

BAMX Comments on the CAISO 2010 Draft Final Transmission Plan

The Bay Area Municipal Transmission group (BAMx)¹ appreciates the opportunity to comment on the CAISO 2010 Draft Final Transmission Plan Report. The comments and questions below address the studies posted on the ISO's website on February 9, 2010 and discussed during the February 16th Stakeholder meeting.

Stakeholder Participation

It is our experience that the time available between the issuances of the draft final report and the final report presented to the ISO board, does not allow the CAISO staff to address the stakeholder concerns adequately. In the past, our suggestions made concerning the draft report appear to have been ignored. Please see *Attachment 1* comprising the BAMx comments made during the last year's transmission planning process, where, among many other comments, we suggested an alternative to the Ravenswood-Cooley Landing 115 kV Reconductor Project. Our proposed alternative, the Newark/Ames 230kV Upgrade, would prevent outages such as the 2/17/10 event that interrupted all City of Palo Alto load for 10 hours. This event resulted from an aircraft striking the Ravenswood – Palo Alto #1 and #2 and Cooley Landing – Palo Alto 115kV lines. The Newark/Ames 230kV Upgrade would provide a new 115kV path from Ames Substation into the Ravenswood/Cooley Landing/Palo Alto area by converting the Cooley Landing – Los Altos 60kV line to a 115kV Line.

The ISO has yet to respond to stakeholder comments filed on November 19, 2009 on the posting of the ISO study results and on the presentations by the PTOs comprising their proposed solution. This lack of responsiveness by the ISO to stakeholder comments is not conducive to a meaningful exchange of ideas between the ISO and the stakeholders. In *Attachment 2*, we have included our November 19th comments.

Since there is no documentation of the San Francisco (SF) reliability assessment in the draft final report, we understand that stakeholders will have additional time to file comments on the SF studies that were presented in the February 16th stakeholder meeting. Please indicate when the documentation for the SF reliability assessments would be made available and the due date for the corresponding comments.

Need for Consistency in Applying Load Dropping for Category C/Category D Contingencies

The ISO does not appear to be consistent in their application of CAISO planning/WECC criteria. We raised this issue in our comments on the 2009 Expansion Plan (included in Attachment 1), where we stated the following.

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

“We request the CAISO to clearly state conditions under which transmission projects would be appropriate for Category C violations and justify these projects accordingly. It is imperative for the CAISO to follow the existing planning standards or create new, but consistently applied, standards across different areas.”

In this year’s transmission plan, for example, it appears that the Stockton “A”-Weber #1 and #2 60 kV Line Reconductoring project is approved on the basis of a category B violation in “2020.”² But a project is proposed for operating date of May 1, 2011. We assume that it is done to mitigate some category C/D level violations. This lack of clarity is a problem unto itself. If our interpretation of the unclear write-up is correct, we think it is unlikely that reconductoring is the most economic way to eliminate near-term category C/D violations. An inexpensive solution to the criteria C/D violations would also allow for alternatives to be developed for the reconductoring project and to adjust the online date based on the load projections in the future assessments. If this concept has been considered, the reasons for rejection need to be documented.

Need for a Better Documentation of the Reliability Projects

Below we list several additional questions/comments related to the Reliability Assessment.

1. Russell City Energy Center is not included in Table 2-3 (New generation units modeled for the reliability assessment). Please confirm that it is modeled as operational in the base cases. Is there any update as to the status of the project?
2. There are several projects that indicate criteria violations as early as 2010. The ISO needs to explain to stakeholders why these projects were not identified in last year’s transmission assessment. It seems strange that last year’s assessment cases for 2013 and 2018 would not show violations, but this year’s assessment for 2010 shows violations. For example,
 - a. The Stockton “A”-Weber #1 and #2 60 kV Line Reconductoring project;
 - b. Pittsburg-Lakewood SPS Project;
 - c. Corcoran 115/70 kV Transformer Replacement Project;
 - d. Upgrade TL680A, San Luis Rey–Melrose Tap 69 kV line; and
 - e. Upgrade TL6952 Penasquitos-NorthCityWest.
3. There are several projects whose assessments of needs are inadequately documented. For the following projects, the worst contingency and the overloaded facilities are not identified.
 - a. The Pit 3-Pit 1 and Pit3-Round Mountain 230 kV Line Relays Replacement project;
 - b. The Stockton “A”-Weber #1 and #2 60 kV Line Reconductoring project;
 - c. Weber 230/60 kV Transformer #2&2A Replacement;

² See Section 3.3.4.4 of the draft report comprising the recommended solutions for facilities not meeting thermal and voltage performance requirements.

