department (“SCL”) and the Balancing Authority of Northern California (“BANC”) on behalf of the Sacramento Municipal Utility District (“SMUD”) will commence participation on April 1, 2019.³ Powerex Corp., the first entity with resources located in a balancing authority area outside the United States, has also committed to participate in the EIM commencing in April of 2018.⁴

II. The Implementation Agreement

The Implementation Agreement details the contractual terms, including the scope of work and the agreed-upon fee, under which the CAISO will take the steps necessary to incorporate DWP into the EIM consistent with the identified key milestones and associated payment provisions.⁵ The Implementation Agreement is modeled after prior implementation agreements previously accepted by the Commission.⁶ However, the Implementation Agreement differs somewhat from most of these prior agreements because DWP is not public a utility as defined under the Federal Power Act.⁷ This instant filing therefore adopts similar provisions to those which were filed in the CAISO-SCL and CAISO-BANC implementation agreements accepted by the Commission.⁸

Under the Implementation Agreement, the CAISO and DWP must complete a variety of project tasks necessary for implementation by April 1, 2019. The parties chose this date to provide sufficient time for completion of all

³ An implementation agreement with the Salt River Project has been executed and will be filed with the Commission for acceptance.

⁴ See FERC Docket No. ER17-1796-000

⁵ See Implementation Agreement, Sections 3-4 and Exhibit A.

⁶ See *Cal. Indep. Sys. Operator Corp.*, 143 FERC ¶ 61,298 (June 28, 2013); *Cal. Indep. Sys. Operator Corp.*, 147 FERC ¶ 61,200 (June 13, 2014), *Cal. Indep. Sys. Operator Corp.*, 151 FERC ¶ 61,158 (May 19, 2015), *Cal. Indep. Sys. Operator Corp.*, 152 FERC ¶ 61,090 (July 31, 2015), *Cal. Indep. Sys. Operator Corp.*, 154 FERC ¶ 61,020 (January 19, 2016); *Cal. Indep. Sys. Operator Corp.*, 155 FERC ¶ 61,311 (June 27, 2016); Letter Order in Docket No. ER17-868-000 (March 14, 2017); and Letter Order in Docket No. ER17-1300-000 (May 18, 2017).

⁷ See, e.g., Implementation Agreement, recital D (noting DWP’s non-jurisdictional status); section 1(e) (acknowledging DWP’s non-jurisdictional status); and section 2(g) (simplifying the termination notice requirements in consideration of DWP’s non-jurisdictional status).

⁸ See Letter Order dated March 14, 2017, *California Independent System Operator Corporation*, Docket No. ER17-868-000; and Letter Order dated May 18, 2017, *California Independent System Operator Corporation*, Docket No. ER17-1300-000.

expected activities based on the size, complexity, and compatibility of DWP, including filing a certification of readiness with the Commission. The specific tasks may be modified by mutual agreement of the parties.⁹

The Implementation Agreement specifies that DWP will pay a fixed implementation fee of \$925,000, subject to completion of six specific milestones for recovery of the portion of the costs attributable to the CAISO's effort to configure its real-time market systems and incorporate DWP into the EIM. The methodology that the CAISO used to determine the implementation fee for DWP is the same methodology that the CAISO used to determine the Powerex, BANC, SCL, Idaho Power Company, Portland General Electric, Arizona Public Service Company, Puget Sound Energy, NV Energy, and PacifiCorp implementation fees.

The implementation fee is based on the CAISO's estimate of the costs it will incur to configure its real-time energy market to function as the EIM available to all balancing authority areas in the Western Electricity Coordinating Council ("WECC").¹⁰ The components of that estimate are described in the Declaration of April D. Gordon, the CAISO's Director of Financial Planning and Procurement, which is included with this filing as Attachment B, and are summarized below.

Implementation Costs (in thousands of dollars)	
Licenses	12,150
EMS system improvements	1,000
Data storage	2,000
Necessary hardware upgrades	500
Production software modifications	1,000
Network configuration and mapping	500
Integration	500
Testing	1,500
System performance tuning	250
Training and operations readiness	150
Project management	100
Total	\$19,650

Using this estimate, the CAISO derived a rate that allocates the \$19.65 million to potential entrants into the EIM according to their proportionate share of the total WECC load (excluding the CAISO's load), using updated data reported to WECC. The CAISO then applied this fee to DWP's share of the updated

⁹ See Implementation Agreement, Section 3.

¹⁰ The total estimated cost is a projection assuming the total work effort remains stable. Implementations either completed or underway are not considered in this estimate.

WECC load (exclusive of CAISO load) to account for the DWP implementation fee.

The \$925,000 implementation fee is just and reasonable because it allocates a portion of the overall cost to DWP in an amount proportionate to DWP's share of the benefits that will ensue from the EIM, as measured by DWP's usage. In addition, as explained in Mrs. Gordon's declaration, the CAISO confirmed the reasonableness of the resulting allocation by comparing it to an estimate of the costs the CAISO projects it will incur to configure its real-time energy market to function as the EIM that serves both the CAISO and DWP. This comparison confirmed that the fee reasonably represents those costs even though certain costs will not be incurred, for example the CAISO does not anticipate incurring any additional data storage costs or software licensing fees, but to integrate DWP the CAISO will need to incur production software modification costs and integration costs up front. In future implementations, the CAISO will similarly confirm that the rate is reasonable by conducting a similar comparison test of the total implementation costs to the individual entity costs.

The Implementation Agreement also provides for adjustment of the fixed implementation fee by mutual agreement of the parties in the event that the CAISO's actual or expected costs exceed the estimate that forms the basis of the implementation fee.¹¹ This provision allows for appropriate consideration of the allocation of costs associated with incorporation of DWP into the EIM. At the same time, the requirement for DWP to agree to any increase in the implementation fee ensures that DWP's share of those costs remains reasonable. The Implementation Agreement therefore reflects a reasonable balance of the parties' interest in preserving a level of cost certainty for DWP customers, while appropriately allocating the costs of implementing the EIM.

The Implementation Agreement represents a binding commitment of the parties. As such, it must provide a workable framework for the parties to resolve any differences and make course corrections along the way. On the other hand, the Implementation Agreement recognizes that the parties are entering into the agreement on a voluntary basis and circumstances may arise that interfere with the incorporation of DWP into the EIM. Accordingly, the Implementation Agreement allows either party to terminate the agreement for any or no reason, provided it has first entered into good faith discussions for thirty (30) days in an effort to resolve any differences.¹² This and other related provisions mean that the parties must work closely together to achieve the goal of implementing DWP into the EIM in a timely manner.

