

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

Order Instituting Rulemaking to
Continue Implementation and Administration
of California Renewables Portfolio Standard
Program.

Rulemaking 11-05-005

(Filed May 5, 2011)

**COMMENTS OF THE BAY AREA MUNICIPAL TRANSMISSION GROUP
OCTOBER 10, 2014 ALJ RULING ON THE RPS CALCULATOR**

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**BAY AREA MUNICIPAL TRANSMISSION
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In accordance with California Public Utilities Commission (“Commission”) Rules of Practice and Procedure (“Rules”), the Bay Area Municipal Transmission Group (“BAMx”)¹ submits these comments to the Energy Division’s Proposal (“ED Proposal”), which was attached to the October 10, 2014 ALJ Ruling (“Ruling”) on the Renewables Portfolio Standards Calculator (“RPS Calculator”).

I. INTRODUCTION

The October 10th Ruling issued a proposal by the Commission’s Energy Division to revise components of the RPS Calculator for the purposes of developing policy based portfolios to potentially inform the Commission’s Long-Term Procurement Plan (LTPP) proceeding, Rulemaking (R.) 13-12-010, and the California Independent System Operator’s (“CAISO”) Transmission Planning Process (“TPP”).

Billions of dollars of customer money have been spent, and are planned to be spent, in building transmission infrastructure to access the full capacity of renewable generation. These expenditures are driven by stringent CAISO “deliverability” requirements without any cost/benefit analysis. Without such analysis, we do not know if the economic benefits provided by these transmission infrastructure projects exceed the costs to customers.

¹ The members of BAMx are Alameda Municipal Power, City of Palo Alto Utilities, and City of Santa Clara, Silicon Valley Power.

BAMx strongly supports the CPUC ED’s consideration of revising the RPS Calculator model to determine whether selected renewable resource options should be energy - only or fully deliverable. The assumption of allowing only “Full Capacity” resources have historically driven excessive and unneeded large-scale transmission projects. The CAISO and several other stakeholders recognize that the issue at hand is deliverability for resources that allow buyers of renewable projects’ output to count the generators’ dependable capacity toward their RA needs. BAMx has questioned the need to build expensive and unneeded transmission to acquire the RA credit from Variable Energy Resources (VER) in several stakeholder processes thus far.² In comments to the CAISO on the 2014-2015 Transmission Planning Process: Imperial County Transmission Consultation dated July 28, 2014, several other stakeholders have raised exactly the same concern.³

For instance, Pacific Gas and Electric (PG&E) states the following.

“Since 2010, the CAISO, CPUC, and CEC have committed to coordinate transmission planning assumptions through a Memorandum of Understanding (MOU) among the agencies. Through this MOU, the Commissioners and senior staff have jointly agreed to the RPS portfolio assumptions that should be used as inputs into the planning process. However, while the number of MWs by location and technology are very clear in these portfolio assumptions, **the choice of whether or not to assume this incremental procurement requires Full Capacity Deliverability Status (FCDS) remains unclear.**”

“**The cost/benefit of Resource Adequacy (RA) vs. network upgrades is currently an issue in the 2014 RPS Plan**, where the CPUC has asked parties to comment on its proposal to assume the value of capacity from RPS procurement to be zero. While PG&E, in its comments to the CPUC, has argued that RA from fully or partially deliverable RPS resources does have positive value, PG&E notes that it currently expects the RA value from non-flexible resources to be low for the foreseeable future, and, with respect to energy-only deals, the RA value, by definition, would be zero.”

Similarly, San Diego Gas and Electric (SDG&E) states the following.

