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Comments of TransWest Express LLC on
CAISO Draft 2012-13 Transmission Plan

Introduction

TransWest Express LLC (TransWest) is developing the TransWest Express (TWE) Project, a 725-mile, 600 kV HVDC transmission project extending from south central Wyoming to southeastern Nevada. The TWE Project will deliver Wyoming's high quality wind resources to consumers in California and neighboring states.

TransWest appreciates this opportunity to comment on the Draft 2012-2013 Transmission Plan (Draft Plan) prepared by the California Independent System Operator (CAISO).

High Out-of-State Import Scenario

Section 4.5 of the Draft Plan describes a sensitivity study for importing 3000 MW of renewable energy delivered to the Eldorado Valley in southeastern Nevada. TransWest requested this study in early 2012 and appreciates the CAISO's effort in conducting this important work. TransWest believes such a study, if based on proper assumptions and criteria, could provide valuable information to policymakers and other stakeholders. However, the study conducted by CAISO (the "Study") is significantly flawed and the results reported in Section 4.5, if left uncorrected, will leave readers with a serious misimpression of CAISO transmission investments necessary to accommodate these imports.

The Study included a classification of contingencies that is inconsistent (overstated) with other similar analyses set out in Section 4. This inconsistency has resulted in the Study overstating potential mitigation requirements in connection with importing 3000 MW delivered to the Eldorado Valley. The Study also failed to take into account certain mitigation measures that were previously identified and recommended for approval in other sections of the Draft Plan, therefore further overstating the mitigation associated with the Study.

Table 4.5-2 shows contingencies and resulting overloads that are assumed to require some form of mitigation. However, with one exception which will be discussed below, a closer look at these contingencies/overloads indicates that either: 1) the contingencies are not appropriate for this

Study or 2) the same contingencies/overloads have already been identified and mitigation recommended for approval this year by the CAISO Board in other sections of the Draft Plan.

The first four contingencies in Table 4.5-2 are N-2 outages of the Eldorado-Lugo and Eldorado-Mohave 500 kV lines or the Eldorado-Lugo and Mohave-Lugo 500 kV lines. There is some apparent confusion about whether these N-2 outages are Category C events which require mitigation or Category D (extreme) events which do not.

CAISO provided the following response to TransWest's comments on the December 11-12, 2012 stakeholder meeting presentation:

SCE has determined that the continued classification of N-2 outages of parallel 500 kV line segments between Eldorado and Lugo as Category D outages, as the impacts of the outages worsen due to considerably increased transmission flows, is not prudent. Under existing system conditions the outages continue to be classified as Category C outages.

TransWest has not been able to verify whether SCE is in agreement with CAISO's response. However, we note that in studies currently in progress to update the WECC Path Ratings for the West of the Colorado River Path (WOR, WECC Path 46) and the East of the Colorado River Path (EOR, WECC Path 49), these contingencies are being treated as Category D outages. If these contingencies were treated as Category C outages, the WOR Path Rating (and, possibly, the EOR Path Rating as well) would be significantly impacted at the very least by the imposition of a much more restrictive nomogram between WOR and the Victorville – Lugo Path (WECC Path 61).

Moreover, CAISO's response is perplexing because the classification of N-2 outages between Category C and Category D is determined by the probability of the event and/or the physical configuration of the lines being considered and not by the use of the lines. Classifying contingencies as a function of the system conditions raises serious questions about the validity of the Path Ratings in the area and how compliance with the NERC Reliability Standards can be maintained as system conditions change. The treatment of these contingencies should be consistent in all Path Rating and CAISO Transmission Planning Process (TPP) analyses, unless there is an increase in the probability that these events will occur; and this change is approved as a performance category adjustment utilizing the WECC Probabilistic Based Reliability Criteria (PBRC) process.

Section 4.3 of the Draft Plan which is the SCE Area Policy Driven Assessment notes the same contingencies/overloads as Table 4.5-2 and proposes the following mitigation:

For [the Eldorado-Lugo/Eldorado-Mohave N-2] outage, recommended mitigation is to reconfigure Eldorado-Lugo 500 kV line to classify outage as [N]-1-1. For the [Eldorado-Lugo/Mohave-Lugo N-2] outage, the recommended mitigation is to maintain WECC

Category D classification for the outage, but also consider SPS to trip gen at Eldorado.
(emphasis added)

It appears that the first four contingencies in Table 4.5-2 also result in overloads in the SCE Area Policy Driven Assessment. The mitigation recommended for these contingencies (including continued treatment of the Eldorado-Lugo/Mohave-Lugo N-2 outage as a Category D contingency) should be adequate to address the same contingencies/overloads identified in Table 4.5-2.