¹¹ See Letter Order dated April 8, 2014, Docket No. ER14-1350-000 (accepting an amendment to increase the PacifiCorp implementation fee to cover additional scope identified in the stakeholder process).

¹² See Implementation Agreement, Section 2.

The Implementation Agreement also includes general provisions that round out the parties' commitments. These are confidentiality (Section 5), limitations of liability (Section 6), representations and warranties (Section 7), general provisions such as notices, amendments, etc. (Section 8), venue (Section 9), communication (Section 10), and dispute resolution (Section 11).

III. Next Steps

Following Commission acceptance of this filing, the CAISO will incorporate DWP into the EIM. DWP's implementation into the EIM will be subject to the CAISO tariff readiness requirements and the filing of a certificate of readiness with the Commission.¹³ The CAISO will also take into consideration lessons learned from the prior implementations, as the readiness criteria represent the baseline for measuring the readiness of each new EIM entity's processes and systems for EIM participation.

The CAISO also expects that DWP will modify its open access transmission tariff in advance of implementation. The CAISO recognizes that DWP will be working with interested parties to facilitate implementation of the EIM and the CAISO will engage in that effort as DWP considers appropriate.

IV. Effective Date

The CAISO requests that the Implementation Agreement be made effective on October 1, 2017.

V. Request for Waivers

The CAISO submits that the filing substantially complies with the requirements of section 35.13 of the Commission's Rules of Practice and Procedure,¹⁴ applicable to filings of this type. The CAISO respectfully requests waiver of any such requirement to the extent this filing does not satisfy that requirement. In particular, the CAISO requests waiver of the requirement to submit Period 1 and Period 2 schedules, because the implementation fee is a one-time fee that is not based on historical data in Period 1 schedules or on the projections in Period 2 schedules. In either event, there is good cause to waive filing requirements that are not material to the Commission's consideration of the Implementation Agreement.

¹³ See CAISO Tariff, section 29.2(b).

¹⁴ 18 C.F.R. § 35.13 (2017).

VI. Service

The CAISO has served copies of this filing upon all scheduling coordinators, DWP, the California Public Utilities Commission, and the California Energy Commission. In addition, the CAISO has posted the filing on the CAISO website.

VII. Contents of Filing

In addition to this transmittal letter, this filings includes the following attachments:

Attachment A	Executed Implementation Agreement; and
Attachment B	Executed Declaration of April D. Gordon, Director of CAISO Financial Planning and Procurement.

VIII. Correspondence

Pursuant to Rule 203(b)(3) of the Commission's Rules of Practice and Procedure,¹⁵ the CAISO requests that all correspondence, pleadings, and other communications concerning this filing be served upon the following:

John C. Anders
Assistant General Counsel
California Independent System
Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Tel: (916) 608-7287
Fax: (916) 608-7222
E-mail: janders@caiso.com

¹⁵ 18 C.F.R. § 385.203(b)(3) (2017).

IX. Conclusion

The CAISO respectfully requests that the Commission accept this filing and permit the Implementation Agreement, CAISO Rate Schedule No. 93, to be effective October 1, 2017, as requested. If there are any questions concerning this filing, please contact the undersigned.

Respectfully submitted,

By: /s/ John C. Anders

Roger E. Collanton

General Counsel

Burton A. Gross

Deputy General Counsel

John C. Anders

Assistant General Counsel

California Independent System

Operator Corporation

250 Outcropping Way

Folsom, CA 95630

Tel: (916) 608-7287

Fax: (916) 608-7222

janders@caiso.com

Attorneys for the California Independent
System Operator Corporation

Attachment A – Executed Implementation Agreement
Energy Imbalance Market Implementation Agreement between
Los Angeles Department of Water & Power and the
California Independent System Operator Corporation

**ENERGY IMBALANCE MARKET
IMPLEMENTATION AGREEMENT**

This Implementation Agreement ("Agreement") is entered into upon the date of execution by and between the City of Los Angeles, acting by and through the Department of Water and Power ("DWP") and the California Independent System Operator Corporation, a California nonprofit public benefit corporation ("ISO"). DWP and the ISO are sometimes referred to in the Agreement individually as a "Party" and, collectively, as the "Parties."

RECITALS

- A. WHEREAS, DWP has determined there is an opportunity to secure benefits for DWP's customers through improved dispatch and operation of DWP's generation fleet and through the efficient use and continued reliable operation of existing and future transmission facilities and desires to participate on a voluntary basis in the energy imbalance market operated by the ISO ("EIM");
- B. WHEREAS, the ISO has determined there are benefits to ISO market participants through greater access to energy imbalance resources in real-time and through the efficient use and reliable operation of the transmission facilities and markets operated by the ISO, and desires to expand operation of the EIM to include DWP;
- C. WHEREAS, DWP acknowledges that the rules and procedures governing the EIM are set forth in the provisions of the ISO tariff as filed with the Federal Energy Regulatory Commission ("FERC") and that participation in the EIM requires corresponding revisions to DWP's Open Access Transmission Tariff ("DWP Tariff") and the execution of associated service agreements;
- D. WHEREAS, DWP is exempt from the jurisdiction of the FERC pursuant to 16 U.S.C §824(f) and by entering into and performing this Agreement neither Party intends to waive this exemption;
- E. WHEREAS, the Parties are entering into this Agreement to set forth the terms upon which the ISO will timely configure its systems to incorporate DWP into the EIM ("Project") on or before April 1, 2019 or a different date mutually agreed to by both Parties; and
- F. WHEREAS, DWP's decision whether or not to participate voluntarily in the EIM is within DWP's sole discretion, and DWP will only participate in the EIM so long as such participation is on a voluntary basis and on terms and conditions acceptable to DWP, including DWP's unilateral right to terminate this Agreement as set forth below.

NOW THEREFORE, in consideration of the mutual covenants contained herein, and of other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

AGREEMENT**1. Effective Date, Term, and Authority.**

(a) The Parties acknowledge that as an entity subject to FERC jurisdiction, the ISO may be required to file this Agreement with FERC. This Agreement shall become effective upon the date the executed Agreement is accepted, approved or otherwise permitted to take effect by FERC after its filing with FERC by the ISO, without condition or modification unsatisfactory to either Party in its sole discretion as more specifically provided in Section 1(b) ("Effective Date").