- d. Morro Bay 230/115 kV transformer addition project: “C” level “low” voltage issue (we could not locate any category B violation); and
 - e. East Kern Wind Resource Area 66kV Reconfiguration Project. Please indicate whether increased level of wind project curtailment would relieve the need for this project and if so, what that level would be.
4. The ISO has identified the projects that they have approved or rejected under the 2010 transmission plan. However, they have not provided any information on the projects that fall into the following categories.
- a. To be evaluated in the next transmission planning cycle;
 - b. To be coordinated with the PTO on final project proposals; and
 - c. Project Withdrawn or ‘FYI’
5. We also have the following questions related to specific projects considered under the 2010 planning cycle.
- a. As regards to the proposed Mountain View/Whisman-Monta Vista 115 kV Reconductoring project, please investigate the impact of closing the breakers (#372 and #382) at Ames substation.
 - b. Concerning the Moraga-Oakland "J" SPS project, please provide your input on the option of closing the Cartwright to Jenny 115kV line under the category C violation involving the loss of two out of three Moraga to San Leandro lines.
 - c. In case of the Reedley-Dinuba 70 kV Line project, have you investigated tripping the generator at Dinuba EC to mitigate the overload on the Dinuba_Jt 70 kV To Dinuba 70 kV Ckt #1?
 - d. The ISO indicates that the project involving the upgrade of the Los Coches 138/69 kV banks 50 & 51 is needed in 2018. BAMx believes that there should be sufficient time to analyze the need for this project based on future load projections and further analysis. It is also our understanding that the CAISO approval is not needed as the project could be done as part of maintenance program in 2010.

Stakeholders need to be informed on the detailed description of the above-mentioned projects. Such information would make the planning process more transparent and understandable to stakeholders. For most of the results, it is very difficult to decipher the contingency/overloaded facilities. The single line diagrams associated with various projects that were presented in the February 16th Stakeholder meeting presentation should be included in the final report. Furthermore, we recommend including the type of information (pairs of overloaded facilities/contingencies, other considered alternatives, etc.) shown on the diagrams in the “San Diego” section of the February 16th Stakeholder meeting presentation for all the regions in the final report.

Economic Planning Study Results

Assumptions driving the Latest Results:

The most recent results of the 2010 study are significantly different from the ones that were shared with stakeholders on September 15, 2009. For example, the considerable hours and amount of congestion in the Greater Bay Area, especially on the Contra Costa - Moraga 230 kV line #1 has decreased significantly. The annual congestion cost on this 230kV facility was reported to be nearly \$103 million in the September 15th results, which has now reduced to only \$11 million in 2010. We understand from the footnotes to the latest tabulated results that this congestion reduction might be a direct result of reconductoring the Contra Costa - Moraga 230 kV lines. However, we are still surprised by the extent to which the overall projected congestion in GBA has decreased. It was our understanding based on the October 26th-27th Stakeholder meeting that even if the Contra Costa - Moraga 230 kV lines were reconductored, the congestion would shift somewhere else, e.g., on the Tesla 500/230 kV transformer. However, that does not appear to be the case based on the ISO's most recent results, which indicate no or very minor congestion on the Tesla transformer bank. Has the ISO made any additional changes/upgrades in the new cases, such as, adding another 500/230 kV transformer bank at Tracy/Tesla? What was the impact of changing impedances on the transformer? Furthermore, in other areas like *Los Banos North* and *San Joaquin Valley area (Big Creek area)*, the congestion has changed relative to the ISO's earlier (September 15th) results. In general, there appears to have been significant changes in the results of the congestion studies performed in the 2010 planning cycle. There was no reporting on these important studies as promised in the 2010 transmission study plan. Furthermore, during the February 16th stakeholder meeting, the congestion study results were not discussed.

The economic planning study results table footnotes lack the necessary detail to explain these significant changes. BAMx requests the ISO to provide more detailed documentation on the changes in assumptions/modeling that have contributed to these changes. We suggest that the ISO should provide this information soon so that the stakeholders have the opportunity to comment on them prior to the issuance of the final 2010 transmission report.

Mitigation Measures:

The ISO had indicated that the scope of the 2010 economic planning study would include three (3) alternative mitigation plans in each high-priority study. However, the latest results do not include any discussion of the mitigation plans. Does the ISO plan to include them in the final 2010 report?

BAMx appreciates the opportunity to comment on the CAISO 2010 Draft Final Transmission Report and acknowledges the significant efforts of the ISO staff to develop the report.

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).

Attachment 1: BAMX Comments on the CAISO 2009 Expansion Plan

The Bay Area Municipal Transmission group (BAMx)³ comments and questions on the draft CAISO 2009 Expansion Plan posted on the ISO's website dated March 6, 2009 are itemized below.

Load Dropping for Category C/Category D Contingencies

BAMx urges the ISO to be consistent in applying the Planning Standards⁴ to determine the need for a given transmission project. Historically, for Category C and D contingencies, no justification has been offered for new project additions or SPSs. However the TransBay Cable, a \$450 million project, is an example of a recent project that addresses a Category C contingency.

