



August 16, 2019

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

**Re: California Independent System Operator Corporation
Filing of CAISO Rate Schedule No. 5244
Docket No. ER19-____-000**

Dear Secretary Bose:

The California Independent System Operator Corporation (“CAISO”) submits for filing and acceptance an agreement dated May 13, 2019, between the CAISO and the Turlock Irrigation District (“Turlock”) (“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 Turlock, pursuant to the CAISO’s Energy Imbalance Market (“EIM”) tariff. Under the Implementation Agreement, Turlock 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 16, 2019, so that the extension of the real-time energy market to include Turlock may proceed towards implementation on April 1, 2021.²

I. Background

The EIM provides other balancing authority areas the opportunity 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 two to join the Energy Imbalance Market. The CAISO’s market rules went into effect on October 24, 2014, for the first trading day November 1, 2014.

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; see *also* CAISO Tariff section 29.2(b).

The EIM has continued to develop and attract the interest of a diverse array of participants throughout the Western Interconnection. NV Energy joined on December 1, 2015, Puget Sound Energy Inc. and Arizona Public Service Company began participation on October 1, 2016, Portland General Electric Company followed on October 1, 2017, and the Idaho Power Company joined concurrently with Powerex Corp. on April 4, 2018. The Balancing Authority of Northern California commenced EIM participation on April 3, 2019. Also, the Salt River Agricultural Improvement and Power District and the City of Seattle, by and through its City Light Department intend to commence EIM participation in April 2020. NorthWestern Energy, the City of Los Angeles Department of Water and Power, and Public Service Company of New Mexico intend to commence EIM participation in April 2021.³

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 Turlock into the EIM consistent with the identified key milestones and associated payment provisions.⁴ The Implementation Agreement is modeled after implementation agreements previously accepted by the Commission and, therefore, adopts substantially similar provisions to those which have been filed and accepted by the Commission.⁵

Under the Implementation Agreement, the CAISO and Turlock must complete a variety of project tasks necessary for implementation by April 1, 2021. The parties chose this date to provide sufficient time for completion of all expected activities based on the size, complexity, and compatibility of Turlock, including filing a certification of readiness with the Commission. The specific tasks may be modified by mutual agreement of the parties.⁶

³ EIM participation materials are available at <https://www.westerneim.com/Pages/About/default.aspx>.

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

⁵ 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); Letter Order in Docket No. ER17-1300-000 (May 18, 2017); Letter Order in Docket No. ER17-2120-000 (September 7, 2017); *Cal. Indep. Sys. Operator Corp.*, 160 FERC ¶ 61,058 (September 7, 2017); Letter Order in Docket No. ER17-2259-000 (November 16, 2017), and Letter Order in Docket No. ER19-1080-000 (April 5, 2019). The Turlock EIM Implementation Agreement includes several provisions specific to publicly owned utilities that were accepted by the Commission in previous orders.

⁶ Implementation Agreement, Section 3.

The Implementation Agreement specifies that Turlock will pay the CAISO a fixed implementation fee of \$85,000, 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 Turlock into the EIM. The methodology that the CAISO used to determine the implementation fee for Turlock is the same methodology that the CAISO used to determine all of the previously accepted implementation fees.

The implementation fee represents the incremental costs necessary to incorporate Turlock into the EIM and 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").⁷ 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 data reported to WECC. The CAISO then applied this fee to Turlock's share of the WECC load (exclusive of the CAISO's load) to account for the Turlock implementation fee.

The \$85,000 implementation fee is just and reasonable because it allocates a portion of the overall CAISO EIM costs to Turlock in an amount proportionate to Turlock's share of the benefits that will ensue from the EIM, as measured by usage. In addition, as explained in Mrs. Gordon's declaration, the

⁷ 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.

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 Turlock. This comparison confirmed that the fee reasonably represents those costs even though only project management costs are triggered by the Turlock implementation, while other costs may be incurred by the CAISO to incorporate other entrants. 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 form the basis of the implementation fee.⁸ This provision allows for appropriate consideration of the allocation of costs associated with incorporation of Turlock into the EIM. At the same time, the requirement for Turlock to agree to any increase in the implementation fee ensures that Turlock'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 Turlock, 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 Turlock into the EIM through the process. 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 30 days in an effort to resolve any differences.⁹ This and other related provisions mean that the parties must work closely together to achieve the goal of implementing Turlock into the EIM in a timely manner.