² See BAMx Comments to CAISO with Respect to CAISO Led Effort on Imperial County Transmission Consultation, dated July 28, 2014 (http://www.caiso.com/Documents/StakeholderComments-ImperialCountyTransmissionConsultationStakeholderMeetingJul14_2014.pdf). See also BAMX Comments on the CAISO 2014-15 Transmission Planning Process Draft Study Plan, dated March 13, 2014 (<http://www.caiso.com/Documents/BAMxCommentsDraft2014-2015StudyPlan.pdf>)

³ See “Stakeholder Comments, Imperial County Transmission Consultation, July 14, 2014” at <http://www.caiso.com/planning/Pages/TransmissionPlanning/2014-2015TransmissionPlanningProcess.aspx>

“Deliverability at Any Cost is Not a Public Policy Objective: The CAISO’s (Imperial Valley Consultation) paper is focused on “renewable generation deliverability.” It does not address the question of whether it makes economic sense to provide “deliverability” for all of the “future increased generation potential in Imperial County.” SDG&E believes there should be some assessment of whether consumers would be better off (i) procuring renewable generation on an “energy only” basis thereby avoiding the transmission costs that would make such generation deliverable and buying Resource Adequacy (RA) capacity from sources that do not require incremental transmission capacity, or (ii) procuring renewable generation with both energy and RA capacity attributes, which could mean incurring transmission costs to make such generation deliverable for RA counting purposes.”

Based upon the underlying data in the latest CPUC’s 33% RPS calculator (Version 6.0) as well as the resource portfolios used in the CAISO’s 2014-15 Transmission Planning Process (TPP), we have performed a preliminary economic assessment comparing the annual Resource Adequacy (RA) value associated with renewables in the zones and the annualized transmission costs associated with the corresponding transmission that is needed to obtain RA deliverability for those renewable resources. *Table I.1* shows that for all zones, the annualized transmission cost is significantly higher than the RA value associated with the full capacity (FC) renewable resources. This exercise demonstrates that the CAISO’s approved Delivery Network Upgrades (DNU) that are presumably needed to meet 33% RPS goal are not a cost-effective mechanism to obtain RA from the underlying renewable resources.

Table I.1: A Comparison of RA Value and Corresponding Transmission Delivery Network Upgrade Cost

Transmission Facility	Est. Capital Cost (M\$)*	Delivering Renewables from Zone*	Total (MW)**	NQC (MW)***	Annual RA Value (M\$)****	Annualized Transmission Cost (M\$)*****
Colorado River - Valley 500kV, Red Bluff 500/220 kV Substation and West of Devers	\$1,980	Riverside East	3,800	1,001	\$30	\$248
Coolwater - Lugo 230 kV	\$840	Kramer	642	214	\$6	\$105
Eldorado - Ivanpah 230kV	\$446	Mountain Pass	658	208	\$6	\$56
* Using the CAISO HV TAC Estimating Model (2013-14 Transmission Plan), Dated May 25, 2014.						
** Based upon Data in the CPUC 33% RPS Calculator for the 2014-15 TPP Base (33% 2024 Mid-AAEE) Resource Portfolio.						
*** Based on ELCC values used in the CPUC ED Proposed Revised Calculator Version 6.0						
**** Assuming \$30/kW-Yr RA capacity price used in the CPUC ED Proposed Revised Calculator Version 6.0						
***** Assuming approx. 12.5% carrying rate						

Currently, the CAISO’s TPP uses the RPS portfolios produced by the CPUC’s RPS Calculator model. The existing RPS Calculator model assumes all of the renewable generation in the RPS portfolio has to be fully deliverable without considering whether this makes economic sense. Per the Memorandum of Understanding (MoU) between the CPUC and the CAISO, the CAISO takes these RPS portfolios and carries them forward into its annual TPP. The CAISO performs deliverability analysis to identify the specific transmission upgrades that will make the entire RPS portfolio deliverable. The CAISO does not undertake any analysis to confirm that the identified transmission upgrades are the lowest cost option of meeting LSEs’ 33% RPS requirement and LSEs’ 15% planning reserve requirement. BAMx applauds the CPUC and ED for proposing changes that might allow stakeholders to compare different resources under energy-only and full deliverability scenarios.

The ED Proposal includes a number of “pre-workshop” questions for parties to answer that will inform a discussion in the first workshop on how to prioritize the topics for further consideration. BAMx appreciates the opportunity to comment on these pre-workshop questions.

II. BAMX RESPONSES TO THE PRE-WORKSHOP QUESTIONS

In this section we include the specific questions posed under the ED Proposal and include the BAMx response to each one of them separately.

