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Docket Number:	15-RETI-02
Project Title:	Renewable Energy Transmission Initiative 2.0
TN #:	211487
Document Title:	Bay Area Municipal Transmission Groupâ€™s Comments on the Renewable Energy Transmission Initiative 2.0 May 2, 2016 Workshop
Description:	N/A
Filer:	System
Organization:	Bay Area Municipal Transmission Group
Submitter Role:	Public Agency
Submission Date:	5/16/2016 8:42:31 AM
Docketed Date:	5/16/2016

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Submitted On: 5/16/2016
Docket Number: 15-RETI-02

Bay Area Municipal Transmission Groupâ€™s Comments on the Renewable Energy Transmission Initiative 2.0 May 2, 2016 Workshop

Additional submitted attachment is included below.

Bay Area Municipal Transmission Group's Comments on the Renewable Energy Transmission Initiative 2.0 May 2, 2016 Workshop

May 16, 2016

1. Introduction

The Bay Area Municipal Transmission Group[1] (BAMx) appreciates the opportunity to comment on the Renewable Energy Transmission Initiative 2.0 (RETI 2.0) Joint Agency Workshop on May 2, 2016. We are quite concerned about the direction that this effort is heading. We do not believe that investigating what transmission to build on paths that are not necessary to fulfill our RPS or GHG goals is the best way to spend limited resources. The goal should be to determine what transmission issues may impede California's ability to achieve its goals with the least environmental and financial impacts on ratepayers.

CAISO CEO Berberich recognized the transmission rate issue when he said "the RETI 2.0 efforts should recognize the current need for optimizing existing transmission assets in the interest of ratepayers." It is also quite apparent that California's transmission rates are significantly higher than those in the neighboring balancing areas[2], and this fact, in addition to many others, might impede regionalization efforts that could help reduce the cost of meeting our State's policy goals.

As explained below, BAMx believes there are areas of investigation that may help achieve the State's goals that concentrate on utilizing the expensive transmission infrastructure we have already constructed. BAMx provides comments on the following four (4) topics presented and discussed during the May 2nd workshop.

- Potential Renewables Demand
- Existing Transmission System Capacity and Plans
- 2030 Electricity Scenarios and Lessons for RETI 2.0
- Transmission Assessment Focus Areas

[1] BAMx consists of Alameda Municipal Power, City of Palo Alto Utilities, Port of Oakland, and the City of Santa Clara's Silicon Valley Power.

[2] The current CAISO High Voltage rate of $11.22/MWh is almost 250% of the high voltage component of the existing PacifiCorp transmission rate.

2. Potential Renewables Demand

One of the May 2nd workshop presentations included a summary of California Energy Demand based on 2030 RPS-eligible sales and 50% RPS estimates.[3] BAMx found this data to be very instructive for understanding the availability of several alternatives to building new transmission to access remote renewable resources, which can lead to achieving the State's RPS and GHG goals. Additional Achievable Energy Efficiency (AAEE) has a significant role to play in reducing the energy demand and renewables needed to meet the 50% RPS goal. Although the Mid demand (Mid AAEE) case reaches 243,000 GWh by 2030, the SB350-friendly AAEE estimate indicates that10,000 fewer GWh will need to be applied to the State's 50% RPS standard.[4] During the May 2nd workshop, Commissioner Weisenmiller not only endorsed the loading order, but also exhibited confidence in achieving the AAEE levels prescribed by SB350.

Slide #6 of the same May 2nd workshop presentation discussed above indicates that the State may incrementally need anywhere from 24.5 to 39.8 TWh of renewable energy, which roughly translates to 9,000 to 15,000MW[5]. Therefore, we concur with the RETI Plenary group's conclusion that "Reaching 50% RPS under low demand conditions could entail modest renewables expansion by 2030." BAMx urges the RETI management team to be cognizant of the fact that with SB 350's priority on energy efficiency, there may be an even further reduction in the need for new transmission.

