

March 14, 2016

Submitted to: CAISO (regionaltransmission@caiso.com)

**COMMENTS OF NEXTERA ENERGY TRANSMISSION WEST, LLC
ON THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION'S
2016-2017 TRANSMISSION PLANNING PROCESS DRAFT STUDY PLAN AND
FEBRUARY 29, 2016 STAKEHOLDER MEETING**

NextEra Energy Transmission West, LLC (“NEET West”) appreciates this opportunity to provide comments on the California Independent System Operator Corporation’s (“CAISO”) 2016-2017 Transmission Planning Process, Unified Planning Assumptions and Study Plan (“2016-2017 TPP Plan”) and associated results discussed at the February 29, 2016 stakeholder meeting. In summary, we invite CAISO to consider the following factors as it undertakes its current transmission planning efforts in the 2015-2016 TPP and the 2016-2017 TPP:

- Proposed framework and re-consideration of several of NEET West’s previously submitted reliability projects.
- Implementation of a comprehensive and consistent metric system for evaluating all viable alternative reliability transmission solutions.
- Consideration of several important special type studies to examine Low Voltage Conditions, Generation Retirement, and Major Paths Flows.
- Consideration of a comprehensive and flexible transmission plan to identify transmission needed to achieve 50% RPS goal.
- Consideration to include economic assessment and to identify comprehensive alternatives including transmission solutions in the areas that currently have mitigation solutions consisting of generation dispatch.

Reliability Assessments

CAISO Planning Standards, North American Electric Reliability Corporation’s (“NERC”) Reliability Criteria (TPL 001-4, NUC-001-2.1) and the Western Electricity Coordinating Council’s (“WECC”) Regional Criteria serve as the foundation for CAISO’s regional transmission plan and provide the

minimum transmission system performance standards. Over the last several years, NEET West has valued and appreciated CAISO's efforts in its planning of a high voltage transmission grid while involving very complex and sometimes competing priorities. At the same time, CAISO has considered more than just the minimum reliability criteria by taking into account other complex changes that could impact transmission system reliability and result in savings for customers. For example, CAISO has included studies that are associated with emerging issues, such as the implications of significant displacement of conventional generation with renewable resources that do not have the same inherent fundamental operating characteristics, how low hydro conditions (i.e., Big Creek) impact reliability, or extreme contingency events such as a catastrophic seismic event in the San Francisco area. To aid in CAISO's comprehensive long term transmission planning process evaluation, NEET West respectfully requests that CAISO consider several recommendations explained below to broaden CAISO's study policies and to more comprehensively assess the benefits of all viable reliability-driven transmission alternatives.

NEET West Recommends CAISO Develop a Long-Term Reliability Transmission Solution for the Lugo – Victorville Thermal Overload

NEET West requests that the 2016-2017 TPP evaluation include the reliability assessment of the NEET West proposed new 17-mile 500 kV transmission line project between Lugo 500 kV substation and Adelanto 500 kV substation, which has an estimated in-service date of 6/1/2022. A careful comparison of the NEET West project alternative against other alternatives considered should be performed to determine the most cost effective solution. In addition, the 2016-2017 TPP evaluation should include the following:

- Evaluation of the congestion management costs under normal operating conditions, currently estimated at a cost of \$43 million since January 2013.¹
 - This analysis would need to include the WECC Path 61 rating, and the impact of both projects to this rating. There is a potential that the Lugo-Adelanto alternative will eliminate the operating nomogram completely, while the Lugo-Victorville Upgrade project will not.

¹ CAISO 2015-2016 TPP Draft (February 1, 2016), Page 109

- This analysis would need to include the impact that 50% Renewable Portfolio Standard (“RPS”) will have on the path. The assumption that all renewables over 33% are Energy Only may change in the next planning cycle. The addition of additional Full Capacity Deliverability Status units to this region can easily surpass the capability of the Lugo-Victorville Upgrade Project.
- Evaluation of the congestion management costs under construction conditions of the Lugo-Victorville Upgrade project versus the Lugo-Adelanto alternative.