Q.3 Should a project with a Commission - -approved PPA be included in the policy-preferred portfolio sent to the CAISO for TPP purposes even if it will trigger the need for a major new transmission project? Why or why not?

As discussed above, BAMx strongly recommends that the inclusion of a project that triggers the need for a major new transmission project in the policy-preferred portfolio sent to the CAISO for TPP purposes be subject to an economic test. In other words, if a PPA-approved project triggers a need for a new minor or major transmission upgrade, then that upgrade can be included provided that its benefit in terms of adding Resource Adequacy (“RA”) capacity value exceeds the cost associated with the new transmission project it triggers. Without such an economic test, a small quantity of PPA resource will trigger large-scale transmission projects. In Table II.1, we provide a listing of the transmission projects based upon the “active portfolio” of the renewable resources selected in the RPS calculator Version 6.0. For example, only 50MW of PPA capacity in the *Kramer* Super CREZ that cannot be fully delivered on the existing transmission triggers a need for a \$436 million “minor” transmission upgrade based upon the data in the current version 6.0 of the calculator. Similarly, only 88MW of capacity in the *San Bernardino - Lucerne* Super CREZ would trigger the need for a \$732 million “major” transmission upgrade.

Based upon the transmission costs assumed in the RPS calculator⁴, the “minor” transmission project in the *Kramer* and the “major” transmission project *San Bernardino - Lucerne* Super CREZs would cost approximately \$63 million and \$106 million per year in terms of annualized

⁴ See Annualized Costs in the “Tx_Inputs” tab of the RPS Calculator Version 6.0, dated October 13, 2014. We noticed that the capital costs associated with the minor and major transmission projects were entered as **\$/kW** instead of **million \$**. When we compared the capital costs associated with transmission projects in Version 5.0 of the RPS calculator, we found that most of the electrical zones (super CREZs) have the capital costs (M\$) in version 5.0 (column W) that are identical to the Capital cost (\$/kW) in version 6.0. This gives us the impression that Version 6.0 has erroneously modeled the capital cost as \$/kW which should instead be in M\$. This results in incorrect values for incremental cost of transmission in terms of \$/kW-Yr and \$/MWh that are ultimately used to determine the ranking cost of candidate resources. Please make this correction in the revised version of the RPS calculator.

transmission cost, whereas the RA value added by the incremental renewable PPA resources in each of these two Super CREZs is less than \$1 million per year. See Table II.1.

Table II.1: Multiple Transmission Projects Triggered in Version 6.0 to Accommodate Small PPA Capacity

Reserved Capacity by Transmission Bundle (MW)*				Annualized Transmission Cost (M\$)**	Annual RA Value of Capacity Triggering New Transmission (M\$)***
Super CREZ	Existing	Minor Upgrades	Major Upgrades		
Carrizo North	-	-	150	\$163	\$1.4
Distributed	13	-	-		
Imperial	-	-	240	\$182	\$2.2
Kramer	200	50	-	\$63	\$0.5
Mountain Pass	300	-	-	\$187	
Palm Springs	-	-	15	\$97	\$0.1
Riverside East	350	-	1,451	\$138	\$13.1
Round Mountain	1	-	-		
Sacramento River	12	-	1	\$73	\$0.0
San Bernardino - Lucerne	-	-	88	\$106	\$0.8
San Diego North Central	-	-	9	\$85	\$0.1
San Diego South	-	-	742	\$162	\$6.7
Santa Barbara	-	-	41	\$167	\$0.4
Solano	101	-	22	\$73	\$0.2
Tehachapi	3,774	-	-		
Twentynine Palms	-	-	6	\$111	\$0.1
Victorville	-	-	62	\$98	\$0.6
Westlands	-	722	-	\$219	\$6.5

* **Source:** RPS Calculator Version 6.0, dated October 13, 2014, “Active Portfolio” Tab

