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Submitted to: CAISO (regionaltransmission@caiso.com)

**COMMENTS OF NEXTERA ENERGY TRANSMISSION WEST, LLC
ON THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION'S
2018-2019 TRANSMISSION PLANNING PROCESS FEBRUARY 28, 2018
STAKEHOLDER MEETING**

NextEra Energy Transmission West, LLC (NEET West) appreciates this opportunity to provide comments on the California Independent System Operator Corporation's (CAISO) 2018-2019 Transmission Planning Process (TPP) February 28, 2018 stakeholder meeting. In summary, we respectfully request CAISO to consider the following factors as it undertakes its current transmission planning efforts to improve reliability in the 2018-2019 TPP:

NEET West requests the CAISO commence an in-depth Economic Planning and 50% Renewable Portfolio Standard (RPS) Public Policy Study for a new Mira Loma – Red Bluff 500 kV Transmission System.

In the past TPP's, NEET West has suggested project proposals to improve reliability, mitigate thermal overloads of the existing 230 kV transmission network in the West of Devers area¹, and address the Desert Area Constraint deliverability issues. By using a combination of in-depth Economic Planning and Public Policy (i.e. modelling the system using the 50% RPS), NEET West proposes the Red Bluff - Mira Loma 500 kV transmission system ("Red Bluff – Mira Loma") would resolve multiple issues on the network, and should be considered for FERC Order 1000 competition.

¹ As part of the CAISO 2017-2018 TPP, the preliminary reliability results identify existing transmission elements can be subject to thermal overloads under several category P6 contingency conditions (up to 25% as reported by CAISO in 2022 Summer Off-Peak with Maximum PV Output). Furthermore, the project will improve the voltage profile on 500 kV system network from Alberhill, Valley, Devers, Colorado River, Rancho Vista, Red Bluff, Serrano, and also on 230 kV transmission network from Devers, El Casco, Etiwanda, Mirage, Mira Loma, Rancho Vista, San Bernardino, Serrano, Vista, Wildlife, and 115 kV network at Devers and Alberhill.

The Red Bluff - Mira Loma project includes the following facilities:

- New ~140 mile 500 kV transmission line between the Red Bluff 500 kV substation and Mira Loma 500 kV substation (Line ratings: 3,421 MVA Normal, 3,880 MVA Emergency).
- 50% Series Compensation with an optimal location in the line to be determined from further studies (Line ratings: 3,291 MVA Summer Normal, 3,949 MVA Summer Emergency).

Red Bluff – Mira Loma would provide a multi-value (reliability, economic, policy) long-term solution that:

- Addresses the Desert Area Constraint that was identified as one of the more robust conclusions of the California Energy Commission (CEC) Renewable Energy Transmission Initiative (RETI) 2.0 Final Plenary Report (February 2017) to emerge as a serious issue prior to 2030, which affects deliverability of resources from a broad area of southeastern California, and should be a priority for further planning.
- Will eliminate and/or minimize the congestion management costs which are used to mitigate thermal issues on the existing 500 kV transmission network. Depending on the amount of congestion that occurs as a result of the Desert Area Constraint, the congestion management costs could be significant. Construction of Red Bluff – Mira Loma would reduce the amount of congestion management necessary (including generation curtailments) to alleviate the thermal issue and, consequently, create economic savings. Further analysis would be required to quantify the congestion management cost savings from the project.
- Minimizes generation curtailment, reliance on existing SPSs (specifically Inland SPS and West of Devers SPS), and reliance on operating procedures for voltage and thermal control.
- Complements integration of CAISO-approved participating transmission owner's projects² and the approved FERC Order 1000 competitive transmission projects.
- Supports Eastern LA Basin Local Capacity Requirement (LCR) Sub-Area process and the need to mitigate post-transient voltage instability that is caused by the loss of the Alberhill – Serrano 500 kV line, followed by an N-2 of Red Bluff - Devers #1 and #2 500 kV lines. The LCR need to mitigate this post-transient voltage instability concern is approximately

² Path 42 Upgrade Project (2015); Devers – Mirage 230 kV Lines Upgrade (2015); Tehachapi Renewable Transmission projects (2016); Lugo – Eldorado 500 kV line reroute (2017); Suncrest 300 MVar SVC (2017); Sycamore – Penasquitos 230 kV line (2017); El Dorado – Lugo Series Caps Upgrade (2019); Lugo – Mojave Series Caps Upgrade (2019); West of Devers Upgrade Project (2020); and Delaney-Colorado River 500 kV line Project (2020).

2,230 MW³, which is expected to be met by available and new resources in the Eastern LA Basin sub-area.

