

Stakeholder Comments Template

Submitted by	Company	Date Submitted
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The Office of Ratepayer Advocates (ORA) is the independent consumer advocate within the California Public Utilities Commission (CPUC). ORA's statutory mandate is to obtain the lowest possible rates for utility services consistent with reliable and safe service levels. ORA also advocates for customer and environmental protections in connection with utility service. ORA appreciates the opportunity to comment on the February 8, 2016 SB350 Regional Integration Study Plan meeting.

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 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?

The SB 350 studies should consider the potential impact of the United States' (US) Supreme Court's February 9, 2016 Order to stay implementation of the Environmental Protection Agency's (EPA) Clean Power Plan (CPP). California's participation in a regional ISO would be overseen by the Federal Energy Regulatory Commission (FERC). In the absence of the CPP, there is no federal requirement to reduce greenhouse gas (GHG) emissions. Without a federal requirement to reduce GHG emissions, FERC's oversight of wholesale markets would consider whether rates are just and reasonable, whether policies were likely to prevent discrimination, enhance reliability and promote efficient operations of the market, but FERC would have no mandate to account for GHG emissions. This scenario (no CPP) and its potential impact on California's GHG policies should be an additional study area.

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?

ORA supports considering a number of scenarios, especially multiple scenarios concerning the ability to export surplus power under the Business-As-Usual scenario.

The scenarios selected are the result of numerous input assumptions. Until the impact of these assumptions is better understood, it is premature to reach conclusions as to the reasonableness of the portfolios. To highlight the criticality of the assumptions presented, it would be informative to identify which assumptions result in binding constraints that increase the overall portfolio cost, and how the portfolios selected and the costs to ratepayers differ if various binding constraints were relaxed.

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?

The primary point of comparison available to measure the reasonableness of assumptions and resulting portfolios is the work that has been done in developing the CPUC RPS calculator. The presentation on February 8 by E3 identified several inputs that were drawn directly from the RPS calculator, including the 33% RPS portfolio and the renewable resource cost assumptions. However, there was no systematic discussion of how the RESOLVE model and the RPS model may differ and how the RESOLVE model performs with respect to the RPS calculator given a similar set of input assumptions. Moreover,

elements of incremental resources (E3 Presentation, slide 33, 500 MW of geothermal and 500 MW pumped storage manually added for portfolio diversity) were not based upon economic analysis of the model. These assumptions, as well as the economic consequences of the selection of these resources, need to be more fully identified.

The impact of simplifications in modeling of the WECC-wide Market in RESOLVE is also unclear. During the stakeholder meeting, Brattle representatives explained that its modeling assumes participation by all United States based Balancing Authorities located in the Western Interconnection. E3's description of the RESOLVE model, states that the Rocky Mountain area is not being modeled. (see slide 14). First, why was the Rocky Mountain area excluded and what are the expected impacts of such an exclusion? Second, does this exclusion create any inconsistency between the RESOLVE model and the production cost simulations being prepared by Brattle, which presumably would include the Rocky Mountain area? These issues should be clarified in advance of the proposed April stakeholder meeting.

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?

The E3 presentation indicated that the renewable resource cost assumptions were drawn from the RPS calculator. This supports consistency between the CPUC and the CAISO. If any cost information was used to supplement the information from the RPS calculator, that information should be identified, including its source, and how it compares to cost of similar technologies in the RPS calculator.

As for locations, ORA supports the assumption that external wind and solar resources would be available over the existing transmission system in proximity to the existing delivery points into California. The linkage of the quantity of such available import capacity to the import of coal-based energy should be more clearly identified, especially how the Clean Power Plan was assumed to impact coal imports and whether the pending stay will result in changes to the modeling to reflect another scenario. While overall additional analysis of the ability to accommodate additional resources on existing transmission deserves further study, sensitivity analysis of the impact of the assumption regarding available transmission capacity utilized in the study on the overall portfolio selection and the value of remote Wyoming and New Mexico wind resources and Southwest solar resources is needed.