3. Existing Transmission System Capacity and Plans

BAMx appreciates the Transmission Technical Input Group's (TTIG) update on the existing In-State transmission capability for renewable resources. In this update, TTIG has provided a very valuable input that needs to be considered in the future RETI 2.0 activities.[6] First, there is sufficient capacity to meet 33% RPS even if it is assumed that all those renewable resources need to be fully deliverable. Second, there is sufficient transmission to accommodate resources beyond 33% on an "energy only" basis. We understand that the term "beyond 33%" encompasses the case involving 50% RPS by 2030. BAMx fully supports the TTIG's

[3] B. Turner, "Plenary Group Report Planning Goals Summary," slide #6.

[4] Ibid. Slide #5.

[5] With annual average renewable resource capacity factor of 30%.

[6] N. Millar, "Revised Presentation on Update on Existing Transmission Capability for Renewable Resources," Slides #7 & #8.

aforementioned conclusions. It is important to recognize that the CAISO has approved and/or built over $8 billion of new transmission projects over the past decade to meet the State's RPS goals. Therefore, the existing transmission system is not only adequate to meet the 33% RPS goal, but the newly approved/built transmission infrastructure also provides residual transmission capacity to accommodate additional fully deliverable resources. Even more renewables can be accommodated by selecting Energy-only resources when they are the most cost-effective. Moreover, as stated in the TTIG presentation (Slide #8), the transmission capacity within the CAISO Balancing Authority Area (BAA) itself, to accommodate Energy-only capacity of over 22,000 MW, is significantly higher than the maximum of 15,000MW possibly needed on an incremental basis to meet the 50% RPS goal by 2030.

BAMx has confirmed that the amounts of fully deliverable as well as energy only resource capability of the existing transmission in several areas as reported in the May 2nd workshop match with the CPUC RPS Calculator version 6.2.[7] BAMx analyzed the six Draft 2016 RPS portfolios proposed in the CPUC Energy Division Staff Paper on the *Draft 2016 RPS Portfolios for Generation and Transmission Planning* using the CPUC RPS Calculator version 6.2. Table 1 summarizes the Delivery Network Upgrades (DNU) identified in each Draft RPS portfolio in the year 2026. As shown in Table 1 the Draft RPS Portfolio #2 does not trigger any new DNUs, whereas the scope and the capital costs associated with the new DNUs required to access the fully deliverable renewable resources in the Draft Portfolios #1, #4 and #6 in the Solano and Tehachapi transmission areas are relatively modest. The Draft Portfolios #3 & #5 are the only ones that trigger a significant DNU to access the Wyoming wind resources. However, as discussed in Section 5.D of these comments, if the RPS Calculator had assumed (like SB 350 study) that a reasonable amount of Out-of-State (OOS) wind and solar resources would be available over the existing transmission system, then it would not have triggered any major DNU in the Draft Portfolio #5. In summary, none of the Draft 2016 RPS portfolios trigger the need for any significant new In-State transmission. BAMx believes that these findings are an endorsement for the adequacy of existing In-State transmission infrastructure in meeting the 50% RPS goal.

[7] Source: RPS Calculator version 6.2, ***CAISO_Tx_Inputs*** tab. The CAISO also updated the fully deliverable capability in the Los Banos transmission area from 0MW to 130MW in their revised presentation posted on 05/03/2016. We also understand that the 2,450MW of fully deliverable resource capability in the *Riverside East and Palm Springs* area assumes the CPUC approval and construction of the West of Devers Upgrade Project.