** **Source:** RPS Calculator Version 6.0, dated October 13, 2014, “Tx_Inputs” Tab

*** By valuing Net Qualifying Capacity (NQC) of the RPS resources at the market capacity price of \$30/kW-Yr.

BAMx is aware that the PPA approvals may take into account the cost of large-scale Delivery Network Upgrades (“DNU”). However, as demonstrated by ED’s recommendation of approval

of the Mojave Solar PPA⁵, PPA approval does not necessarily mean the Commission will support construction of a major DNU for deliverability purposes. The ED's approval of PPA recognized that the project will not be economic if the cost of related DNU is included. Allowing such DNUs to bypass any economic test means that portfolios will be sent to the CAISO that have never been properly tested for economic viability and thus will likely be rejected by the CPUC in a Certificate of Public Convenience and Necessity (CPCN) proceeding. Therefore, it is inappropriate to assume a PPA project justifies the construction of a transmission line (DNU) unless it is economically justified based upon its RA value.

We are hopeful that the ED-proposed iterative process between the CPUC and CAISO will help streamline the RPS resource selection as regards to transmission need, cost and capability by the time the RPS portfolios are developed as part of the 2016-17 TPP. However, since the existing version of the RPS Calculator (Version 6.0) will be utilized to perform a special study by the CAISO within the 2015-2016 TPP cycle (that would consider an RPS penetration level greater than 33%), we are concerned that it will provide inaccurate renewable resource selection signals if the commercial/PPA projects continue to bypass any economic evaluation concerning RA value versus incremental transmission cost.

Q13. What information should be used to update transmission cost estimates associated with Super CREZs? Provide recommendations on how the Energy Division staff can improve upon its processes for updating the cost estimates for existing and new transmission included in the RPS Calculator.

When reviewing the RPS calculator Version 6.0, we noticed that some of the capital cost estimates associated with new transmission projects were outdated. We recommend the ED staff update this information by utilizing publicly available sources for transmission capital costs including, but not limited to, the CPCN applications, the CAISO TAC Estimating Model⁶ and Request Window applications in the CAISO 2014-15 TPP⁷. BAMx suggests that the transmission cost and capability as listed in version 6.0 be updated using these sources. This

⁵ See the approval of "Pacific Gas and Electric Company's renewable energy power purchase agreement with Mojave Solar, LLC," CPUC ALTERNATE DRAFT, RESOLUTION E-4433, dated November 10, 2011.

⁶ To access the model, see <http://www.caiso.com/planning/Pages/TransmissionPlanning/Default.aspx>.

⁷ <http://www.caiso.com/planning/Pages/TransmissionPlanning/2014-2015TransmissionPlanningProcess.aspx>

should be followed up with a stakeholder process to help the ED determine appropriate transmission capital cost and capability.

Q14. Is the proposed iterative process between the CPUC and CAISO (outlined in seven steps in the above section, Development of Additional Transmission Costs for Version 6.1) for identifying major and minor transmission upgrade costs in areas where CAISO has not conducted many interconnection studies (e.g., the Sacramento River Valley Super CREZ) reasonable? If not, explain how these estimates should be developed and specify whether or not your proposal can meet the Track 1 and Track 2 schedules outlined in this Energy Division staff proposal.

BAMx supports the concept of an iterative process proposed by the CPUC ED between the CPUC ED and the CAISO. At the same time, we believe the process scope should be changed to concentrate on determining whether transmission needs to be built to make renewable resources within each super CREZ fully deliverable. We believe the process as proposed, which is based on a continuing foundation that assumes that renewables projects should be built in a super CREZ based on a transmission that makes them fully deliverable, is flawed. The elements of an iterative process should concentrate on finding the most economic set of resources, including PPA/commercial projects, among all possibilities including whether the resources need full deliverability. Furthermore, the current CPUC ED proposal allows for vetting by stakeholders only at the end of the iterative process. We urge the CPUC ED to maintain transparency by sharing communication between the CPUC and the CAISO, and requesting timely comments at each stage.

Q16. The RPS Calculator currently assumes that all new renewable generation must be made fully deliverable. Should the RPS Calculator be capable of evaluating energy-only and/or partially-deliverable projects? If so, how should the resource ranking and selection methodology be adjusted to reflect the impacts of such projects?

