September 19, 2016

VIA ELECTRONIC MAIL

Clerk of the Board
California Air Resources Board
1001 I Street
Sacramento, California 95814
http://www.arb.ca.gov/lispub/comm/bclist.php

Re: Comments on Proposed Amendments to California Cap-and-Trade and Mandatory Greenhouse Gas Reporting Regulations

Dear Clerk:

The California Independent System Operator Corporation (ISO) submits these comments on proposed amendments to California's cap-and-trade and mandatory greenhouse gas reporting regulations issued by the California Air Resource Board (ARB).[1] The ISO supports California's efforts to reduce greenhouse gas emissions in California's electricity sector and will continue to work collaboratively with state agencies and stakeholders to advance this objective. The ISO has already developed and implemented rules in its wholesale energy market to reflect the costs of California greenhouse gas regulations in its dispatch of resources. In addition, the ISO has enhanced its energy markets and electric transmission planning activities to support California's renewable portfolio standard and facilitate the use of clean resources.

Among other efforts, the ISO's implementation of the western Energy Imbalance Market (EIM) has allowed the ISO to integrate increasing amounts of variable energy resources, including wind and solar. The EIM is an extension of the ISO's real-time market that helps balance electric supply and demand in the ISO balancing authority area as well as in EIM Entities' balancing authority areas. The use of the EIM permits other balancing authority areas to take advantage of the ISO's real-time market processes and facilitates transfers of power across the combined ISO and EIM footprint based on available transmission capability. Since its inception, the EIM has facilitated economic transfers of energy between the ISO and EIM Entities. These transfers have in part supported the operation of non-emitting clean resources. For example, in the second quarter of 2016, the EIM allowed the ISO to avoid the curtailment of over 158,806 MWh of renewable output in the ISO balancing authority area and displaced an estimated 67,969 metric tons of carbon dioxide equivalents.[2] As the EIM footprint

[1] ARB issued these proposed amendments for public comment on August 2, 2016 and July 19, 2016, respectively.

[2] ISO 2016 Q2 Report Benefits for Participating in EIM dated July 28, 2016 at 7. http://www.caiso.com/Documents/ISO-EIMBenefitsReportQ2_2016.pdf

grows and more renewable resources develop in the West, the EIM will continue to facilitate these emission reductions. The ISO strongly encourages ARB to consider this fact as ARB assesses refinements to California's programs that seek to achieve cost-effective greenhouse gas emission reductions.[3]

Under ARB's current cap-and-trade and mandatory greenhouse gas reporting regulations, ARB treats EIM transfers serving ISO load in California as electricity imports into California. ARB relies on the ISO's market results as reported by EIM participating resource scheduling coordinators to identify resources that supported those transfers and applies a specified source emission rate to those resources. ARB imposes reporting and compliance obligations on EIM participating resource scheduling coordinators representing these resources. The ISO and ARB collaborated on the development of initial regulatory changes to ARB's regulations to recognize EIM transfers that serve California load constitute electricity imports and that ARB would apply a resource specific emission rate to EIM participating resources supporting those transfers.

Among the proposed amendments to ARB's cap-and-trade and mandatory greenhouse gas regulations are revisions that seek to apply additional reporting and compliance obligations with respect to EIM transfers into the ISO. These additional obligations attempt to capture the emissions associated with "secondary" dispatch"[4] to serve imbalances outside of the ISO as a result of California load taking advantage of low cost and often non-emitting resources outside of the ISO. ARB's proposed amendments appear to equate this secondary dispatches with leakage. While the ISO does not believe that all secondary dispatches represent leakage, the ISO acknowledges ARB's concern that additional emissions may be occurring to serve load outside of California as a result of the use of non-emitting or lower emitting resources outside of the ISO to help resolve ISO energy imbalances. The ISO has been and looks forward to continuing to work with ARB and stakeholders to examine appropriate means to track these emissions and to assess whether ARB needs to take regulatory action. At the same time, any solution adopted to account for emissions associated with EIM transfers into the ISO should not undermine the economic and emission reduction benefits of EIM. To do so could create additional costs to California ratepayers and increase emissions associated with ISO dispatch in a manner that contravenes the objectives of California's climate change and clean energy policies.

