

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Integrate and Refine
Procurement Policies and Consider Long-Term
Procurement Plans.

Rulemaking 13-12-010
(Filed December 19, 2013)

**COMMENTS OF THE VOTE SOLAR INITIATIVE IN RESPONSE TO
KEY TECHNICAL QUESTION FOR PARTIES IN RESPONSE TO DECEMBER 18TH,
2013 WORKSHOP ON PLANNING ASSUMPTIONS AND SCENARIOS FOR USE IN
THE CPUC 2014 LONG TERM PROCUREMENT PLAN PROCEEDING AND THE
CAISO 2014-2015 TRANSMISSION PLANNING PROCESS**

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Pursuant to the *Administrative Law Judges' Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans*, issued on December 19, 2013 in the above captioned proceeding, The Vote Solar Initiative (Vote Solar)¹ respectfully submits the following responses to key technical questions in response to the December 18, 2013 workshop materials on planning assumptions and scenarios for use in the California Public Utilities Commission ("Commission") 2014 Long Term Procurement Plan Proceeding and the California ISO ("CAISO") 2014-2015 Transmission Planning Process.

Some of the recommendations presented herein may be more conceptual in nature due to time constraints in preparing these comments. We believe the scenarios should evaluate the full range of possible futures to be most valuable for informing policy decisions. For this reason, we are recommending more aggressive renewable and preferred resources scenarios consistent with the state's aggressive carbon and greenhouse gas (GHG) reduction targets. Vote Solar welcomes

¹ Vote Solar is a non-profit grassroots organization working to fight climate change and foster economic opportunity by bringing solar energy into the mainstream. Since 2002, Vote Solar has engaged in state, local and federal advocacy campaigns to remove regulatory barriers and implement key policies needed to bring solar to scale.

the opportunity to work with staff to refine these recommendations and develop more precise assumptions where necessary to support these objectives.

I.

KEY TECHNICAL QUESTIONS & RESPONSES

1. **Is the current range of scenarios sufficient to cover current policy issues facing the CPUC?**

No – the range of scenarios does not cover current policy issues, specifically the use of plug-in electric and hybrid electric vehicles for the purpose of integrating higher levels of renewable resources and a scenario that considers breakthrough storage developments. Both of these issues have been the subjects of previous or ongoing Commission proceedings and both have the potential to significantly increase the amount of variable resources onto the grid. As these are significant potential contributors for helping CA meet its greenhouse gas reduction goals, they deserve more than a cursory inclusion in the 2014 LTPP proceeding. Vote Solar recommends either adding stand-alone scenarios for each, or increasing the assumed contribution from each resource in various other scenarios, particularly those involving increased reliance on variable renewable resources.

2. **Are there any technical errors in the proposed scenarios, scenario tool, or RPS Calculator? For any identified errors, please be very specific in your comments including the location of the error and the correct value, including the source for the revised value. If appropriate, please provide a revised spreadsheet showing any corrected values. Some example questions to consider in identifying factual errors are:**

- a) **Are any resources counted twice or inappropriately left out of the analysis?**
- b) **Are any numbers cited in the proposed scenarios or spreadsheets inaccurate relative to the intended sources?**
- c) **Are there any errors in the renewable generation project data in the 33% RPS Calculator?**

Vote Solar suggests the following corrections to the assumptions for the scenarios:

- a) For all scenarios, the Commission should assume a 40% RPS by 2024 and 51% RPS by 2030² instead of the 33% and 40% numbers used in the report. These numbers are in line with general policy discussions in CA for future renewable policy direction and they support meeting the state's aggressive GHG reduction targets. We believe the scenarios should evaluate as many possible futures in order to better inform policy. These RPS targets provide the high renewable/preferred resources bracket to the trajectory (business as usual) scenarios being proposed.
- b) As described in more detail in our response to question 9, below, the High DG scenario (Scenario 4) should use higher distributed PV assumptions from the Western Electricity Coordinating Council's 2022 PC4 High EE/DR/DG study case. This report, prepared by Energy + Environmental Economics (E3), assumes 12,000 MW of distributed PV by 2022 and roughly 15,000 MW by 2032.
- c) The assumption for storage used in Scenario 6 should be double the amount authorized in CPUC Decision (D.)13-10-040. This scenario should reflect the greatest effort to meet the state's GHG reduction goals and integrate the maximum amount of large-scale and distributed renewables possible, along with aggressive DSM measures. This scenario should also assume retirement of Diablo Canyon, no incremental conventional generation additions, a 50% RPS by 2030 and a high level of distributed PV, as described above and in question 9. The combined effect of these measures will help inform the state's ability to meet the aggressive AB32 goals.
- Although this scenario focuses on reducing GHG emissions, we are recommending