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).

⁸ 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). PacifiCorp's request for additional scope is the only instance thus far where an amendment of the implementation fee has been necessary.

⁹ Implementation Agreement, Section 2.

III. Next Steps

Following the Commission's acceptance of this filing, the CAISO will incorporate Turlock into the EIM. Turlock's implementation will be subject to the CAISO tariff readiness requirements and the filing of a certificate of readiness with the Commission.¹⁰ 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 Turlock will modify its transmission service agreements in advance of implementation, to the extent necessary to account for the EIM. The CAISO recognizes that Turlock will be working with interested parties to facilitate implementation of the EIM and the CAISO will engage in that effort as Turlock considers it appropriate.

IV. Effective Date

The CAISO requests that the Implementation Agreement be made effective on October 16, 2019.

V. Request for Waivers

The CAISO submits that the filing substantially complies with the requirements of section 35.13 of the Commission's regulations,¹¹ 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.

VI. Service

The CAISO has served copies of this filing upon all parties with scheduling coordinator agreements under the CAISO tariff, Turlock, the California Public Utilities Commission, and the California Energy Commission. In addition, the CAISO has posted the filing on the CAISO website.

¹⁰ See CAISO Tariff, section 29.2(b).

¹¹ 18 C.F.R. § 35.13

VII. Contents of Filing

In addition to this transmittal letter, enclosed for filing is the following:

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

VIII. Correspondence

Pursuant to Rule 203(b)(3) of the Commission's Rules of Practice and Procedure,¹² 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

IX. Conclusion

The CAISO respectfully requests that the Commission accept this filing and permit the Implementation Agreement, CAISO Rate Schedule No. 5244, to be effective October 16, 2019, 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

Attorneys for the California Independent
System Operator Corporation

¹² 18 C.F.R. § 385.203(b)(3).

Attachment A – Executed EIM Implementation Agreement
Turlock Irrigation District and
California Independent System Operator Corporation

**ENERGY IMBALANCE MARKET
IMPLEMENTATION AGREEMENT
May, 2019**

This Implementation Agreement (“Agreement”) is entered into as of May 13 2019, by and between Turlock Irrigation District, a publicly owned irrigation water and electric utility (“Turlock”), and the California Independent System Operator Corporation, a California nonprofit public benefit corporation (“ISO”). Turlock and the ISO are sometimes referred to in the Agreement individually as a “Party” and, collectively, as the “Parties.”

RECITALS

- A. WHEREAS, Turlock has determined there is an opportunity to secure benefits for Turlock’s customers through improved dispatch and operation of Turlock’s generation fleet and through the efficient use and continued reliable operation of existing and future transmission facilities and desires to participate 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 Turlock;
- C. WHEREAS, Turlock 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 may require corresponding revisions to Turlock’s transmission agreements and the execution of amendments to those agreements;
- D. WHEREAS, the ISO acknowledges that Turlock is a non-jurisdictional entity described in section 201(f) of the Federal Power Act, 16 U.S.C. 824(f) and respects Turlock's interest in remaining so;
- 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 Turlock into the EIM (“Project”) on or before April 1, 2021 (“Implementation Date”), or a different date mutually agreed to by the Parties; ; and
- F. WHEREAS, Turlock's decision whether or not to participate voluntarily in the EIM is within Turlock's sole discretion, and Turlock will only participate in the EIM so long as such participation is on a voluntary basis and on terms and conditions acceptable to Turlock, including Turlock'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) business 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, by notifying the other Party in writing ten (10) days prior to said termination.

(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 revisions to the ISO tariff necessary for the commencement of Turlock'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, provided that the rights and obligations set forth in Sections 5 and 6 shall survive the termination of this Agreement and remain in full force and effect as provided therein.