Table 1: Need for New DNUs in the Draft 2016 RPS Portfolios

#	Draft 2016 RPS Portfolio Name*	Description*	Need for New DNU**
1	Default	A 50% by 2030 portfolio that is fully deliverable; new, generic resources may be selected only from within California	Only one DNU costing **$150 million** to access FCDS resources in Solano
2	Energy-Only	Same as default, but incorporates energy-only projects to reach the RPS target	None
3	Out-of-State	Same as default, but incorporates 3,000 MW of Wyoming wind WECC-Wide	New DNU **costing $3 billion** to Access Wyoming Wind full capacity resources
4	WECC-Wide	Same as default except that new generic resources may be selected from throughout the WECC region	Only one DNU costing **$150 million** to access FCDS resources in Solano
5	Energy-Only & WECC-Wide	Same as default, but incorporates energy-only projects to reach the RPS target and new generic resources may be selected from throughout the WECC region	New DNU **costing $3 billion** to Access Wyoming Wind energy only resources
6	Lower Efficiency	Same as default, but assumes energy efficiency achievements equal to those in the 2015 IEPR mid AAEE case	Only two DNUs with a combined cost of **$250 million** to access FCDS resources in Solano and Tehachapi

*** Source:** Energy Division Staff Paper on Draft 2016 RPS Portfolios for Generation and Transmission Planning, p.9, attached to ALJ Ruling (03/14/2016), R.15-02-020; and
****Source:** *Ibid*. Appendices B & C. Also*, Portfolio_Analytics* and CAISO_Tx_Inputs tabs of RPS Calculator Version 6.2.

The TTIG's May 2nd workshop presentation also indicates that the capacity on OOS transmission will limit renewable imports into California. BAMx does support the investigation of transmission limitations that would limit importing economically viable OOS renewable resources, but first it is vital to determine whether there is really any constraint. The TTIG presented the most heavily utilized paths in the WECC based upon the ***PC-22: High Renewable Energy*** WECC planning case. BAMx understands that this is an extreme case, the purpose of which was to determine how transmission flows and how congestion would be affected in the West if renewable energy penetration in the Western Interconnection is around 50%. There are other WECC study cases, such as, "PC-19: High Distributed Generation" and "PC-21: Coal

Retirement," which show that little or no congestion occurs with High DG or coal-plant retirements and significant renewable energy additions across the WECC footprint.[8]

BAMx requests the RETI management team to perform a realistic assessment of renewable development across WECC to determine its impact on the renewable imports into California.

4. 2030 Electricity Scenarios and Lessons for RETI 2.0

BAMx applauds the RETI management team's efforts to be informed by several different tools and studies such as the California Low Carbon Grid Study (LCGS), the 2016 Portfolio Sensitivity Analyses using the CPUC RPS Calculator v6.2, and The Nature Conservancy's Renewable Energy Build-Out Model. However, the portfolios produced from these studies are not necessarily directly comparable. For example, the LCGS model outputs cannot be directly compared to the RPS Calculator's outputs (including The Nature Conservancy's RPS Calculator-based outputs) because they were produced with different models, different assumptions, and different resource portfolios. BAMx agrees with the California Wind Energy Association's (CalWEA) following comments on the RETI 2.0 April 18th workshop.

> "If portfolios have not been produced on an "apples to apples" basis, we cannot know which is optimal in terms of meeting greenhouse gas and renewable energy targets at least cost while maintaining system reliability. Such optimization is the goal of the CPUC's newly launched Integrated Resources Planning effort, which was required by SB 350.
>
> To be reasonably plausible, the RPS portfolios ultimately used in LTPP and TPP should be based on most of the same fundamental assumptions and produced by the same model so that they are directly comparable (i.e., so that the reasons for their differences are well understood). To produce different reasonably plausible portfolios, reasonably plausible changes should be made to certain of the fundamental assumptions (e.g., higher EV assumptions, lower load assumptions, tougher land-use assumptions, etc.). Each of the portfolios should be optimized for cost and reliability under those different assumptions. From this range of optimal reasonably possible portfolios, a "least regrets" transmission plan can be developed to facilitate most or all of these optimal futures."

[8] An October 29, 2015 WECC presentation that reports on all three of the case studies (PC-19, PC-21 and PC-22) that were conducted at that time can be found here: http://westernenergyboard.org/wp-content/uploads/2015/10/10-29-15_CREPC-SPSC-WIRAB_woertz_WECC_reliability_study_requests.pdf .