(b) In the event FERC requires the ISO to make any modification to the Agreement or imposes any other modification or condition upon its acceptance or approval of the Agreement, each Party shall have ten (10) days from the date the Party is notified of such modifications or conditions to notify the other Party that any such modification or condition is unacceptable to that Party as determined in that Party's sole discretion. If no Party provides such notice, then the Agreement, as modified or conditioned by FERC, shall take effect as of the date determined under Section 1(a). If either Party provides such notice to the other Party, the Parties may take any one or more of the following actions : (i) meet and confer and agree to accept any modifications or conditions imposed by such FERC order; (ii) jointly seek further administrative or legal remedies with respect to such FERC order, including a request for rehearing or clarification in which case all further FERC orders on rehearing, clarification or similar orders will be subject to the same rights of the Parties under this Section as the original FERC order; or (iii) enter into negotiations with respect to accommodation of such FERC order, provided however, if the Parties have not agreed to accept or accommodate any modifications or conditions imposed by such FERC order under clauses (i)-(iii) of this Section 1(b) within thirty (30) days after the date on which such FERC order becomes a final and non-appealable order, such order shall be deemed an adverse order and this Agreement will immediately terminate without further action of the Parties and the Parties shall have no further rights and obligations under the Agreement. Notwithstanding the foregoing, either Party may at its sole discretion terminate this Agreement in the event FERC requires any modification to the Agreement or imposes any other condition upon its acceptance or approval of the Agreement upon notification within ten (10) days to the other Party.

(c) The term of the Agreement ("Term") shall commence on the Effective Date and shall terminate upon the earliest to occur of (1) the date FERC permits all necessary revisions to the ISO Tariff that are required by law or requested by the ISO to be approved or accepted by FERC to take effect and the service agreements under such tariff for the commencement of DWP's participation in the EIM have taken effect, and the date DWP permits all necessary revisions to the DWP Tariff to take effect and the service agreements under such tariff for the commencement of DWP's participation in the EIM have taken effect; (2) termination in accordance with Section 2 of this Agreement; or (3) such other date as mutually agreed to by the Parties ("Termination Date").

(d) This Agreement shall automatically terminate on the Termination Date and shall have no further force or effect.

(e) Nothing in this Agreement waives or will be deemed to waive, limit or impair to any extent the exemption of DWP from FERC's jurisdiction under the Federal Power Act or to submit DWP to the jurisdiction of FERC.

2. Termination.

(a) The Parties may mutually agree to terminate this Agreement in writing at any time. In addition, either Party may terminate this Agreement in its sole discretion after conclusion of the negotiation period in Section 2(b) or as provided in Section 2(d) or 2(e) as applicable.

(b) Subject to this Section 2(b), either Party may seek to unilaterally terminate this Agreement by notifying the other Party in writing of its intent to do so ("Notice of Intent to Terminate"). Upon receipt of such notice, the Parties shall negotiate in good faith for thirty (30) days in an effort to resolve the notifying Party's concerns. If both Parties agree that the concerns of the Party issuing the Notice of Intent to Terminate have been resolved, then the Party that issued such notice shall notify the other Party in writing of the withdrawal of such Notice ("Notice of Resolution").

(c) At the time the Notice of Intent to Terminate is provided, or any time thereafter unless a Notice of Resolution is issued, DWP may provide written notice directing the ISO to suspend performance on any or all work on the Project for a specified period of time ("Notice to Suspend Work"). Upon receipt of a Notice to Suspend Work, the ISO shall: (1) discontinue work on the Project; (2) place no further orders with subcontractors related to the Project; (3) take commercially reasonable actions to suspend all orders and subcontracts; (4) protect and maintain the work on the Project; (5) otherwise mitigate DWP's costs and liabilities for the areas of work suspended. The ISO will not invoice DWP pursuant to Section 4(c) of this Agreement for any milestone payment following the issuance of a Notice to Suspend Work. To the extent a Notice of Resolution is issued pursuant to Section 2(b), the Notice to Suspend Work in effect at the time shall be deemed withdrawn and the ISO shall be entitled to invoice DWP for any milestone completed as specified in Section 4(c) of this Agreement and DWP shall pay such invoice pursuant to Section 4.

(d) Any time after thirty (30) days from the date of a Notice of Intent to Terminate under Section 2(b) issued by either Party, and prior to the date of a Notice of Resolution, the ISO may terminate this Agreement by providing written notice to DWP that it is terminating this Agreement ("Termination Notice") effective immediately. The ISO may terminate this Agreement under the terms of this Section 2(d) at its sole discretion.

(e) Any time after 30 days from the date of the Notice of Intent to Terminate under Section 2(b), issued by either Party, and prior to the date of a Notice of Resolution, DWP may terminate this Agreement by providing written notice to the ISO

that it is terminating this Agreement ("Termination Notice") effective immediately. DWP may terminate this Agreement under the terms of this Section 2(e) at its sole discretion.

(f) In the event this Agreement is terminated by either or both of the Parties pursuant to its terms, this Agreement will become wholly void and of no further force and effect, without further action by either Party, and the liabilities and obligations of the Parties hereunder will terminate, and each Party shall be fully released and discharged from any liability or obligation under or resulting from this Agreement as of the date of the Termination Notice provided in Section 2(d) or 2(e), as applicable, notwithstanding the requirement for the ISO to submit the filing specified in Section 2(g).

Notwithstanding the foregoing, the rights and obligations set forth in Sections 5 and 7(n) shall survive the termination of this Agreement and remain in full force and effect as specified in Section 5, and any milestone payment obligation pursuant to Section 4(c) that arose prior to the Termination Notice in accordance with Section 2(d) or 2(e) shall survive until satisfied or resolved in accordance with Section 10.

(g) Although DWP is exempt from FERC jurisdiction pursuant to 16 U.S.C §824(f), DWP acknowledges that the ISO is required to file a timely notice of termination with FERC; and such acknowledgement by DWP does not deem a waiver of said exemption.

3. Implementation Scope and Schedule.

(a) The Parties shall complete the Project as described in Exhibit A, subject to modification only as described in Section 4(e) below.

(b) The Parties shall undertake the activities described in Exhibit A with the objective of completing the Project and implementing the EIM no later than April 1, 2019, including all milestones listed under Exhibit A for the date the implementation is to be completed, subject to modification only as described in Section 3(c) below.

(c) Either Party may propose a change in Exhibit A or the April 1, 2019 date to the other Party. If a Party proposes a change in Exhibit A or the April 1, 2019 date, the Parties shall negotiate in good faith to attempt to reach agreement on the proposal and any necessary changes in Exhibit A and any other affected provision of this Agreement, provided that any change in Exhibit A, or any change to the April 1, 2019 date, must be mutually agreed to by the Parties. The agreement of the Parties to a change in Exhibit A, or a change to the date the implementation is to be completed, shall be memorialized in a revision to Exhibit A, which will then be binding on the Parties and shall be posted on the internet web sites of the ISO and DWP, without the need for execution of an amendment to this Agreement. Changes that require revision of any provision of this Agreement other than Exhibit A shall be reflected in an executed amendment to this Agreement. Without waiving any rights or exemptions, the Parties acknowledge that the ISO is required to file this Agreement with FERC for acceptance.