(e) The ISO acknowledges that Turlock is a non-jurisdictional entity described in section 201(f) of the Federal Power Act, (16 U.S.C. 824(f)) and respects Turlock's interest in remaining so. Nothing in this Agreement is intended to make Turlock FERC jurisdictional, nor shall this Agreement be construed or interpreted in a manner that makes Turlock FERC jurisdictional. The ISO will at all times make commercially reasonable efforts to avoid actions that would cause Turlock to become subject to FERC jurisdiction that does not already exist with respect to Turlock's non-jurisdictional status or its operations or assets. Nothing in this Agreement waives or will be deemed to waive, limit or impair to any extent the exemption of Turlock from FERC's jurisdiction under the Federal Power Act or to subject Turlock 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) Except as provided for under Section 1(b), if either the ISO or Turlock seeks to unilaterally terminate this Agreement, it must first notify the other Party in writing of its intent to do so ("Notice of Intent to Terminate") and engage in thirty (30) days of good faith negotiations in an effort to resolve its concerns. If the Parties successfully resolve the concerns of the Party issuing the Notice of Intent to Terminate, 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, Turlock 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; and (5) otherwise mitigate Turlock's costs and liabilities for the areas of work suspended. The ISO will not invoice Turlock 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 Turlock for any milestone completed as specified in Section 4(c) of this Agreement and Turlock 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 Turlock 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 for any reason.

(e) Any time after thirty (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, Turlock may terminate this Agreement by providing written notice to the ISO that it is terminating this Agreement (“Termination Notice”) effective immediately. Turlock may terminate this Agreement under the terms of this Section 2(e) at its sole discretion for any reason.

(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 6 shall survive the termination of this Agreement and remain in full force and effect as specified in Sections 5 and 6, 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 11.

(g) Although Turlock is exempt from the FERC’s jurisdiction, Turlock acknowledges that the ISO may be required to file a timely notice of termination with FERC. The Parties agree that Turlock’s acknowledgement does not constitute 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 the Implementation Date, including all milestones listed under Exhibit A for the Implementation Date, subject to modification only as described in Section 3(c) below.

(c) Either Party may propose a change in Exhibit A or the Implementation Date to the other Party. If a Party proposes a change in Exhibit A or the Implementation 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

Implementation 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 Implementation Date, 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 Turlock, 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 and may be filed by the ISO with FERC for acceptance with respect to the ISO.

(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 Implementation Date. For purposes of this section, "Designated Executive" shall mean the individual identified in Section 8(g), or her or his designee or successor.

4. Implementation Charges, Invoicing and Milestone Payments.

(a) As itemized in Section 4(c) below, Turlock shall pay the ISO a fixed fee of \$90,000 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 Turlock 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 Implementation Date, in accordance with Section 3(c) and the Parties agree that an adjustment to the Implementation Fee is warranted in light of such change.

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

- i. \$15,000 upon the Effective Date as further described in Section 1 of this Agreement and Exhibit A as Milestone 1;
- ii. \$15,000 upon deployment into the ISO test environment of the full network model database that includes the topology of the Turlock system as further described in Exhibit A as Milestone 2;
- iii. \$15,000 upon ISO promotion of market network model including Turlock area to non-production system with Turlock connection and data exchange data in advance of market simulation as further described in Exhibit A as Milestone 3;

- iv. \$15,000 upon commencement of EIM market simulation as further described in Exhibit A as Milestone 4;
- v. \$15,000 upon start of parallel operations as further described in Exhibit A as Milestone 5; and
- vi. \$15,000 upon the Implementation Date as further described in Exhibit A as Milestone 6.

(d) Following the completion of each milestone identified in Section 4(c)(i) through (vi), the ISO will deliver to Turlock an invoice which will show the amount due, together with reasonable documentation supporting the completion of the milestone being invoiced. Turlock shall pay the invoice no later than forty-five (45) 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").

(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 Turlock disputes any portion of any amount specified in an invoice delivered by the ISO in accordance with Section 4(c), Turlock shall pay its total amount of the invoice when due, and identify the disputed amount and state that the disputed amount is being paid under protest. Any disputed amount shall be resolved pursuant to the provisions of Section 11. If it is determined pursuant to Section 11 that an overpayment or underpayment has been made by Turlock or any amount on an invoice is incorrect, then (i) in the case of any overpayment, the ISO shall promptly return the amount of the overpayment (or credit the amount of the overpayment on the next invoice) to Turlock; and (ii) in the case of an underpayment, Turlock shall promptly pay the amount of the underpayment to the ISO. Any overpayment or underpayment shall include interest for the period from the date of overpayment, underpayment, or incorrect allocation, until such amount has been paid or credited against a future invoice calculated in the manner prescribed for calculating interest in Section 4(d).

