# ORA

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THE OFFICE OF RATEPAYER ADVOCATES' COMMENTS ON THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR (CAISO) TRANSMISSION PLANNING PROCESS (TPP) PRESENTATIONS AND MEETINGS ON SEPTEMBER 21-22, 2017

October 6, 2017

The Office of Ratepayer Advocates (ORA) is the independent consumer advocate within the California Public Utilities Commission (CPUC) with a mandate to obtain the lowest possible rates for utility services, consistent with reliable and safe service levels, and the state's environmental goals.

ORA submits the following questions and comments on the California Independent System Operator (CAISO) Reliability Assessments and Special Studies and the Participating Transmission Owners Reliability Solutions presentations at the September 21-22, 2017 CAISO Transmission Planning Process (TPP) meetings.

1. **The Interregional Transmission Project (ITP) Evaluation Did Not Support Use of Out of State Resources to meet the State's 50% Renewable Portfolio Standard (RPS) Target**

The CAISO made an assumption that out of state wind and solar resources are less expensive and have higher capacity factors than in-state resources. With this assumption, the CAISO evaluated the potential for current proposed ITPs to provide 4,000 megawatts (MW) of wind from Wyoming and New Mexico to California to meet the state's 50% RPS target. However, this evaluation revealed that this target cannot be met with just one ITP.[1] This evaluation, along with the CPUC's Integrated Resource Planning (IRP) study findings,[2] confirms that California can meet its current 50% RPS target with in-state resources at lower costs than with the inclusion of out of state wind resources.

ORA supports continued consideration of ITPs to meet future state RPS targets, along with in-state resources to determine the most cost efficient procurement method. To further assess the costs and benefits of proposed ITPs, ORA recommends further study on the following items:

[1] *Interregional Transmission Project (ITP) Evaluation and 50% RPS Out-of-State Portfolio Assessment*, Day 2 CAISO Presentation -2017-2018 Transmission Planning Process- Preliminary Reliability Results, September 22, 2017, CAISO staff, slides 12,40 and 42 (ITP Presentation).
[2] Proposed Reference System Plan, Modeling Results Files and Resolve Model 9/19/2017 Attachment A: Proposed Reference System Plan, slide 23.

A. *Firm Available Transfer Capacity (ATC) of Resources:* The ITP evaluation revealed that only the TransWest Express (TWE) ITP would "create sufficient long-term, firm available transmission capacity from the renewable resource areas [located in Wyoming] all the way to the CAISO without relying on other transmission not owned by the project sponsor" [3] in the amount of 1,500 MW. The CAISO should provide additional information to support this assertion, such as all the costs associated with getting wind from Wyoming to the CAISO.

B. *Renewable Curtailment Market Factors:* The ITP evaluation revealed that additional transmission would not result in greater exports of California renewables.[4] The export of California renewables beyond the current CAISO 2,000 megawatts (MW) export limit is impacted more by market dynamics than by transmission constraints. ORA requests further evaluation and information on the market barriers to increasing the export of California renewables beyond 2,000 MW in item 2 of these comments.

ORA provides more specifics on its recommended future RPS procurement studies in item 9 of these comments.

**2. The CAISO Should Reevaluate the Benefits in the Senate Bill 350 Regionalization Studies Based on its TPP Special Study Findings**

During the 2017-2018 TPP presentations,[5] there was a discussion on the CAISO's export limits that raised questions on the reported regionalization benefits in the Senate Bill 350 (SB 350) study. This discussion revealed that the CAISO is not able to sell more than 2,000 MW of its surplus solar energy in the regional market even without transmission constraints. The SB 350 study assumed that with regionalization, the CAISO's export capacity would increase from 2,000 MW to 8,000 MW.[6] The SB 350 study benefit analysis assumed that California's renewable exports would be sold at a value no less than \$0/MWh (\$0 per megawatt-hour).[7] The analysis also considered a sensitivity in which California renewable exports would be sold at a negative price (-\$40/MWh) during oversupply conditions.[8]

Based on the 2017/2018 TPP special study findings, the CAISO has new information on California's ability to sell its excess renewable resources in a regional market. It would be good to continue this discussion with a review and an evaluation of the barriers to selling California's excess renewable supply in the regional market, and if these barriers could be addressed through a day-ahead regional market. One of the barriers discussed in the September 22, 2017 CAISO TPP meeting was the predictability of California's renewable oversupply. This oversupply may