(d) At least once per calendar month during the Term, the Parties' Designated Executives, or their designees, will meet telephonically or in person (at a mutually

agreed to location) to discuss the status of the performance of the tasks necessary to achieve the milestones in Exhibit A and the continued appropriateness of Exhibit A to ensure that the Project can meet the April 1, 2019 date. For purposes of this section, "Designated Executive" shall mean the individual identified in Section 7(g), or her or his designee or successor.

4. Implementation Charges, Invoicing and Milestone Payments.

(a) As itemized in Section 4(c) below, DWP shall pay the ISO a fixed fee of \$925,000 for costs incurred by the ISO to implement the Project ("Implementation Fee"), subject to completion of the milestones specified in Section 4(c) and subject to adjustment only as described in Section 4(b).

(b) The ISO will provide prompt written notice to DWP when the sum of its actual costs through the date of such notice and its projected costs to accomplish the balance of the Project exceed the Implementation Fee. The Implementation Fee shall be subject to adjustment only by mutual agreement of the Parties if the Parties agree to a change in Exhibit A, or a change to the date the implementation is to be completed, in accordance with Section 3(c) and the Parties agree that an adjustment to the Implementation Fee is warranted in light of such change; provided, however, the cost of additional instructor-led training of the ISO and EIM courses beyond that which is provided for in this Agreement shall not exceed \$5,000 per day plus reasonable travel expenses.

(c) Upon completion of the milestones identified in Exhibit A, the ISO shall invoice DWP for the Implementation Fee as follows:

- i. \$155,000 upon the Effective Date as further described in Section 1 of this Agreement and Exhibit A as Milestone 1;
- ii. \$155,000 upon deployment into the ISO test environment of the full network model database that includes the topology of the DWP system as further described in Exhibit A as Milestone 2;
- iii. \$155,000 upon ISO promotion of market network model including DWP area to non-production system with DWP connection and data exchange data in advance of market simulation as further described in Exhibit A as Milestone 3;
- iv. \$155,000 upon commencement of EIM market simulation as further described in Exhibit A as Milestone 4;
- v. \$155,000 upon start of parallel operations as further described in Exhibit A as Milestone 5; and

- vi. \$150,000 upon the date the implementation is completed as further described in Exhibit A as Milestone 6.

(d) Following the completion of each milestone identified in Section 4(c)(i) through (v), the ISO will deliver to DWP an invoice which will show the amount due, together with reasonable documentation supporting the completion of the milestone being invoiced. DWP shall pay the invoice no later than ninety (90) days after the date of receipt. Any milestone payment past due will accrue interest, per annum, calculated in accordance with the methodology specified for interest in the FERC regulations at 18 C.F.R. § 35.19a(a)(2)(iii) (the "FERC Methodology"), except that interest will be compounded annually. Either Party shall have sole discretion at the completion of, and payment for in the case of DWP, each milestone identified in Section 4 (c) to terminate the Agreement with ten (10) days notice to other Party. After expiration of this notice period, the Parties may terminate this Agreement pursuant to the termination procedures in Section 2.

(e) If a milestone has not been completed as described in Section 4(c)(i), (ii), (iii), (iv), or (v) and in Exhibit A by the date specified therein, as Exhibit A may have been modified in accordance with Section 3(c), the Parties shall negotiate in good faith an agreed upon change to the Project Delivery Dates (as defined in Exhibit A) consistent with Section 3(c) such that the timing of milestone payments in Section 4(c) can be adjusted to correspond to the updated Exhibit A.

(f) If DWP disputes any portion of any amount specified in an invoice delivered by the ISO in accordance with Section 4(c), DWP shall pay the amount of the invoice not in dispute when due and identify the disputed amount. Any disputed amount shall be resolved pursuant to the provisions of Section 10. Upon resolution of the dispute pursuant to Section 11 and it has been determined and mutually agreed to by both Parties that disputed amount is correct DWP shall promptly pay the amount of the underpayment to the ISO. Any underpayment shall include interest calculated in the manner prescribed for calculating interest in Section 4(d) for the period from the date of underpayment, or incorrect allocation, until such amount has been paid.

(g) All costs necessary to implement the Project not provided for in this Agreement shall be borne separately by each Party, which in the case of the ISO will be recovered through rates as may be authorized by its regulatory authorities.

(h) All milestone payments required to be made under the terms of this Agreement shall be made to the account or accounts designated by the Party which the milestone payment is owed, by wire transfer (in immediately available funds in the lawful currency of the United States).

5. Confidentiality.

(a) All written or oral information received from the other Party in connection with this Agreement (but not this Agreement after it is filed with FERC) necessary to complete the Project and marked or otherwise identified at the time of communication

by such Party as containing information that Party considers commercially sensitive or confidential shall constitute "Confidential Information" subject to the terms and conditions herein.

(b) If DWP publicly releases DWP's Confidential Information in connection with a public process or a regulatory filing, or if the ISO publicly releases the ISO's Confidential Information in connection with a public process or a regulatory filing, then the information released shall no longer constitute Confidential Information; provided, however, that Confidential Information disclosed under seal (or in such other manner as to be treated confidentially) in connection with a regulatory filing shall retain its status as Confidential Information under this Agreement. In addition, Confidential Information does not include information that (i) is or becomes generally available to the public other than as a result of disclosure by either Party, its officers, directors, employees, agents, or representatives; (ii) is or becomes available to such Party on a non-confidential basis from other sources or their agents or representatives when such sources are not known by such Party to be prohibited from making the disclosure; (iii) is already known to such Party or has been independently acquired or developed by such Party without violating any of such Party's obligations under this Section 5; (iv) is the subject of a mutual written agreement between the Parties, including an agreement evidenced through an exchange of electronic or other communications, with regard to information for discussion at any stakeholder meetings or during the stakeholder process or with any regulatory authority; or (v) is the subject of a mutual written agreement between the Parties, including an agreement evidenced through an exchange of electronic or other communications, to allow for such disclosure and designation as non-confidential or public information on a case-by-case basis in accordance with Section 9 of this Agreement.

(c) The Confidential Information will be kept confidential by each Party and each Party agrees to protect the Confidential Information using the same degree of care, but no less than a reasonable degree of care, as a Party uses to protect its own confidential information of a like nature. Notwithstanding the preceding sentence, a Party may disclose the Confidential Information or portions thereof to those of such Party's officers, employees, contractors and attorneys who need to know such information for the purpose of analyzing or performing an obligation related to the Project. Notwithstanding the foregoing, a Party is not authorized to disclose such Confidential Information to any officers, employees, contractors or attorneys without (i) informing such officer, employee, contractor or attorney of the confidential nature of the Confidential Information and (ii) ensuring that such officer, employee, contractor or attorney is subject to confidentiality duties or obligations to the applicable Party that are no less restrictive than the terms and conditions of this Agreement. Each Party will be liable for any disclosure of Confidential Information not permitted by this Agreement.