(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 in this Agreement after the ISO files it 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 Turlock publicly releases Turlock'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 10 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, partners, representatives, attorneys, contractors, advisors, or agents 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, partners, representatives, attorneys, contractors, advisors, or agents without (i) informing such officer, employee, partner, representative, attorney, contractor, advisor, or agent of the confidential nature of the Confidential Information and (ii) ensuring that such officer, employee, partner, representative, attorney, contractor, advisor, or agent 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

agrees to be responsible for any breach of this Section 5 by such Party or a Party's officers, employees, partners, representatives, attorneys, contractors, advisors or agents, subject to the limitations set forth in Section 6 below.

(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 as part of a governmental regulatory process, subpoena, civil investigative demand or similar request or process) 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. 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) Notwithstanding the foregoing, the Parties acknowledge that they are required by law or regulation to report certain information that could embody Confidential Information from time to time, and may do so from time to time without providing prior notice to the other Party. Such reports may include models, filings, and reports of costs, general rate case filings, cost adjustment mechanisms, any applicable FERC-required reporting, investigations, annual state reports that include resources and loads, integrated resource planning reports, reports to entities such as FERC, the North American Electric Reliability Council ("NERC"), Western Electricity Coordinating Council ("WECC"), or similar or successor organizations, or similar or successor forms, filings, or reports, the specific names of which may vary by jurisdiction, along with supporting documentation. Additionally, in regulatory proceedings or investigations in all state and federal jurisdictions in which they may do business, the Parties will from time to time be required to produce Confidential Information, and may do so without prior notice using its business judgment in compliance with all of the foregoing and including the appropriate level of confidentiality for such disclosures in the normal course of business.

(f) 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, subject to the limitations set forth in Section 6 below.

(g) Unless otherwise prevented by law, 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.

(h) 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.

(i) This Section 5, Confidentiality, applies for two years (24 months) after the Termination Date or the date of any expiration or termination of this Agreement.

(j) The ISO acknowledges that Turlock 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 Turlock in its sole discretion concludes that a conflict exists between a confidentiality obligation in this Section 5 of the Agreement and an obligation of Turlock under the California Public Records Act or the Brown Act, the California Public Records Act or the Brown Act shall prevail. Turlock will promptly notify the ISO if Turlock concludes that such a conflict arises.

6. Limitation of Liability; Indemnity.

(a) The Parties acknowledge and agree that, except as otherwise specified in Section 4(f) 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) To the extent allowed by law, each Party shall indemnify, defend and hold harmless each of the other Party and its officers, directors, employees, agents, contractors and sub-contractors, from and against all third-party claims, judgments, losses, liabilities, costs, expenses (including reasonable attorneys' fees) and damages for personal injury, death or property damage, to the extent caused by the negligence, willful misconduct, or breach of this Agreement of the indemnifying Party, its officers, directors, agents, employees, contractors or sub-contractors related to this Agreement; provided, that this indemnification shall be only to the extent such personal injury, death or property damage is not attributable to the negligence or willful misconduct related to this Agreement or breach of this Agreement of the Party seeking indemnification, its officers, directors, agents, employees, contractors or sub-contractors. The indemnified Party shall give the other Party prompt notice of any such claim. The indemnifying Party, in consultation with the indemnified Party, shall have the right to choose competent counsel, control the conduct of any litigation or other proceeding, and settle

any claim, upon the reasonable approval of the indemnified Party. The indemnified Party shall provide all documents and assistance reasonably requested by the indemnifying Party.

(c) The rights and obligations under this Section 6 shall survive the Termination Date and any expiration or termination of this Agreement.

7. Representation and Warranties.

(a) Representations and Warranties of Turlock. Turlock represents and warrants to the ISO as of the Effective Date as follows:

(1) It is duly formed, validly existing and in good standing under the laws of the jurisdiction of its formation.