[3] ITP Presentation slides 12 and 40.
[4] ITP Presentation slide 42.
[5] Day 2 ISO Presentation - 2017-2018 Transmission Planning Process- Preliminary Reliability Results, September 22, 2017, CAISO and stakeholder staff discussion.
[6] *Senate Bill 350 Study, The Impacts of a Regional ISO-Operated Power Market on California, Executive Summary*, July 8, 2016, Brattle Group, Energy & Environment Economics, Bear and the Aspen Environmental Group, Page 33. (SB 350 Executive Summary).
[7] SB 350 Executive Summary p.30.
[8] SB 350 Executive Summary p.34.

not be known until an hour before the market starts.[9] This short market transaction time frame makes it difficult for California's excess renewable supply to supplant existing scheduled resources. These scheduled resources would have to shut down then ramp up again to serve load following the renewable output at short notice.

Given this new information, it would be helpful to understand the benefits and costs of selling more than 2,000 MW of California's renewable supply in the regional market. It also would be helpful to know the expected market price for any additional renewable energy export and the amount that could be sold at $0/MWh, -25/MWh, or -40/MWh.

This discussion also would benefit from data on the current amount of California renewable resources sold in the regional market, and their market settlement price. This information is not currently provided in the CAISO's quarterly Energy Imbalance Market (EIM) benefit reports; however, this information would assist with understanding the reported EIM benefits.

### 3. The Next Bulk Energy Storage Study Should Include A Scenario that Utilizes Surplus Solar Power

The CAISO's "Bulk Energy Storage Resource Case Study" assumes that new pumped storage would procure energy based on the least cost best fit criteria, and for this reason it would import cheaper energy from out of state rather than in-state.[10] This study assumed a variation in renewable curtailment prices based on market factors. It concluded that additional bulk energy storage would not reduce renewable curtailment or carbon dioxide ($CO^2$) emissions in the state.

To study how energy storage may reduce renewable curtailment, ORA recommends that the next study scenario evaluate the costs and benefits of new bulk energy storage that relies on in-state solar power when it has a negative value as an input. During the day, solar power is in oversupply and has a negative value. For this study scenario, the storage output could serve evening peak load.

### 4. Preferred Resources Not Considered in San Diego Gas & Electric Company's (SDG&E) Reliability Solutions

The CAISO's reliability assessment of the San Diego area identified several internal 230 kilovolts (kV) reliability constraints. The CAISO identified solutions for these reliability constraints included both preferred resources and facility upgrades.[11] In response, SDG&E proposed only facility upgrades to address reliability constraints in its service area.[12] Reliability

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[9] ITP Presentation discussion.

[10] *Bulk Energy Storage Resource Case Study-Update to the 2016-2017 Transmission Plan Studies,* Day 2 ISO Presentation, September 22, 2017, Shucheng Liu, slide 24.

[11] *SDG&E Main System Preliminary Reliability Assessment Results, 2017-2018 Transmission Planning Process Stakeholder Meeting September 21-22, 2017*, September 21, 2017, Frank Chen CAISO, slides 11, 16, 17 and 21. *San Diego Gas & Electric Area Sub-Transmission Preliminary Reliability Assessment Results, 2017-2018 Transmission Planning Process Stakeholder Meeting September 21-22, 2017*, September 22, 2017, Charles Cheung SDG&E, slides 5-6.

[12] *2017 SDG&E Grid Assessment Results CAISO Stakeholder Meeting September 22, 2017, September 22, 2017*, Habib Maiga SDG&E, slides 8-15.

solutions should consider possible outcomes such as higher transmission costs from solutions that require reliance on imports for future energy resources. Solutions that include preferred resources could have additional benefits of reducing reliance on imports for future energy need. For these reasons, ORA supports the CAISO identified solutions for the San Diego service area which included preferred resources. These solutions respond to internal transmission limitations, reduce the dependency on imports, and reduce future transmission costs. Going forward, ORA recommends consideration of the solution trade-offs before selecting one solution method over another.

**5. Expand CAISO Review of Previously Approved Projects to the Entire CAISO Region**

The CAISO appears to have expanded its review of previously approved reliability projects in response to reduced load forecasts. ORA supports this critical review and recommends that it not be limited to the PG&E service area, but include all reliability driven CAISO-approved transmission projects in all of the CAISO-grid control areas.