(d) In the event that a Party is required by a court of competent jurisdiction or governmental regulatory authority (by law, rule, regulation, order, deposition, interrogatory, request for documents, data request issued by a governmental regulatory authority, subpoena, civil investigative demand or similar request or process), or by law to disclose any of the Confidential Information, such Party shall (to the extent legally

permitted) provide the other Party with prompt written notice of such requirement. The Party subject to the requirement shall allow the other Party a reasonable amount of time prior to making the required disclosure so that the other Party may seek a protective order or other appropriate remedy and/or waive compliance with the terms of this Section 5, and if such Party is not legally permitted to provide the other Party with notice, such Party shall seek a protective order or other appropriate remedy to protect the Confidential Information to be furnished. In the event that such protective order or other remedy is not obtained, the disclosing Party hereby waives compliance with the provisions hereof with respect to such Confidential Information. In such event, the Party compelled to disclose shall (i) furnish only that portion of the Confidential Information which, in accordance with the advice of its own counsel (which may include internal counsel), is legally required to be furnished, and (ii) exercise reasonable efforts to obtain assurances that confidential treatment will be accorded the Confidential Information so furnished.

(e) Each Party is entitled to seek equitable relief, by injunction or otherwise, to enforce its rights under this Section 5 to prevent the release of Confidential Information without bond or proof of damages, and may seek other remedies available at law or in equity for breach of this provision.

(f) Upon written request by a Party, the other Party shall promptly return to the requesting Party or destroy all Confidential Information it received, including all copies of its analyses, compilations, studies or other documents prepared by or for it, that contain the Confidential Information in a manner that would allow its extraction or that would allow the identification of the requesting Party as the source of the Confidential Information or inputs to the analysis. Notwithstanding the foregoing, neither Party shall be required to destroy or alter any computer archival and backup tapes or archival and backup files (collectively, "Computer Tapes"), provided that such Computer Tapes shall be kept confidential in accordance with the terms of this Agreement.

(g) Nothing in this Agreement shall be deemed to restrict either Party from engaging with third parties with respect to any matter and for any reason, specifically including the EIM, provided Confidential Information is treated in accordance with this Section 5.

(h) This Section 5, Confidentiality, applies for ten years after the Termination Date or the date of any expiration or termination of this Agreement.

(i) The ISO acknowledges that DWP is a department of the City of Los Angeles, California and as such that DWP is subject to the California Public Records Act and the Ralph M. Brown Act, Cal. Gov.'t Code §§ 54950 et seq. ("Brown Act"). In the event DWP in its sole discretion concludes that a conflict exists between a confidentiality obligation in this Section 5 of the Agreement and an obligation of DWP under the California Public Records Act or the Brown Act, the California Public Records Act or the Brown Act shall prevail. DWP will promptly notify the ISO if DWP concludes that such a conflict arises.

6. Limitation of Liability; Indemnity.

(a) The Parties acknowledge and agree that, except as otherwise specified in Sections 4(f) and 5(e) of this Agreement, neither Party shall be liable to the other Party for any claim, loss, cost, liability, damage or expense, including any direct damage or any special, indirect, exemplary, punitive, incidental or consequential loss or damage (including any loss of revenue, income, profits or investment opportunities or claims of third party customers), arising out of or directly or indirectly related to such other Party's decision to enter into this Agreement, such other Party's performance under this Agreement, or any other decision by such Party with respect to the Project.

(b) Each Party shall hold harmless the other Party and its officers, directors, employees, agents, from and against all claims, judgments, losses, liabilities, costs, expenses (including reasonable attorneys' fees) and damages for personal injury, death or property damage claimed by third-parties and related to this Agreement ("Third-Party Claim").

7. General Provisions.

(a) This Agreement, including Exhibit A to this Agreement, constitutes the entire agreement between the Parties, and supersedes any prior written or oral agreements or understandings between the Parties, relating to the subject matter of this Agreement; provided, that nothing in this Agreement shall limit, repeal, or in any manner modify the existing legal rights, privileges, and duties of each of the Parties as provided by any other agreement between the Parties, or by any statute or any other law or applicable court or regulatory decision by which such Party is bound.

(b) This Agreement may not be amended except in writing hereafter signed by both of the Parties; provided, however, the Parties may mutually agree to changes in Exhibit A in accordance with Section 4(e).

(c) Any waiver by a Party to this Agreement of any provision or condition of this Agreement must be in writing signed by the Party to be bound by such waiver, shall be effective only to the extent specifically set forth in such writing and shall not limit or affect any rights with respect to any other or future circumstance.

(d) This Agreement is for the sole and exclusive benefit of the Parties and shall not create a contractual relationship with, or cause of action in favor of, any third party.

(e) Neither Party shall have the right to voluntarily assign its interest in this Agreement, including its rights, duties, and obligations hereunder, without the prior written consent of the other Party, which consent may be withheld by the other Party in

its sole and absolute discretion. Any assignment made in violation of the terms of this Section 8(e) shall be null and void and shall have no force and effect.

(f) In the event that any provision of this Agreement is determined to be invalid or unenforceable for any reason, in whole or part, the remaining provisions of this Agreement shall be unaffected thereby and shall remain in full force and effect to the fullest extent permitted by law, and such invalid or unenforceable provision shall be replaced by the Parties with a provision that is valid and enforceable and that comes closest to expressing the Parties' intention with respect to such invalid or unenforceable provision.

(g) Whenever this Agreement requires or provides that (i) a notice be given by a Party to the other Party or (ii) a Party's action requires the approval or consent of the other Party, such notice, consent or approval shall be given in writing and shall be given by personal delivery, by recognized overnight courier service, or by certified mail (return receipt requested), postage prepaid, to the recipient thereof at the address given for such Party as set forth below, or to such other address as may be designated by notice given by any Party to the other Party in accordance with the provisions of this Section 7(g):

If to DWP:

Department of Water and Power
111 Noth Hope St., Rm. 1246
Los Angeles, California 91723
Attention: Eric Montag, Power Engineering Manager
E-mail: eric.montag@ladwp.com

Alternate recipients for LADWP

Simon Zewdu, Power Engineering Manager
E-mail: simon.zewdu@ladwp.com

Jan Lukjaniec, Manager of Transmission Contracts
E-mail: jan.lukjaniec@ladwp.com

If to the ISO:

California Independent System Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Attention: Petar Ristanovic, Vice President, Technology
E-mail: PRistanovic@caiso.com

Each notice, consent or approval shall be conclusively deemed to have been given (i) on the day of the actual delivery thereof, if given by personal delivery, or overnight delivery, or (ii) date of delivery shown on the receipt, if given by certified mail (return

receipt requested). It is the responsibility of each Party to provide, in accordance with this Section, written notice to the other Party of any necessary change in the contact or address information herein.