(2) It has all requisite corporate power necessary to own its assets and carry on its business as now being conducted or as proposed to be conducted under this Agreement.

(3) It has all necessary corporate power and authority to execute and deliver this Agreement and to perform its obligations under this Agreement, and the execution and delivery of this Agreement and the performance by it of this Agreement have been duly authorized by all necessary corporate action on its part.

(4) The execution and delivery of this Agreement and the performance by it of this Agreement do not: (i) violate its organizational documents; (ii) violate any governmental requirements applicable to it; or (iii) result in a breach of or constitute a default of any material agreement to which it is a party.

(5) This Agreement has been duly and validly executed and delivered by it and constitutes its legal, valid and binding obligation enforceable against it in accordance with its terms, except as the same may be limited by bankruptcy, insolvency or other similar laws affecting creditors' rights generally and by principles of equity regardless of whether such principles are considered in a proceeding at law or in equity.

(6) All material governmental authorizations in connection with the due execution and delivery of this Agreement, have been duly obtained or made prior to the date hereof and are in full force and effect.

(b) Representations and Warranties of the ISO. ISO represents and warrants to Turlock as of the Effective Date as follows:

(1) It is duly formed, validly existing and in good standing under the laws of the jurisdiction of its formation.

(2) It has all requisite corporate power necessary to own its assets and carry on its business as now being conducted or as proposed to be conducted under this Agreement.

(3) It has all necessary corporate power and authority to execute and deliver this Agreement and to perform its obligations under this Agreement, and the execution and delivery of this Agreement and the performance by it of this Agreement have been duly authorized by all necessary corporate action on its part.

(4) The execution and delivery of this Agreement and the performance by it of this Agreement do not: (i) violate its organizational documents; (ii) violate any governmental requirements applicable to it; or (iii) result in a breach of or constitute a default of any material agreement to which it is a party.

(5) This Agreement has been duly and validly executed and delivered by it and constitutes its legal, valid and binding obligation enforceable against it in accordance with its terms, except as the same may be limited by bankruptcy, insolvency, regulatory authority, or other similar laws affecting creditors' rights generally and by principles of equity regardless of whether such principles are considered in a proceeding at law or in equity.

(6) All material governmental authorizations in connection with the due execution and delivery of this Agreement, have been duly obtained or made prior to the date hereof and are in full force and effect.

8. 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, email 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 8(g):

If to Turlock:

Turlock Irrigation District
333 East Canal Drive Turlock, CA 95380
or
PO 0949 Turlock, CA 95381-0949
Attention: Manjot Gill, Assistant General Manager
Electrical Engineering and Operations

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, email sent by 5:00 p.m. Pacific Time, 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, 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 Turlock 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.

(l) 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.

(m) 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.

(n) The above-stated recitals are incorporated into and made a part of this Agreement by this reference to the same extent as if these recitals were set forth in full at this point.

9. Governing Law; Venue. 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 conflict of laws. Venue for any action hereunder shall be FERC, where subject to its jurisdiction, or otherwise any state or federal court with jurisdiction in Sacramento County 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*. No provision of this Agreement shall be deemed to waive the right of any Party to protest, or challenge in any manner, whether this Agreement, or any action or proceeding arising under or relating to this Agreement, is subject to the jurisdiction of FERC.

10. Communication. The Parties shall develop a communication protocol for the dissemination of material information associated with the Project, which shall be approved by Turlock and the ISO. Pursuant to the communication protocol, the individual identified in Section 8(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 Turlock'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.

11. Dispute Resolution. 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, to the extent practicable, 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 court identified in Section 9.

12. Third Party Agreements. Subject to the requirements 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.

13. Compliance. This Agreement is not intended to modify, change or otherwise amend the Parties' current 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.

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.

Turlock Irrigation District

By: Manjot Gill
Name: Manjot Gill
Title: Assistant General Manager, Electrical Engineering and Operations

CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

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

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 Implementation Date to coordinate their efforts required for completion of the Project on a milestone track.

