BAMx Comments on the CAISO 2012-13 Transmission Plan: CAISO Preliminary Study Results and PTO's Proposed Solutions

The Bay Area Municipal Transmission group (BAMx)[1] appreciates the opportunity to comment during the development of the CAISO's 2012-13 Transmission Plan. The comments and questions below address the studies posted on the ISO's website on August 15, 2012 and discussed during the September 26th-27th Stakeholder meetings. We have divided our comments in two parts. Part I includes our comments on the CAISO's Reliability Assessment, whereas Part II focuses on the projects submitted by the PTOs in the 2012 Request Window (R/W).

PART I: CAISO Reliability Assessment Results

BAMx appreciates the CAISO staff efforts in issuing the study information that is timely and complete. In past years, the completeness of the analysis and the designation of proposed remedies for criteria violations have been inconsistent across the CAISO grid, and some areas were much better documented. However, this year, we found that more information was included in almost all the CAISO presentations as well as in the PTO presentations, most notably the ones made by the PG&E staff. Even though there were substantial improvements, we encourage the CAISO to consider further improvement to the presentations of their assessment results. Specific examples of improvement needed are contained in the comments below.

CAISO Assessments Finds More Deficiencies Even with Recently Approved Projects

Our review of the CAISO's assessment in several study areas indicates that there are deficiencies even though the CAISO has approved transmission projects in those areas in the very recent planning cycles. Below, we provide some examples.

1. **Greater Bay Area- Peninsula:** The CAISO assessment includes a Category C contingency overload on the *Jefferson - Stanford 60 kV* Line. See Table 1 below. There is an approved project to build a new Jefferson-Stanford #2 60 kV line to address a prior Category B issue. Please confirm that this overload exists after adding the new *Jefferson - Stanford 60 kV* Line.

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2014 Summer Peak	2017 Summer Peak	2022 Summer Peak	
Penn-SP-T-16	Jefferson - Stanford 60 kV Line	Cooley Landing-Stanford 60kV Lin (Coo_Jefferson-Las Pulgas 60kV Line (Jefferso	C3	N-1-1	104%	111%	120%	Re-rate or reconductor line. Drop load either manually or thru SPS as appropriate

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

Table 1: Category C Overloads in Peninsula

2. **East Bay:** The CAISO assessment identifies a Category C thermal overload on Moraga to Oakland J 115kV beginning in 2017. See Table 2 below. We are under the impression that the CAISO had approved PG&E's *Moraga-Oakland "J" SPS* project in the 2009-10 transmission plan in part to mitigate this issue. In addition PG&E had submitted the *Moraga-San Leandro and Moraga-Oakland J 115kV Reconductor* projects in the 2010 Request Window, but our understanding is that it was not approved. Subsequently, the CAISO approved the *East Shore - Oakland "J" 115 kV Reconductor* project in 2011-12 Transmission Plan. Presumably, this approved project as well as the *Moraga-Oakland "J" SPS* projects were modeled in the 2012-13 assessment base cases. Is there another capacity deficiency on the horizon for load served from Oakland J so soon after the approval of the reconductor project?

ID	Overloaded Facility	Worst Contingency	Category	Category Description	Loading (%)			Potential Mitigation Solutions
					2014 Summer Peak	2017 Summer Peak	2022 Summer Peak	
Ebay-SP-T-05	Moraga - Oakland J 115 kV Line	Grant-Oakland J 115 kV Line _San Leandro - Oakland J #1 115kV Line	C3	N-1-1	N/A	102%	107%	Re-rate or reconductor line. Drop load either manually or thru SPS as appropriate

Table 2: Category C Overloads in East Bay

3. **Humboldt:** The CAISO assessment identified a category B overload on the *Humboldt Bay – Humboldt 60kV line #1* and provided reconductoring of this line as the mitigation measure. The CAISO 2011-12 Transmission Plan indicated that the *Humboldt Bay-Humboldt 60 kV line #1* would be upgraded by October 2014 as a part of PG&E's Infrastructure Replacement Project, which is a maintenance project that does not require ISO approval.[2] Please provide any updates on this project. Also please confirm that this project is needed even with the previously approved 60kV projects such as, the *Humboldt - Eureka 60 kV Line Capacity Increase* and the incremental LGIA (renewable interconnection) -driven *Humboldt 60 kV upgrades*.