(h) This Agreement may be executed in one or more counterparts (including by facsimile or a scanned image), each of which when so executed shall be deemed to be an original, and all of which shall together constitute one and the same instrument.

(i) Nothing contained in this Agreement shall be construed as creating a corporation, company, partnership, association, joint venture or other entity with the other Party, nor shall anything contained in this Agreement be construed as creating or requiring any fiduciary relationship between the Parties. No Party shall be responsible hereunder for the acts or omissions of the other Party.

(j) The decision to execute an EIM service agreement and participate in the EIM remains within the sole discretion of DWP and the decision whether to continue to offer EIM services (subject to Sections 1(c) and 2) remains within the sole discretion of the ISO.

(k) Nothing in this Agreement shall preclude a Party from exercising any rights or taking any action (or having its affiliates take any action) with respect to any other project, provided that neither Party may use any Confidential Information acquired in connection with this Agreement for any other purpose but for performing its obligations under this Agreement.

(l) Nothing contained in this Agreement grants or confers to either Party any license or right to any intellectual property and this Agreement does not limit the right of either Party to contest the scope, validity, or alleged infringement of any intellectual property.

(m) Unless otherwise expressly provided, for purposes of this Agreement, the following rules of interpretation shall apply: (i) any reference in this Agreement to gender includes all genders, and the meaning of defined terms applies to both the singular and the plural of those terms; (ii) the insertion of headings are for convenience of reference only and do not affect, and will not be utilized in construing or interpreting, this Agreement; (iii) all references in this Agreement to any "Section" are to the corresponding Section of this Agreement unless otherwise specified; (iv) words such as "herein," "hereinafter," "hereof," and "hereunder" refer to this Agreement (including Exhibit A to this Agreement) as a whole and not merely to a subdivision in which such words appear, unless the context otherwise requires; (v) the word "including" or any variation thereof means "including, without limitation" and does not limit any general statement that it follows to the specific or similar items or matters immediately following it; (vi) the Parties have participated jointly in the negotiation and drafting of this Agreement and, in the event an ambiguity or question of intent or interpretation arises, this Agreement shall be construed as jointly drafted by the Parties and no presumption or burden of proof favoring or disfavoring any Party will exist or arise by virtue of the authorship of any provision of this Agreement; and (vii) the term "sole discretion" means

with respect to any determination made by a Party, the sole and absolute discretion of that Party, for any reason or no reason, without regard to any standard of reasonableness or other standard which shall not be challenged by the other Party.

(n) The provisions of Sections 2(f), 5, 6, 7(f), 7(k), 7(l), 8 and 10 will survive any termination of this Agreement.

8. Governing Law. This Agreement shall be governed by, and construed and interpreted in accordance with, the laws of the State of California without regard to its principles of conflicts of laws.

9. Communication. The Parties shall develop a communication protocol for the dissemination of material information associated with the Project, which shall be approved by DWP and the ISO. Pursuant to the communication protocol, the individual identified in Section 7(g), or their designee or successor, shall provide reasonable advance notice to the other Party of planned press releases, public statements, and meetings with the public or governmental authorities in which material information concerning the Project or DWP's involvement will be shared. The Parties shall mutually consult with each other as provided in the communication protocol prior to making such public statements or disclosures; provided that nothing herein shall prevent, limit, or delay either Party from making any disclosure required by applicable law or regulation, subject to the provisions of Section 5 hereof. In the event either Party engages in material unplanned communications about the Project that otherwise should have been subject to this Section and the communication protocol, such Party shall provide notice to the other Party as promptly as possible of the nature and content of such communication.

10. Dispute Resolution and Venue. Unless otherwise provided herein, each of the provisions of this Agreement shall be enforceable independently of any other provision of this Agreement and independent of any other claim or cause of action. In the event of any dispute arising under this Agreement, the Parties shall first attempt to resolve the matter through direct good faith negotiation between the Parties, including a full opportunity for escalation to executive management within the Parties' respective organizations. If the Parties are unable to resolve the issue within thirty (30) days after such escalation of the dispute, then the Parties may thereafter exercise their right to enforce this Agreement. For matters subject to FERC jurisdiction, either Party shall have the right to file a complaint under Section 206 of the Federal Power Act. For all other matters, the Parties may bring an action before any State or Federal court in the County of Los Angeles in the State of California and for such actions irrevocably agree to submit to the exclusive venue of such courts in the State of California and waive any defense of *forum non conveniens*.

11. Third Party Agreements. Subject to the provisions of Section 5, the Parties may engage in discussions with third parties, either jointly or unilaterally, to facilitate the Project. Each Party may adopt or modify tariffs or enter into or modify binding agreements between such Party and third parties to implement the approved terms and conditions of the Project or EIM as necessary and appropriate.

12. Compliance. This Agreement is not intended to modify, change or otherwise amend the Parties' functional responsibilities associated with compliance with WECC and NERC Reliability Standards; provided, however, the Parties may enter into separate mutually agreed to arrangements to clarify roles and responsibilities associated with compliance with WECC and NERC Reliability Standards in respect of this Agreement.

*****REMAINDER OF PAGE INTENTIONALLY LEFT BLANK*****

APPROVED AND FORWARDED:
[Signature]

[Signature]
[Title]
[Date]

IN WITNESS WHEREOF, each of the Parties has caused its duly authorized officer to execute this Implementation Agreement as of the date first above written.

DEPARTMENT OF WATER AND POWER
BY THE CITY OF LOS ANGELES BY
BOARD OF WATER AND POWER COMMISSIONERS

By: *David H. Wright* *for 5/24/17*
Name: David H. Wright
Title: General Manager

And: *Barbara E. Moschos*
Name: Barbara E. Moschos
Title: Board Secretary

California Independent System Operator Corporation

By: *Petar Ristanovic*
Name: Petar Ristanovic
Title: Vice President, Technology

017190
AUTHORIZED BY RES.
MAR 21 2017

APPROVED AS TO FORM AND LEGALITY
MICHAEL N. FEUER, CITY ATTORNEY

MAR 17 2017
BY *Felix Lebron*
FELIX LEBRON
DEPUTY CITY ATTORNEY

EXHIBIT A: PROJECT SCOPE AND SCHEDULE

The Project consists of the activities and delivery dates identified in this Exhibit A, implemented in accordance with the Agreement. The Parties have included a schedule for the date the implementation is to be completed to coordinate their efforts required for completion of the Project on a milestone track. Each of the Project activities below shall include (to the greatest extent possible at each respective stage of the Project) analysis and implementation actions sufficient to allow DWP to properly attribute and assign costs to its Balancing Authority Area and Transmission Customers.