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, 2021
<p>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. This phase will include a detailed IT system review to assist Turlock in development of a detailed metering plan, bid-to-bill system, and coordination with Turlock EMS. Work will be initiated on the Turlock staff training program using the foundational and detailed system computer-based training module, as well as on the resource data templates needed during Milestone 2.</p>	<p>May 2019- June 2019</p>
<ul style="list-style-type: none"> • Milestone 1 – This milestone is completed when the Agreement has been made effective in accordance with Section 1 of the Agreement. 	<p>July 2019</p>

<p>Full Network Model Expansion – Full Network Model expansion for Turlock 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 Turlock; testing of the new market model; and validation of the Outage and State Estimator applications.</p>	November 2019
<ul style="list-style-type: none"> • Milestone 2 - This milestone is completed upon modeling Turlock into the ISO Full Network Model through the EMS which will be deployed into a non-production test environment using the ISO's network and resource modeling process. 	July 2020
<p>System Implementation and Connectivity Testing – System requirements and software design, the execution of necessary software vendor contracts, development of Market network model including Turlock, allow Turlock to connect to a non-production test system.</p>	August 2020
<ul style="list-style-type: none"> • Milestone 3 - ISO to promote market network model including Turlock area to non-production system, and allow Turlock to connect and exchange data in advance of Market Simulation. 	September 2020
<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>	September 2020
<ul style="list-style-type: none"> • Milestone 4a – Start of Joint Integration Testing with ISO, Interface testing with minimum data requirements and functional integration testing. ISO will make the test environment available for Turlock connectivity testing prior to the delivery date assuming Turlock has provided all requisite data and non-production system availability does not conflict with ISO production system Spring Release schedule. 	September 2020
<ul style="list-style-type: none"> • Milestone 4b –Begin ‘Day in the Life’ scenario testing 	November 2020
<ul style="list-style-type: none"> • Milestone 4c – Begin Structured Market simulation (Milestone 4 payment due at this point) 	December 2020
<p>Activate Parallel Operations – During January 2021, the ISO will activate a parallel operation environment to practice production grade systems integration as well as market processes and</p>	January 2021

<p>operating procedures in anticipation of the impending Turlock activation as an EIM Entity and to confirm compliance with the EIM readiness criteria set forth in the ISO tariff.</p>	
<ul style="list-style-type: none"> • Milestone 5 – Start of parallel operations 	<p>February 2021</p>
<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 Turlock 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>March 2021</p>
<ul style="list-style-type: none"> • Milestone 6 – This milestone is complete upon the first production Turlock energy imbalance market trade date. 	<p>April 1, 2021</p>

Attachment B – Declaration of April Gordon
EIM Implementation Agreement
Turlock Irrigation District and
California Independent System Operator Corporation

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

**California Independent System) Docket No. ER19-____-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 (GMC). I am responsible for the CAISO's GMC revenue requirement and 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 Turlock Irrigation District ("Turlock") 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: (1) licenses, \$12.1 million; (2) energy management system upgrades, \$1.0 million; (3) data storage, \$2.0 million; (4) hardware upgrades, \$500,000; (5) production software modification, \$1.0 million; and (6) network configuration and mapping, \$500,000; (7) integration, \$500,000; (8) testing, \$1.5 million; (9) system performance tuning, \$250,000; (10) training and operations readiness, \$150,000; and (11) 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, the integrated forward market, the 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 the process is described herein 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 is 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), 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 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 Turlock as established in the Implementation Agreement, the CAISO applied the rate to Turlock's net energy for load for 2017 of 2,698,317 MWh, for a rounded total of \$85,000.

Comparison of Turlock 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 Turlock'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 Turlock. Using the same process described above, the CAISO estimated the costs (in thousands) that appear in the following table:

Estimated Implementation Costs (\$\$ in thousands)	
License Fees	\$-
Production Software Modification	
Testing	
Training and Operational Readiness	
Project Management	\$85
Total	\$85

23. As is readily apparent, although the total costs are the same, the proportion of the total Turlock 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 storage costs or EMS upgrade, but to integrate Turlock, the CAISO will need to incur project management costs up front. Although the Turlock specific costs are the same as the Turlock 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: August 15, 2019

/s/ April D. Gordon
April D. Gordon