



California ISO

Accessing Out-of-State Wind Resources to meet California Resource Adequacy Requirements

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1 Introduction

In the California ISO's 2021-2022 Transmission Plan¹, the ISO noted that it is intending to engage further with industry to gauge interest in accessing out-of-state wind resources through a separate process and any recommendations resulting from this outreach will be considered an extension of the existing 2021-2022 transmission planning cycle.

The California ISO (CAISO) believes that inter-regional transmission coordination, through an open and transparent stakeholder engagement process, is required to ensure implementation of efficient and cost-effective inter-regional solutions to reliability and policy driven transmission infrastructure build not only across the CAISO footprint but also across the entire Western Interconnection. Moreover, the benefits associated with inter-regional transmission planning and coordination are clearly articulated by the CAISO in its 2021-2022 Transmission Plan and by FERC in Order 1000 (Transmission Planning and Cost Allocation by Transmission Owning and Operating Public Utilities).² CAISO also believes that such initiatives support inter-regional collaboration as envisioned in the framework of the Western Interstate Energy Board (WIEB), the objectives of which are: protecting the environment, enhancing the economy of the West, and contributing to the well-being of the region's people.³

As part of the outreach to the industry, the ISO intends to engage with industry through stakeholder consultation, on the basis of this issues paper, followed by a request for expression of interest from load serving entities (LSEs) in the CAISO footprint, in accessing out-of-state wind resources.

CAISO is interested in receiving stakeholder feedback from the industry on two proposals:

- **Proposal A:** Accessing wind resources specifically located in Idaho through transmission projects, either proposed such as the Southwest Intertie Project - North (SWIP-North) transmission project, or future projects.
- **Proposal B:** Accessing wind resources in other neighboring states such as Wyoming, New Mexico, and Arizona through transmission projects, either proposed⁴ or future projects.

The objective of this outreach is to identify specific out-of-state transmission projects that should be developed to facilitate access to out-of-state wind resources. The ISO is seeking input from the industry to a set of questions at the end of this issues paper. The responses received will form the basis for a stakeholder engagement workshop and ensuing expressions of interest.

¹ <http://www.aiso.com/InitiativeDocuments/ISOBoardApproved-2021-2022TransmissionPlan.pdf>

² <https://www.ferc.gov/sites/default/files/2020-04/OrderNo.1000.pdf>

³ <https://www.westernenergyboard.org/western-interstate-energy-board/>

⁴ https://www.energy.ca.gov/sites/default/files/2021-07/July%2022%20Workshop%20SB%20100%20Transmission_Master%20v4.pdf

2 Modeling out-of-state wind resources in the CAISO's Annual Transmission Plan

Each year, the CAISO undertakes a comprehensive assessment of the transmission needs of the system over a 10-year planning horizon and produces an annual transmission plan.

In the 2021-2022 planning cycle, the Commission provided a base portfolio and two sensitivity portfolios to the California ISO under its approved Power System Plan (PSP). The base portfolio and the Sensitivity 1 portfolio included out-of-state wind resources, particularly resources in the New Mexico, Wyoming, and Idaho areas.⁵

Some of the out-of-state wind resources in the CPUC IRP portfolios expected to require new transmission, while some rely on existing transmission, to deliver their wind energy to the CAISO footprint.