As part of the re-evaluation of the Lugo – Adelanto project, NEET West requests that the 2016-2017 TPP assumptions include details regarding the Los Angeles Department of Water and Power (“LADWP”) system and in particular address:

- 1) Whether or not Intermountain units 1 and 2 should be assumed to be on-line or replaced with alternate/renewable resources.
- 2) Whether or not LADWP faces any internal basin generation retirements or re-powerings.

NEET West Recommends CAISO Develop a Long-Term Reliability Transmission Solution for the Pacific Gas & Electric (“PG&E”) Oakland Area

In the 2015-2016 TPP, CAISO indicates that they will continue to consider transmission, generation or non-transmission solutions as they revisit the assessment of Oakland area needs in the 2016-2017 TPP cycle. In the near-term, the Oakland area relies on Special Protection Systems (“SPS”) with a relatively small amount of load shedding as allowed per the CAISO Planning Standards; however CAISO will consider alternatives for the long-term horizon.

To improve the reliability and to mitigate thermal overloads within the Oakland area, NEET West submitted a new transmission solution that consists of a new 230 kV transmission source connecting Sobrante 230 kV substation to a new Oakland C 230 kV substation, with an in-service date of 6/1/2022.

- NEET West requests that the CAISO’s 2016-2017 TPP include a special assessment of the Oakland/East Bay area and evaluate the NEET West project alternative against alternatives

considered to determine the most cost effective solution. Due to its characteristics, long-term planning for the Oakland/East Bay Area should incorporate an approach similar to the San Francisco Peninsula Extreme Event Reliability Assessment previously performed in the CAISO's 2015-2016 TPP. The Oakland East Bay assessment should explore all viable mitigation options that address the special circumstances for this area, including:

- A high-density urban area consisting of over 400MW of load.
- Potential retirement due to age² of Oakland area combustion turbine (“CT”) generation. It should also be noted that previous versions of the CAISO Planning Standards included the Greater Bay Area Generation Outage criterion, which recognized a higher unavailability of these units due to their age and forced outage rates.
- Elimination of the reliance on SPS or Remedial Action Schemes (“RAS”) per the CAISO’s new High Density Urban Load Area planning standard, which no longer allows “non-consequential load dropping in high density urban load areas in lieu of expanding transmission or local resource capability” to mitigate NERC TPL standard contingencies and transmission system impacts (for facilities ≥ 115 kV). NEET West recognizes there are multiple existing Special Protection Systems in the East Bay area³. These systems are designed to drop load in order to comply with NERC TPL contingency events.
- The environmental restrictions and economic impacts of the Oakland combustion turbines (that are Reliability Must Run units) and Northern California Power Agency (“NCPA”) combustion turbines in Alameda have on the system and how these restrictions and economics may be impacted with the addition of the NEET West Oakland Project.
- Exposure and restrictions of transmission system topology. Existing critical overhead transmission sources (Moraga-Claremont, Moraga-Station X, and Moraga Station J 115kV circuits) are confined to multiple-circuit corridors and traverse

² Oakland Power Plant became operational in January, 1978. Source: Master CAISO Control Area Generating Capability List. Revised Database to reflect known CAISO Control Area generating resource information as of: October 9, 2015.

³ PG&E Greater Bay Area: Moraga-Oakland J 115 kV line OL RAS, Grant 115 kV OL SPS, Oakland 115 kV C-X Cable OL RAS, Oakland 115 kV D-L Cable OL RAS.

heavily-wooded areas, foothill ridges and canyons. These conditions limit accessibility, and expose these facilities to causes of common-corridor outages (such as fire). Likewise, downtown Oakland's aging network of 115 kV underground cables (gas-filled pipe-type cables constructed in the 1960's) offer limited access due to heavy urban development, and are also exposed to seismic considerations (proximity and orientation to the Hayward Fault). All these factors complicate the timely restoration and/or reinforcement of existing circuits, and likewise present routing challenges for new facilities. Planning studies should consider the implications of multiple-circuit/extreme outages, and the potential for sustained unavailability of one or more circuits.

NEET West Recommends CAISO Develop a Long-Term Reliability Transmission Solution for the PG&E Fresno Herndon Area

In the 2015-2016 TPP, CAISO found a need for further evaluation of the Fresno Herndon area. The reliability issues were identified due to transient stability violation for a Bus 2 fault at Herndon 115 kV bus. In addition, thermal overloads on the Pinedale to Bullard 115 kV lines for multiple category contingencies.

