

## Stakeholder Comments Template

Submitted by	Company	Date Submitted
Mike Benn 604.891.6074	Powerex Corp.	February 19, 2016

Please use this template to provide written comments on the Clean Energy and Pollution Reduction Act Senate Bill 350 Study initiative posted on February 4, 2016.

Please submit comments to [regionalintegration@caiso.com](mailto:regionalintegration@caiso.com) by close of business  
 February 19, 2016

Materials related to this study are available on the ISO website at:  
<http://www.caiso.com/informed/Pages/RegionalEnergyMarket/BenefitsofaRegionalEnergyMarket.aspx>

Please use the following template to comment on the key topics addressed in the initiative proposal.

1. Do you think the proposed study framework meets the intent of the studies required by SB350? If no, what additional study areas do you believe need to be included and why?
<p>Comment: Powerex appreciates the opportunity to comment on CAISO’s February 8, 2016 meeting outlining CAISO’s proposed approach towards conducting the studies mandated by California Senate Bill 350 (“SB 350”), the Clean Energy and Pollution Reduction Act, which requires that CAISO assess the potential benefits associated with CAISO’s transition to a western regional transmission organization (“RTO”).</p> <p>Powerex believes that rigorous studies can provide critical information to decision-makers in California and the broader region, who need to carefully weigh the costs and benefits of regional integration. In particular, SB 350 mandates that transformation of the CAISO into a regional organization “only occur where it is in the best interests of California and its ratepayers.” In furtherance of that express mandate, it is essential that the studies required by SB 350 provide decision-makers with a realistic and well-founded assessment of the incremental benefits that can be achieved only by</p>

undertaking the transformative changes required for a CAISO RTO. The SB 350 studies will not achieve this objective if they merely identify a range of benefits that can be expected, as a general matter, from improved, coordinated regional electricity trading between California and the rest of the west. Instead, these studies will only provide value if they accurately gauge the potential *particular* benefits of one very specific initiative: the formal extension of CAISO's comprehensive market design across a larger geographic area in the west.

In Powerex's view, the proposed framework for the SB 350 studies, as set out by representatives from Energy and Environmental Economics ("E3") and others at the February 8, 2016 workshop, will not meet this objective. During the workshop, E3 provided an overview of the framework and assumptions that it plans to use to study the impact of an integrated regional energy market on renewable resource procurement and availability, including the effects of coordinated system operation and dispatch, and implementation of a regional transmission tariff.<sup>1</sup> In order to estimate the benefits of formal regional market integration, E3 states that it plans to model operations in four "zones" in the Western Interconnection—CAISO, the Pacific Northwest, Desert Southwest, and the Los Angeles Department of Water and Power<sup>2</sup>—under three distinct scenarios:

- **Business-as-Usual ("BAU")**—assumes that renewable energy procurement is largely limited to in-state resources and with no regional energy market to reduce curtailment of in-state renewable resources during over-generation conditions.
- **Integrated regional market operations with BAU renewable energy procurement**—assumes there is a regional organized electricity market, but with no increase in the availability of out-of-state renewable resources.
- **Integrated regional market and renewable energy procurement**—assumes there is a regional organized electricity market and that additional out-of-state wind resources are available through the construction of new transmission facilities developed through the regional market's transmission planning process.<sup>3</sup>

The benefits to California ratepayers of transforming the CAISO into a western RTO will be based on the differences in costs associated with each of the above scenarios.

As discussed further herein, Powerex is concerned that the initially proposed study

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<sup>1</sup> Energy and Environmental Economics, Draft Renewable Portfolio for CAISO SB 350 Study (Feb. 8, 2016), *available at* <http://www.caiso.com/Documents/Presentation-SB350-DraftRenewablePortfolios-E3.pdf>.

<sup>2</sup> *Id.* at 14.