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[3] *See* California Global Warming Solutions Act of 2006, codified at California Health and Safety Code Section 38500 *et seq*.

[4] The market optimization simultaneously solves to serve load in the ISO and the other balancing authority areas in the EIM footprint. The term "secondary" dispatch is used to illustrate the backfill effect of lower GHG cost resources supporting EIM transfers to serve ISO imbalances with higher GHG cost resources serving imbalances in EIM Entities' balancing authority areas. Secondary dispatch does not mean that the market optimization has multiple distinct steps in dispatching resources to serve ISO load versus load in EIM balancing authority areas.

The remainder of these comments identify concerns with proposed amendments to ARB's regulations, provide an assessment of the leakage concerns identified in ARB's initial statements of reasons, and identify potential alternatives to address these concerns. The ISO encourages ARB to schedule an additional workshop to discuss alternative approaches and obtain input from stakeholders.

I. The proposed amendments to ARB cap-and-trade and mandatory greenhouse gas regulations would undermine the ISO's market optimization, are internally inconsistent, and inappropriately seek to make the ISO a reporting entity.

In its initial statement of reasons supporting the proposed amendments to the cap-and-trade program, ARB states that the ISO's market optimization results in emissions leakage in connection with EIM transfers to serve imbalances in the ISO balancing authority area.[5] ARB's concern is that the ISO market optimization may not reflect the full greenhouse gas burden experienced by the atmosphere as a consequence of EIM transfers serving load in the ISO in a given market interval. The ISO's market optimization simultaneously minimizes total costs to serve imbalances across the EIM footprint, which includes the ISO. The cost minimization considers ISO imbalances based on energy bids and greenhouse gas bid adders and EIM Entity imbalances based on energy bids. The optimization dispatches the lowest cost resources – often non-emitting resources – to support an EIM transfer to support ISO imbalances. The optimization does not account for emissions that occur because of the associated dispatch of another external resource to serve load within an EIM Entity balancing authority area that could have been served by the resource dispatched to support the transfer into the ISO. ARB seeks to capture emissions resulting from this "secondary" dispatch to backfill the need created by the dispatch of lowest cost resources to serve ISO imbalances. Accordingly, ARB proposes to impose a new compliance obligation on entities that purchase from the EIM to serve load in California. These entities would become electricity importers under ARB's regulations and face reporting and compliance obligations.

ARB's proposed regulatory amendments would include EIM Purchasers in the definition of electricity importers and add a new definition of EIM Purchaser as follows:

> *Energy Imbalance Market Purchaser* or *EIM Purchaser* means an entity that purchases energy through the EIM market to either serve California load or to deliver or sell the purchased energy to an entity serving California load.[6]

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[5] ARB Staff Report: Initial Statement of Reasons at 51-52.https://www.arb.ca.gov/regact/2016/capandtrade16/isor.pdf

[6] *See* proposed addition of EIM Purchaser to the definitions of ARB's cap and trade regulation at 17 Code of California Regulations Section 95802.

Under ARB's proposed amendments, the definition of imported electricity would include not only EIM dispatches reported by the ISO to serve electric load within the state of California but also electricity emissions distributed to EIM Purchasers pursuant to a formula that assess emissions not accounted for by the ISO's market results.[7] ARB would calculate these emissions at a default emissions rate less emissions from EIM participating resources identified by the ISO's market as supporting EIM transfers into the ISO. The proposed language would include California load serving entities as well as market participants that operate resources supplying power in the ISO's wholesale markets in the definition of EIM Purchasers. These entities would face an emission reporting responsibility and compliance obligation associated with secondary dispatch effects in the EIM.

Unlike existing ARB reporting and compliance obligations associated with EIM transfers into the ISO, the ISO's market optimization would not reflect this secondary emission cost. As a result, the costs incurred by EIM Purchasers would not align with ISO market results. Unlike the existing ISO market design, in which resources both within the ISO balancing area and in the EIM receive a payment that reflects greenhouse gas allowance costs when dispatched to serve ISO load, EIM Purchasers would incur greenhouse gas costs without any such market payment. In addition, because the ISO's market optimization would not reflect this secondary emission cost, the optimization could dispatch resources to support EIM transfers into the ISO as economic when, in fact, the additional cost that ARB's proposed approach would impose could make that dispatch uneconomic.