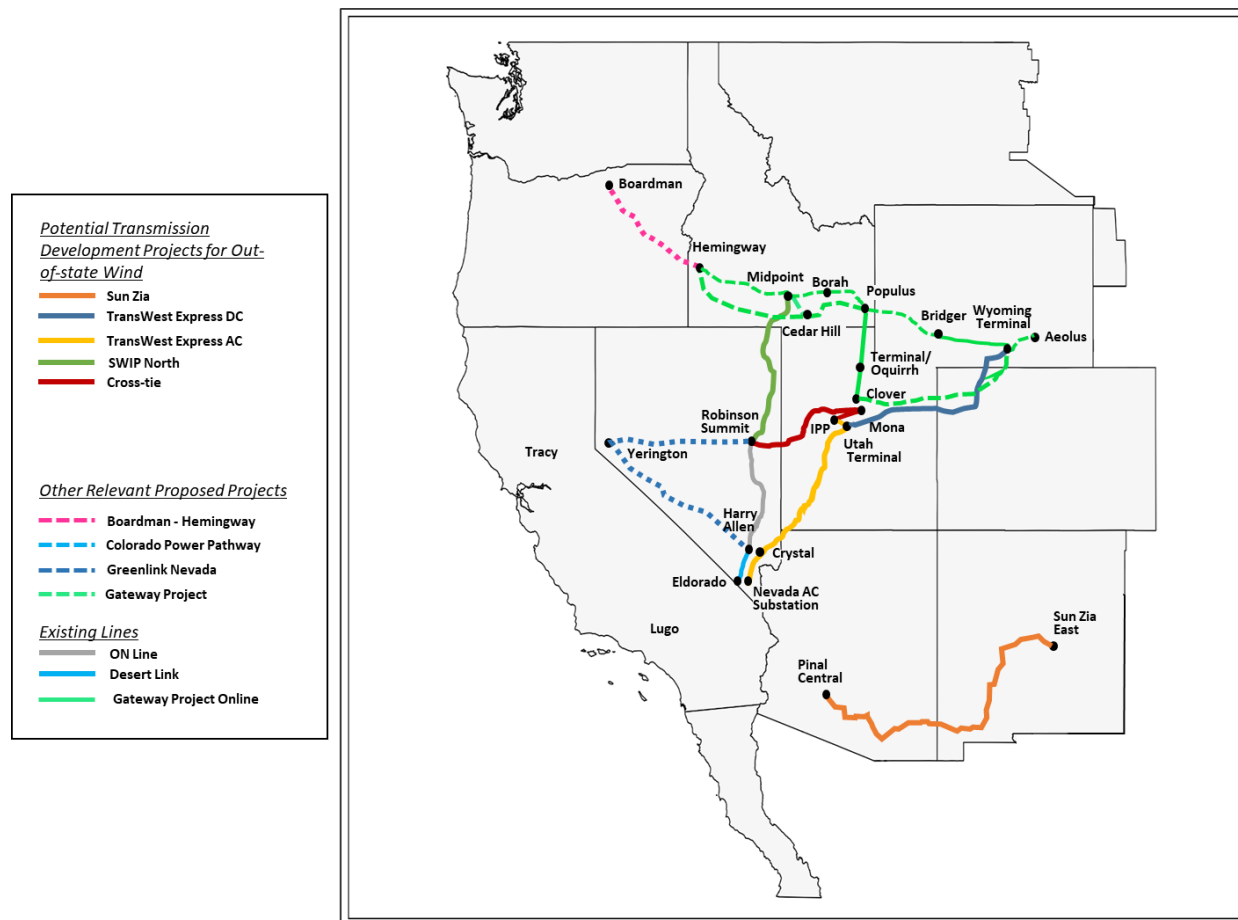
- The CPUC IRP Base portfolio included out-of-state wind with 1062 MW of capacity identified in two alternative locations, Wyoming/Idaho or New Mexico areas, which are expected to require new transmission. The Base portfolio also included out-of-state wind with 530 MW of capacity in Pacific Northwest on existing transmission.
- The CPUC IRP Sensitivity 1 portfolio included out-of-state wind requiring new transmission with 1500 MW of capacity in Wyoming/Idaho area and 1500 MW of capacity in New Mexico area. The Sensitivity 1 portfolio also includes another out-of-state wind resource with 500 MW of capacity in New Mexico area and 1500 MW of capacity in Pacific Northwest area, both on existing transmission.

For the out-of-state wind resources that require new transmission, the CPUC IRP portfolio provided specified injection points to the ISO system, but did not specify particular out-of-state transmission projects to deliver the resources to the ISO boundary.

⁵ <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M449/K173/449173804.PDF>

3 Out-of-State Transmission Projects

Figure 1: Proposed out of state transmission projects



There are several out of state transmission projects that are currently in the works with planned ISDs in the 2025/2026 timeframe. Some of these projects are:

- The TransWest Express (TWE):** A 732-mile transmission system which provides a direct interconnection between CAISO and out-of-state wind resources in Wyoming. The Wyoming to Utah segment is an HVDC segment with a 3,000 MW capacity and the Utah to Nevada segment is a 500 kV AC segment with a capacity of 1,500 MW.
- Southwest Intertie Project – North (SWIP-North):** The SWIP-North project, providing access to out-of-state wind resources in Idaho, is a 275-mile, 2,050 MW, 500 kV AC bidirectional transmission line, includes a 500 kV line between the Midpoint and Robinson Summit 500 kV buses, series compensation on the Robinson Summit – Harry Allen 500 kV line, and 500/345 kV phase shifters at the Robinson Summit substation. The project scope also includes a path rating increase of SWIP-South from 900 (N-S)/600 (S-N) MW to 2000/2000 MW.

- **Cross Tie Project:** The Cross-Tie 1,500 MW project is a 214 mile, 500 kV AC transmission project that will connect Idaho and Nevada and increase transmission capacity between the PacifiCorp, NV Energy, CAISO and Idaho Power balancing areas.
- **SunZia Southwest:** The SunZia transmission project will connect New Mexico and Arizona. It is a 2-phase project with Phase 1 being a 3,000 MW, 530 miles, 525 kV DC line and Phase II being a 35 mile, 1, 850 MW, 500 kV AC line.

The ISO, in its 2021-2022 Transmission Plan, explored the implications of out-of-state transmission needed to bring the base case amounts and sensitivity amounts of out-of-state wind resources to the ISO boundary. These were conducted in the course of the economic study process, considering and comparing a number of alternative transmission developments including TransWest Express and Cross-Tie accessing Wyoming resources, and the SWIP-North project accessing Idaho resources.