This year, there have not been any projects proposed in the Greater Bay Area to address Category C contingencies. Some of the Category C overloads in this area are very high, requiring significant quantity of load dropping, up to 600 MW, to mitigate the violations. However, there are several projects listed (the list may not be complete) below that appear to be based on a Category C contingency requirement in other areas. Some of the projects were recommended for approval by the CAISO Management and some were recommended by the staff as the preferred mitigation measures.

- Fulton-Fitch Mountain 60 kV line reconductor in PG&E's North Coast/Bay area,
- Moss Landing – Salinas – Soledad #1 &2 lines in PG&E.
- Atascadero – San Louis Obispo 70kV line in PG&E.
- San Luis Obispo – Santa Maria 115 kV line in PG&E
- Mesa – Sisquoc 115kV Line in PG&E.
- Santa Maria – Sisquoc 115kV Line in PG&E
- The Redondo-La Fresa 230 kV line upgrades in SCE.
- Chino–Mira Loma 230 kV line # 3 in SCE

We request the CAISO to clearly state conditions under which transmission projects would be appropriate for Category C violations and justify these projects accordingly. It is imperative for the CAISO to follow the existing planning standards or create new, but consistently applied, standards across different areas.

Power Flow Contingency Analysis

Section 3.4.1.2 (Power flow contingency analysis) on Page 9 of the *Draft 2009 ISO Transmission Plan Report* (Draft Report, hereafter) includes the following.

The following system conditions were considered for all the local area studies:

³ BAMx consists of Alameda Power, City of Palo Alto Utilities, and City of Santa Clara, Silicon Valley Power.

⁴ <http://www.caiso.com/docs/09003a6080/14/37/09003a608014374a.pdf>

- All single contingencies (including all combinations of *L-1* and *G-1* contingencies),
- All double-circuit tower line outages plus all combinations of any two elements, (generator, line, or **transformer**) outages,
- Combinations of any one element outage followed by double-circuit tower line outages.

Was the loss of two transformers analyzed as a Category C contingency for all or any of the PTO areas? Were there any “combinations of any one element outage followed by double-circuit tower line outages” conducted? If so, what were they? Please describe.

Post Transient Voltage Stability Analyses

Section 3.4.1.4 of the Draft Report discusses the Post transient voltage stability analyses. Were such analyses or any reactive power margin analyses conducted for the Greater Bay Area? Please clarify.

List of Contingencies

Page 12 of the Draft report indicates that the list of contingencies is available on the ISO secured website for the contingencies. We have accessed an *Excel* file comprising about 74 contingencies in Northern California. However, this does not appear to be the complete list. If this list is not the one mentioned above, please identify its location.

List of Transmission Projects

Table 7-2 (Section 7.1) shows the Transmission Projects that were not recommend for approval by ISO staff. Please provide some indication of why they were not approved and/or the requirements for project approval.

Section 7.3 lists the ongoing projects. Please distinguish between the projects that “are being developed by project sponsors” and those projects that “the ISO has conceptually agreed with the scope of the projects yet still require further evaluation or additional information”. Which, if any of these projects, would be considered for approval in the 2009 planning cycle?

Local Capacity Requirements

Section 8 of the Draft Report includes the reference to the ISO Local Capacity Requirements (LCR) Studies. However, no real emphasis is placed on evaluating the economics of the transmission in reducing the LCR. It appears, especially for GBA, where the reactive margin sets the level of LCR needs, that additional reactive capability may be economically justified to reduce the LCR requirements.

Generation Assumption

Table 4-36 lists the Generating capacity in the Greater Bay Area assumed in the Draft Plan. BAMX would like to know the rationale behind modeling both the Potrero Gas Turbines and the SF Peakers (including the SFO Peaker) as operating simultaneously. A condition for the approval of the SF peakers was the shutdown of Potrero. Showing excessive generation within SF potentially masks any supply problems to the SF Peninsula. We encourage the ISO to reevaluate the adequacy of serving the SF Peninsula with a more realistic, reduced level of generation in SF.

The Draft Plan assumes all East Bay generation (Oakland as well as Alameda) to be operational. Please confirm, for the East Bay B contingencies, whether you removed one of the Oakland CTs.

The ISO should include a Table in its final report which indicates the P_{max} and P_{gen} for each unit for the 2013 and 2018 analysis it has performed.

Historically, PG&E has performed sensitivity analyses addressing the potential generation retirements. Those correlate closely with the *Once-Through Cooling* (OTC) Generation retirement studies. Those scenarios provide critical information to assess the best transmission solutions for GBA. This Draft Plan does not provide these insights – please explain. Please include a report on the state of the OTC analysis that is being studied by the group of State Agencies.