<sup>3</sup> *Id.* at 8.

framework will overestimate the incremental benefits associated with regional integration by (1) employing aggressive assumptions regarding the likely size and scope of a regional market; and (2) measuring the benefits of that market against a “business as usual” base case that does not reasonably capture current regional trade activities or how the CAISO is likely to evolve if a western RTO is either not pursued or is limited in its geographic scope. The study framework also appears to implicitly assume that California ratepayers will receive all of the economic benefits associated with the reduced need for new in-state investments as a result of increased access to external renewable and flexible resources, without any portion of those economic benefits flowing to non-California ratepayers that have funded (and will continue to fund) those external resources. Such an assumption would be unrealistic and would undermine the accuracy and value of the studies prepared as a result of this proceeding.

A sound analysis of the benefits of a CAISO-run western market that satisfies the mandate of SB 350 requires:

- First, the footprint of any expanded market should only reflect those utilities that are likely to join the market. In the “low case” this might include only the entities that have expressed interest in becoming part of the CAISO (*i.e.*, PacifiCorp). A “high case” scenario could include utilities that have either joined the Energy Imbalance Market (“EIM”) or expressed an intention to do so.
- Second, any scenario used to measure the incremental benefits of regional integration needs to include (as a “base case” or as a reasonable alternative) the likely evolution of the CAISO market design in the absence of a formal expansion of its footprint. This should reflect efficiency improvements that can be achieved through eliminating existing barriers to interregional trade and attracting the increased participation of external flexible resources.
- Third, benefits associated with reduced in-state investments necessary to achieve California’s 50% Renewable Portfolio Standard (“RPS”) target need to be clearly and equitably allocated between California ratepayers and ratepayers in external areas, whose past and ongoing investments allow these savings to be realized in the first place. This will help ensure that the studies more accurately reflect the benefits likely available to California ratepayers.

Powerex believes the studies required by SB 350 can provide valuable insight into how best to pursue more efficient interregional transactions in the west. Specifically, the SB 350 studies can, if properly designed, identify the incremental benefits that are available under a CAISO-run western RTO that cannot be achieved through other enhancements to the existing regional markets. Powerex believes an RTO does offer some important incremental benefits not available through other approaches, including the benefits of centralized unit commitment and dispatch over both day-ahead and real-time timeframes, and full consolidation of Balancing Authority responsibilities. It

would undermine the accuracy and value of these studies, however, to conflate the potential benefits of an expanded RTO with the potential benefits of improved interregional coordination that can and should be achieved more generally. The evaluation of the benefits of a CAISO-run western RTO must also be founded on realistic assumptions about the likely geographic scope of a western RTO, as well as accurate representations of transactions outside of the RTO framework. Such an approach will allow decision-makers to compare the incremental benefits of an RTO framework (covering a realistic geographical footprint) to the benefits that can be achieved across the western region from market enhancements within the CAISO's current market construct.

**A. The Proposed Study Framework Assumes That Almost All U.S. Utilities In The Western Interconnection Will Join the CAISO As A Base Case**

Based on the February 8<sup>th</sup> presentation, it appears that E3 plans to study the benefits of regional integration using the assumption that the CAISO market will be extended to encompass the entire Western Interconnection, with the limited exception of certain Canadian and Mexican systems and portions of Wyoming and Colorado.<sup>4</sup> In other words, it assumes that almost all utilities located within the U.S. portion of the Western Interconnection, including Bonneville Power Administration and other public power entities, will cede operational and dispatch control over their transmission systems and generation resources to the CAISO. In reality, some of these entities may be unable and/or unwilling to integrate into the CAISO due to a variety of legal, political, and operational reasons. In fact, several of these entities have not yet expressed any interest in taking the far more limited step of participating in the CAISO EIM, and some have expressly rejected this possibility. At this juncture, it does not seem accurate to assume, particularly as a "base case," that all of these entities would be absorbed into a western RTO in the foreseeable future.

