

BAMx Comments on the CAISO Draft 2012-13 Transmission Plan

The Bay Area Municipal Transmission group (BAMx)¹ appreciates the opportunity to comment on the Draft CAISO 2012-13 Transmission Plan (Draft Plan) dated February 2, 2013, which was discussed during the Stakeholder meeting on February 11, 2012. The comments and questions below address both the Draft Plan and the February 11th Stakeholder meeting. We hope that the CAISO addresses these issues in its Final 2012-13 Transmission Plan.

Stakeholder Input

BAMx appreciates the enormous amount of CAISO staff effort in performing several comprehensive studies in a timely fashion. In the Draft Plan, the CAISO has identified 42 reliability, policy driven and economic projects adding up to approximately \$2 billion that are candidates for approval under the Transmission Planning process (TPP). The CAISO has used the term “ISO Determination” in the Draft Plan as well as in the February 11th Stakeholder meeting in reference to these candidate transmission projects. We submit these comments under the assumption that the CAISO means that this is a tentative “ISO Determination” subject to additional Stakeholder input. Otherwise, we question the purpose in receiving Stakeholder input at this time. We suggest the CAISO use the term “Initial Determination,” as presumably such determination is not finalized in the Final Transmission Plan without Stakeholder input per the CAISO tariff Section 24.4.10.

Significant Growth in HV TAC

BAMx very much appreciates the CAISO’s efforts in developing a High Voltage Transmission Access Charge (HV TAC) forecasting tool to address concerns over increasing upward pressure on transmission costs. Your efforts should help others understand how much transmission costs are increasing and how it is no longer a small portion of consumer electricity costs. As BAMx has pointed out repeatedly, the HV TAC along with Low Voltage TAC are rising exponentially. The HV TAC has gone up from \$1.40/MWh in 2001 to \$8.70/MWh in 2012. The CAISO’s February 2013 HV TAC forecast indicates the rate will go up further to \$13/MWh in 2022 taking into account the projects approved in the 2012-13 transmission planning cycle, which means a HV TAC increase of more than an order of magnitude in only two decades. While some of the HV TAC increases result from projects that are needed to maintain reliability or support the RPS, others projects that contribute to the increase are not adequately justified. In the remaining portion of these comments, we probe the need to approve some major transmission projects in the current transmission planning cycle.

The CAISO needs to make its HV TAC forecasting tool available to the stakeholders as soon as possible, so that the stakeholders could have the opportunity to review the underlying assumptions and mechanics and provide meaningful input accordingly. We urge the CAISO to

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

make this forecasting tool available prior to its presentation at the Board of Governors' meeting in March 2013.

Transmission Infrastructure Assumptions under Base Cases

We have observed from the CAISO 2012-13 transmission analyses that the CAISO Base Cases did not include some LGIA-driven transmission projects such as, the Pisgah-Lugo 500kV project and the Coolwater-Lugo 230kV project. However, it did include some of the other LGIA-driven projects such as the West of Devers project. We do not believe the CAISO should have included LGIA-driven upgrades that have not been approved by the CPUC in the Base Cases. BAMx had made these comments during the development of the 2012-13 transmission study plan. BAMx urges the CAISO to also reconsider its decision to include the LGIA-driven transmission among the elements of the 2012-2013 CAISO Transmission Plan supporting renewable energy goals.

Reliability-Driven Transmission Project Needs & Recommendations

The draft plan includes a large number of reliability projects totaling over \$1.3 billion in new capital expenditures. Given the cumulative cost of these projects in addition to the long list of projects which have previously received CAISO approval, extra scrutiny is justified to ensure that the reliability projects are of proper scope and timing. Therefore BAMx requests additional consideration of the following projects.

Midway-Andrew 230 kV Project

This project would bring a new 230 kV circuit into the southern Los Padres Area with an estimated cost of up to \$150 million. This project plus other projects approved in recent transmission plans reflect a major investment to serve an area with a load growth of only about 4 MW/year.² Furthermore, the contingencies being mitigated are Category C events which are very rare and for which interruption to customers is permissible under NERC Standards. As noted in the draft report, there is already a load dropping SPS in place to ensure that the NERC Standards are met. Therefore, before approving this costly project additional analyses is needed to:

1. Address why the existing level of reliability to the area is inadequate with the SPS.
2. Identify the benefit-cost ratio (BCR) associated with the project because of the expected reduction in customer interruptions due to SPS action.
3. Identify the incremental benefit-cost ratio of the CAISO proposed plan over the less expensive PG&E proposal.