To improve the reliability and thermal overloads within the Herndon area, NEET West submitted a proposal to construct a new 230 kV transmission system that consists of a new 230/115 kV Transformer at Bullard Substation and a new 230 kV transmission line from Ashlan Ave to Bullard Substations, which has an in-service date of 6/1/2021. The NEET West 230 kV transmission line between Ashlan Ave to Bullard removes the identified transient stability issues for a Bus 2 fault at Herndon 115 kV. CAISO reviewed the submission and based upon the reliability assessment found a need for further evaluation in 2016-2017 TPP of potential mitigation to address the category P2 longer term issues identified.

NEET West requests that the 2016-2017 TPP evaluate the reliability of the NEET West Herndon project and provide a comparison of the project alternative against alternatives to determine the most cost effective solution.

NEET West Recommends CAISO Develop a Long-Term Reliability Transmission Solution for the Southern California Edison (“SCE”) Big Creek Area

In the 2015-2016 TPP, the 2020 Summer Peak with Low Hydro Reliability Assessment for the SCE Tehachapi and Big Creek Corridor revealed thermal performance concerns (including Magunden – Vestal 230 kV 1 or 2, Rector – Vestal 230 kV 1 or 2, and Magunden – Springville 230 kV 2) under various category P1, P3, and P7 outages. Based on the assessment results, CAISO proposed to manage hydro generation to utilize during peak hours to avoid load arming.

Furthermore, the Tehachapi and Big Creek Corridor Baseline and Sensitivity Scenario reliability assessment identified transient stability concerns under Big Creek 1-Big Creek 2 230 kV line (P5) outage. To mitigate this concern, SCE will be installing second (dual) high-speed protection for this line with OD of December 2017. In the interim, for faults at the remote terminal ends of Big Creek 1 - Big Creek 2 and upon loss of the high speed protection, the total output of the Eastwood unit should be maintained below 160 MW.

To improve the reliability, thermal overloads, and transient stability concerns in the Big Creek area, NEET West submitted a proposal to construct a new Pittman Hill 230 kV substation project that will tie the following transmission lines together:

- Helms – New E1 230 kV #1 & #2 Lines (PG&E)
- Big Creek 3 - Rector 230 kV Line #2 (SCE)
- Big Creek 4 - Springville 230 kV Line (SCE)
- Big Creek 1 - Rector 230 kV Line (SCE)

This project has an estimated in-service date of June 1, 2021.

The 2015-2016 TPP indicated that CAISO will continue to study Sensitivity Scenarios with Low Hydro conditions in future TPP cycles and will consider alternative projects if managing hydro is not sufficient to mitigate the thermal overloads.

NEET West requests that CAISO evaluate the following key factors regarding the SCE Big Creek Area in its 2016-2017 TPP:

- Evaluate all alternatives, including NEET West Pittman Hill project, for reliability and performance by testing system thermal loading, voltage performance and control, stability performance, short-circuit margins, extreme contingency performance, and interface impacts (internal/external).
- Evaluate the Midway 500 kV Substation Extreme Event outage and capture additional reliability benefits that the NEET West Pittman Hill Project has over any other alternatives.
- Evaluate potential for less reliance on Helms Pumped-Storage RAS.
- Evaluate load dropping RAS at Rector under contingency conditions for all alternatives.
- Determine the necessary reliance on Big Creek Generation under contingency conditions.
- Quantify benefits for potential increased operational flexibility of the Helms Pumped-Storage Plant.