If CAISO, however, would still require mitigation for the previously classified Category D events for this Study, the identified solutions (either building a new 500 kV line from Eldorado to Rancho Vista or converting the Mead-Adelanto 500 kV line to DC) may be effective but are much more expensive than other alternatives. There are two overloaded elements for these contingencies:

The first overloaded element is the Eldorado-McCullough 500 kV line. The Eldorado and McCullough switchyards are less than a mile apart, so adding a second line, or re-conductoring with higher ampacity wire between these facilities are obvious alternatives to mitigate this overload. In fact, the TWE Project has requested interconnections to both Eldorado and McCullough which would effectively eliminate this overload.

TransWest is a member of the SWAT-led Eldorado Valley Study Group (EVSG) along with CAISO. The multi-station connections within the Eldorado Valley have been a common design assumption used within the EVSG. To the extent that CAISO can better coordinate with the Eldorado Valley Study Group on planning assumptions within this region, the CAISO TPP could be made more efficient.

The second overloaded element is the Victorville-Lugo 500 kV line. The Victorville and Lugo switchyards are approximately 20 miles apart, so adding a second line between these facilities would be the best alternative to mitigate this overload as opposed to adding a much longer line from the Eldorado area to the LA Basin. This alternative would also mitigate overloads of the Victorville-Lugo line for other contingencies identified in Tables 4.3-3 and 4.5-2 and possibly eliminate the need for other recommended mitigation measures (relocation of a portion of the Eldorado-Lugo line and the Eldorado-Lugo series cap and terminal equipment upgrade). This alternative would also eliminate the need for nomograms for Path 46/Path 61 and Path 49/Path 61 that have been identified in the studies currently in progress to update the WECC Path Ratings for WOR (Path 46) and EOR (Path 49).

Furthermore the violations outlined in table 4.5-2, which TransWest has concerns with as outlined in these comments, do not support the potential mitigation identified in the

report as part of Option 1 of a new 500 kV line between Lugo and Rancho Vista. This line may be helpful to CAISO, however it isn't clear from the reported results, why this line would be needed for the 3000 MW import scenario.

The fifth and sixth contingencies in Table 4.5-2 are N-2 outages of the Colorado River-Red Bluff 500 kV lines and the Red Bluff-Devers 500 kV lines. The same contingencies (and associated overloads) are also noted in Table 4.3.3 for the SCE Area Policy Driven Assessment and the same mitigation is recommended (Eldorado-Lugo series cap and terminal equipment upgrade) in both instances.

The seventh and last contingency in Table 4.5-2 is voltage instability in the Northwest for the simultaneous loss of all 3000 MW injected at Eldorado. This issue has also been identified in the WECC Path Rating process for the TWE Project. A bi-pole outage of the TWE Project delivering 3000 MW to the Eldorado area simultaneous with the California-Oregon Intertie (COI, WECC Path 66) at its 4800 MW Path Rating appears to require some form of mitigation. Discussions with BPA have identified limiting flow on the TWE Project to approximately 2600 MW as an effective mitigation measure. (This results in the bi-pole outage of the TWE Project having impacts on COI roughly equivalent to the impacts of a 2-unit outage at Palo Verde.) TransWest and BPA have not reached an agreement as to whether this reduced level of flow on the TWE Project is necessary under all system conditions or only when COI is operating near its Path Rating.

The issues discussed above will be fully addressed in the Path Rating and interconnection studies for the TWE Project. These studies are in progress and CAISO is participating in the respective review groups.

In the meantime, the information reported in Section 4.5 of the Draft Plan paints a misleading picture of what is needed to import 3000 MW from Eldorado into the California transmission grid. Merely stating that the analysis done by CAISO to date is a less-than-complete sensitivity study and more in-depth analysis may be completed in the future is an ineffective remedy for the misconceptions that will be fostered by the current report language. To rectify this, Section 4.5 should be modified as follows:

1. A discussion of the classification (Category C vs. Category D) of the Eldorado-Lugo N-2 outages should be added to Section 4.5, including the specific facts relied upon by CAISO and/or SCE in determining the appropriate Categories for these outages. Whatever Categories are determined for these outages should be used in all areas of the Draft Plan including the High Out-of-State Import Scenario, the SCE Area Policy Driven Assessment and the Reliability Assessment.
2. If CAISO determines that either or both of the Eldorado-Lugo N-2 outages are Category C contingencies and that mitigation is required for overloads between Eldorado and

McCullough and between Victorville and Lugo, the addition of second circuits between these pairs of switchyards should be identified as the preferred mitigation alternative instead of the much more expensive measures identified in the Draft Plan.

3. Mitigation measures listed in Section 4.5 that have been recommended to address issues in other Sections of the Draft Plan should be clearly identified as not being incremental to the High Out-of-State Import Scenario.

CAISO may endeavor to repeat this analysis in a more formal analysis in the future. Given the points raised above, TransWest believes it would be prudent for CAISO to next conduct the requested Economic Analysis on this import case. Through work conducted in the Path Rating process and CAISO's sensitivity analysis, the proposed project to be studied within the Economic Analysis can be modified accordingly to minimize, perhaps eliminate, any upgrades to CAISO system to accommodate this High Out-of-State Import Scenario.