- Improves voltage profile in the local 230 kV transmission system by providing a new source for the area and offloading the existing network, while enabling the additional renewable generation in the Eastern area. Further analysis may be required to establish optimal voltage support for the area, under various operating conditions, including additional steady state and/or transient voltage support at Red Bluff, Colorado River, and Serrano substations.
- Continues to support integration of existing and new renewable generation in the CAISO. The most recent Cluster 10 Phase 1 Interconnection Study Report, SCE Eastern Bulk Area Report (January, 2018), identified numerous thermal overloads and low voltages conditions with all facilities in-service and divergence and severe overloads and low voltages under contingent conditions.

In the current 2017-18 TPP cycle, the CAISO studied Red Bluff – Mira Loma as “economic” and “reliability” only. CAISO’s study, which was based upon a 33% RPS, observed limited economic and reliability benefits of the project. The primary driver for Red Bluff – Mira Loma is to enable the integration of a renewable generation that reflects the Public Policy mandate requiring a 50% RPS.

While the primary need for Red Bluff – Mira Loma is to ensure compliance with the 50% RPS, it is important for the CAISO to recognize that the project can also help address other challenges in Southern California including early retirement of gas generation and other conventional generation that is at the risk of early retirement. This project offers an important opportunity to avoid inefficiencies and future costs and will provide important policy-driven transmission that is clearly consistent with the future needs of the system as identified by both the CPUC RETI 2.0 and CAISO generation interconnection process.

NEET West encourages CAISO to identify and to approve public policy-driven transmission projects in the 2018-19 TPP based on the CPUC’s recommendation to use the Reference System Plan portfolio, the “42 Million Metric Tons (MMT) Scenario”.

³ See CAISO 2015-2016 TPP.

In 2018, the CPUC developed a new/additional Greenhouse Gas (GHG) reduction target of 42 million metric tons (MMT) by 2030, known as “Reference System Plan” (the “42 MMT Scenario”). NEET West recommends that this “42 MMT Scenario” be used as the base case for policy-driven transmission projects for the CAISO’s TPP in 2018-19⁴. The CPUC identified that using the 42 MMT Scenario was the planning target for Load Serving Entities (“LSEs”) pursuing their integrated resource planning (“IRP”). Therefore, NEET West believes the 42 MMT Scenario is the appropriate target for policy-driven cases in the 2018-2019 TPP. Importantly, the RESOLVE model estimates that the 42 MMT Scenario will require approximately 9,000 additional MW of solar, 1,200 MW of wind, and 2,000 MW of storage resources.⁵ This will also enable the CAISO to address the Desert Area Deliverability Constraint which was identified as one of the more robust conclusions of the RETI 2.0 Final Plenary Report (February 2017) to emerge as a serious issue prior to 2030, that affects deliverability of resources from a broad area of southeastern California. Utilizing the 42 MMT scenario will also align the CAISO with the CPUC’s comment in RETI 2.0 assessment that the Desert Area Deliverability Constraint should be a priority for further planning.

The CAISO’s 2018-2019 draft study plan describes the handling of the “42 MMT Scenario” as follows:

“Based on the proposal voted on and adopted by the CPUC, a statewide electric sector GHG reduction target of 42 million metric tons (MMT) by 2030 was selected. In order to provide a general planning direction to the electric sector, the CPUC adopted a portfolio of energy resources to meet this 2030 GHG reduction target. This 42 MMT Scenario portfolio will be transmitted to the CAISO to be used as a sensitivity in the 2018-2019 TPP policy-driven assessment to identify Category 2 transmission based on the Reference System Plan.”

The CAISO’s policy-driven analysis is typically performed to recognize the transmission impacts of meeting California’s RPS goals, particularly the 50% RPS and GHG reduction by 2030. Based upon the results of the policy-driven analysis, transmission projects can help to achieve RPS objectives.

⁴<http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M201/K974/201974336.PDF>

⁵http://cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/UtilitiesIndustries/Energy/EnergyPrograms/ElectPowerProcurementGeneration/irp/AttachmentA.CPUC_IRP_Proposed_Ref_System_Plan_2017_09_18.pdf

However, per the CAISO's 2018-2019 draft study plan assumptions, no baseline portfolio will be transmitted to the CAISO as part of the 2018-2019 TPP policy-driven assessment. Because the CPUC has adopted the 42 MMT Scenario portfolio to be assessed as a "sensitivity" and for "informational purposes only" in the 2018-2019 TPP policy-driven assessment, the CAISO will not recommend approval of any policy-driven transmission projects as part of the 2018-2019 TPP.