NEET West Recommends CAISO Develop a Long-Term Reliability Transmission Solution for the East Bay Transmission System

The 2015-2016 TPP addressed several P6 and P7 contingency overloads to East Bay transmission system. Specifically, the overloaded facilities identified in the TPP are:

- Moss Landing-Las Aguilas 230 kV Line
- Las Aguilas-Panoche #1 & #2 230 kV Lines
- Lone Tree-US Wind, Los Esteros-Newark
- North Dublin-Cayetano 230 kV Lines
- Newark 230/115 kV Transformer #11
- Newark-Lockheed Junction #1
- Newark-Dixon Landing, Trimble-San Jose B 115 kV Lines
- North Dublin-Vineyard 230 kV Line

The 2015-2016 TPP listed potential mitigation measures to be assessed further in the 2016-2017 TPP. In its 2015-2016 TPP, CAISO considered the following potential mitigation measures:

- Dispatching all available generation in San Jose
- Delay retirement of the Moss Landing Power Plants
- Trip Load in the Moss Landing Area
- Trip some of the load in San Jose
- Sectionalizing of the San Jose 230/115 kV transmission system (radializing)

NEET West recommends that the 2016-2017 Planning Assumptions eliminate the possibility of load tripping and radializing to resolve overloads in this area, and to follow CAISO’s new High Density Urban Load Area planning standard, which no longer allows “non-consequential load dropping in high density urban load areas in lieu of expanding transmission or local resource capability” to mitigate NERC TPL standard contingencies and transmission system impacts (for facilities ≥ 115 kV).

NEET West Recommends the Implementation of a Comprehensive and Consistent Metric System for Evaluating Viable Alternative Reliability Transmission Solutions

NEET West believes that a consistent framework for quantifying important costs and overall reliability benefits should be used to identify the most appropriate and cost effective reliability solutions among multiple competing reliability projects. One such framework for evaluation is CAISO Transmission Economic Assessment Methodology (“TEAM”)⁴ which is designed to evaluate both economic and reliability driven projects. NEET West recommends that CAISO apply and share with stakeholders a comprehensive and consistent metric system for evaluating viable competing reliability solutions that includes:

- Evaluating all alternatives for reliability and performance by testing system thermal loading, voltage performance and control, stability performance, short-circuit margins, extreme contingency performance, and interface impacts (internal/external).
- Assessing overall project viability including constructability, environmental impact, rights-of-way impact, in-service dates, outage requirements and impacts.

⁴ See CAISO TEAM, ES.8.1 Reliability Evaluations and TEAM Methodology, stating that the TEAM methodology can be applied to both reliability-driven and market-driven transmission expansion/upgrade projects.

- Determining any long-term project benefits including expansion capabilities, lifetime efficiency and expectancy.
- Examining operational and maintenance related issues and costs on a high-level basis to ensure that solutions do not introduce new operational or maintenance related concerns. This component of the evaluation should outline the benefits to “Operational Reliability” or “Operational Flexibility” (more options for maintenance outages, additional flexibility for switching and protection arrangements).
- Evaluating the overall costs and benefits (possibly including a net present value analysis) and performance of the viable competing reliability projects to determine which is the most appropriate and cost-effective solution. The cost/benefit evaluation should include items that may impact project selection such as: construction costs, long-term congestion impacts, cost of outages associated with construction, costs associated with operation and maintenance of the assets, cost of losses, local capacity requirement benefits and reductions that otherwise would have to be purchased through reliability-must-run (“RMR”) contracts, capacity benefits of the transmission upgrade(s) (potential increases to reserve sharing and firm capacity purchases, and associated decrease to the amount of local area power plants that have to be constructed to meet adequacy requirements), environmental benefits of avoiding local air emissions, etc.
- Incorporating high voltage transmission aging infrastructure decisions into the ongoing TPP. The aging transmission infrastructure represents a significant element in the operational and long-term planning followed by a risk evaluation aimed at anticipating and mitigating the impact of significant transmission loss events. Similar to efforts performed in other regions⁵, the analysis, as part of the long term transmission plan, should take into account the aging of high voltage transmission elements in the system over CAISO’s entire footprint. In addition, the analysis should include stakeholders review and engagement in the development of

⁵ To demonstrate with a specific example, Probabilistic Risk Assessment implementation at PJM Interconnection LLC (PJM) is a risk management tool employed to reduce the potential economic and reliability consequences of high voltage transmission system equipment losses. Initially focused on an aging 500/230 kV transformer fleet, PJM has begun to examine aging 500 kV lines, some more than 40 years old. A number of them have been identified as constraints in 2015 Baseline Aging Infrastructure analyses (PJM Regional Transmission Expansion Plan, Section 8: 2015 Baseline Analysis – Aging Infrastructure, page 173).

transmission solutions to mitigate operational, reliability, and market impact of such transmission losses.