Diablo Canyon Voltage Support Project

This project installs a 150 MVAR SVC or thyristor-controlled switched capacitor bank at an estimated cost of up to \$45 million. The CAISO should clarify whether this project is still needed if a Midway-Andrew 230 kV Project or its alternative, a Midway-Mesa 230 kV project is constructed. This new source into the area should improve the post-contingency voltage

² The total Los Padres area load growth is identified as 8 MW/year. About half the area load is located in the southern portion of Los Padres served by this project.

performance in the area, especially if the 230 kV line is terminated at Mesa 230 kV. If the voltage support is still found to be needed, then the facilities are required to meet the special requirements of Diablo Canyon Nuclear Power Plant and should be treated as a Special Facility. The cost of this project should be born by Diablo Canyon and excluded from the CAISO TAC.

Gates-Gregg 230 kV Transmission Line

The CAISO's Central California Study is quite enlightening. The incremental view of the transmission upgrades and the interaction with Helms operation provides valuable insights on the nature of the problem and solution. Two elements of the proposed solution should be further reviewed and explained before being presented to the Board for approval.

1. The addition of a new 500/230 kV transformer at Gates Substation has an excessive cost of up to \$85M. The cause of this high cost needs to be further explained and justified. If the cost is associated with ancillary work (such as an extensive re-arrangement of the 230 kV switchyard), such costs must be separately justified and not be allowed to piggy-back on this project.
2. The estimated date for the Gate-Gregg line is 2022. The envisioned cost for this project is reported to be \$145M. The Helms Water Availability Assessment for Development Configuration 3 (no Gates-Gregg 230 kV line) shows only modest impacts in 2023-25. Therefore the approval of this element is not urgent for this planning cycle. Given that the water analysis is very sensitive to both the installed PV level and combustion peaker use in the Greater Fresno Area, the CAISO should continue to review the timing for this portion of the project in the 2013-2014 Transmission Planning Process with the new renewable portfolio assumptions to assess the robustness of the timing of the project need.

BCR Calculations

We notice for the first time in this year's planning cycle that there are numerous projects justified based upon benefit to cost ratios (BCR) calculations. We re-iterate our request to see these calculations and to get a further clarification of when and how they are being applied. BAMx understands the CAISO wishes to limit their use to cases where the planning criteria are already being met but when loss of load occurs with radial loads. But we see these type of calculations as potentially failing to distinguish between times when load dropping is allowed for criteria Level C events and when it is not. In the past there has not seemed to be a clear criteria for when load dropping is allowed and when it is not.

In any case, it is incumbent on the CAISO to share such calculations if it is to have an open and transparent planning process. We assume the many examples of elimination of radial load dropping in this year's plan have existed for many years, if not decades. So although we may ultimately be supportive of eliminating the radial feeds, the CAISO should not approve the many projects eliminating the historical conditions until the criteria are better understood.

Policy-Driven Transmission Project Needs & Recommendations

In the Draft Plan, the CAISO has recommended a couple of transmission projects for approval as category 1 policy-driven projects based on the deliverability assessments on the renewable portfolios, while the CAISO's reliability assessment on the same renewable portfolios did not indicate any need for those projects. In assuming that all renewable projects should be "fully deliverable", the CAISO is in essence building transmission to allow renewables to provide Resource Adequacy without undertaking any cost-benefit analysis to demonstrate that this approach is economically justified.

BAMx does not believe that there is any state policy that renewable projects should provide Resource Adequacy irrespective of economics.³ Rather than designating transmission projects as policy driven solely to allow renewable projects to satisfy the Resource Adequacy needs, the CAISO should undertake a cost-benefit analysis to show that the proposed projects are economic. For example, BAMx suggests that the CAISO provide an economic justification for the approval of the *Lugo – Eldorado 500 kV Line Re-route* and the *Warrenville – Bellota 230kV Line Reconductoring* projects, that are classified as "policy-driven" transmission projects purely based on the deliverability assessment.

In Table 1, we provide an example of a comparison of the capital costs of the CAISO-proposed policy-driven transmission projects with RA capacity costs for procuring renewable resources presumably enabled by those transmission projects. The Draft plan as well as the CAISO's February 11th presentations have identified that without the proposed policy-driven projects listed in Table 1, certain amount of renewable generation will be deemed undelivered. However, the CAISO has not identified the amount of such undelivered renewable generation. In the absence of that information, we have estimated the amount of "fully delivered" exclusively solar or wind capacity that can be economically justified by the proposed policy-driven projects. For instance, if the *Sycamore – Penasquitos Line 230kV* project can incrementally allow the solar capacity of 589MW or the wind capacity 2,947MW from the claimed undeliverable renewable generation zones, then it can be potentially justified as a preferred solution to provide full capacity deliverability to the interconnecting renewable generation. The CAISO has not performed any such assessment.

³ Senate Bill 2 (1X) mandated new RPS procurement requirements are renewable energy, and not resource adequacy capacity requirements for renewables.