BAMx Supports CAISO's Consideration of Non-transmission Alternatives.

During the September 26th meeting, the CAISO indicated that they were looking for opportunities for Stakeholder input on non-transmission alternatives. BAMx generally supports this CAISO initiative. We agree with the CAISO that Stakeholder comments on *Unified Planning Assumptions* is an appropriate forum/timing for Stakeholders to provide their input, especially on load forecast-related non-transmission alternatives such as, Energy Efficiency, Demand Response Programs, Combined Heat and Power and Distributed Generation. We

[2] See Section 2.5.1.4 Recommended Solutions of the CAISO 2011-12 Transmission Plan, March 14, 2012.

encourage the CAISO to closely work with the CEC staff to model these non-transmission alternatives at appropriate locations.

PART II: PTO Request Window Project Applications

Post the Request Window Applications

We have reviewed the PTO Request Window (R/W) presentations that were made on September 27th. However, they do not present an adequate description, especially in regards to the alternatives studied by the PTOs/project developer. In order for stakeholders to provide any meaningful input into the 2012 R/W projects and the 2012-13 transmission plan in general, we need to have access to the following data:

- A detailed description of "Other Alternatives Considered" and why they were found to be less preferred;
- Key issues such as, requirement for CPCN, Common Mode Exposure Items, and related existing SPSs;
- *GE PSLF* modeling information; and
- Power flow/study results findings.

Such detailed information is only available in the R/W submissions (as evident in the CAISO's posting in March 2012 for 2011 R/W applications). There are several 2012 PTO R/W projects, which refer to other alternatives, but do not adequately describe them in the brief PTO presentations. In addition, no such data is available for non-PTO R/W applications, if any. Posting the R/W applications in March 2013 would be too late in terms of providing any meaningful stakeholder input.

Please post these R/W applications on the CAISO secured website (covered under the TPP NDA) as soon as possible.

Provide Details on BCR Calculations

The PG&E staff, in some of the R/W project presentations, showed that Benefit-Cost Ratios (BCR) for the following Central Valley projects was greater than one, such as,

- Salado 115/60 kV Transformer Addition; and
- Ripon 115 kV New Line.

In response to the questions asked on these BCR calculations, the PG&E staff indicated that these calculations were based on *Value of Service* analysis to address the CAISO Grid Planning Standard #6.[3] Please explain the criteria and methodology underlying these BCR calculations that were performed only to a subset of the PG&E R/W projects. We encourage broader

[3] "Planning for New Transmission Versus Involuntary Load Interruption Standards," CAISO Grid Planning Standards, June 23, 2011.

applications of BCR calculations for R/W submittals. BAMx also requests PG&E/CAISO to provide details on the BCR calculations for the PG&E projects listed above.

PG&E Request Window Applications

Below we seek more information on three (3) specific PTO Request Window applications that were presented during the September 27th Stakeholder meeting.

1. **Northern Fresno 115 kV Area Reinforcement**

At the September 27th CAISO Stakeholder's Meeting, PG&E presented a proposal for a project named Northern Fresno 115 kV Area Reinforcement. This project was described as needed to address 20 NERC *Category C* violations.