Powerex believes that adopting a model that includes the systems and resources of entities for which CAISO participation may not be viable or desirable would significantly undermine the accuracy and value of any resulting study. Rather than providing an estimate of the benefits to California ratepayers *likely* to result from CAISO's transition to an integrated regional market, as SB 350 mandates, such a study would provide an estimate of the benefits of an expanded market that may not ever exist in practice. In this regard, E3 is proposing a "maximum participation" scenario, which will be incapable of answering the reasonable question of whether a western RTO is worth pursuing even if it does not ultimately include virtually every utility in the U.S. portion of the Western Interconnection. Moreover, since the modeling analysis would be prepared without the support or input of many of the external systems that are being modeled, there is little assurance that the model will accurately represent the capabilities, limitations, and operation of these systems.

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<sup>4</sup> *Id.* at 14.

Powerex believes that a more realistic estimate of the potential benefits from CAISO's transformation to an integrated regional market will be achieved by including in the analysis only those entities that are likely to join such a market. To date, only PacifiCorp has expressed an interest in fully integrating into the CAISO. A regional market footprint consisting of the current CAISO plus PacifiCorp would be an appropriate "low participation" scenario. A reasonable "high participation" scenario would be to perhaps include all entities that have either joined the EIM or expressed an intention to do so (unless they request that they not be included in the study).<sup>5</sup> This will provide a more balanced picture of the potential benefits of a regional market, at this juncture, than simply presuming, as a base case, that almost all U.S. utilities within the Western Interconnection will ultimately join the CAISO RTO.<sup>6</sup>

### **B. The Study Should Evaluate And Reflect The Benefits That Can Be Achieved By Modifications To The Existing CAISO Market**

E3's description of the three scenarios that it plans to model appears to incorporate an implicit assumption that the only way to achieve certain interregional benefits is by formal extension of the CAISO markets throughout the west. In particular, it appears that E3 plans to study the BAU scenario in order to provide a "baseline" from which to assess the benefits of a regional energy market. E3 does not appear to consider whether such benefits can be achieved through other means, such as enhancements to existing CAISO market rules.

In reality, however, there are numerous opportunities to make modifications to the existing CAISO market design that can increase the efficiency of interregional trade and achieve many of the same integration benefits cited in support of a CAISO-run RTO. Such changes are simpler to implement, and the efficiency improvements would apply to all CAISO transactions with external market participants across the entire west, not just those that are able and willing to join a western RTO. Identifying the efficiencies and benefits that can be achieved within the existing market construct will prevent the study process from inadvertently overstating the *incremental* benefits of

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<sup>5</sup> Even this scenario assumes that all entities participating in the EIM would ultimately fully integrate their transmission systems, Balancing Authority functions, and operations with the CAISO. For that reason, it would be prudent to study both a "low participation" case, expanding the CAISO footprint to include the system of PacifiCorp, and a "high participation" case, including the systems of all entities that have expressed an intention in joining the EIM.

<sup>6</sup> Moreover, to the extent that CAISO believes that the systems and resources of external transmission providers that have not expressed an interest in participating in the EIM should be modeled within the footprint of an expanded regional market, Powerex recommends that CAISO reach out to these entities and seek their input and collaboration in any study. Doing so will help ensure that CAISO has accurate information regarding the capabilities and constraints of these systems and will help avoid any perception that CAISO is simply presuming that expansion of its market across almost the entire Western Interconnection is inevitable.



regional expansion of the CAISO markets.

#### a. The Elimination of Hurdle Rates

E3's proposed modelling approach appears to assume that development of an integrated regional energy market and transmission tariff is a precondition to eliminating incremental transmission rates that may act as an impediment to more efficient interregional trading. However, there are opportunities available in the near-term to eliminate hurdle rates to prevent such rates from impeding the efficiency of energy markets in the current market construct.

