

## **BAMX Comments on the CAISO 2013-14 Transmission Plan: Policy Driven and Economic Assessment**

The Bay Area Municipal Transmission group (BAMx)<sup>1</sup> appreciates the opportunity to comment on the CAISO 2013-14 Transmission Plan. The comments and questions below address the *Policy Driven and Economic Assessment* studies discussed during the November 20<sup>th</sup> and the *Recommendations for Management Approval of Reliability Projects less than \$50 Million* discussed during the November 21<sup>st</sup> stakeholder meetings. We request that the CAISO address these issues in its draft comprehensive Transmission Plan expected in January 2014.

### **Policy-Driven Transmission Project Needs & Recommendations**

#### **Recommend CPUC LTPP Track 4 as the Proper Forum for Developing the Specifics of the Reliability Plan for LA Basin and San Diego**

BAMx believes that the CPUC LTPP (R.12-03-014) Track 4 proceeding<sup>2</sup> is the proper forum for developing the specifics of the reliability plan for LA Basin and San Diego. This is a somewhat unique opportunity to make decisions that will replace the need for generation from some OTC units and for San Onofre on a least overall cost basis. Under the Track 4 proceeding, BAMx recommends selecting a least cost plan that balances transmission solutions with local conventional generation. BAMx is concerned, however, that the CAISO's 2013-14 transmission plan as an input into the CPUC LTPP Track 4 proceeding, does not allow a full economic evaluation of the tradeoffs between transmission and generation. Based upon previous CAISO presentations, it appears that many transmission projects have been proposed for the LA Basin, but none are described in the latest CAISO studies. We do not know where these concepts for new transmission originate, but assume that at least some come from request window projects that are not available for review by stakeholders until March 2014.

In determining the need for policy-driven transmission projects, the CAISO has assumed 520 MW of new generation in northwestern San Diego in the 2013/2014 33% RPS base portfolio analysis. BAMx supports this particular assumption for purposes of a base plan during this planning cycle. However, we believe that the CAISO should identify several scenarios that require a range of additional local resources for the LA basin and San Diego. For each of these resource scenarios, the scope and cost of the transmission should be identified. This would allow for more direct observation of the relationship between the need for new transmission and the level of local resource development. While the CAISO should develop these alternatives based upon input it has received from PTOs and others, BAMx recommends that none of these alternatives be included in the TPP for approval at this time. Rather, selection should follow the CPUC Track 4 decision concerning procurement targets for local resources.

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<sup>1</sup> BAMx consists of Alameda Municipal Power, City of Palo Alto Utilities, and City of Santa Clara, Silicon Valley Power.

<sup>2</sup> Track 4 is envisioned to be the vehicle for consideration of long-term local capacity needs stemming from the now-closed San Onofre Nuclear Generating Station (SONGS) generators, specifically on the LA Basin local area and San Diego sub-area (Together "SONGS Study Area").

We believe the CAISO should take a reasonable set of transmission alternatives and analyze the economics of those alternatives with realistic assumptions on the cost and location of new preferred and gas fired local capacity, as suggested by the CPUC ED and CEC Staff. The CAISO should use its considerable expertise and economic assessment model to analyze the overall economics using its security-constrained production cost model developed for this planning cycle. The CAISO should report in detail on the results of this effort in the CPUC Track 4 proceeding. The CPUC, as part of its LTPP proceeding, is in the best position to select a least overall cost solution of transmission and/or local resources. Given the urgency of the need and the long lead-time to develop potential transmission additions, early development work on the transmission alternatives may need to occur prior to the decision on local generation versus transmission.

### **Role of Multiple Resource Portfolios and Deliverability Assessment**

BAMx supports the CAISO's analysis that makes a determination of a policy-driven transmission project not solely based upon the base case (commercial interest), but also on the remaining two alternative renewable resource portfolios (High Distributed Generation and Environmentally-Constrained). In particular, consistent with the CAISO's tariff, if a project is identified only in the base case, and not in any of the alternative resource portfolios, then that project should not be classified as a Category 1 policy-driven project.