3 The following MW figures were calculated from the TWh figures in the WECC

In summary, BAMx recommends that the RETI 2.0 management team should concentrate its efforts on the same tool used to evaluate CPUC scenarios of interest in the Long Term Planning Process (LTPP) and Transmission Planning Process (TPP) processes, i.e., the CPUC RPS Calculator v.6.2. The team should use it to model any scenarios found to be of interest through the RETI 2.0 process. We believe that the RPS Calculator is the best decision support tool that is currently available. Moreover, although RETI 2.0 is a non-regulatory forum, its findings will be considered more credible if it utilizes the tools that are used in the regulatory forums.

5. Transmission Assessment Focus Areas

A. Proposed Study Range is Unrealistic

The CAISO has built and approved several large-scale High Voltage (HV) transmission projects that have contributed to the HV TAC increasing by nearly 300% over the last decade. BAMx unequivocally agrees with CAISO CEO Berberich's statement made during the May 2nd workshop regarding the current need to optimize existing transmission assets in the interest of ratepayers. BAMx hopes that the RETI management team pays careful attention to this concern while developing their approach for analyzing the Transmission Assessment Focus Areas (TAFA).

RETI 2.0 management team's proposed approach to determine the TAFA entails addressing the following questions.[9]

1. How much renewables might be needed?
2. Which resources might be important by 2030?
3. How much renewables might come from different areas?
4. Might this level of renewables require new transmission?

The first two questions are the appropriate ones to capture the bookend scale of renewable need by 2030, as well as resource costs and values in 2030 context to identify resources and zones of potential value for 2030. However, BAMx believes that the latter two questions are not conducive to the RETI 2.0 team spending its time in areas that are most useful to understanding the role of transmission in meeting the State's RPS and GHG goals. There are better ways to utilize the combined resources of the team than to answer "what if" questions that are based upon unsupported assumptions. Such an approach goes completely against the least-cost best-fit principle for procuring renewable resources and will end up identifying transmission solutions

[9] B. Turner, "Transmission Assessment Focus Areas Introduction, Proposed List, and Next Steps," Slide #4, 5-2-16.

for problems that do not exist, which is a significant departure from "least regrets" solutions. For instance, Figure 1 that was presented during the May 2nd workshop shows that there is currently 4,252MW of renewable capacity located in the San Joaquin Valley area in the CAISO generation interconnection queue. It is well-known that the currently active capacity (more than 30,000MW) in the CAISO queue[10] is unrealistically high and that a vast majority of that capacity will never materialize because the State does not need that level of renewable capacity to meet the RPS goals. The CPUC RPS Calculator v. 6.2 adds only 599MW to 808MW of renewable generation in the San Joaquin Valley area to meet the 50% RPS goal on a least-cost best-fit basis.[11] However, as shown in Figure 1 below, the RETI management team is considering studying 5,000MW to 10,000MW of renewable resources in the San Joaquin Valley. In other words, even the lower bookend of the study range is higher than the extremely high amount of renewable capacity that is currently queued in the San Joaquin Valley. There are better ways to spend scarce RETI 2.0 resources than to postulate development scenarios that are unrealistic.

The above observations made by BAMx in the case of the San Joaquin Valley are also applicable to the other TAFAs included in the California Desert and Northern California.