² Ernest Orlando Lawrence Berkeley National Laboratory – *Estimating Policy-Driven Greenhouse Gas Emissions Trajectories in California: The California Greenhouse Gas Inventory Spreadsheet (GHGIS) Model*, dated November 2013, at p.25: <http://eetd.lbl.gov/sites/all/files/lbnl-6451e.pdf>

including the retirement of Diablo Canyon to evaluate the widest range of renewable and preferred resources deployment.

- d) The assumptions about out-of-state renewable resources and transmission development should not be based off of the TEPPC 2022 Common Case Generation data. This data was developed with outdated solar capital cost data and will result in an incorrect mix of generation resource assumptions from outside CA. Instead, resources assumed in the PV and CSP Technology Breakthrough Study Cases should be used (Link available here: http://www.wecc.biz/committees/BOD/TEPPC/Pages/2013Plan_20-Year.aspx). Similarly, for the High DG scenario, the import assumptions should be based on the TEPPC 2022 PC4 High EE/DR/DG study case (see link below for Question 9).
- e) For all of the Trajectory Scenarios, the Additional Achievable Energy Efficiency should be Mid-High instead of the more conservative figures recommended in the staff report. For Scenarios 2 – 6, the AA-EE should be assumed to be High. Energy efficiency continues to be the most cost-effective resource and should be assumed to be at the highest level for scenarios involving high loads, loss of Diablo Canyon and high renewable/preferred resources scenarios.
- f) Scenario 5, which we are recommending being changed to a 50% RPS by 2030, should also include the high incremental distributed PV assumptions. Higher levels of renewables could likely result in continued cost declines making distributed PV affordable to more consumers. For this reason, it makes sense to model higher levels of distributed PV with an ambitious RPS target.

3. Should Diablo Canyon be assumed online or retired in the Trajectory case?

Vote Solar has no comment on this at this time.

4. Is the treatment of energy storage for capacity value reasonable?

Vote Solar is unclear how specifically energy storage is assumed to be treated for capacity value in this report. We need additional information before responding to this question.

5. For existing resources that do not have announced retirement dates, Staff may assume a resource retires based on facility age. Facility age is calculated from Commercial Online Date, but the COD may not be available for some resources. If no COD is available, is it reasonable to assume the resource does not retire within the planning horizon? If not, please provide an alternate methodology and justification from a public data source as needed.

Vote Solar has no comment on this question at this time.

6. How should the capacity value of energy storage, demand response, and demand side resources (PV, CHP) be allocated to small geographic regions and/or busbars and how should the capacity value be adjusted to account for locational and operational characteristics uncertainty?

Vote Solar has no comment on this question at this time.

7. Decision (D.13-10-040) established storage goals for each of three categories – transmission, distribution, and customer-side of the meter, but does not specify the function(s) to be provided. Should storage modeling be focused on deep multi-hour cycling to support operational flexibility or rapid cycling for ancillary services? How should the production profile of each category of storage identified in the CPUC Storage Target Decision be modeled – as a fixed profile or as a dispatchable resource?

For more mature storage technologies like pumped hydro, or for large-scale molten salt energy storage affiliated with CSP projects, storage should be modeled as deep multi-hour cycling. For newer technologies, or storage located on or close to the distribution grid, they should be modeled for rapid cycling for the 10-year study period. Smaller-sized storage that can better provide rapid, shorter duration ancillary services makes more sense in the early stages of

deployment when technology costs are higher at lower production volumes. This may be an over-simplification, but for planning purposes it may allow more storage to be modeled.

8. Should incremental small PV and small CHP on the customer side of the meter be modeled as demand-side load reduction or supply side generation? How should the production profile of each resource type be modeled? Should the same modeling convention be used in all 2014 LTPP and 2014-15 TPP studies or may specific studies make this decision in a manner best suited to the topic being studied?