The Parties understand that input received from stakeholders during the course of implementing the Project, conditions imposed or questions raised in the regulatory approval process, and the activities of the Parties in implementing the Project may cause the Parties to determine that changes in the Project are necessary or desirable. Accordingly, this Exhibit A may be modified in accordance with Section 3(c) of the Agreement.

Each Party is responsible for performing a variety of tasks necessary to achieve the milestones on the scheduled dates specified in the table below ("Project Delivery Dates") and shall plan accordingly. The Parties shall communicate and coordinate as provided in the Agreement to support the planning and execution to complete the Project.

Project Scope and Milestones	Project Delivery Dates supporting April 2019
Detailed Project Management Plan – The Parties will develop and initiate a final project management plan that describes specific project tasks each Party must perform, delivery dates, project team members, meeting requirements, and a process for approving changes to support completion of the Project.	June 2017
<ul style="list-style-type: none"> • Milestone 1 – This milestone is completed when the Agreement has been executed and made effective in accordance with Section 1 of the Agreement. 	July 2017
Full Network Model Expansion – Full Network Model expansion for DWP and EMS/SCADA, including, proof of concept of export/import of EMS data; complete model into the ISO test environment; complete validation for all SCADA points from DWP; testing of the new market model; and validation of the Outage and State Estimator applications.	Dec 2017

<ul style="list-style-type: none"> • Milestone 2 - This milestone is completed upon modeling DWP into the ISO Full Network Model through the EMS using the ISO's network and resource modeling process. 	July 2018
<p>System Implementation and Connectivity Testing – System requirements and software design, the execution of necessary software vendor contracts, development of Market network model including DWP, allow DWP to connect to a non-production test system.</p>	Aug 2018
<ul style="list-style-type: none"> • Milestone 3 - ISO to promote market network model including DWP area to non-production system as an internal test prior to allowing DWP to connect and exchange data in advance of Market Simulation. 	Sept 2018
<p>Construction, Testing and Training in Preparation for Market Simulation - This task includes IT infrastructure upgrades, security testing, training, Day-in-life simulation, and functional testing.</p>	Sept 2018
<ul style="list-style-type: none"> • Milestone 4a – Start of Connectivity to ISO Testing in a non-production test environment, Interface testing with minimum data requirements and functional integration testing. ISO will make the test environment available for LADWP connectivity testing prior to the delivery date assuming LADWP has provided all requisite data and non-production system availability does not conflict with ISO production system Spring Release schedule. 	Sept 2018
<ul style="list-style-type: none"> • Milestone 4b –Begin 'Day in the Life' scenario testing 	Oct 2018
<ul style="list-style-type: none"> • Milestone 4c – Begin Structured Market simulation 	Nov 2018
<p>Activate Parallel Operations - Beginning two months prior to the first market trade date for DWP, the ISO will activate a parallel operation environment to practice production grade systems integration as well as market processes and operating procedures in anticipation of the impending DWP activation as an EIM Entity and to confirm compliance with the EIM readiness criteria set forth in the ISO tariff.</p>	Jan 2019
<ul style="list-style-type: none"> • Milestone 5 – Start of parallel operations 	Feb 2019

<p>System Deployment and Go Live – Implementing the Project and going live will include resource registration, operating procedures and updates, execution of service agreements, completion of the DWP tariff process, applicable board approvals, the filing and acceptance of service agreements and tariff changes with FERC, and completion and filing of a readiness criteria certification in accordance with the ISO tariff.</p>	<p>Mar 2019</p>
<ul style="list-style-type: none"> • Milestone 6 – This milestone is complete upon the first production DWP energy imbalance market trade date. 	<p>April 1,2019</p>

Attachment B – Executed Declaration of April D. Gordon
Energy Imbalance Market Implementation Agreement between
Los Angeles Department of Water & Power and the
California Independent System Operator Corporation

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

**California Independent System) Docket No. ER17-____-000
Operator Corporation)**

**DECLARATION OF APRIL D. GORDON
ON BEHALF OF THE
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION**

I, April D. Gordon, state as follows:

1. I am employed as Director of Financial Planning and Procurement for the California Independent System Operator Corporation (the "CAISO"). My business address is 250 Outcropping Way, Folsom, California 95630. As part of my duties at the CAISO, I oversee the development of the CAISO's grid management charge. I also oversee the CAISO's budget preparation and management; long term financial planning; corporate procurement; and contract management. I received an undergraduate degree in Business Administration with a major in accounting from the California State University of Sacramento. Prior to my current position I was a Financial Analyst at the CAISO from 2010 - 2014. Prior to the CAISO I was a Senior Accountant at the California Association of Hospitals and Health Systems (2003 - 2010) and an Accountant at Enterprise Resource Group (1999 – 2003).
2. The purpose of my declaration is to provide cost support for the fixed implementation fee that the CAISO proposes to charge the City of Los Angeles, acting by and through the Department of Water and Power

("DWP") for the development and implementation of the energy imbalance market under the Implementation Agreement that the CAISO is filing today.

The Implementation Fee

3. The implementation fee is based on the CAISO's estimate of the start-up cost of implementing an energy imbalance market that could ultimately accommodate the entire Western Electric Coordinating Council ("WECC"), should the WECC utilities all choose to participate.
4. As explained below, the CAISO estimates that the total start-up cost for the energy imbalance market would be \$19.6 million. (Throughout this declaration, I am rounding millions to a single decimal point.) The CAISO would not incur this entire cost up front, however. Rather, the CAISO would incur the costs incrementally as the imbalance energy activity from additional balancing authority areas are incorporated into the market.
5. This total estimated cost comprises eleven components: licenses, \$12.1 million; energy management system upgrades, \$1.0 million; data storage, \$2.0 million; hardware upgrades, \$500,000; production software modification, \$1.0 million; network configuration and mapping, \$500,000; integration, \$500,000; testing, \$1.5 million; system performance tuning, \$250,000; training and operations readiness, \$150,000; and project management, \$100,000.