Projects Proposed to be Approved

New Project- Newark/Ames 230kV Upgrade (Alternative to Newark-Ames 115kV Reconductoring)

Project *South of San Mateo Capacity Increase* (T920A) was first approved in the 2007 CAISO expansion plan. The PG&E project description was:

The project scope is to upgrade the transmission facilities between Ames, Ravenswood and San Mateo. The completion of this project would reduce or eliminate the need for the existing automated protection scheme. Project options to be evaluated include upgrading existing and building new transmission facilities.

Please note there was no explanation of which lines were being upgraded or whether the voltage level was being changed. The operating date was listed as May 2009. Subsequently, in the PG&E's 2007 assessment, it was updated to May 2010. Both, the latest PG&E assessment and the current draft CAISO plan indicate it to be May 2011.

When PG&E proposed this project in their 2006 assessment (*Summary of Transmission Project Proposals*), it provided the following background.

San Mateo and Ravenswood Substations are critical transmission substations in serving electric customers in San Francisco and San Mateo counties. Planning studies concluded that a 230 kV double line outage of either the two 230 kV lines to Ravenswood or to San Mateo could overload

the 115 kV lines between Ames, Ravenswood, and San Mateo substations. If not properly managed, these overloads could lead to cascading outages and local area blackouts. PG&E has been using an automated protection scheme to mitigate the potential line overloads if the double line outage, even though unlikely, occurs. Currently, up to 600 MW of customers could be interrupted for a double circuit tower line outage.

The current draft CAISO plan for this year describes the project as reconductoring of the ***Ravenswood-San Mateo 115kV*** line.

We noticed in the Base Case on the CAISO website for this year's expansion plan for years 2013 and 2018, that the existing ratings for the Newark-Ames 115kV lines were changed from 83MVA to 228MVA. In discussions with PG&E to understand the justification for the rating change, we were told that this change was part of the *South of San Mateo Capacity Increase* project.

We also understand from PG&E that they are having some difficulty completing the South of San Mateo project and the cost has risen so that it may need to go to the ISO Board for approval.

Whether re-approval is needed or not, BAMx believes that a 230kV alternative should be studied to increase the capability to deliver power to the Peninsula from Newark. Based upon the latest description of T920A, this potential project would be a new project. We suggest the following configurations should be analyzed for the existing four (4) Newark-Ames 115kV circuits:

1. 230kV single circuit to replace one of the double circuit 115kV lines leaving the other 115kV DCTL as is.
2. Replace four 115kV circuits with 2 – 230kV circuits, one on each of the existing tower lines.
3. Same as 2 above but remove the DCTL and replace with new double circuit steel pole line.

Of course, load flow wise alternatives 2 and 3 are similar. In all cases, add a 230/115kV bank at or in the vicinity of Ames Substation.

This is a much better long term solution to the reliability needs of the Peninsula because of an ability to import more power from Newark. Due to environmental constraints, building additional lines or re-building the lines after they are reconducted would be very difficult and maybe impossible. This solution would eliminate the need to add additional 230/115kV capacity at Newark Substation. We believe the 230kV alternative will also reduce losses and reactive support requirements.

Alternative to Ravenswood-Cooley Landing 115 kV Reconductor Project

In this year's draft plan, the Ravenswood-Cooley Landing 115 kV reconductor project is proposed to mitigate an overload caused by the loss of one of the Ravenswood-Cooley Landing 115 lines and the Cardinal generation.

As shown in the draft report, there are numerous C contingencies that would cause much higher overloads in the area. The following Table shows the overloaded transmission facilities, the related worst C level contingencies, and the corresponding amount of load dropped at Palo Alto.

#	Overloaded Transmission Facility	Worst Category C Contingency(ies)*	Load Dropped @ Palo Alto Under SPS (MW)
1	Ravenswood – Palo Alto 115 kV Line No. 2	Bus Fault at Ravenswood 115 kV bus 2E or Loss of (Ravenswood -Palo Alto #1) & (Cooley Landing-Palo Alto) 115kV	65 MW
2	Ravenswood – Cooley Landing 115 kV Line No. 2	Loss of Ravenswood -Palo Alto #1&2 115kV	140 MW
3	Cooley Landing – Palo Alto 115 kV Line	Loss of Ravenswood -Palo Alto #1&2 115kV	140 MW

* **There are no existing operating procedures for these outages. PG&E is working on developing these procedures.**

The proposed Ravenswood- Cooley Landing 115 kV Reconductor Project does not address these C level overloads and significant load dropping would be needed for loss of two sets of conductors on common towers. Since the related overloads are in the same area, there might be different and cost effective solutions to mitigate both the B and C level overloads. For example, building a new **Ames to Palo Alto 115kV tie** could potentially mitigate all the overloads in the area. Re-enforcing an existing underutilized tower line could be a relatively inexpensive way to achieve this new feed to Palo Alto. Therefore, we recommend that the ISO study this project as an alternative to reconductoring the Ravenswood – Cooley Landing 115kV lines.