For the purposes of the 2014 LTPP, DG should be modeled as a supply side resource to better understand the potential value of re-orienting a percentage of installed PV arrays to face west instead of south in order to maximize capacity value and to reflect the ability of advanced PV inverters to provide ancillary services such as frequency regulation and voltage support. This allows greater flexibility and transparency for planning purposes³.

The production profiles for small PV should include both south- and west-facing configurations, as well as fixed tilt and single axis tracking. As CA achieves higher levels of distributed PV penetration, it is more important to model various configurations of PV to help inform policy decisions and to identify potential incentives and tariffs to maximize the grid benefits. Vote Solar welcomes the opportunity to work with the Commission to identify or develop production profiles for west facing arrays and tracking systems, but due to time constraints for responding to the Commission's questions, is unable to provide these profiles at this time.

These modeling conventions should be applied to all LTPP study cases. With the continued declines in PV costs, combined with expected retail electric rate increases over time, distributed solar is expected to grow on a market-driven basis despite the expiration of CSI

³ Note that Vote Solar is not suggesting any changes in the treatment of distributed solar for incentive, rate or tariff design purposes in these comments, but to allow greater flexibility and transparency for planning purposes only.

program benefits, even if/when the ITC drops from 30% to 10% as scheduled for 2016. Thus, it is important to model configurations that yield the greatest benefits to the grid.

9. Is the forecast of incremental small PV (beyond what is embedded within the IEPR forecast) on the demand side reasonable? If not, please provide an alternate forecast and justification from a public data source as needed.

No, the small PV forecast for the high DG scenario is not reasonable. This scenario should help inform policy and planning to maximize the amount of distributed PV to help the state meet its aggressive GHG reduction targets mandated in AB32.

Instead, the Commission should use the estimates from the 2022 PC4 High EE/DR/DG study case prepared by the Western Electricity Coordinating Council in September 2013. The assumptions used in this study were developed by Lawrence Berkeley National Laboratory (LBNL), Energy + Environmental Economics (E3), and the Demand-Side Management Work Group of the State and Provincial Steering Committee (SPSC).⁴

E3 was contracted to assess the distributed PV potential for this study, which is based on their March 2012 report to the CPUC Technical Potential for Local Distributed Photovoltaics in California (<http://www.cpuc.ca.gov/NR/rdonlyres/8A822C08-A56C-4674-A5D2-099E48B41160/0/LDPVPotentialReportMarch2012.pdf>). For the SPSC 2022 High DG/DER case, E3 based their estimates on the potential DG capacity of a feeder, not exceeding 30% of its rated capacity. For the 2032 estimate, they used the maximum capacity per feeder without curtailment. This resulted in an estimate of 12,000 MW of distributed PV by 2022 and roughly 15,000 MW by 2032.

⁴ The SPSC is affiliated with the Western Governor's Association and the Western Interstate Energy Board and is comprised of representatives from Governors, Premiers, and Public Utility Commissioners from each of the States and Provinces in the Western Interconnection. The goal of the SPSC is to provide input to regional transmission planning, improve utilization of the existing grid, and enable integration of renewable resources into the Western Grid. Representatives from California include one CPUC Commissioner staff members from the CPUC and CEC.

Supporting documents can be found via the following links:

- WECC 2022 PC4 High EE/DR/DG report:
http://www.wecc.biz/committees/BOD/TEPPC/External/TEPPC_2022_StudyReport_PC4-High%20EE-DSM-DG.docx
- PowerPoint presentation by E3:
<http://www.westgov.org/sptsc/workgroups/dsmwg/webinars/2013/3-HiDSMpotential.pdf>
- Excel spreadsheet with MW assumptions by TEPPC zone:
<http://www.westgov.org/sptsc/workgroups/dsmwg/highDSM2013/01-11-13DSMdgsci.xls>

10. Is the forecast of incremental CHP on the demand side and the supply side reasonable for the scenarios that include those forecasts? If not, please provide an alternate forecast and justification from a public data source as needed.

Vote Solar has no comment on this question at this time.

II.

CONCLUSION

Vote Solar appreciates the opportunity to provide these comments and reserves the right to respond on other questions in Reply Comments.

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Respectfully submitted,

/s/

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