As an example, CAISO recently stated that it is exploring eliminating or reducing the transmission access charge ("TAC") and other measured demand charges for exports providing flexible capacity.<sup>7</sup> These charges are currently applied to all CAISO export transactions, in both the day-ahead and real-time timeframe. In Powerex's experience, these charges represent a significant impediment to greater interregional trade and deter a range of activities that can help the CAISO meet the challenges of renewable integration. The elimination of such charges has the potential to confer significant reliability and efficiency benefits to ratepayers, including facilitating exports during periods when market prices are low to help alleviate oversupply conditions and avoid the need to curtail renewable output.<sup>8</sup> CAISO has the ability to seek modification of these charges within the context of the existing footprint and without further expansion of the CAISO market. Importantly, doing so would eliminate hurdle rates for *all* CAISO exports, not just those exports delivered to entities that join a western RTO. E3's proposed study framework does not appear to recognize the potential benefits of such a change. The result is that the E3 study approach effectively assumes that CAISO will not follow through on this initiative, unnecessarily perpetuating hurdle rates for entities that do not join a western RTO, and permanently inhibiting the efficiency of transactions with participants outside of the RTO.

With respect to the evaluation of hurdle rates on imports into the CAISO, E3's initial assumptions do not appear to accurately characterize the amount of import activity that is actually affected by such hurdle rates. In Powerex's experience, the majority of deliveries that occur over systems operating under the Open Access Transmission Tariff framework established by FERC typically occur on transmission rights that are purchased in advance of any day-ahead and real-time transactions. For example, Bonneville Power Administration recently calculated that the vast majority of energy

<sup>7</sup> Flexible Resource Adequacy Criteria and Must Offer Obligation – Phase 2, Straw Proposal at 15 (Dec. 11, 2015), available at <http://www.caiso.com/Documents/StrawProposal-FlexibleResourceAdequacyCriteria-MustOfferObligationPhase2.pdf>.

<sup>8</sup> Comments of Powerex Corp. on Flexible Resource Adequacy Criteria and Must Offer Obligation – Phase 2 Straw Proposal at 19-20 (filed Jan. 6, 2016), available at <http://www.caiso.com/Documents/PowerexComments-FlexibleResourceAdequacyCriteria-MustOfferObligation-StrawProposal.pdf>.

deliveries on the Pacific AC and Pacific DC Interties were scheduled on transmission service with a term of a year or longer.<sup>9</sup> On these major interties, only a small fraction of imports into the CAISO face any incremental hurdle rate at all. Yet the E3 approach appears to propose to apply the hourly rate to *all* imports into the CAISO under the BAU case, effectively imposing artificial impediments to trade that appear to be “resolved” through a CAISO integrated regional market. To be clear, Powerex does not contend that interregional trade under a bilateral scheduling framework is as efficient as it could be under centralized dispatch. But the benefits of centralized dispatch under a CAISO integrated regional market must be based on a reasonably accurate representation of the existing activity, including modeling hurdle rates only to the extent they actually apply in practice.

#### **b. Access to External Renewable Resources**

E3’s study approach appears to assume that, under two of the three study scenarios, there will be limited external renewable resources available to meet California’s RPS. E3’s proposed study framework appears to overlook that there are already numerous examples of renewable resources that have been constructed outside of the CAISO BAA for the purpose of being delivered to California to meet its RPS requirements. For example, it is well known that numerous wind facilities have been built both in Montana and in Oregon with the goal of meeting California’s RPS requirements. Thus, it is inaccurate for the E3 study to assume that continued access to additional out-of-state renewable resources, such as Wyoming wind, can only occur with the implementation of a CAISO integrated regional energy market.

Likewise, there are numerous examples of transmission facilities that have been built to meet the needs of multiple jurisdictions without the regional transmission planning that comes with a regional transmission tariff. For example, the California-Oregon Intertie and the Pacific DC Intertie were constructed as joint initiatives between numerous entities in California and in the Pacific Northwest, and was achieved without the benefit of an RTO or common transmission tariff. Investment in these interregional facilities continues today, as the Pacific DC Intertie is currently completing a major \$400 million upgrade. While Powerex strongly supports efforts to increase transmission planning coordination between regions, it should not be assumed that a regional transmission tariff or RTO is a necessary precondition for building or expanding interregional transmission facilities that can provide significant benefits.