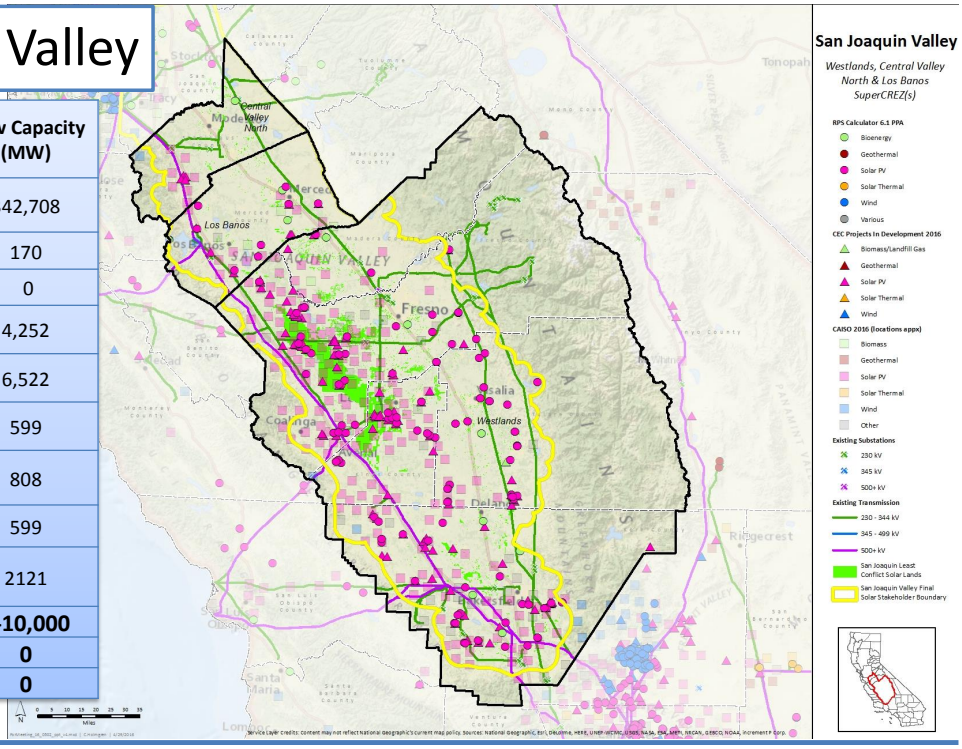
[10] https://www.caiso.com/Documents/ISOGeneratorInterconnectionQueue.pdf

[11] Based on the CAISO's input to the CPUC RPA Calculator v.6.2, any FCDS capacity exceeding 823MW in the Westlands transmission area triggers a need for additional transmission. On the other hand, you can add as much as 2,121MW of Energy-Only resources in Westlands without any need for a new transmission project.

Figure 1: New Renewable Capacity in San Joaquin Valley[12]

San Joaquin Valley

Data Source		New Capacity (MW)
Technical Potential (RPS Calc)	Solar PV	342,708
	Wind	170
	Geo	0
CAISO Queue		4,252
CEC Database		6,522
RPS Calc v6.2 Scenario Selections	Cal	599
	Cal Env Pref	808
	WECC Wide	599
Existing Energy-Only Tx Capacity		2121
Proposed Study Range	**Solar**	**5-10,000**
	Wind	**0**
	Geo	**0**



BAMx suggests that the overarching guideline for determining the renewable capacity study range in a certain area should be the quantity of capacity that will be developed in that area as part of the in-State and OOS renewable mix needed to meet the State's RPS and GHG goals. Such an approach will likely avoid studying arbitrarily determined renewable capacity (for example, 10,000MW) in a single transmission area, when the overall capacity needed to meet the State goal could be as low as 9,000MWto 15,000MW. BAMx recommends that the RETI management utilize the CPUC Energy Division's 2016 RPS Portfolio Sensitivities Results[13] to model the upper limit of renewable resource development in each TAFA. For instance, renewable development in the DRECP/SJVP scenario[14] can be used as a bookend in the Desert area (Tehachapi, Victorville/Barstow, Riverside East, and Imperial Valley) and San Joaquin

[12] Source: B. Turner, "Transmission Assessment Focus Areas Introduction, Proposed List, and Next Steps," Slide #12, 5-2-16.

[13] March 2016 CPUC Staff Paper studied LTPP scenarios and additional "sensitivities" to 2030.