**6. Justification Needed for GridLiance Valley-Innovation 230 kV Project**

GridLiance has proposed a new 230 kV circuit and 230/138 kV transformer at Valley Substation with an estimated cost of $50 million[13] to support the Valley Electric Association system. While some potential reliability benefits have been identified, GridLiance did not demonstrate that the existing system design fails to meet the planning standards. The CAISO's current system assessment also did not support GridLiance's proposal.[14] Should GridLiance's seek to have this project considered as a reliability improvement project, then a formal cost and benefit analysis as envisioned in the CAISO Planning Standards, Section 5.4 must be provided.

**7. Pacific Gas and Electric Company (PG&E) Should Provide the Funding Sources for California's High Speed Rail (CHSR) Load Interconnection and Network Upgrades**

PG&E gave a presentation on their CHSR network upgrades; however, they did not provide information on how the project will be financed. PG&E has proposed connection configurations[15] estimated to cost approximately $500 million (M) (an average cost of $50M per site[16]) with potentially another $165M in upstream system improvements.[17] The presentation did not explain whether such connection configurations were per CHSR's requests or based on PG&E's determination. If CHSR has requested these connection configurations, PG&E should identify the CHSR funding commitments for these selected upgrades. If PG&E has specified these connection configurations, PG&E should provide its reliability and cost analysis that supports the presented

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[13] *GridLiance West Transco's 2017 Request Window Proposal, CAISO 2017/2018 Transmission Planning Process September 21-22, 2017*, September 22, 2017, GridLiance, slide 2.

[14] *Valley Electric Area Preliminary Reliability Assessment Results, 2017-2018 Transmission Planning Process Stakeholder Meeting September 21-22, 2017*, September 21, 2017, Meng Zhang CAISO, slides 3-4.

[15] PG&E has proposed Breaker-and-a-half (BAAH) interconnections for all CHSR sites, irrespective of the size of load being served.

[16] As a point of comparison, later that day, Valley Electric Association presented its proposal for a four breaker, 2 transformer 80 MVA station with an estimated cost of ~$11 million.

[17] PG&E indicated that the upstream system improvements would only be initiated through the CAISO TPP when triggered by the CHSR forecasted load within the planning horizon.

designs. ORA recommends a follow-up presentation on the CHSR project that responds to these information requests and describes the funding resources for the identified upgrades.

### 8. The CAISO and PG&E Reliability Assessments Illustrate the Role of Distributed Energy Resources in Transmission Planning

The CAISO's reliability assessment presentations provided the load and "load modifier" assumptions for all the service areas evaluated in the CAISO TPP. The load modifier assumptions included output from energy efficiency, behind the meter-photovoltaics (BTM-PV), and demand response. The BTM-PV output was assumed from all sources of BTM-PV i.e. wholesale and retail net energy metering.[18] ORA supports the inclusion of this information, which demonstrates the capacity of the BTM-PV to serve load and load peaks. ORA notes that the CAISO's reliability assessments assumed that BTM-PV has no output that would reduce winter peaks between 4 p.m. and 6 p.m. in four planning areas. These planning areas are Humboldt, North Coast and North Bay Areas, the Greater Bay Area, and Central Coast/Los Padres Area.[19] ORA requests additional information on any operational issues that occur as a result of the performance of BTM-PV during winter peak time-frames, and confirmation on the months included in the winter peak time-frames.

PG&E presented a reliability assessment solution for the East Bay that included distributed energy resources (DER) to replace local generation at risk of retirement and to eliminate the reliance on Special Protection Systems. The solution included a combination of substation upgrades and distributed energy resources, energy storage and operational solutions to provide the least-cost best-fit solution program.[20] ORA supports the continued consideration of cost effective renewable resources for reliability needs.

### 9. Responses to the CAISO's Questions on the Next Steps for the ITP

The CAISO requested responses from stakeholders on four questions regarding the next steps for the ITPs discussed during the September 22, 2017 CAISO TPP meeting. These ITPs are (1) Southwest Intertie Project North; (2) PacifiCorp Gateway West and South, Cross Tie; (3) TransWest Express; and (4) the Renewable Energy Express ("REX") transmission and SunZia projects. The following are the CAISO's questions as stated,[21] and ORA's responses.

*A. "How the transmission project would be procured – interregional project, regional project, or component of generation procurement?"*

At this time, ORA does not recommend procuring out of state wind resources because the ITP's evaluation demonstrated that existing in-state resources can meet the state's current 50% RPS target. [22] The CPUC's Integrated Resource Plan for 2017-2018[23] had the same

[18] Day 1 Presentation -2017-2018 Transmission Planning Process- Preliminary Reliability Results, September 22, 2017, CAISO staff, (Day 1 Presentations) slides 23,48,60,80,104,121,136,152,209,219,230 and 256.