#### **c. Participation of External Resources**

Additionally, and perhaps more importantly, it is important to recognize that there are changes that can be made to the CAISO’s existing market framework, such as

<sup>9</sup> Bonneville Power Administration, Schedule Data Summary at 2, *available at* [https://www.bpa.gov/Finance/RateCases/BP-18/Meetings/SchedulingDataCharts\\_2015-11-12.pdf](https://www.bpa.gov/Finance/RateCases/BP-18/Meetings/SchedulingDataCharts_2015-11-12.pdf).

removing CAISO's export charges and enhancements to California's Flexible Resource Adequacy Criteria and Must-Offer Requirement ("FRAC-MOO") framework, that can facilitate the participation of additional external resources in the CAISO markets, even without regional integration. In order to provide an accurate assessment of the incremental benefits likely to result from a CAISO integrated regional market, it is important that such changes be taken into account when developing any BAU or baseline scenario used to assess the value of regional integration.

### **C. The Study Framework Must Properly Allocate Savings from Avoided Capital Investments**

E3's presentation cites as a key benefit of regional integration "increased access to latent flexible capacity across a broad, diverse region."<sup>10</sup> Powerex agrees that there is significant flexible capacity located outside the current CAISO footprint, particularly the large storage hydro systems of the Pacific Northwest. This flexible capacity can—and already often does—help meet rapid increases or decreases in CAISO's net load. The output of these flexible resources can also be reduced to permit excess energy produced within the CAISO to be absorbed externally to CAISO's footprint, reducing the need to curtail renewable output. As recognized in the Brattle Group's presentation,<sup>11</sup> access to additional flexible capacity can allow California to meet the 50% RPS target without overbuilding the state's renewable fleet and without the need to build storage resources. Both renewables overbuild and building new storage resources imply significant additional investment, making access to external resources—which reduces or avoids the need to make these expensive investments—highly valuable.

The studies mandated by SB 350 appear capable of recognizing these capital cost savings, at least at an aggregate level. But a key goal of these studies is to estimate the benefits that will be realized specifically by California ratepayers. It is unclear how the studies anticipate that these capital investment savings will be allocated. Will the entirety of the avoided investments be treated as a benefit to California ratepayers? Or will these savings somehow be shared with the ratepayers that funded (and continue to fund) the external resources that make those investment savings possible? Any parsing of benefits between California and non-California ratepayers requires making an explicit assumption about how these investment savings will be shared, and the framework under which these savings will be distributed.

There is likely a wide range of possible approaches to sharing these benefits that make all ratepayers better off. But it should not simply be assumed that 100% of all capital

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<sup>10</sup> E3 presentation at 7.

<sup>11</sup> The Brattle Group, CAISO's SB350 Evaluation Plan: Ratepayer Impact Analysis at 3 (Feb. 8, 2016), available at <http://www.caiso.com/Documents/Presentation-SB350RatepayerImpactsAnalysis-BrattleGroup.pdf>.



investments that California ratepayers avoid making are treated as benefits to those ratepayers. The implication of such an assumption is that the non-California ratepayers that fund external resources—the “latent flexible capacity” cited by E3—receive *none* of this economic value. In other words, the owners of external flexible capacity are assumed to join a CAISO integrated regional market in order to receive the relatively modest operational efficiency benefits, while California ratepayers receive both their share of the operational efficiency benefits, and also the entirety of the long-term economic benefits created by this additional flexibility. This approach seems not only inequitable, but unrealistic and inconsistent with the expectation that the “latent flexible capacity” in the region would be made available to CAISO under those terms.

Powerex shares the view that very large economic benefits can be realized by developing appropriate long-term and short-term market frameworks for flexible resources located outside of the current CAISO footprint to participate in meeting California’s renewable integration challenges. A critical part of the SB 350 studies has to be a clear and transparent articulation of how those benefits will be shared, which, in turn, must be internally consistent with the estimated benefits for California and non-California ratepayers, as well as with the assumptions regarding participation by entities located outside of California.