ISO Short-Term Plan – Operational Needs

BAMx appreciates the ISO’s efforts in identifying several projects with lead times less than three years (Table 8-3). From this table, we can see that the gap between originally proposed targeted in-service date and the current proposed date is anywhere from 1 to 4 years. BAMx is concerned that if there is any further change of scope to any of these approved projects, their operation date may be affected. Clearly, next years load projections may be significantly reduced from those used in this analysis. Moreover, there are several approved projects that appear to have changed in scope; however no reason is provided (Table A-1).

- Newark – Ravenswood 230 kV Line (2010);
- Contra Costa – Las Positas 230 kV Line (2010);
- Glass – Madera 70 kV Reconfiguration (2009); and
- Humboldt Reactive Support (2009).

BAMx urges the ISO to provide sufficient transparency in the process so that the stakeholders are aware of the delay as well as the cause of the delay associated with any given project. Furthermore, BAMx suggests that the ISO take into consideration the planning and construction time associated with a given project while prioritizing the project approvals. In other words, transmission projects with longer term planning and construction horizons should be studied and

approved in advance of (or at least concurrent with) other shorter term projects. The project with shorter planning and construction horizons should not be approved prematurely.

We suggest deferring projects such as the San Mateo-Bair 60 kV line reconductoring project in this planning cycle, as the overload is observed only in year 2018. We have no alternative to propose for now. However, not approving in this cycle should not adversely affect the completion of the project on a timely basis. Additionally, postponing such projects should improve the ISO's ability to study potentially more effective and more timely transmission alternatives.

The *South of San Mateo Capacity Increase* project is justified on the basis of a Category C (*N-2*) contingency, however the ISO's introduction to the section indicates that it focuses on only normal and *N-1* conditions. Please explain why you call this project "concern" as "Congestion" versus "Reliability." Please also explain why the *Moraga 230/115kV Banks 1 and 2 Upgrade* project's concern is also "Congestion".

Detailed Study Assumptions

Table A-1 provides a list of transmission projects modeled in the reliability assessment. The *Menlo 60 kV Switch Upgrade* project has a targeted in-service date of 2008, which indicates that this project was modeled in the study base cases for the assessment. We were informed by the ISO in one of the Stakeholder meetings that the original scope of the project was limited to replacing the fifteen 600 amp switches with 1200 amp switches. However, the current revised scope also includes the following two additional upgrades.

- Upgrade limited components on the Jefferson-Stanford and Cooley Landing -Stanford 60 kV lines; and
- Reconductor 60 kV buses at Glenwood and Menlo substations.

Please verify that the original scope of this project is already in-service.

Table A-2 lists the names of the protection systems modeled in the ISO reliability assessment. Please provide the details on these SPSs/RASs.

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).

Attachment 2: BAMx November 19, 2009 Comments

Reliability Assessment Results

BAMx appreciates the ISO staff efforts in issuing the study information in a timely fashion. While the study results were complete in most respects, they do not address two areas containing roughly 2,000 MW of important urban loads in San Francisco and the Peninsula. BAMx would like to know when the ISO expects to provide those results and the associated mitigations for San Francisco and the Peninsula.

In past years, the completeness of the analysis and the designation of proposed remedies for criteria violations have been inconsistent across the CAISO grid. Some areas are much better documented and the analysis has been more complete than in other areas. Although that is still the case, we are encouraged by the improvement of the analysis of the Greater Bay Area needs in the 2010 assessment compared to the 2009 assessment.

Greater Bay Area (GBA) Long-Term Study Results

Rationale for GBA Generation Retirement Scenarios

The ISO has performed a detailed analysis of three scenarios of generation availability in the GBA for years 2014 and 2019. However, the ISO has not explained the reasons for this study and has not provided a study plan. BAMx is surmising that these generation retirement scenarios were developed to determine the minimum requirements for the Once-through Cooling (OTC) generators. If so, what is the rationale for doing such scenarios only for the GBA for this year's CAISO expansion plan? It would be helpful if more information were provided to assist reviewers of the substantial analytical effort that has been available for almost two months.

Availability of the Base Cases

In addition to the lack of a plan and an explanation of goals and assumptions for the GBA generation availability scenarios, another more important deficiency exists with respect to the ability of the stakeholders to fully understand the study results; the CAISO has not made the base cases used to perform this analysis available. The CAISO has not provided the locations on the grid for the new (replacement) generators assumed in Scenarios 1 and 3. With neither the study plan available nor access to the cases utilized, it makes it difficult to provide comments on the studies. BAMx encourages the ISO to post the Base Power Flow Cases for years 2014 and 2019 on the CAISO secured website at the earliest possible date.