Consistent with its past practices, the CAISO has also performed a deliverability assessment on the base case portfolio assuming all the renewable generation projects in the base case portfolio need to be delivered to the "aggregate of load" based upon a strict set of deliverability criteria. BAMx has consistently questioned the need to rely on new renewable resources to meet the State's system resource adequacy needs. As indicated by the CPUC, there is no immediate need for new system capacity.<sup>3</sup> We are all aware of the possibility of premature generation retirement due to insufficient economic support for controllable resources, as we try to determine how much of this controllable resource is needed to meet the State's system flexible resource needs. This planning process is also occurring at a time that the CPUC is developing a probabilistic equivalent load carrying capability (ELCC) tool that better evaluates the incremental resource adequacy benefits of new renewables. Early indications are that there is very little resource adequacy benefit that can be attributed to the addition of new intermittent resources.<sup>4</sup>

We understand that the CAISO is not recommending any policy-driven transmission project based purely upon the deliverability assessment under the 2013-14 plan with the exception of *upgrading series cap and terminal equipment at Mohave on Lugo - Mohave 500kV line*. BAMx opposes approving any project based upon a deliverability analysis that is deployed only on the

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<sup>3</sup> **Source:** 2012 LTPP, See Appendix B. Data shown is the Base Scenario from D. 12-12-010, Appendix C, and page C-1. Also, see the presentation by Edward Randolph, Director Energy Division, CPUC at CPUC-CAISO Long-Term RA Summit, February 26, 2013.

<sup>4</sup> See slide #20 (Renewable ELCC) in "Renewable Energy Flexibility (REFLEX) Results," by Energy and Environmental Economics, at CPUC Workshop dated CPUC Workshop, August 26, 2013.

base resource portfolio. In assuming that all intermittent renewable projects should be “fully deliverable” under its strict criteria, the CAISO is in essence building transmission to allow renewables to provide Resource Adequacy (RA) without undertaking any cost-benefit analysis to demonstrate that this approach is economically justified.

BAMx asserts that there is no state policy that renewable projects should provide Resource Adequacy irrespective of economics.<sup>5</sup> Rather than designating transmission projects as policy driven solely to allow intermittent renewable projects to satisfy the State’s system RA needs, the CAISO should undertake a cost-benefit analysis to show that any proposed new transmission project to assure deliverability of new resources is justified. The CAISO needs to determine whether the new proposed transmission is both necessary and the most economical alternative to meet the State’s resource adequacy needs.

### **CAISO Category 1 Recommendations**

While BAMx understands the recommendation of the IV/CFE flow control device coupled with a Suncrest 150 MVAR SVC is preferable to alternatives identified, the CAISO should further describe why these components are the preferred plan. More specifically, IID had previously commented that the IV/CFE flow control device may not be needed, depending on upgrades on its system and this needs to be more fully explained and discussed in the CAISO recommendation. Also, the decision to address the voltage support need with a SVC versus fast-switched shut capacitors should be justified.

### **Economics-Driven Transmission Project Needs & Recommendations**

#### **BAMx Appreciates the CAISO’s Efforts**

BAMx recognizes the tremendous amount of effort over past several years that has been made in improving its production cost database and analysis included in its economic assessment. The CAISO staff’s efforts in modeling additions/changes to the TEPPC database as well as developing the sensitivities involving loads, hydro conditions, natural gas prices, GHG models and California RPS portfolios are commendable. As we suggest later, this extensive modeling effort should be utilized to help decide what is needed in the LA basin and San Diego areas to replace OTC and SONGS generation.

The CAISO’s presentation of its preliminary findings on the economic assessment of five candidate projects has led to several key questions.