<p><b>2. Five separate 50% renewable portfolios are being proposed for 2030 as plausible scenarios for the purpose of assessing the potential benefits of a regional market. Are these portfolios reasonable for that purpose, and if no, why?</b></p>
<p>Comment: No comments</p>
<p><b>3. To develop the five renewable portfolios the RESOLVE model makes a number of assumptions resulting in a mix of renewable and integration resources for the scenario analysis (rooftop solar, storage, retirements, out of state resources etc.) Do you think the assumptions associated with developing the renewable portfolios are plausible? If no, why not?</b></p>
<p>Comment: No comments.</p>
<p><b>4. The renewable portfolio analysis assumes certain costs and locations for the various renewable technologies. Do you think the assumptions are reasonable? If no, why not?</b></p>
<p>Comment: No comments.</p>
<p><b>5. The renewable portfolio analysis makes assumptions about the availability and quantity of out-of-state renewable energy credits (“RECs”) to California. Do you think the assumptions are plausible? If no, why not?</b></p>
<p>Comment: No comments.</p>
<p><b>6. The renewable portfolio analysis makes assumptions about the ability to export surplus generation out of California (i.e., net-export assumptions). Do you think these assumptions are reasonable? If no, why not?</b></p>
<p>Comment: No comments.</p>

<p><b>7. Does Brattle’s approach for analysis of potential impact on California ratepayers omit any category of potential impact that should be included? If so, what else should be included?</b></p>
<p>Comment: No comments.</p>
<p><b>8. Are the methodology and assumptions to estimate the potential impact on California ratepayers reasonable? If not, please explain.</b></p>
<p>Comment: It is unclear whether the potential beneficial impact on California ratepayers will be accurately modeled. Please see Part C of the comments responsive to Question 1.</p>
<p><b>9. The regional market benefits will be assessed based assuming a regional market footprint comprised of the U.S. portion of the Western Interconnection. Do you believe this is a reasonable assumption for the purpose of this study? If not, please explain.</b></p>
<p>Comment: No. Please see Part A of the comments responsive to Question 1.</p>
<p><b>10. For the purpose of the production cost simulations, Brattle proposes to use CEC carbon price forecasts for California and TEPPC policy cases to reflect carbon policy implementation in rest of WECC. Is this a reasonable approach? If not, please explain.</b></p>
<p>Comment: No comments.</p>
<p><b>11. BEAR will be using existing economic data, and generation and transmission data from E3, the CAISO, and Brattle. These data are currently being developed. Are there specific topics that you want to be sure to be addressed regarding these data?</b></p>
<p>Comment: No comments.</p>

<p><b>12. The economic analysis will focus on the electricity, transportation, and technology sectors to develop the economic estimates of employment, gross state product, personal income, enterprise income, and state tax revenue. These results will be further disaggregated by sector, occupation, and household income decile. Do you think these sectors are the appropriate ones on which to focus the job and economic impact analysis? If no, why?</b></p>
<p>Comment: No comments.</p>
<p><b>13. Under the proposed study framework, both economic and environmental impacts of disadvantaged communities will be studied. Based on the study overview do you think this satisfies the requirements of SB350?</b></p>
<p>Comment: No comments.</p>
<p><b>14. The BEAR model will evaluate direct, indirect, and induced impacts to income and jobs, including those in disadvantaged communities. Do you think additional economic analysis is required? If yes, what additional analysis is needed and why?</b></p>
<p>Comment: No comments.</p>
<p><b>15. The environmental analysis will evaluate impacts to California and the west in five areas – air quality, GHG, land, biological, and water supply. Do you think additional environmental analysis is required? If yes, what additional analysis is needed and why?</b></p>
<p>Comment: No comments.</p>
<p><b>16. The environmental analysis presentation identified a number of potential indicators for the various impacts. Are the indicators sufficient? If no, what additional indicators would you suggest?</b></p>
<p>Comment: No comments.</p>

**17. Other**

Comment: No comments.