Licenses

6. To estimate the license costs, the CAISO used the costs for its existing licenses for software systems development for scheduling infrastructure, integrated forward market, real-time market and market quality system, and settlements software. The total base fees for the contracts covering these services are \$4.5 million. The fees in certain cases include a provision for a fee increase for each specified increment of additional CAISO peak demand. The details for these contracts are confidential, so I will need to describe the process without identifying the specific data.
7. Because the information on peak loads was not readily available, the CAISO decided to estimate costs by applying the 10% incremental cost to annual net energy for loads. The definition of “net energy for load” is from the July 20, 2006 Commission Order Certifying North American Electric Reliability Corporation as the Electric Reliability Organization.¹ It comprises imports plus generation less exports with specific exclusions. Net energy for load is reported to WECC annually by each balancing authority area and used by Peak Reliability to allocate its reliability costs to each balancing authority area. The net energy for load (which I will hereafter refer to as load) for each balancing authority area is included with Peak Reliability’s billing to the balancing authority area for reliability costs. It is the most consistent and available data on all balancing authority areas in WECC. The CAISO used the 2013 load, which was

¹ *North American Electric Reliability Corporation*, 116 FERC ¶ 61,062 (2006), at fn. 73.

included in the 2015 billing, for this allocation. The 2013 annual load for the CAISO was 232.3 million MWh. Using this data, the CAISO estimated the increment in CAISO load that would occasion a specific amount of additional license costs.

8. The WECC load, exclusive of the CAISO, was 636.2 million MWh. The CAISO calculated that this is a particular multiple of the load increments used in the license contracts. The CAISO calculated the product of this multiple and the increased costs associated with the contractual increment. Using this methodology, the CAISO estimates the license costs for implementing a WECC-wide energy imbalance market would be 27 times \$450,000, or \$12.15 million.

Data Storage

9. The CAISO will need to procure additional data storage to account for the expanded data requirements associated with integrating all WECC balancing authority areas into CAISO systems. The storage will provide the required highly available and redundant storage as well as cover long-term archiving.
10. The storage for current CAISO production requires 200 terabytes at a cost of approximately \$7.5 million. The CAISO estimates that it will require a 10% increase for additional storage and faster retrieval, which would equate to \$750,000 at the same rate. Additional cabinets and ports will cost \$500,000 and licensing for databases, monitoring, storage, backups, etc. will be \$750,000, for a total additional cost of \$2.0 million.

Hardware Upgrades

11. Hardware upgrades will be necessary to meet the market timeline requirements, including 5-minute dispatch. These upgrades include servers and supporting network systems to provide the needed availability, reliability, and performance.
12. The CAISO currently uses about 100 servers. The CAISO estimates that it will need an additional 10%, or ten servers, with an estimated cost of \$30,000 each, for a total of \$300,000. The CAISO also estimates \$200,000 of networking and data acquisition costs for a total hardware upgrade cost of \$500,000.

Network Configuration and Mapping, Integration, System Performance Tuning.

13. The CAISO will need to include the other energy imbalance market balancing authority areas into the CAISO's network model and market model. It must also (1) integrate system interfaces to enable data exchange between systems to meet business and system requirements and (2) measure and analyze performance in a non-production environment and mitigate any identified performance issues to ensure that production performance is as expected.
14. The CAISO project management team determined the costs of these activities in consultation with the relevant directors and managers of the affected departments by estimating the level of effort required based on an extrapolation from the level of effort necessary for similar past activities. The staff consulted has extensive experience in estimating costs in this

area. In particular, the CAISO in 2009 completed a \$200 million implementation of a new market design and annually thereafter has carried out software implementation, modification and redesign projects averaging about \$20 million each.

Energy Management System Upgrades, Production Software Modification, and Testing

15. To build the energy imbalance market for the entire WECC region, the CAISO will need to improve the existing energy management system, which currently supports the CAISO control area with a peak demand of 50,000 MW. These system improvements would enable the CAISO to integrate the imbalance energy for the additional balancing authority areas within the four-second data resource time.
16. The CAISO will also require production software modifications to support new inputs and outputs associated with the energy imbalance market, including base schedules.
17. Following the system integration described above, the CAISO will need to conduct testing to ensure that it meets all energy imbalance market business and system requirements.
18. The CAISO project management team determined the costs of these activities in consultation with the relevant directors and managers of the affected departments by estimating the resources (contractors and consultants) needed based on an extrapolation from the resources that the CAISO has required for recent software changes and modifications.

As described above, the staff consulted has extensive experience in estimating costs in this area.

Training and Operations Readiness, and Project Management

19. Similarly, CAISO project management personnel determined the costs of these activities in consultation with the relevant directors and managers of the affected disciplines by estimating the level of effort required based on an extrapolation from the level of effort necessary for similar past activities. As described in paragraph 14 above, the staff consulted has extensive experience in estimating costs in this area.

Derivation of Implementation Fee

20. Having determined that the total cost of implementing the WECC-wide energy imbalance market would be \$19.6 million, the CAISO proceeded to develop a rate that could be used for individual participants. To do so, the CAISO divided the \$19.6 million total cost by the 636.2 million MWh of non-CAISO net energy for load in the WECC, for a rate of \$0.031/MWh.
21. Finally, to determine the implementation fee for DWP as established in the Implementation Agreement, the CAISO applied the rate to the DWP most recently reported net energy for load for 2014 of 29,696 million MWh, for a rounded total of \$925,000.

Comparison of DWP Fee to Generic Rate

22. Although the CAISO intends to base the implementation fee on a generic rate that would reasonably allocate the costs of a WECC-wide energy imbalance market to all potential participants, the CAISO thought it

worthwhile to compare DWP’s fee based on the \$0.031/MWh rate with an estimate of the specific costs of expansion of the existing energy imbalance market to include DWP. Using the same process described above, the CAISO estimated the costs (in thousands) that appear in the following table:

Component	Amount (in thousands)
EMS system improvements	\$ 50
Production software modifications	200
Network configuration and mapping	100
Integration	100
Testing	100
System performance tuning	100
Training and operational readiness	75
Project management	200
Total	\$925

23. As is readily apparent, although the total costs are the same, the proportion of the total DWP specific costs that each component represents differs from proportion of the WECC-wide costs that the component represents. For example, the CAISO does not anticipate incurring any additional data storage costs or software licensing fees, but to integrate DWP, the CAISO will need to incur production software modification costs and integration costs up front. Although the DWP specific costs are the same as the DWP fee based on the generic rate, the CAISO cannot determine at this time if this will be the case with regard to all future participants. Nonetheless, the CAISO has concluded that the generic fee

represents the most equitable methodology of allocating the costs of a WECC-wide energy imbalance market.

I hereby certify under penalty of perjury that the foregoing statements are true and correct to the best of my knowledge, information, and belief:

Executed on: July 21, 2017

/s/ April D. Gordon
April D. Gordon