Given the high cost of the proposed project ($110M - $190M), insufficient information has been provided to assess whether the proposed project is the most cost effective method to address low probability *Catgeory C* contingencies. More information needs to be presented on:

i. The specific *Category C* contingencies and overloads being addressed by the project. For example, a single weak link in the transmission system can result in many criteria violations, so the number of violations being addressed is not necessarily a good indicator of the scope of a transmission problem or the scale of mitigation required.
ii. The cost of the alternatives being considered and how each element of both the proposed project and the alternatives address the criteria violations found. This is in recognition that not all violations have the same cost of mitigation. It may be justified to install new capacity to address some violations, others may indeed be best addressed by load dropping for *Category C* events.
iii. There are many proposed new generators in the Fresno area and from a planning perspective the potential for new generation in the area is in flux. A better understanding is needed as to whether the need for the proposed project is sensitive to this planning uncertainty and if so, what can be done to manage the risk of defining an improper project scope in the face of such uncertainty.

Therefore, the project as presented does not contain sufficient information to be included in the CAISO 2012-13 Transmission Plan.

2. **Midway-Wheeler Ridge 230 kV Capacity Increase**

This project was described as needed to address the following concerns:

- Load growth in the Wheeler Ridge area has led to transmission capacity limitations between Midway and Wheeler Ridge substations on the two 230 kV lines.
- The *Midway-Wheeler Ridge 230 kV line #1* or *#2* are projected to exceed their normal ratings under clearance conditions and during summer peak loading conditions for an outage of either line (*N-1*) with pumping load online.

The potential cost is identified as $85M to $128M over two phases.

The assessment identifies overloads on the *Midway-Wheeler Ridge No. 1 230 kV* circuits associated with several *Category C* outages due to breaker or bus failures in Midway Substation. The potential solution in the assessment is to drop CDWR pump load. While the PG&E presentation alluded to other alternatives involving reinforcing the system or building new facilities from Kern PP are still under evaluation but are expected to be more expensive, the low cost solution of dropping the CDWR pumps for these low probability *Category C* events was not addressed.

Additionally, we understand that the high cost of the proposed reconductoring is partially due to the current condition of the existing line. As CDWR is a 75% owner of this line, will CDWR be asked to fund a portion of this work as needed line maintenance. Also, if the capacity increase is funded by PG&E and rolled into TAC, how will the capacity increase be allocated between PG&E and CDWR?

Given the potential for a low cost solution identified in the CAISO assessment, the project as presented does not contain sufficient information to be included in the CAISO's 2012-13 Transmission Plan.

3. **Greater Fresno Area Upgrade Project**

Though this project appears to be a scaled down version of the previous *Midway-Gregg-Tesla* project, it is still a very large project with an estimated cost of $400M-$500M of just direct costs.

There was insufficient information presented at the stakeholder's meeting to justify a project of such a scale. The presentation noted Category A, B and C overloads on the *Bellota-Gregg 230 kV* line in the CAISO assessment. The overloads identified on this line in the assessment were generally quite small (2% to 5%) except for a 2017 partial peak case where the *Category A* loading on the *Warnerville-Wilson 230kV* portion of the line was 157% of the line rating. The identified mitigation in the assessment was to turn on Helms if available.

For all but the partial peak case, the minor overload suggest that reconductoring the *Bellota-Gregg 230 kV line* would provide sufficient capacity margin well beyond the planning horizon. The power flow assumptions in the partial peak case that would drive such high flows during this moderate system condition are not clear. Additionally, the PG&E presentation did not address the ability to generate at Helms during this condition as identified in the CAISO assessment. As such, the material presented was inadequate to justify a project of such magnitude.

Furthermore, the PG&E proposal was incomplete. The western terminus of a proposed line into *Raisin City Junction* has not been determined. This project clearly requires further investigation before it is sufficiently defined and justified to be considered for inclusion in the CAISO 2012-13 Transmission Plan. BAMx recommends that the system deficiencies identified in the

assessment be addressed in the *Central California Transmission Study* being prepared during this planning cycle.

Finally, given the very modest overloads during the summer peak conditions and the linkage to Helms generation during non-peak conditions, BAMx recommends that any increase in scope beyond reconductoring the existing *Bellota-Gregg 230 kV* line be treated as an economic project and required to undergo the CAISO assessment process for economically based project justifications.