#### **Fluctuating Economic Benefits Without Adequate Documentation or Rationale**

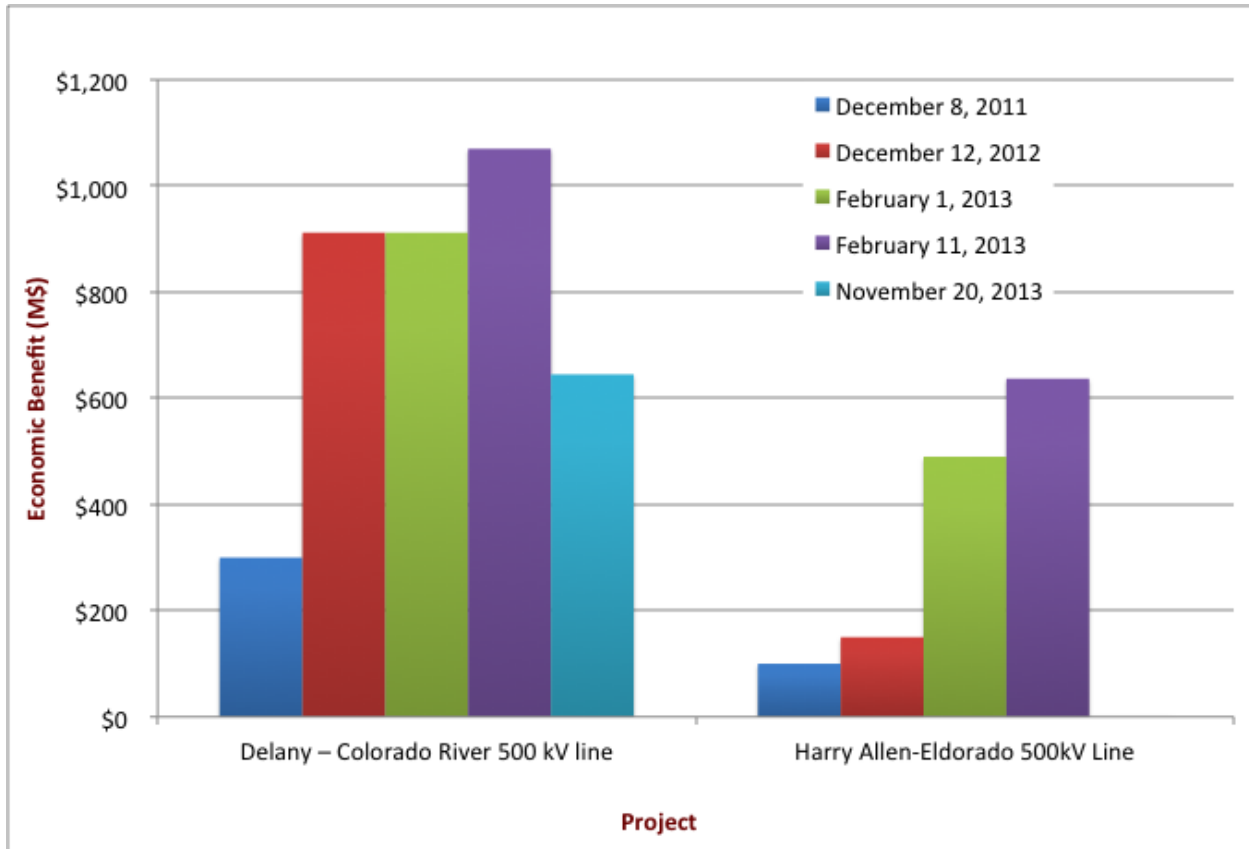
We have noticed that the estimated benefits associated with two candidate projects; the *Delaney – Colorado River (DCR) 500 kV* line project and the *Harry Allen – Eldorado (HAE) 500 kV* line

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<sup>5</sup> Senate Bill 2 (1X) mandated new RPS procurement requirements are renewable energy, and not resource adequacy capacity requirements for renewables.

project have changed significantly under multiple CAISO reportings as shown in Figure 1 below. The CAISO has provided little documentation on the reasons for such major changes in the estimated benefits associated with these transmission projects. We request that the CAISO provide a synopsis of the differences including assumptions and underlying rationale for each finding as well as arguments, if any, as to why the preliminary benefits calculations that were presented in the November 20<sup>th</sup> stakeholder meetings are now sufficiently reliable to support approval of transmission projects costing hundreds of millions of dollars.