Voltage Violations Criteria

BAMx understands that meeting the voltage deviations criteria is mandatory under a WECC criterion. Does the ISO plan to provide results for the GBA LT study similar to the violations listed in the Reliability Assessment study? We gather from the ISO's answers in the October

26th stakeholder meeting that its criteria for low voltages on an absolute basis are based on standards developed by the PTOs. Please provide those standards to the stakeholders. Please also indicate whether the ISO believes a violation of these standards justifies capital expenditures to address the violations.

Additional information needed to clarify apparent Discrepancies in the Results

BAMx has communicated to ISO staff that some of the 2014 overloads are higher than the 2019 overloads for the same facility and the same contingency (see Table 1 in Appendix A). The ISO has indicated that one of the factors causing these anomalies could be the increased generation in 2019 in the PG&E (ISO) areas external to GBA. We are not able to confirm this observation without the base cases for the study. The ISO also has indicated that it has proposed mitigations for the Category B and DCTL overloads found in the GBA LT study if there were no overloads in the Reliability Assessment study. However, we have noticed that there were several such overloads in the GBA LT study for which no mitigations were proposed (see Table 2 in the Appendix A). Please identify the mitigation measures for these overloads, if any.

Economic Planning Study Results

It is apparent that a tremendous amount of effort was put into developing the market simulations database to assess future congestion on the CAISO grid. These studies predict a level of congestion that we do not see today. Since the onset of MRTU, we have not experienced significant congestion on the facilities identified as being congested in the Economic Planning Studies for years 2014 and 2009, such as the Contra Costa Moraga 230kV line or the Tesla 500/230kV transformer bank. BAMx recognizes that the projected congestion in the future years may be driven by the assumed level of new renewable generation. The modeling of the location and output profile of the renewable generation are critical in assessing the future projected congestion. Please provide additional information about the assumptions made in the congestion study and the ISO's assessment of the key factors affecting the congestion.

The two page summary of the congestion work is helpful, but we are anxious to have the CAISO comment on the results as soon as possible. Assuming the results are accurate, it appears it may be possible to justify significant transmission construction based on economics, rather than reliability. BAMx appreciates the ISO's efforts in making the modeling databases available to the non-market participants on the ISO's secured website. It is important for the ISO to indicate in their report what they expect to study based upon this assessment. It is our understanding that the primary purpose of this assessment was to identify the highly congested areas for CAISO detailed studies. Please identify the CAISO's next steps and the expected timing of those steps in this regard.

2020 Renewable Transmission Conceptual Plan Based on Inputs from the RETI Process

The CAISO has made a great start on a huge issue for the State with the 2020 Renewable Transmission Conceptual Plan. This is a complex study and we wish to compliment the ISO and the PTO staff for their timely and extensive efforts.

Assumptions and Transmission Upgrade Criteria

As mentioned in the report, this study is "intended to initiate, prioritize, refine and ultimately implement cost-effective transmission projects." This study identified the transmission needs and potential upgrades (initiation of the Conceptual Plan). When would the ISO begin the studies to "prioritize, refine and ultimately implement" the transmission upgrades?

There are over \$11 Billion of investments that would be needed within the next 10 years based on the costs of the various upgrades listed in this report. This is a huge investment to be borne by the ISO customers and therefore the ISO and others must be very careful and judicious in making these investments. Despite the excellent start represented by these ISO/PTO studies, there is a need for substantial follow-on efforts before any decisions can be made to spend this magnitude of new investment to connect remote renewables.

The ISO recognizes that there was great uncertainty in assumptions made in this conceptual renewable plan. So far, the ISO has made several reasonable assumptions; however, the ISO needs to consider many sets of reasonable assumptions (scenarios). BAMx urges the ISO to emphasize in the final report that it has not considered many uncertain variables and that additional scenario analysis will be required before decisions can be made.

For example, one of the many assumptions that could affect the results dramatically would be the level of imports. Some discussion occurs on the import assumptions (for RA purposes, for instance) but those are all within the context of an assumed 5,500 MW of total renewable imports. RETI has recognized that the 5,500 MW assumption is somewhat arbitrary and over-simplified compared to RETI's in-state analyses and regional analyses performed by others. Thus RETI is currently pursuing a significant work effort which will yield much better import assumptions very soon.

It is imperative to study different reasonable and credible scenarios and the ISO should, as soon as possible, propose a set of follow-on studies and solicit comments on those assumptions both from RETI and from individual stakeholders.