[14] Under this scenario, only "preferred" lands (DFAs within the DRECP and "least conflict" lands within San Joaquin Least Conflict Solar study area) are allowed for development. **Source:** RPS Calculator User Guide, Version 6.2 March 15 2016.

Valley area. Furthermore, in studying the potential renewable capacity levels in these areas, the RETI management team needs to consider that not all that capacity needs to be fully deliverable. A possible mix of "fully deliverable and energy only" resources will be added in each area from a least-cost best-fit perspective.

B. Capability of Existing Transmission Needs to be Further Explored

During the May 2nd workshop, TTIG also presented some insights into the non-CAISO California existing and planned transmission capability to accommodate additional renewable resources.[15] Prior to evaluating new transmission, BAMx believes there needs to be better understanding among the policymakers and stakeholders regarding the locations of In-State resources that can be accessed and OOS renewable resources that can be imported on the existing transmission infrastructure. Such an assessment would involve scenarios which assume the timely retirement of coal resources. There are already studies completed by WECC which can help with this effort. [16] Such scenarios should include studying the effect of the "repurposing" proposed for the Intermountain DC Intertie, an HVDC line owned and operated by the Los Angeles Department of Water and Power (LADWP).

C. Need to Study Exports

We know that California's ability to export is a very effective tool in reducing the need to build additional renewable resources to meet the State RPS and GHG goal.[17] Therefore, we encourage RETI 2.0 management to further study the capability and adequacy of the existing transmission system to facilitate California exports. BAMx shares Commissioner's Picker's concern that any new transmission built to access remote renewable resources will not necessarily be used to effectively export California excess renewables during certain times of the day or year. Therefore, rather than jumping to a conclusion that it is necessary to build new transmission to

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[15] N. Millar, "Revised Presentation on Update on Existing Transmission Capability for Renewable Resources," Slide #9.

[16] An October 29, 2015 WECC presentation that reports PC-21 case study and can be found here: http://westernenergyboard.org/wp-content/uploads/2015/10/10-29-15_CREPC-SPSC-WIRAB_woertz_WECC_reliability_study_requests.pdf

[17] CPUC ED's 2016 RPS Portfolio Sensitivities Results indicate that a 5,000MW of export capability for the CAISO BAA reduces the annual renewable curtailments from 7.9% to as low as 0.5%. **Source:** DRAFT 2016 RPS Portfolios, RETI 2.0 Plenary Group Meeting, Slide #9, 3/18/2016.

access renewables that can also be utilized to facilitate California's exports, RETI 2.0's efforts are better served in exploring whether the existing transmission system is really the limitation for exports. If not, then the market issues that are creating barriers to exporting California renewables should be investigated rather than constructing new transmission.

D. Need to Better Understand Capability of Existing Transmission to Import OOS Resources

Currently, the CPUC RPS Calculator assumes that no existing transmission is available (e.g., new transmission must always be built) to access OOS renewable projects.[18] BAMx believes there needs to be better understanding among the policymakers and stakeholders regarding the level of OOS renewable resources that can be imported on the existing transmission infrastructure. There is clearly some amount that can be imported over the existing transmission system. The SB 350 study provides some insights in this regards, where it assumes that nearly 3,000 MW of external medium-quality wind and solar resources would be available over the existing transmission system at the proximity to the existing delivery points into California.[19] BAMx strongly encourages the RETI 2.0 management team to investigate the capability of the existing system to import and accommodate OOS renewable resources. BAMx believes that RETI 2.0 management team is ideally suited to undertake this very important task that requires joint agency coordination.

Thank you for the opportunity to comment.

If you have any questions concerning these comments, please contact Joyce Kinnear (jkinnear@santaclaraca.gov or (408) 615-6656).

[18] RPS Calculator User Guide, Version 6.1, p. B-25, August 20 2015.

[19] Draft Renewable Portfolios for CAISO SB 350 Study, slide #23, CAISO Public Workshop, February 8, 2016.