**Figure 1: Estimated Economic Benefits of the Two Economic Study Projects Under Multiple CAISO Findings**



We question the Net Present Value (NPV) calculations of the benefits of the candidate transmission projects. For example, for the *DCR* project, the CAISO calculated the production benefits in years 2018 and 2023 to be **\$30M** and **\$25M**, respectively. Our understanding is that the CAISO interpolated these benefits for the intervening years and assumed a flat benefit of \$25M in years 2024 onwards. We question the CAISO's rationale for such extrapolation of economic benefit. The CAISO has estimated the NPV of benefits over 50 years discounted at 7% to be **\$364M**. We have verified these calculations. However, when we apply a trend on the benefits that extrapolates them beyond 2023 (which accounts for a significant drop in the benefits from 2018 to 2023), the NPV benefit is **\$248M** over 50 years. This is nearly a 1/3<sup>rd</sup>

reduction in production benefit calculated by the CAISO.<sup>6</sup> This exercise demonstrates that the CAISO’s calculation of the benefits based on only two years of data is highly susceptible to how the extrapolation of these benefits are calculated. BAMx believes that it is important to recognize why the benefit has dropped from 2018 to 2023, the likely reason being the increased buildup of the low variable cost renewables within the CAISO BAA. We recognize the tremendous effort that goes into analyzing the results with differing assumptions on fundamental drivers such as loads, hydro conditions, renewable development, etc. However, we are quite concerned about the lack of scenario analysis around the 50-year projection of benefits from two data points. We also observe that if renewables continue to increase within the CAISO in the later years, it is likely that the benefits of the out-of-state (OOS) transmission projects like *DCR* and *HAE* will see a corresponding reduction.

The Transmission Economic Assessment Methodology (TEAM) implemented for the *Palo Verde Devers #2 500kV* line (PVD2) project proposed two different ways of extrapolating the two study years’ benefit to outer years. A conservative assumption was that these longer-term benefits are zero. Alternatively, the other proposal was to extrapolate the average benefits for the two study years to outer years.<sup>7</sup> In Table 1, we provide a comparison of the production benefits as calculated for PVD2 and DCR. In case of PVD2, since the analysis showed that the production cost benefit was actually increasing, extrapolating the average benefit of these two years was found to be reasonable. When PVD2 was studied in the 2002-05 timeframe, a large amount of renewable build-up within California was not anticipated. However, that is clearly not the case with the current transmission economic analysis for DCR given the current rapidly changing regulatory and market environment. It is evident from the CAISO’s production cost analysis that the production cost benefit of the candidate project is primarily derived from the difference in potential economic efficiencies of gas-fired units in Arizona relative to those in California. In addition to the potential increase in price-taking renewables built within the State in the future, the production cost benefits of the projects such as DCR would tend to decrease, as more OTC units are repowered in California with more efficient gas-fired units, as well as growth in preferred resources.

**Table 1: A Comparison of Production Benefits (M\$) for PVD2 and DCR in Two Study Years**

Study Year	PVD2	DCR
Year 1	\$41 M	\$30 M
Year 2	\$54 M	\$25 M

Therefore, due to the uncertainty around future benefits, BAMx recommends that the CAISO explicitly identify the range of uncertainty associated with the extrapolation method selected and supports that the benefits be truncated in future year, such as 2031 and beyond as suggested by SCE in the November 21<sup>st</sup> Stakeholder meeting, due to the uncertainty around future benefits.

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<sup>6</sup> Applying the trending to the benefits actually results in negative benefits in the later years; therefore we assumed the benefits to be \$0M in our example calculations.