NEET West requests the CAISO consider the following:

- What is the CAISO's rationale for not conducting a baseline Policy-Driven Analysis in the 2018-19 TPP cycle? NEET West views the 2018-19 TPP cycle as a transitional process where the base case assumptions should be more certain to reflect on the current CPUC's Integrated Resource Planning (IRP) process.
- Sensitivity studies are typically conducted to measure the impact of an assumption change. Without a baseline reference (versus a "sensitivity analysis"), how will CAISO measure the difference caused by the 42 MMT assumptions? In other words, what should/will the 42 MMT Scenario's performance be compared to?
- Please provide further details on the 42 MMT Scenario. Specifically, how much renewable generation will be required and where does CAISO assume the renewables will be located? If these assumptions are not yet available, when will CAISO be able to provide this information to stakeholders?
- The reliability analysis in the 2018-19 TPP will use the 50% RPS assumptions to develop the reliability cases. Do these reliability cases also represent a "policy-driven" baseline analysis?

Finally, if the CAISO does not incorporate the 42 MMT Scenario into the 2018-29 base case reliability and policy assessment, then the 2018-19 mitigation plans and recommendations will be premised on the 33% RPS requirements starting in 2020, rather than the 50% RPS required in 2030. While NEET West appreciates that the CPUC has not yet provided to the CAISO the "Preferred Plan" data and assumptions to integrate 50% renewables by 2030 and therefore CAISO has not yet identified or approved a policy-driven transmission plan to achieve the 50% RPS, the CAISO should study the 42 MMT Scenario and incorporate the 42 MMT Scenario into appropriate base case reliability, policy, and economic evaluations. This would facilitate a full assessment of the

transmission needs in this cycle and determine the value of transmission with respect to the increased RPS standard.

The CAISO should continue to assess High Voltage Reactive Voltage Support necessary to address existing issues on the 500 kV network in Northern California, and to address voltage stability concerns resulting from the Diablo Canyon Nuclear Power Retirement in 2025.

The CAISO's *2017-18 Reliability Assessment - Preliminary Study Results* document voltage stability concerns (insufficient reactive margin) at Round Mountain 500 kV under anticipated 2022 summer peak conditions with high renewable integration. The contingencies tabulated within the CAISO's preliminary results are:

- 2-Diablo Canyon Unit Trip (*Extreme Event*)
- 2-Palo Verde Unit Trip (*Extreme Event*)
- Pacific DC Intertie (PDCI) Bipole (*NERC Category P7*)

To address the identified voltage stability concerns, NEET West proposed a new dynamic reactive power support project that consists of:

- A new ± 300 MVar Static Var Compensator (SVC) connected to a new 500 kV Bus through a single 500/23.2 kV step-up transformer, with a rating of approximately 340 MVA.
- A new 500 kV tie line connecting the high-side bus of the SVC step up transformer to PG&E's existing Round Mountain or Gates 500 kV substation. The ratings for this line will be approximately 330 MVA Normal/Emergency.
- A new bay position at the Round Mountain or Gates 500 kV bus consisting of two new 500 kV breakers.

The Round Mountain SVC proposal was evaluated by the CAISO in their 2017-18 TPP as a transmission solution to resolve the insufficient reactive margin with several contingencies and high renewable generation output, as well as to address the issues associated with high voltage in the 500 kV in Northern California under off-peak conditions. The CAISO concluded that the project is valid, but additional studies are required to determine the exact locations and the size of the devices. NEET West requests that the CAISO continue to assess the bulk system reactive needs for this region in their 2018-19 TPP.

Reactive supply is a least cost option to mitigate voltage stability problems. The CAISO has undergone a very successful system analyses, by identifying and, consequently, approving a series of bulk power projects for voltage support to address San Onofre Nuclear (SONGS) retirement in Southern California. This included the approval of the Talega Synchronous Condenser (SC), SONG SC, San Luis Rey SC, Miguel SC, and Suncrest SVC. These projects provide voltage stability and fast variable control that is instrumental to prevent voltage collapse during normal and extreme system contingencies. Finally, NEET West respectfully requests additional data granularity including hourly recorded voltages on PG&E Northern California buses to determine the proper SVC size and location.

NEET West respectfully requests CAISO to develop off-peak cases which model any considered Energy Storage solution in charging (load) mode.

As part of the reliability case input assumptions, CAISO's lead engineer for reliability assessment described that for the off-peak cases, Energy Storage would be modeled at 0 MW output. This is a very important assumption that could play a key role in CAISO's determining size, location, and the system's available capacity for Energy Storage proposals. NEET West recommends that instead of modeling Energy Storage at 0 MW output, that CAISO develop an off-peak case (cases) that models proposed Energy Storage facilities in charging (load) mode. This important assumption could further support CAISO's most recent initiatives and mandates to utilize electric storage resources for multiple services including the use of Energy Storage as transmission facility.

Conclusion

NEET West commends CAISO's staff for all of their time and effort put into defining appropriate input assumptions in the 2018-2019 TPP. NEET West submits these comments with the goal of enhancing the processes utilized in the evaluation and selection of the most efficient and effective reliability, economic, and public policy transmission projects in the transmission planning process. NEET West appreciates the opportunity to participate in the transmission planning process and to provide these comments.

Sincerely,



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