Although ARB developed this proposal in part based on dialog with the ISO and other stakeholders, the ISO now believes that this approach may be problematic and proposes possible alternatives in Section III of these comments. An advantage of the EIM is that it provides transparency as to the actual resources dispatched to serve imbalances across the combined ISO and EIM footprint and reflects the cost of dispatching those resources, including the cost of compliance with ARB's current regulation. Applying an additional emission rate to EIM Purchasers outside of the market optimization for EIM transfers to serve ISO load in order to account for a secondary dispatch would not be transparent or provide the right market signals. The ISO, accordingly, recommends that ARB not adopt the approach set forth in its proposed amendments to the cap and trade regulation.

ARB also proposes to modify the safe harbor provisions associated with the prohibition against resource shuffling to exclude the EIM.[8] These provisions also create uncertainty and are internally inconsistent. First, ARB's initial statement of reasons provides that ARB is removing the resource shuffling exemption for economic bids or

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[7] *See* proposed changes to the definition of Electricity Importer and Imported electricity in ARB's cap and trade regulation 17 Code of California Regulations Section 95802 and addition of language to ARB's cap and trade regulation at 17 Code of California Regulations Section 95852.

[8] *See* proposed changes to cap and trade regulation section 95852(2)(a)(10).

self-schedules that clear the ISO real-time market.[9] This language creates uncertainty because it suggests that economic bids or self-schedules that clear the ISO's real-time market constitute resource shuffling when they clearly do not. Resource shuffling, as defined by ARB, is a "plan, scheme, or artifice undertaken by a First Deliverer of Electricity to substitute electricity deliveries from sources with relatively lower emissions for electricity deliveries from sources with relatively higher emissions to reduce its emissions compliance obligation."[10] ISO market dispatches do not meet this definition because they are not a plan, scheme or artifice undertaken by a first deliverer of electricity. In addition, the proposed regulatory changes are internally inconsistent because they state that electricity imported through the EIM is not exempted from resource shuffling provisions but maintain a safe harbor from the prohibition against resource shuffling for ISO real-time market transactions. The EIM is the ISO's real-time market extended to other balancing authority areas in the West. The ISO recommends ARB not adopt the proposed changes to the resource shuffling safe harbor provisions of its cap-and-trade regulation.

The proposed amendments would also make the ISO a reporting entity under the regulation and attach specific verification requirements for submitted data. ARB's initial statement of reasons supporting the proposed changes to the mandatory greenhouse gas regulations provides:

> Staff is proposing to include CAISO as a reporting entity for electricity imports data related to transfers within the EIM. In previous years, this type of data was acquired through a formal subpoena process. Since the EIM may not be providing ARB or its participating members, some of which are reporting entities under MRR, all of the data to support full accounting of GHG emissions experienced by the atmosphere when there is dispatch to serve California load during periods of imbalances, staff worked with CAISO to identify the additional type of data that would be needed to support full GHG accounting. As this data will be provided by CAISO directly and used in the cap-and-trade program to assess compliance obligations, the timeliness and verification of the data must be the same as other data collected for the same purpose.[11]

ARB's proposal to make the ISO a reporting entity under its mandatory greenhouse gas reporting regulation creates unnecessary regulatory requirements for

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[9] ARB Staff Report: Initial Statement of Reasons at 156. https://www.arb.ca.gov/regact/2016/capandtrade16/isor.pdf

[10] 17 California Code of Regulations at Section 95802(a)(336).

[11] ARB Staff Report: Initial Statement of Reasons at 9. https://www.arb.ca.gov/regact/2016/ghg2016/ghgisor.pdf

the ISO. Under AB 32, ARB has authority to require reporting from greenhouse gas emission sources.[12] The ISO is a market operator and transmission planning entity. In conducting these activities, the ISO is not a source of emissions. Although the ISO may have possession of market data that may assist ARB implement its regulatory programs, the ISO is not appropriately a reporting entity under ARB's regulations. Moreover, the proposed changes to ARB's mandatory greenhouse gas reporting regulations would require the ISO to have its market data verified by a third-party that meets specified requirements.[13] This proposal would impose an undue burden on the ISO and there is no justification for doing so ARB does not explain why it cannot use existing processes – including its subpoena authority - to obtain ISO market data. As such, the ISO objects to ARB's proposal to make the ISO a reporting entity under the mandatory greenhouse gas reporting regulation.