Impact of RPS on Existing Generation Dispatch

The ISO should provide more information on certain assumptions and on how the results were developed to allow meaningful stakeholder participation. For instance, replacing over 26,000 MW of existing generation with new RPS is a significant change to the power system and much of the system upgrades would depend on the assumed new generation dispatch pattern. The report provides some information on the quantity and location of the new renewable resources but, except for stating some once through cooled units that would be retired (which ones?), there was no information on which existing generation was displaced by the RPS generation nor the

reasons for the selected generation curtailment. Please provide the generation dispatch (or changes from the base case) for the power flow cases used in the study. Also, please include the intertie flows. Please describe whether the ISO has evaluated how different dispatch and import patterns would affect the investment costs.

Distinguish between RPS Stand-Alone Upgrades versus those Driven by the OTC Retirement

As stated in the report, "the primary objective of this study is to develop a foundation for reliable transmission system upgrades and additions sufficient to meet California's 33% RPS goal by the year 2020. A secondary goal is to displace as much as possible of the old once through cooled units in California with new renewable resources."

BAMx requests the ISO to differentiate the upgrades that were caused by the RPS from those caused by the once through cooled unit retirement. Furthermore, please identify whether any of the upgrades would be justified by the normal course of load growth.

The report stated that the upgrades were based on "engineering assessments". Some of the upgrades contain details on studies justifying their need and some have hardly any detail included in the report. The same discrepancy exists with regard to details on the upgrades needed. Please explain whether these differences are attributed to the different stages of development for these upgrades. Please also identify those upgrades that have already received ISO approval and provide details of all of the upgrades.

There were no transmission upgrades identified to deliver 900MW from the Solano area in the 2020 Renewable Transmission Conceptual Plan; however the 2010 reliability assessment has identified several transmission upgrades. Please provide detailed information you have on the upgrades listed in this report.

Transmission Upgrades as Mitigation Measures for Contingency Violations

Please summarize the criteria used to determine the need for upgrades in the report and also point out what mitigation measures might be available to minimize costs. There appears to be no discussion of generation curtailment as a mitigation measure and it appears some transmission facilities are proposed to eliminate category C overloads (see the table on the page 37 of the report.) The upgrades for category C contingencies were only in the SCE area and no such upgrades to mitigate category C violations were identified in either PG&E or SDG&E areas. Please explain why load curtailment or other operating procedures are not sufficient to address the deficiencies under category C events.

Impact of Transmission Upgrades on Future TAC

Please provide an estimate of how the transmission upgrades would affect the High Voltage (HV) Transmission Access Charge (TAC) by 2020 assuming all the projects in the study would be implemented. In this exercise, please exclude elements of the transmission upgrades that

would not be included in TAC. For example, we assume that the LADWP's \$500 million *Green Path North* project will not affect the ISO TAC.

Need for Adequate Information to Participate in 2010 CAISO Transmission Planning Process (TPP)

BAMx acknowledges the considerable efforts made by the ISO staff in performing several studies meeting their deadlines during the 2010 transmission planning process. BAMx recognizes that this year's planning process involves more comprehensive studies than those run by the ISO during the 2009 process. However, there are several instances where the ISO has not provided adequate information to the stakeholders to enable meaningful stakeholder participation in the 2010 TPP. Lack of information or even delay in providing the necessary information limits the stakeholders' ability to evaluate the ISO's reliability assessment and mitigations, and in turn the PTO projects and potential alternatives. The unavailability of the reliability assessments for the San Francisco and Peninsula divisions as well as the unavailability of the Base Cases underlying the GBA LT study are examples that make it unlikely that stakeholders will have an opportunity to suggest their own projects and/or alternatives to the PTO projects in some of the areas within GBA within the 2010 request window.

As the CAISO is aware, one of the nine Order No. 890 planning principles is transparency. Transparency means that access must be provided to the methodology, criteria, and processes used to develop transmission plans. FERC clarified that, in addition to requiring transmission providers to disclose to all customers and other stakeholders the basic criteria, assumptions, and data that underlie their transmission system plans, transmission providers must disclose transmission base case and change case data used by the transmission provider⁵. In the order on CAISO's compliance filing implementing Order No. 890, FERC further explained that sufficient information should be made available to enable customers, other stakeholders, and independent third parties to replicate the results of planning studies and thereby reduce the incidence of after-the-fact disputes regarding whether planning has been conducted in an unduly discriminatory fashion⁶. FERC further emphasized to the CAISO in its subsequent compliance filing that "we remind the CAISO that it is obligated under Order No. 890 to provide transmission planning participants with sufficient data to enable them to replicate the results of planning studies."⁷ We urge the ISO to post the base cases used for these studies to its secured web page as stated in its TPP BPM at Section 9.2.

BAMx encourages the ISO to provide written responses along with the required data to stakeholders prior to the publications of the Draft transmission plan. If the responses to BAMx' data requests in these comments are available only in the draft transmission plan, which is expected to be available in January/February 2010, there will not be sufficient time for

⁵ Paragraphs 181 and 199, FERC Order No. 890-A, Order on Rehearing and Clarification, December 28, 2007.