<sup>7</sup> See Table VII.1 in “Economic Evaluation of the Palo Verde-Devers Line No. 2 (PVD2),” prepared by the California ISO Department of Market Analysis & Grid Planning, February 24, 2005.

### Sensitivity Analysis for Capacity Benefits is Needed

The CAISO's preliminary findings indicate substantial capacity benefits associated with the *Delaney – Colorado River 500 kV* line project. Table 2 shows how the capacity benefits that were identified in the prior assessment to be less than **\$10M** NPV over fifty years are now projected to be as high as **\$281M**. Since the capacity benefits for DCR are a significant portion of the overall project benefit, essentially justifying its economic viability, we believe that the CAISO should perform several sensitivity analyses to evaluate the capacity benefits, similar to the work that the CAISO has done for the production benefits. Additional capacity benefits sensitivity calculations are reasonable, as such analyses will likely take relatively less effort and time—these calculations do not require deployment of the resource intensive production cost tool and analysis.

**Table 2: A Breakdown of Production and Capacity Benefit (M\$) of the Delaney – Colorado River 500 kV line project Under Multiple CAISO Findings**

Benefit Category	Dec-11	Feb-13	Nov-13
Production Benefit (M\$)	\$300 M	\$902 M	\$364 M
Capacity Benefit (M\$)	\$0 M	<\$10 M	\$281 M

We understand the CAISO has derived capacity benefits based on the assumptions that California will continue to have a resource adequacy requirement and that Arizona can be the source of contracted capacity to serve California load. Additionally a key assumption for these savings is that the future cost of capacity in Arizona will be significantly less than the cost in California. For these assumptions to hold true in the long run, the following conditions need to persist:

- The capital and fixed operating costs for a peaking unit must remain less in Arizona as compared with California resulting in comparatively lower capital and operating costs in Arizona which may translate into a lower capacity price.
- There will be a greater resource surplus in Arizona than in California during the early years of the project resulting in a lower demand for capacity in Arizona as compared to California.

BAMx agrees that such a set of conditions is one possible future scenario. The CAISO's November 20<sup>th</sup> presentation included slides that indicated that California would be resource deficit by 2020. However, the CAISO did not provide any analysis in support of that statement. The CPUC 2012 LTPP source cited earlier suggests that the planning reserve margin is expected to be in the range of 120% during the 2020-2022 time period. An analysis based on these very different assumptions would provide significantly different results.

The CAISO should explore additional alternative sensitivity scenarios and evaluate their impact on the capacity benefit associated with the candidate transmission projects. Furthermore, the CAISO's capacity benefits calculations assume that the entire capacity benefit would be attributed to CAISO ratepayers. TEAM, on the contrary, assumes that the capacity benefit is split

equally between the buyers and sellers of capacity. Thus, if the estimated annual societal benefit for DCR is **\$17 million** (\$41/kW-Yr), then the assumed CAISO benefit should be half that amount or **\$8.5 million**.<sup>8</sup> In other words, the NPV of the capacity benefit to CAISO ratepayer, who will ultimately pay for the proposed DCR transmission project, should be restricted to **\$140M**.

### The Underlying Capital Cost Elements Need to be Clearly Documented

Table 3 compares the capital cost and the total cost associated with the *DCR* and *HAE* transmission projects as reported by the CAISO over the past year. Although the capital cost associated with *DCR* has gone up from \$325M to \$343M, the 50% reduction in the capital cost associated with *HAE* from \$240M as reported in February 2013 to \$120M, in November 2013 is puzzling. Please explain the causative changes in assumptions for the *HAE* project. Moreover, we find the capital cost of \$3M per mile and \$1.8M per mile for the 500kV projects such as *DCR* and *HAE* to be unrealistically low. BAMx is concerned that such low capital cost estimates produce inflated benefit-cost ratios, and will ultimately cost the CAISO ratepayers much more than anticipated in the most recent CAISO analysis. We think it is important to document the underlying capital cost breakdown and the level of contingencies assumed in the development of those capital cost estimates.