In the stakeholder meeting, the high-quality out-of-state wind resource class was assigned a transmission cost of \$1.5 billion for 3,000 MW of wind (1,500 MW in Wyoming and 1,500 MW in New Mexico). One explanation for this cost was that it reflected an estimate of the transmission cost to integrate the resources in the local market. Given the remoteness of the two resource areas and the recent experience in California, ORA is concerned that this may significantly underestimate the cost to interconnect these resources to the local

market. An analysis of the impact of doubling or tripling the portfolio selection and integration value would help assess the importance of the accuracy of these transmission costs in accurately modeling these resource options.

At the stakeholder meeting, Mr. Casey (Vice President, CAISO Market and Infrastructure Development) inquired whether stakeholders supported an analysis that would focus on an Energy Only status for the increment of RPS energy above 33%, essentially not requiring physical delivery of all the energy to California. ORA supports an analytical method that evaluates transmission upgrades associated with remote resources based on an economic analysis of any identified congestion and assuming that the cost of such transmission upgrades is linked to the remote resources in the portfolio selection.

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?

No comment at this time.

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?

The portfolio selection and the value of regionalization appears very sensitive to the assumptions around the ability of California to export surplus California generation. As such, ORA supports the proposal to consider three alternative export limits under Business-As-Usual Procurement. However, the lower bound (2,000 MW), which is based upon historic patterns, may not be indicative of the future with greater penetration of renewable generation and associated increased downward pressure on market prices. External parties will be highly incentivized to procure this energy. The lower boundary of the range of exports should therefore either be increased or given little weight in the valuation of regionalization.

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?

No comment at this time.

8. Are the methodology and assumptions to estimate the potential impact on California ratepayers reasonable? If not, please explain.

In response to PG&E's questions regarding how the impacts and benefits from the study would be allocated between California and the other areas, Brattle stated that the study was not intended to be used to determine precisely where the shifts of impacts will occur. However, in order to truly estimate the potential impact of the transformation of the ISO into a regional organization on California ratepayers, an effort should be made to determine where the shifts of impacts will incur. In particular, the study should identify the relative impacts and benefits of several different, plausible footprints for the expanded regional ISO.

It would be helpful for the analysis to address whether there will be additional costs that will be borne by California associated with regionalization. The analysis should include a separate section on any such costs, including TAC costs, increases in the GMC (for example, will regional operation offices be required), loss of transmission revenues associated with exports, etc.

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.

Brattle acknowledged during the presentation that assuming that all US balancing authorities in the Western Interconnection would join the expanded ISO would produce an outer bookend of potential market benefits. However, this is based on a scenario that may not occur for many years, if ever. For example, it is unclear whether federal power agencies Bonneville Power Administration and Western Area Power Administration would join the expanded ISO. Nor is it clear given the recent stay of the CPP, when and if other balancing authorities will be interested in joining a regional ISO.

In light of these uncertainties, it is critical to evaluate the market benefits of an expanded ISO with fewer participating balancing authorities. One possibility would be to evaluate benefits based on balancing authorities that have indicated interest in joining an expanded regional ISO. At this point, that would be PacifiCorp only. Another possibility would be to evaluate benefits based on balancing authorities that have indicated interest in joining the Energy Imbalance Market. Completing a second scenario using more realistic near term assumptions about balancing authorities likely to join, in addition to the proposed study assuming a regional market footprint comprised of the US portion of the Western Interconnection, would provide a set of bookends providing information about the range of potential benefits.

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.
No comment at this time.
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?
No comment at this time.
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?
No comment at this time.
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?
No comment at this time.
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?
No comment at this time.
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?
After review, ORA staff finds that environmental impact analysis of air quality, GHG, land use and visual resources, biological resources and ecology, and water supply, is sufficient at this time. No additional analysis is required at this time.
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?
After review, ORA staff finds that the listed potential indicators of impacts are a good starting point for focused analysis. The inclusion of analysis on a more granular level would be beneficial, where applicable. For example, including co-development analysis on the “sub-zoned” level for certain areas in the Land Use and Visual Resource section as mentioned by Rachel Gold from LSA and Carl Zichella from NRDC would be beneficial, since a higher level view might not adequately capture the actual benefits or harms to a specific area. This is especially true if this data is readily available for a particular area.
17. Other