[19] Day 1 Presentations slides 23, 48, 60 and 121.

[20] *PG&E Oakland Reliability Proposal CAISO Stakeholder Meeting, CAISO 2017/2018 TPP September 22, 2017 Presentation*, September 22, 2017, PG&E slide 24.

[21] ITS Presentation slide 43.

[22] ITP Presentation slide 5.

conclusion as the ITP. The TPP presentations also show that the generation and transmission cost differences for in-state and out-of-state wind are not as significant as previously assumed.[24]

For RPS assessments for targets greater than 50%, ORA recommends the CAISO continue to evaluate in-state versus out of state RPS procurement cost. This evaluation should consider the following:

i. In-state resources identified in the Renewable Energy Transmission Initiative (RETI) 2.0 studies.
ii. Possible capacity factor increases for in-state wind resources with new wind turbine technology.
iii. Status of the in-state and out-of-state RPS projects and their related transmission connections to the CAISO including expected completion date, and remaining approvals. This information should include wind resources in Sacramento River Valley and Lassen.
iv. Total cost per MW to develop in-state and out-of-state projects to achieve California's RPS goals, including transmission costs to connect to the CAISO grid. This information should include wind resources in the Sacramento River Valley and Lassen.
v. The expected economic benefits of the proposed RPS transmission projects. The CAISO's 50% RPS Out-of-State Portfolio Assessment did not consider the economic benefits of in-state RPS resources. ORA requests the economic benefits of RPS projects be part of the TPP discussion through independent analysis similar to the analysis conducted for the Senate Bill 350 Economic Impact Analysis for regionalization.[25] This analysis should estimate the economic impact of new RPS driven transmission projects on new job and tax revenue generation in sub-regions. This analysis will assist in determining if a regional transmission project falls under the economic category or the policy category or all project categories. For reference, the TransWest project, a project included in the ITP study, will generate significant property and sales tax revenue in the states of Wyoming and Nevada, as well as new employment in these states.

B. *"Arrangement with other non-ISO transmission owners for capacity, and for development of non-ISO transmission."*

Without further justification that convincingly shows benefits to California ratepayers, ORA does not recommend pursuing an arrangement with other non-ISO transmission owners for

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[23] Proposed Reference System Plan, Modeling Results Files and Resolve Model 9/19/2017 Attachment A: Proposed Reference System Plan. slide 23.

[24] *Bulk Energy Storage Resource Case Study-Update to the 2016-2017 Transmission Plan Studies*, Day 2 ISO Presentation, September 22, 2017, Shucheng Liu, slide 15. In-state wind is estimated at 239.14/kW-year and out of state wind is estimated at 223.88//kW-year.

[25] *Senate Bill 350 Study Volume VIII: Economic Impact Analysis*, Berkeley Economic Advising and Research, July 8, 2016.

capacity and for development of non-ISO transmission at this time because current RPS targets can be meet with in-state RPS resources.

*C. "Costs and Cost responsibilities"*
ORA recommends that the allocation of transmission cost be based on benefits received, consistent with Federal Energy Regulatory Commission (FERC) Order No. 1000.[26] ORA also recommends that the CAISO recalculate transmission project benefits at least every three years to confirm that the project cost allocation is reasonable. This reassessment policy would be consistent with Pennsylvania-New Jersey-Maryland (PJM) and Southwest Power Pool (SPP) regional transmission cost allocation policies.[27]

D. *"Staging and sequencing of transmission and generation resources"*
As explained above, ORA supports the procurement of in-state resources to meet the state's RPS targets. The presented evaluation of existing resources and transmission capacity did not conclude that new transmission is needed to secure out of state wind resources from New Mexico and Wyoming to meet the state's current 50% RPS target. For state RPS targets greater than 50%, ORA recommends continuing to consider out-of-state resources along with identified RETI projects.

If you have any questions on this submittal, please contact Kanya Dorland at Kanya.Dorland@cpuc.ca.gov or (415) 703-1374.

[26] *Order No. 1000, Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilitie*s, Federal Energy Regulatory Commission, July 21, 2011, Section 622, p. 447.

[27] ORA staff phone interview with Pauline Foley, January 9, 2017; PJM Open Access Transmission Tariff, Schedule 12. (b)(i)(A) and (c) 4. and *Regional Cost Allocation Review* (RCAR II) SPP Regional Cost Allocation Review Report RCAR II, July 11, 2016, SPP, pp. 25-27.