Table 1: An Illustration of the Economics of the Draft Plan Recommended Policy-Driven Projects

Project Name	Service Area	Project Cost (M\$)	Annualized DNU Cost (M\$/Yr)	Incremental Economic Solar Capacity (MW)*	Incremental Economic Wind Capacity (MW)**	Approval Justification	Claimed Undeliverable Renewable generation in zones
Sycamore – Penasquitos Line 230kV	San Diego Area	\$221	\$22.10	589	2,947	Needed Under Nuclear Back-up	Arizona, Imperial, San Diego South and Baja
Lugo – Eldorado 500 kV Line Re-route	SCE Area	\$40	\$4.00	107	533	Needed only under policy-driven deliverability studies	Eldorado, Tehachapi, Nevada C, and Imperial Valley
Lugo terminal–Eldorado equipment series cap upgrade	SCE Area	\$121	\$12.10	323	1,613	Needed under two policy-driven reliability portfolios & deliverability studies	Mountain Pass, Eldorado, Riverside East, Tehachapi, Nevada C, Kramer and Imperial Valley
Warnerville-Bellota 230 kV line reconductoring	PG&E Area	\$28	\$2.80	75	373	Needed only under policy-driven deliverability studies	Greater Fresno DG, Central Valley North, Merced, Westlands
Wilson-Le Grand 115 kV line reconductoring	PG&E Area	\$15	\$1.50	40	200	Needed under multiple policy-driven reliability portfolios & deliverability studies	Greater Fresno DG, Merced, Westlands

* Exclusively solar capacity with assumed NQC of 75% of Pmax and annual RA capacity price of \$50/KW-Yr .

** Exclusively wind capacity with assumed NQC of 15% of Pmax and annual RA capacity price of \$50/KW-Yr

The *Sycamore-Penasquitos 230 kV line* project, with an estimated cost of \$111M-\$221M, is identified in the potential policy driven solutions for a number of SDG&E area overloads. However, many of the overloads are relatively minor and all have multiple relatively inexpensive solutions. Therefore, the major expense of this line has not been sufficiently justified in light of these alternatives. From the CAISO’s February 11th presentation, it appears that the *Sycamore-Penasquitos 230 kV* project is recommended as an insurance for SONGS shut down. While the return of SONGS is uncertain and planning for flexibility of the transmission system to continue to reliably serve load in the face of such SONGS uncertainty is an immediate challenge, considering the *Sycamore-Penasquitos 230 kV line* as forgone conclusion and simply advancing it to support the needed flexibility may be masking other, lower cost solutions than building this

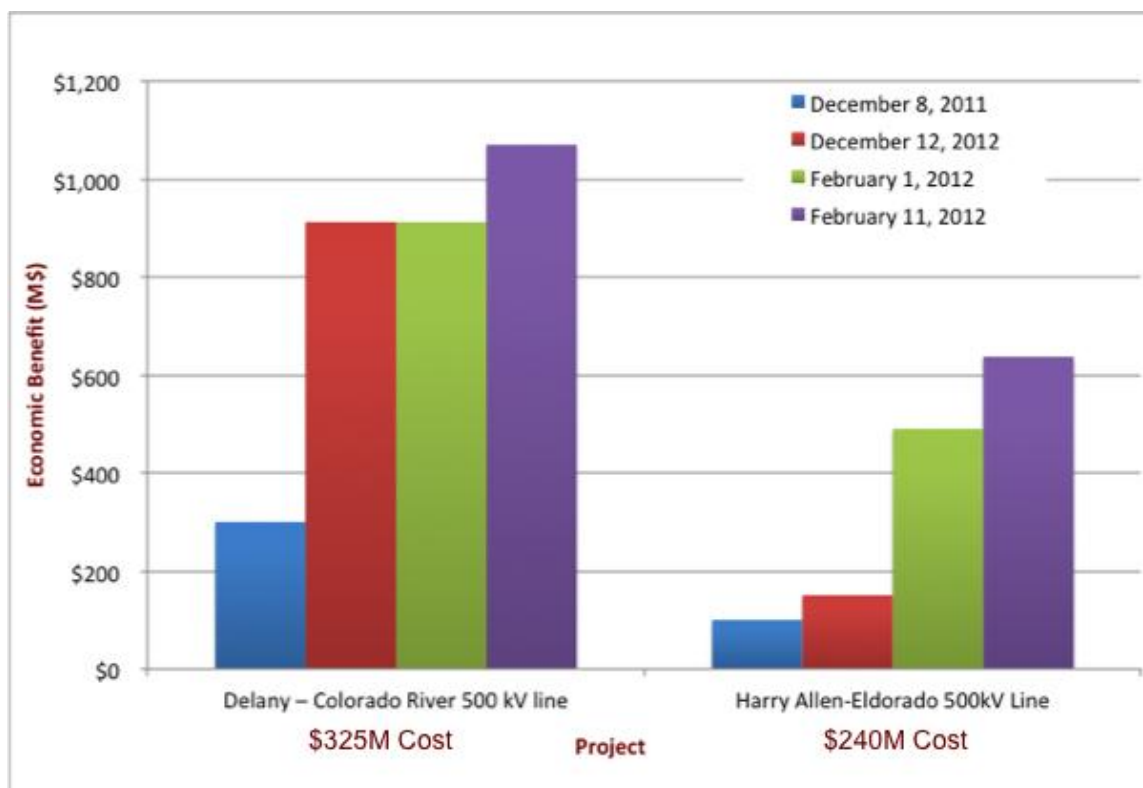
line in the first place. In other words, why buy the most expensive insurance policy when there is uncertainty whether it will be needed? Furthermore, as an insurance policy for the mid-term, a new 230 kV line through a congested area is fraught with risk. The typical assumption provided by the utilities for permitting, engineering and construction of new 230 kV line on a new right-of-way is seven to nine years. The last major transmission line in the San Diego area, the Sunrise Project, had a lengthy permitting project in part due to highly engaged and concerned local stakeholders. It is likely that the *Sycamore-Penasquitos 230 kV line* will face similar issues and would not be available if needed. Therefore, as a mid-term insurance policy, it is a poor choice.