- Communicating the final results, including appropriate metrics of all tested alternatives to all stakeholders and publishing the results in the CAISO TPP.

NEET West recognizes that some of the factors, such as “Operational Reliability” have dimensions that are not easily quantifiable (e.g., the value of avoiding the adverse impact to society of a system-wide blackout). NEET West recommends that some of the factors as described herein are considered as complimentary to the existing reliability studies and detailed cost evaluation and that they are intended to help support differentiation of a particular project in making a final selection.

NEET West Requests Additional Stakeholder Engagement and Participation throughout the Project Analysis Phase

NEET West appreciates CAISO’s effort to follow its Federal Energy Regulatory Commission (“FERC”) approved transmission planning process, which FERC found to be just and reasonable and not unduly discriminatory or preferential. The CAISO has provided for open and transparent access and stakeholder consultation opportunities as set out in that process. NEET West appreciates the current CAISO transmission planning process, which provides for the opportunity to submit needed reliability projects, to participate in stakeholder meetings, and to submit comments throughout the process. In order to have a more meaningful impact upon the CAISO TPP and its objective to determine the most cost-efficient solution, NEET West requests that CAISO allow interested stakeholders to participate in the project analysis phase for specific regions of interest, where competing reliability projects are under evaluation.

Low Voltage Sensitivity Study

NEET West recommends the CAISO incorporate a “Low Voltage” Sensitivity study case to be included in the 2016-2017 TPP Study Plan. NEET West appreciates CAISO’s effort to improve system modelling and tools and specifically to incorporate detailed composite load models. NEET West proposes that CAISO performs the Special Low Voltage study to be based on the heavy load base cases (which are intended to reflect maximum anticipated load conditions) to better understand

interaction between retirements of significant conventional generation in the CAISO service area, combined with integration of significant intermittent renewable generation, and further perplexed with continued increase in system load. The goal of this assessment is to investigate potential reactive deficient areas that are more prone to voltage (steady-state and transient) instability during normal and contingent conditions. Furthermore, the consideration should be given to study various reasonable expected sensitivity conditions that could be impacted by different generation dispatch, load levels, and path flows. The analysis should point out the local area most susceptible to voltage instability and should identify the most efficient solutions inclusive of transmission static and dynamic reactive support solutions.

Generation Assumptions Study

NEET West recommends that CAISO examine potential reliability impacts, under sensitivity scenarios, due to the sudden and unexpected long term loss of a variety of generation facilities throughout the system. This would simply be a continuation of the existing sensitivity scenarios the CAISO already considers for: Diablo Canyon retirement and OTC retirements.

Sudden and unexpected losses of resources can occur for several reasons including improper maintenance, equipment failure, economic factors, environmental and policy changes. NEET West would like to provide several examples of unforeseen power plant shutdowns:

- Both SONGS Units 2 and 3 had to be shut down in 2012 due to premature wear of the steam turbines, and in June 2013 SCE announced that the plants would be permanently retired.
- In 2005 the Taum Sauk Hydroelectric Power Station sustained a failure of the upper reservoir that resulted in damage that was not repaired until 2010.
- PacifiCorp's Hunter Unit No. 1, failure of the stator core.
- Danskammer Power Plant, 530 MW coal fired plant was shut down in 2012 after being damaged by superstorm Sandy.

Furthermore, NEET West understands that, in comparison to other planning areas, the Greater Bay Area has been subject to a more stringent planning criterion. In light of aging generation, the

CAISO considered G-2, N-1 outages as part of their Category B planning standard. In this regard, NEET West recommends that the CAISO should consider adopting this planning standard to the entire CAISO service area (on a local basis), to take into consideration the dependability of older generation and the possibility of early plant retirement.

Policy Assessments

With FERC's approval of the CAISO's revised TPP in December 2010⁶, the revised TPP created a category of transmission additions and upgrades to enable the CAISO to plan for and approve new transmission projects needed to support state or federal public policy requirements and directives. The impetus for the "policy-driven" category was the recognition that California's renewable energy goal would drive the development of substantial amounts of new renewable supply resources over the next decade, which in turn would drive the majority of new transmission needed in the same time frame. NEET West appreciates all of the time and effort put forth by CAISO to improve the current TPP while continuing to support the public policy objectives. Specific to the 2016-2017 TPP planning cycle, the overarching public policy objective is the state's mandate for 33% renewable energy by 2020 that could lead to the identification and approval of policy-driven transmission elements in the CAISO's 2015-2016 TPP.