II. ARB's initial statement of reasons does not adequately define or identify the magnitude of leakage that may be occurring in connection with EIM transfers.

In its initial statement of reasons for proposed amendments to its cap-and-trade regulations, ARB states:

> AB 32 requires ARB to minimize emissions leakage, which is a reduction in GHG emissions within the State that is offset by an increase in GHG emissions outside the state. Leakage may occur when industry or production moves out of State in response to increased costs due to the California price on carbon.[14]

Although ARB expresses concern that its current regulation is not capturing all of the emissions experienced by the atmosphere as a result of an EIM transfer into the ISO, the initial statement of reasons does not quantify this leakage. The initial statement of reasons also does not clearly articulate how production has moved out of state in response to California's price on carbon. All EIM participating resources offering their output to support EIM transfers to support ISO imbalances are subject to California's price on carbon. The ISO's market optimization is merely selecting the most

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[12] California Health and Safety Code Section 38530(b)(1).

[13] *See* proposed addition to section 95111(h)(2) and (3) of ARB's mandatory reporting regulation, which states in relevant part:

> (2) CAISO will report the following information:
> (A) Annual sum of the "remaining emissions" calculated in section 95111(h)(1);
> (B) Names of entities meeting California imbalances from EIM transfers and annual quantity of purchased MWh for each entity based on 5 minute interval data;
>
> (3) The data provided in 95111(h)(2) must be verified per section 95103(f).

[14] ARB Staff Report: Initial Statement of Reasons at 10-11. https://www.arb.ca.gov/regact/2016/capandtrade16/isor.pdf

economical resource mix based on resources' energy and greenhouse gas bids consistent with the optimization's objective function to minimize total costs. As such, the ISO's market results accurately measure the emissions associated with EIM participating resources selected to support EIM transfers into the ISO.

ARB's proposed amendments seek to add a compliance obligation to account for the emissions impact of the secondary dispatch to serve imbalances in EIM Entity's balancing authority areas outside of California. While EIM Purchasers would shoulder this compliance obligation, the ISO strongly encourages ARB to consider emission reduction impacts of EIM holistically as it assesses whether it needs to take additional measures to minimize "leakage." To this end, ARB should develop a more precise definition of leakage as it applies to the EIM. Not all secondary dispatches necessarily qualify as "leakage" because dispatches of some EIM participating resources would occur economically to meet EIM load needs in an EIM balancing authority area. The ISO urges ARB to continue to discuss this issue with stakeholders.

The ISO has completed a preliminary analysis to assess emission impacts of EIM and associated transfers into and out of the ISO balancing authority area from January through June 2016. The ISO has posted the results of this analysis on its website at the following link: http://www.caiso.com/Documents/EIMGreenhouseGasCounter-FactualComparison-PreliminaryResults_Jan-Jun_2016_.pdf The analysis compares dispatch and greenhouse gas emissions of external EIM participating resources supporting ISO imbalances and internal ISO supply displaced by EIM transfers to the ISO. The analysis also compares dispatch and greenhouse gas emissions of internal ISO supply and external supply displaced by EIM transfers out of ISO. Importantly, without EIM, the ISO would not have visibility on the resources operating in response to ISO dispatch to even complete this analysis. This increased transparency will help assess the benefits of dispatching resources across the west and the emission profile of the combined ISO and EIM fleet of resources.[15] The results of this analysis reflect that EIM dispatches reduced greenhouse gas emissions across the combined ISO and EIM footprint by 291,998 MTons of carbon dioxide equivalents for the period January 1, 2016 through June 30, 2016. The analysis also reflects that the secondary dispatch GHG emissions associated with EIM transfers into ISO are more than offset by GHG emission reductions associated with EIM transfers out of the ISO.