Therefore, we request that the CAISO first determine whether the multitude of relatively less expensive upgrades will address the transmission capacity issue and this serve as the foundation of the assessment for any additional system flexibility needs to accommodate the SONGS uncertainty.

Economics-Driven Transmission Project Needs & Recommendations

The Draft plan has recommended the *Delany – Colorado River 500 kV line* project for approval and has recommended the *Harry Allen – Eldorado 500 kV line* project for further study in the ongoing CAISO-NVE joint study. We have noticed that the estimated benefits associated with these two projects have gone up significantly under multiple CAISO reporting since last year as shown in Figure 1 below. The CAISO has provided little documentation in the Draft Plan on the reasons for such major changes in estimated benefits associated with these transmission projects. We request that the CAISO provides justification for these changes as well as arguments, if any, on why the final benefits calculations that were presented in the February 11th stakeholder meetings should be trusted to approve transmission projects costing hundreds of millions of dollars.

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



Furthermore, we find that the Net Present Value (NPV) calculations of the benefits of the candidate transmission projects to be questionable. For example, for the *Harry Allen – Eldorado 500 kV line* project, the CAISO calculated the total benefits in years 2017 and 2022 as **\$87M** and **\$33M**, respectively. Our understanding is that the CAISO interpolated these benefits for the intervening years and extrapolated the benefit of \$33M in years 2023 onwards at 1% annual escalation. 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 **\$637M**. We have verified these calculations. However, when we apply a trend on the benefits to extrapolate them beyond 2022 taking into account a significant drop in the benefits from 2017 to 2022, we get a NPV of benefit of **\$327M** over 50 years, nearly half as much as benefit calculated by the CAISO.⁴ 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 2017 to 2022, the likely reason being the increased buildup of the low variable cost renewables within the CAISO BAA. If the renewable buildup continues to go up within the CAISO in the later years, it is likely that the benefit of the out-of-state (OOS) transmission projects like *Harry Allen – Eldorado 500 kV line* will go down.

⁴ Applying the trending to the benefits actually results in negative benefits in the later years; therefore we capped the benefits to \$1M in our example calculations.

During the February 11th stakeholder meeting, the CAISO claimed that most of the benefits of the OOS candidate transmission projects were attributed to lower impedances due to new lines that allow for redistribution of imports among the lines into California from the Southwest, and not necessarily by increasing the transfer capability of WOR & EOR interfaces. If lowering of impedances results in such major economic benefits, has the CAISO considered studying lower cost measures such as the sufficiency of series compensation schemes for the existing import lines into the CAISO BAA? If not, the CAISO needs to consider lower cost alternatives prior to approving a major new 500kV transmission project.

It also is important to recognize the calculated benefits assume the completion of other projects whose construction is uncertain. We urge the CAISO to continue its study of the potential benefits of projects that can import power from other States but to not approve them in this transmission planning cycle.

We hope that the CAISO considers these comments on the Draft Plan favorably and responds accordingly in the Final Plan. BAMx appreciates the opportunity to comment on the CAISO 2012-13 Transmission Plan and acknowledges the significant effort of the CAISO staff to develop the plan so far.

If you have any questions concerning these comments, please contact Barry Flynn (888-634-7516 and brflynn@flynnrci.com) or Pushkar Wagle (888-634-3339 and pushkarwagle@flynnrci.com)