SDG&E Request Window Applications

1. San Diego Reactive Support 230 kV

At the September 27, 2012 CAISO Stakeholder's Meeting for the 2012-2013 Transmission Planning cycle, SDG&E presented a group of projects collectively referred to as the *Reactive Support 230 kV*. Each of the four installations included in this project would install +/- 240 MVARs of reactive capability through the use of synchronous condensers and shunt reactors. The four installations would have a combined total cost of **$228M** to **$284M**.

The driving factors for this project are identified as:

- Meet NERC/WECC reactive margin criteria.
- Dynamic reactive capability & inertia:
  - South Bay (Retired in 2010)
  - Encina (Possible 2017 retirement & OTC)
  - SONGS is currently OOS, possible future OTC Retirement
- Need for improved voltage control pre and post contingency:
  - Maintains voltage stability, particularly with high system imports.
  - Regulates grid voltage for all system loading conditions.
  - Voltage/VAR control independent of unit commitment /dispatch.
  - NUC-001 requires following narrow voltage band at San Onofre bus.
- Improves San Diego Import Capability.

With regard to the need to meet NERC/WECC reactive margin criteria, there is no information presented in the CAISO assessment that suggests that there is a reactive margin deficiency in the San Diego area. Additional information is needed to identify the nature of any such alleged deficiency as well as alternative measures to mitigate it.

With regard to dynamic reactive capability and inertia, other devices such as such as SVCs can provide dynamic reactive support and are the more standard way of providing such capability. Synchronous condensers have higher initial capital costs, as well as higher maintenance costs and operating losses. As for inertia, synchronous condensers are not highly effective in providing inertia. The lack of a turbine and the lighter rotor construction of a synchronous condenser (due to the lack of the need to accommodate power transfer) result in a lower effectiveness in providing inertia. If inertia is indeed needed due to the shut down of South Bay

and possibly Encina, other options should also be considered such as conversion of those units into synchronous condensers or procurement of local replacement generation.

With regard to improved pre and post contingency voltage control, the assessment did identify a number of SDG&E 69 kV and a few 138 kV voltage violations. These are primarily due to light load normal conditions or contingency conditions on the 69 and 138 kV systems. As voltage issues are normally best corrected closest to the deficiency, it is unclear why device installation on the 230 kV was chosen. Solutions to these issues should be addressed through local system improvements rather than through bulk system upgrades.

As for improving San Diego Import Capability, this should be addressed based on an economic evaluation rather than as a reliability upgrade.

Given the above issues, the project as presented does not contain sufficient information to be justified for inclusion in the CAISO's 2012-13 Transmission Plan.

2. San Diego New 230kV Sycamore-Penasquitos line and Los Coches 230kV Expansion

SDG&E also presented two large projects, the *New 230 kV Sycamore - Penasquitos* line and the *Los Coches 230kV Expansion*. The total cost of these two projects ranges between **$191M** and **$241M**.

The *Sycamore - Penasquitos line* is represented as alleviating multiple *Category B* and *C* overloads. As most of the overloads in the CAISO assessment of the San Diego area were on the 69 kV system, it is not clear which overloads this project addresses. Both projects are identified as reducing congestion in the Sycamore area. No alternatives were provided for the *Sycamore - Penasquitos* line and the alternative to the *Los Coches 230kV Expansion* is to upgrade the 138 kV and 69 kV systems.

There is insufficient information to assess the minimum project cost for simply addressing the *Category B* and *C* violations versus the expanded scope of these larger projects to reduce congestion and facilitate renewable generation integration. Any costs/scope above that necessary to address criteria violations should be treated as an economic project and required to undergo the CAISO assessment process for economically based project justifications.

Given the above issues, these projects as presented do not contain sufficient information to be justified for inclusion in the CAISO Transmission 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 to date.

If you have any questions concerning these comments, please contact Robert Jenkins (415-926-1530 and robertjenkins@flynnrci.com), or Pushkar Wagle (888-634-3339 and pushkarwagle@flynnrci.com).