Economic Studies

TransWest believes that CAISO's Economic Studies are fundamentally flawed because these studies focus on the economic benefits of congestion relief while ignoring the potentially much larger benefits of providing access to the lowest cost renewable energy resources in the Western Interconnection. The following language appears on page 312 of the Draft Plan:

The ISO notes that the economic study requests from Zephyr Power Transmission, LLC and TransWest Express, LLC were focused on bringing renewable resources from other regions in WECC to the southeastern borders of the ISO controlled grid. As set forth in tariff section 24.3.4.1, the proposed transmission facilities in these economic study requests did not identify or project congestion, nor did the study requests address local capacity requirements. Furthermore, these study requests do not address delivery of location-constrained resources nor are they intended to access generation from an energy resource area that has been designated as such by the CPUC and the CEC, or certified by the ISO Governing Board as meeting the requirements of an energy resource area. As discussed in Chapter 2, the ISO's planning methodology is based on the renewable portfolios developed by the CPUC with the assistance of the CEC and ISO; these portfolios do not reflect the generation proposed by Zephyr Power Transmission, LLC and TransWest Express, LLC and accordingly those resources were not modeled exploring the benefits of further reinforcements into the Desert Southwest. However, the ISO did conduct a power flow and stability sensitivity analysis of the impacts of an additional high out-of-state resource, set out in Section 4.5.

While TransWest appreciates this explanation it does not provide sufficient rationale for CAISO to ignore planning scenarios with the potential to provide billions of dollars of benefits to

California consumers.¹ There is nothing in the CAISO tariff or in the MOU between CAISO, CPUC and CEC that prevents CAISO from conducting the studies requested by TransWest. Instead, the Draft Plan would develop and implement transmission planning and associated processes that serve the needs of in-state renewable energy development while failing to conduct analysis that would allow policymakers and stakeholders to consider and judge the potential consumer benefits that could arise from accessing remote renewables in other states.

The basic methodology employed by CAISO to perform its economic studies could be utilized to look at scenarios with remote renewables displacing in-state renewables by simply including the total costs of the added/subtracted resources in much the same way that total transmission costs are included in the current economic studies. This is similar to the approach utilized by WECC and its stakeholders in the preparation of WECC regional transmission plans.

The Draft Plan identifies two projects – new 500 kV lines between Delaney and Colorado River and between Harry Allen and Eldorado - that appear to be economically justified based primarily on congestion relief. The methodology and models used to estimate the congestion benefits are extremely complex which has led to a large number of stakeholder questions. For example, the calculated congestion benefits seem very large for the relatively small reduction in the number of hours when congestion occurs. And the benefits for the Delaney-Colorado River project have quadrupled (\$942 million vs. \$237 million) in the one year since the 2011-12 Transmission Plan's economic studies found this project to be uneconomic.

The Draft Plan notes a number of changes to the production cost models used to calculate congestion benefits. These changes may explain all or part of the increased congestion benefits. However, given the limited information and time available to stakeholders since the release of the Draft Plan, it is impossible to verify the results. Given the large number of dollars involved - \$325 million for Delaney-Colorado River and \$240 million for Harry Allen - Eldorado lines – CAISO should not move forward with either project until the economic analysis has been fully vetted. TransWest recommends that CAISO form a technical review group to work with CAISO staff to review the economic studies, resolve any issues that may be identified and report any significant findings to CAISO and stakeholders.

CAISO should also consider that the modeled congestion benefits may not materialize. If these transmission projects are built and the costs are included in the CAISO Transmission Access Charge (TAC), presumably the CAISO transmission network will be extended and opportunities will be available to developers of new renewable energy projects in Arizona and Nevada to sell directly into California markets without any incremental transmission costs. These transactions

¹ As one example, the 2011 WECC 10-Year Regional Transmission Plan included a scenario where high-quality Wyoming wind power delivered over the TWE Project could provide \$660 million per year of cost savings for California consumers. Over a __-year period using a __% discount rate this is a net present value of \$__ billion.

may use up the transmission capacity assumed to be fully available and utilized for the wholesale economy energy transactions that produce congestion benefits. Furthermore renewable resources located close to these new CAISO network interconnection points may not represent lower cost resources (as compared with other resources in California and/or the Western region) which could in fact increase costs to ratepayers. TransWest suggests that a sensitivity analysis be conducted on these Economic Studies that examine the impacts of the assumption that capacity on these new projects will be utilized by the economy energy transactions and not for additional contracted resources. As Renewable Resources may seek access to these new CAISO network upgrades, the Economic Studies should be expanded to include the impacts to ratepayers from both the marginal operational costs and the fully loaded capital costs for alternative resources.

Finally, there does not appear to be any alternative project configurations considered for these two out-of-state 500 kV transmission projects. In accordance with the Tariff and accepted planning practices, other resource and transmission alternatives should be explored to determine that the recommended projects represent the best alternative with the largest net benefit to reduce ratepayer impacts.

Contact Information

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