As stated earlier in Section I (Introduction), BAMx strongly supports the CPUC ED's consideration of revising the RPS Calculator model to evaluate Energy-Only (EO) and/or Partially-deliverable projects.

BAMx proposes that the RPS calculator can be changed to perform an assessment to determine which projects are most economic as EO and which are most economic as full capacity. In the beginning, the RPS calculator should assume all candidate renewable resources to be EO. For every resource, the RPS calculator will calculate its net resource cost (NRC) by taking into consideration Levelized Cost of Energy (LCOE), Energy Value and Integration cost (upon its implementation). Once candidate resources are initially ranked based on their NRC, each resource will then be considered whether it is more economic for it to be a Full Capacity (FC) resource. Each resource is then tested as to whether it should be a full capacity resource. If the RA value associated with that resource exceeds the cost of the DNU it might trigger, it should be considered a full capacity resource. Otherwise, that resource should continue to be considered as an energy-only resource. Based on this re-ranking the portfolio of the most economic resources is selected.

BAMx believes that this mechanism can be implemented in Version 6.0 with little time and effort as it can be accommodated within the existing framework of the RPS Calculator. This resource ranking and selection methodology could then be further enhanced with the iterative process between the CPUC and CAISO (See our response to Q.14), where a feedback loop between the RPS calculator and the CAISO's technical assessment would determine the ultimate need for transmission given its capability and cost to accommodate a mix of EO and FC resources selected under an RPS portfolio.

Q19. Is it appropriate to use ELCC values instead of NQC for planning purposes in the RPS Calculator?

BAMx believes that it is appropriate to use Effective Load Carrying Capability (ELCC) values instead of using the existing Exceedance-Based values to calculate NQC for planning purposes in the RPS Calculator for two reasons. First, the ED Proposal to develop ELCC values for Wind and Solar Resources is in compliance with the Senate Bill 2 (1X) (Simitian, Stats. 2011, ch.1). Second, the ELCC values provide a realistic depiction that takes into account the saturation effect, that is, ELCC values decline with the penetration of certain type of renewable resource

technology.⁸ The CPUC ED has done a lot of good work in developing appropriate factors to account for this saturation effect. Clearly more analysis can always occur, and we foresee that more accurate adjustments will occur annually, but it would not be appropriate to continue deferring the implementation of ELCC values as required by state law.

Q22. Is the proposed approach used to forecast the avoided cost of system capacity appropriate for calculating capacity value? Please provide any recommendations for improving the methodology or alternative assumptions that should be used.

Given the excess system capacity available in the CAISO BAA, it would seem reasonable to assign zero value to adding to the system capacity as suggested by questions posed in the Assigned Commissioner's Ruling.⁹ However, BAMx recognizes that even under the current capacity surplus environment, system capacity is paid a positive value. Given that there is adequate system capacity, any addition to system capacity should result in lowering the system capacity price. It would be difficult to quantify this downward pressure on the system capacity price. Lacking such analysis, we do not object to utilizing the current average RA contract price as modeled in the Revised RPS Calculator. On the other hand, when the system is short, BAMx believes that it is reasonable to assume the capacity avoided cost to approach the all-in net cost of a new CT. The RPS Calculator (Version 6.0) includes load-resource balance for CAISO to determine the timing of this transition from a system capacity surplus to a shortfall. The RPS calculator appears to be able to estimate the need for additional flexible resources. The RPS calculator should defer the need for new capacity to meet the system Planning Reserve Margin (PRM) if resources are added for flexibility reason.

⁸ The earlier versions of the RPS Calculator (Versions 2.0-5.0) modeled fixed NQC values.

⁹ See "Assigned Commissioner's Ruling Identifying Issues And Schedule of Review For 2014 Renewables Portfolio Standard Procurement Plans," R.11-05-005, January 11, 2014

III. CONCLUSION

BAMx appreciates the opportunity to comment on the development of the revised RPS Calculator and acknowledges the significant effort of CPUC, CEC and the CAISO staff. We believe this effort is long overdue and hopefully will lead to only building transmission infrastructure to obtain deliverability from renewable resources only when it makes economic sense to do so.

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Respectfully submitted,

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