In considering whether to expand compliance obligations for EIM transfers into the ISO, ARB should consider whether EIM transfers are facilitating production of electricity out of state in response to increased costs from California's price on carbon, or if EIM transfers are offering California a greater opportunity to rely on non-emitting resources to serve its load as well as displace fossil resources in EIM Entity balancing authority areas. The latter is true and should inform any regulatory action ARB plans to take.

[15] The ISO has committed to stakeholder to publish the emission profile associated with its dispatch and is intends to make a draft report available for public review and input during the fourth quarter 2016.

III. ARB should consider alternative approaches to track emissions associated with EIM transfers into the ISO and establish compliance obligations.

As ARB considers any appropriate regulatory action to track the emissions associated with associated with an EIM transfer into the ISO and impose a compliance obligation for those emissions, ARB should assess alternatives. Broadly, ARB should consider the following alternatives to enhance the greenhouse gas accounting associated with EIM transfers to service ISO imbalances:

- Assess whether emissions associated with secondary dispatches are greater than emission reductions achieved by the EIM overall during an individual compliance year. If, based on actual data, secondary dispatches are not greater than emission reductions achieved by the EIM overall during a compliance year, ARB should not take any action. If emissions associated with secondary emissions are greater emission reductions achieved by EIM during the year, ARB could reduce allowances or modify its cap in a subsequent compliance period.

- Establish a dynamic residual emission rate that the ISO can incorporate into its market optimization for the EIM. This residual emission rate or "hurdle rate" would permit the ISO's optimization to recognize that emissions associated with an EIM transfer into the ISO include a specified source rate as well as a residual emission rate associated with a secondary dispatch. This residual rate could reflect the resource mix during a given season as well as change over time as the participating resource portfolio changes. All else being equal, this rate would make EIM participating resources more expensive than internal ISO resources and could result in the ISO's optimization dispatching an internal emitting resource over an external non-emitting resource. In addition, this alternative would prevent the market optimization from differentiating between relative emission rates of resources with emission rates below the hurdle rate. This may result in a dispatch that increases emissions in some instances.

- In consultation with the ISO and its stakeholders, work to examine changes in the ISO optimization logic to restrain EIM transfers to only dispatches above a level that reflects an optimized dispatch of resources to serve EIM Entity area imbalances without transfers to the ISO. This approach would involve establishing an "economic base schedule" from which the ISO market optimization could then attribute EIM transfers to specific resources. Developing an economic base schedule reflects the fact that the ISO's market systems have not optimized base schedules submitted by EIM participating resource scheduling coordinators. Under this approach, the ISO's optimization would develop an economic set of schedules such that they are lowest cost to meet load outside of the ISO.

This economic dispatch level would likely be different from the submitted base schedules because the base schedules may not be optimized in this as independently submitted by different EIM Entities. This approach would require the ISO to conduct an additional dispatch optimization pass and extensive changes to dispatch algorithm in each dispatch interval, which may not be practical or even possible within the constraints of the optimization. Finally, this approach may also reduce the efficiency of the EIM and result in additional emissions to serve California load.

The alternatives listed above identify opportunities to enhance ARB and ISO processes as well as pose potential challenges. Each has legal and regulatory risks. In some instances, the ISO would need to undertake a parallel stakeholder process to modify its market rules and obtain authorization to do so from the Federal Energy Regulatory Commission. This process could take between six and nine months. Finally, some of the alternatives also have the risks of increasing costs to ratepayers and increasing greenhouse gas emissions. To the extent ARB determines it is necessary to amend its regulations to expand compliance obligations associated with EIM transfers for the 2018-2020 compliance period, the ISO recommends that ARB consider scheduling a workshop to discuss these alternatives with stakeholders prior to proposing any revisions to the proposed amendments to its cap and trade and mandatory reporting regulations.

IV. Conclusion

The ISO supports ARB's effort to examine an appropriate means to account for emissions associated with EIM transfers. However, the ISO believes the proposed amendments to ARB's cap and trade and mandatory greenhouse gas reporting requirements present certain problems and require additional consideration. For these reasons, the ISO encourages ARB to continue its discussions with the ISO and stakeholders regarding this matter.

Dated: September 19, 2016

Respectfully submitted,

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