50% Renewable Energy Goal for 2030

During the 2016-2017 TPP planning cycle, the CAISO will perform a special study to provide information regarding the potential need for public policy-driven transmission additions or upgrades to support a state 50% renewable energy goal. NEET West understands that the CAISO is performing this study for information purposes only and that the results will not be used to support a need for policy-driven transmission in the 2016-2017 planning cycle. Furthermore, the 2016-2017 Study Plan states that the 50 percent renewable goal is not being considered to determine the need for policy-driven transmission additions or upgrades because "it is not yet a formal state requirement, so in accordance with the CAISO tariff the CAISO cannot use it as a basis for

⁶ See 133 FERC ¶ 61 224 (2010), FERC Order Conditionally Accepting CAISO's Tariff Revisions To Implement a Revised Transmission Planning Process (TPP), effective December, 2010. 2016 Transmission Planning Process Unified Planning Assumptions and Study Plan March 31, 2015 (<https://www.caiso.com/Documents/2015-2016FinalStudyPlan.pdf>)

approving policy-driven transmission.” NEET West would just note that “Section 24.1”⁷ of the CAISO tariff provides that the range of public policy objectives to be considered in the TPP are not just related to RPS, but also includes other state, municipal, county and federal policy requirements and directives. For example, California law provides that “a principal goal of electric and natural gas utilities’ resource planning and investment shall be to minimize the cost to society of the reliable energy services that are provided by natural gas and electricity, and to improve the environment and to encourage the diversity of energy sources through improvements in energy efficiency, development of renewable energy resources, such as wind, solar, biomass, and geothermal energy, and widespread transportation electrification.”⁸

In addition, per Section 24.2 of the CAISO tariff, the TPP process shall at a minimum:

- (a) *Coordinate and consolidate in a single plan the transmission needs of the CAISO Balancing Authority Area for maintaining the reliability of the CAISO Controlled Grid in accordance with Applicable Reliability Criteria and CAISO Planning Standards, in a manner that promotes the economic efficiency of the CAISO Controlled Grid and considers federal and state environmental and other policies affecting the provision of Energy. ...*
- d) *Identify existing and projected limitations of the CAISO Controlled Grid’s physical, economic or operational capability or performance and identify transmission upgrades and additions, including alternatives thereto, deemed needed to address the existing and projected limitations.*

⁷ California Independent System Operator Corporation Fifth Replacement FERC Electric Tariff (https://www.caiso.com/Documents/Section24_ComprehensiveTransmissionPlanningProcess_May19_2014.pdf) Section 24. Comprehensive Transmission Planning Process

24.1 Overview“...The CAISO will analyze the need for transmission solutions in accordance with the methodologies and criteria set forth in this Section 24, the Transmission Control Agreement, and the applicable Business Practice Manuals. The comprehensive Transmission Plan will identify Merchant Transmission Facilities meeting the requirements for inclusion in the Transmission Plan and transmission solutions needed (1) to maintain System Reliability; (2) to satisfy the requirements of a Location Constrained Resource Interconnection Facility; (3) to maintain the simultaneous feasibility of allocated Long-Term CRRs; (4) as additional components or expansions to LGIP Network Upgrades are identified pursuant to Section 24.4.6.5; (5) to meet state, municipal, county and federal policy requirements and directives ,including renewable portfolio standards policies; and (6) to reduce congestion costs, production supply costs, transmission losses, or other electric supply costs resulting from improved access to cost-effective resources”.

⁸ Cal Pub Util Code § 701.1 (2016).

In this regard, NEET West recommends that the 2016-2017 TPP consider a broad range of known objectives that will provide more flexibility in the TPP and that will identify a category of transmission upgrades and additions to enable the CAISO to plan for and approve new transmission needed to achieve the policy objectives in future planning cycles. The 2016-2017 TPP should identify transmission system issues that would enable the 50% renewable goal to be realized and planned efficiently and to approve new transmission projects accordingly.