⁶ Paragraph 41, Order on Compliance Filing, FERC Docket No. OA08-62-000, June 19, 2008.

⁷ Paragraph 60, Order Denying Rehearing and on Compliance filing, FERC Docket No. OA08-62-002, -003, 004, May 21, 2009.

stakeholders to critically evaluate the several study findings, their ramifications and proposed mitigations. Moreover, typically there is very little time available between the Draft transmission plan and the Final transmission plan to have meaningful stakeholder input on the draft transmission plan incorporated in the Final transmission plan. BAMx therefore requests the information be made available to stakeholders as soon as possible.

BAMx appreciates the opportunity to comment on the CAISO 2010 Transmission Plan and acknowledges the significant effort of the ISO staff to develop the plan.

Appendix A

Table 1: List of Violations with 2014 overloads higher than the 2019 overloads

Study	Scenario	Facility	Thermal/ Low Volt/ Volt Dev	Rating (MVA, SE)	Category	Contingency	2014 (%)	2019 (%)
Reliability	Base	Almaden 60	Volt Dev	60.0	B (L-1)	Evergreen-Los Gatos 60	8%	5%
GBA LT	2	Altamont Mdw-Delta Pump 230	Thermal	450.0	C (T-1-1)	Vaca-Dixon 500/230 #11 & Vaca-Dixon 500/230 #12	118%	104%
Reliability	Base	Dumbarton-Newark 115	Thermal	233.1	C (L-1-1)	Pittsbrg-E.Shore 230 & E.Shore-San Mateo 230	143%	139%
GBA LT	3	Larkin-Portero #2 115	Thermal	159.3	B (L-1)	Mission-Portero #1 115	104%	103%
GBA LT	1	Mission-Potrero 115	Thermal	139.4	B (L-1)	Larkin-Portero #1 115	101%	100%
GBA LT	3	Monta Vista 230/60 #5	Thermal	134.0	A	Normal	140%	137%
GBA LT	2	Moraga-Claremont #1 115	Thermal	94.0	B (L-1/G-1)	Moraga-Claremont #2 115 & DEC	113%	111%
GBA LT	2	Moraga-Claremont #2 115	Thermal	94.0	B (L-1/G-1)	Moraga-Claremont #1 115 & DEC	113%	111%
GBA LT	1	San Mateo-Belmont 115	Thermal	111.0	C (DCTL)	Ravenswood-Bair #1 & 2 115	105%	104%
GBA LT	2	Tesla-Altamont Mdw 230	Thermal	450.0	C (T-1-1)	Vaca-Dixon 500/230 #11 & Vaca-Dixon 500/230 #12	118%	104%
GBA LT	3	Westley-Los Banos 230	Thermal	677.2	C (L-1-1)	Tesla-Losbanos 500 & Tracy-Losbanos 500	116%	112%
GBA LT	2	Westley-Los Banos 230	Thermal	677.2	C (L-1-1)	Tesla-Losbanos 500 & Tracy-Losbanos 500	145%	141%

Table 2: List of Violations under B or DCTL outages in the GBA LT Study with no proposed mitigation (no overload in Reliability Assessment Study)

Scenario	Facility	Area/ Division	Thermal/ Low Volt/ Volt Dev	Rating (MVA, SE)	Category	Contingency	2014 (%)	2019 (%)
3.0	Christie-Sobrante 115	Diablo	Thermal	104.0	C (DCTL)	Sobrante-"G" #1 & 2 115	100%	111%
3.0	Christie-Sobrante 115	East Bay	Thermal	104.0	C (DCTL)	Sobrante-"G" #1 & 2 115	100%	111%
2.0	Christie-Sobrante 115	Diablo	Thermal	104.0	C (DCTL)	Sobrante-"G" #1 & 2 115	97%	108%
2.0	Evergreen-San Jose B 115	San Jose	Thermal	210.0	C (DCTL)	Metcalf-EI Patio #1 & 2 115	100%	104%
2.0	Jefferson-Hillsdale Jct 60	GBA	Thermal	62.6	B (L-1/G-1)	Jefferson-Martin 230 & DEC	107%	109%
1.0	Llaga-Gilroy 115	San Jose	Thermal	350.0	C (DCTL)	Metcalf-Morgan Hill & Metcalf-Llagas 115	110%	111%
2.0	Moraga-Claremont #1 115	East Bay	Thermal	94.0	B (L-1/G-1)	Moraga-Claremont #2 115 & DEC	113%	111%
2.0	Moraga-Claremont #2 115	East Bay	Thermal	94.0	B (L-1/G-1)	Moraga-Claremont #1 115 & DEC	113%	111%
2.0	SAN RAMON 230	GBA	Low Volt	230.0	B (L-1/G-1)	Pittsburg-San Mateo 230 & MEC	91%	89%