**Table 3: A Comparison of Capital and Total Costs (M\$) for PVD2 and DCR As Reported in the Last Year**

Transmission Project	Feb-13		Nov-13	
	Capital Cost (M\$)	Total Cost (M\$)	Capital Cost (M\$)	Total Cost (M\$)
Harry Allen – Eldorado 500 kV line (~60 miles, NV)	\$240	\$348	\$120	\$174
Delaney – Colorado River 500 kV line (~110 miles, AZ-CA)	\$325	\$471	\$343	\$498

### Better to Wait to Approve DCR in Rapidly Changing Market and Regulatory Environment

BAMx urges the CAISO to continue its study of the potential benefits and refine costs of projects that can import power from other States, but to make no recommendations on these projects in the current transmission planning cycle. In these comments, we have provided several reasons to delay such approval until a fuller analysis can be completed. First, the changes to the production and capacity benefits attributed to the candidate transmission projects in the latest CAISO analysis need to be clearly explained and justified. Second, a reasonable extrapolation method should be applied to the production cost benefit as calculated in the two study years (2018 and 2023) that captures varying expectations of regulatory and market conditions. Third, similar to the sensitivities analyzed for the production benefits, the capacity benefits also should be computed under several sensitivity scenarios, as they form a substantial portion of the overall project benefits, per the latest CAISO analysis. Fourth, the capital costs for the candidate

<sup>8</sup> *Ibid*, Section VII.C.

transmission projects need to be understood and explained in more detail. Fifth, it is important to recognize the calculated transmission project benefits assume completion of other projects whose actual construction is uncertain. For example, in order to realize the 400MW of incremental RA capacity, the *Category I* upgrades<sup>9</sup> proposed in 2013/2014 planning cycle need to be in place. An additional example is the role of the CAISO's internal transmission projects that were modeled in the CAISO's economic studies, but have yet to be approved by the regulatory authorities.

### **Recommendations for Management Approval of Reliability Projects less than \$50 Million**

#### **Projects Justified Based Upon the new NERC Planning Standards**

NERC recently approved new planning standards with respect to the loss of non-consequential load due to the loss of a single transmission element. This change in standards was cited in the need for at least one project recommendation (Estrella Substation). The new NERC standards, rather than prohibiting the loss of non-consequential load, provide for an open process to decide whether to continue to make use of such a solution. In light of this new NERC standard, the CAISO should initiate a process to revise its Planning Standards to explicitly address its process for making such a determination. This proposed revision and associated stakeholder review should be made prior to approving any projects due to this change in NERC standards.

#### **Load Interconnection Projects**

The CAISO has proposed a number of projects to accommodate the interconnection of new load to the transmission grid. Frequently the costs are broken down between Interconnection Facilities and Network Upgrades. Please confirm that all work identified as Interconnection Facilities would be ineligible for inclusion in the TAC, but would either be customer Special Facilities or utility distribution upgrades.

BAMx appreciates the opportunity to comment on the CAISO 2013-14 Transmission Plan. BAMx would also like to acknowledge the significant effort of the CAISO staff to develop the plan to date, as well as the staff's willingness to work with the stakeholders in the process to more fully develop it. We hope to work with the CAISO staff to continue to improve and enhance its capabilities.

If you have any questions concerning these comments, please contact Barry Flynn (888-634-7516 and [brflynn@flynnrci.com](mailto:brflynn@flynnrci.com)) or Pushkar Wagle (888-634-3339 and [pushkarwagle@flynnrci.com](mailto:pushkarwagle@flynnrci.com)) or Robert Jenkins (888-634-0777 and [robertjenkins@flynnrci.com](mailto:robertjenkins@flynnrci.com)).

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<sup>9</sup> The proposed Phase shifter on Imperial Valley - ROA 230 kV line and the 150 MVar SVC at Suncrest 230 kV bus.