Furthermore, NEET West does not agree with the initial assumptions that incremental renewable generation will be energy-only. Given the complexity and challenges associated with the congestion-related curtailment of renewable resources that already exist, combined with California environmental restrictions and Resource Adequacy requirements, NEET West recommends that, in determining the mitigation plan solutions that will be needed to achieve the 50% renewable goal, CAISO considers the full capacity deliverability status needed to serve as RA resources.

Additionally, NEET West encourages the CAISO to assess transmission system reliability and transient stability impacts associated with higher renewables penetration. With the most recent modelling improvements that allows for full composite loads to be incorporated with the CAISO system tools, combined with the input assumptions that takes into account the expected retirement of large amounts of OTC units, especially in Southern California, there is big uncertainty as to the system frequency response and transient stability capability and more importantly system –wide reliability. Transmission system solutions inclusive of not only transmission elements such as lines and transformers, but also flexible AC transmission devices (Static Var Compensators) should also be considered along with their potential cost options. Finally, NEET West would like to request CAISO’s input with respect to the following:

- The base cases for the incremental 50% RPS portfolio as utilized in the 2016-2017 TPP. These cases should be made available to stakeholders as soon as applicable. To facilitate understanding of these cases, the resources making up the 33% RPS base portfolio should be distinguished from the incremental resources necessary for the 50% renewable portfolio.

- The 50% RPS Scenario studies from the 2015-2016 TPP featured various sensitivity levels of possible “exports” (0MW; 2000MW; 8000MW; and unconstrained). NEET West requests that CAISO include in the 2016-2017 TPP assumptions details regarding where (to what areas) the exported power will be being scheduled.
- Provide detailed information specific to the assumed amounts of out-of-state resources in the Out-of-State Portfolio in the 2016-2017 TPP. The 2015-2016 TPP report indicated “selected a material but reasonable amount of out-of-state resources”, but NEET West would like to request more information regarding assumptions behind export levels.
- Include the assumptions that will be applied for the Pacific DC Intertie (“PDCI”) during the 33% and 50% studies. For exports of 8,000 MWs or unconstrained exports, will the CAISO consider/include south-to-north reversal of the PDCI? California-Oregon Intertie (“COI”) flows are limited by the amount of online Northern California Hydro. The total Lassen/Round Mountain/Sacramento River Zones have a capability estimate of 3,404 MW for the in state scenario in the 2015-2016 TPP Report. Much of this new generation will flow into the Round Mountain and Table Mountain systems, similar to Northern California Hydro. Will the CAISO be evaluating how much impact this new renewable generation will have to allowable COI flows, or will the assumption be that all of the Lassen Generation is curtailable?
- Beyond the assumptions inherent in the Transmission Expansion Planning Policy Committee (“TEPPC”) Production Cost model, will the 2016-2017 TPP assumptions include any other emerging trends (such as coal plant retirements and renewable resources development in Nevada and Arizona)?
- NEET West requests that the 2016-2017 TPP assumptions include a list that details where generation is being interconnected (bus/size) for the 50% RPS portfolio. For example, where is Lassen North Wind Generation being interconnected?

Economic Assessments

NEET West recommends that the 2016-2017 Planning Assumptions include a policy to perform economic assessments in areas that have potential mitigation solutions of generation dispatch. In order to properly assess the lowest cost alternative for customers, the plan must economically compare generation dispatch mitigation alternatives against traditional transmission upgrades and additions. In addition, NEET West recommends that CAISO performs both reliability and economic studies with “major paths” simulated with higher flow levels assumptions as defined in the seasonal nomograms. The economic analysis should incorporate production cost simulation studies to better predict the frequency and expected future flows on particular major paths. Finally, if any identified transmission constraints are identified, mitigation plans inclusive of both reliability and economic upgrades should be considered to protect the system in the long run.

Conclusion

NEET West commends CAISO staff for all of the time and effort that it put into the 2016-2017 TPP. NEET West submits these comments with the goal of enhancing the processes utilized in the evaluation of reliability, economic, and public policy projects in the transmission planning process. NEET West appreciates the opportunity to participate in the transmission planning process and to provide these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Edina Bajrektarevic".

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