These projects were considered specifically because these projects:

- Have been submitted previously as interregional transmission projects in previous planning cycles, and
- Access the same or similar resources in Wyoming or Idaho.

4 Economic Analysis of Transmission Projects in the CAISO' 2021-2022 Transmission Plan

The ISO performed detailed production cost modeling (PCM) studies based on the base and sensitivity scenarios provided by the Commission, in its 2021-2022 Transmission Plan. Study scenarios were selected considering key parameters of the study, such as out-of-state wind location and transmission upgrades. Different phase shifter (Robinson PST for Cross-Tie and SWIP-North, IPP PST for TWE) settings were considered, as they were also identified critical to impact the system-wide generation dispatch, hence the flow through the studied transmission projects.

In the Base portfolio out-of-state wind study, the development status of the Gateway West project, especially the segments between Bridger to Hemingway, was considered as a critical parameter. These segments provide additional transmission connections between the Wyoming and Idaho systems. Sensitivity studies assuming these segments of the Gateway West project not in service were conducted. It was also noticed that the transmission upgrades assessed in the out-of-state wind study all have injection points to the ISO system through the Harry Ellen – Eldorado 500 kV line.

The GLW Upgrade, which reinforces the GridLiance West/VEA system with additional 500 kV connection to the Harry Allen – Eldorado 500 kV line, was identified as an economically driven transmission upgrade in this planning cycle. The ISO conducted additional sensitivity study with the GLW Upgrade modeled in the planning PCM to examine potential impact of the GLW Upgrade on the out-of-state wind study results.

Studied parameters included production benefits, benefit to cost ratio including an alternative benefit-to-cost ratio for each project and alternative configuration assuming an added benefit of avoiding half of the cost of the SunZia project (proxy for the cost of delivering New Mexico wind generation to Pinal Central in Arizona), curtailment, and congestion costs.

It must be noted that the benefits provided by the various alternatives are heavily dependent on the wind regimes and resulting resource output profiles of wind resources in those geographically diverse regions. Additionally, comparing the various transmission projects becomes complex as some of the potential alternatives are being proposed on the basis of receiving regulated, cost-of-service cost recovery as a participating transmission owner asset, while others are being developed on a subscriber basis, without the need for ISO transmission plan approval, to provide transmission service to resources seeking access to California markets. The different cost and cost recovery mechanisms make direct comparisons of benefits, need satisfaction, and benefit- to-cost ratios more challenging.

5 Stakeholder Engagement

The ISO noted in its 2021-2022 Transmission Plan that it intends to engage with the industry to gauge interest in accessing out-of-state wind resources. The scope of this engagement is intended to address this commitment of the ISO to the industry, stakeholders, and California ratepayers. The objective of this engagement is to:

- Ensure alignment with the Commission’s integrated resource planning process, the approved Power System Plan, and the ISO’s Transmission Plan.
- Provide a platform for industry to provide feedback on accessing out-of-state wind resources from states such as Idaho, Wyoming, Arizona and New Mexico.
- Through expression of interest (EOI) proceedings, gauge interest and level of competition from the load serving entities in meeting part of their resource adequacy obligations using out-of-state wind resources as part of the resource portfolio.
- Receive feedback from the industry and stakeholders regarding concerns or potential benefits to California ratepayer should the state move forward with funding specific out-of-state transmission projects required to access out-of-state wind resources.

6 Proposals

Proposal A: Accessing wind resources specifically located in Idaho through planned transmission projects such as the SWIP-North project, or future projects.

- Scope of Proposal

The CAISO, as noted in its 2021-2022 transmission plan, is interested in gauging interest from California LSEs in accessing out-of-state wind resources in Idaho through transmission projects such as SWIP-North or any future planned transmission projects.

In addition to resource portfolio requirements, if there is keen interest and commitment on behalf of the LSEs along with proven benefits to California ratepayers, then the ISO would further explore the potential of adding a particular transmission project to the rate base and operating the transmission line as a participating transmission owner (PTO) in the CAISO footprint.

- Level of Commitment

The California ISO plans to release a request for expression of interest as part of this engagement process following a stakeholder engagement kick-off workshop. The expression of interest request will help the ISO gauge interest from LSEs in contracting with out-of-state wind resources from Idaho. In this regard, it is important to understand the level of commitment from LSEs which will help in moving the procurement process forward.

The ISO is exploring the possibility of LSE’s providing the CAISO with a refundable deposit of \$10,000/MW which will be refunded after the LSEs finalize and submit to the CAISO, a Power Purchase Agreement (PPA) with Idaho resources for the MW capacity consistent with the amount they are intending to procure as part of their resource adequacy obligation requirements.

Proposal B: Accessing wind resources located in various states including Wyoming, New Mexico, and Arizona through planned or future transmission projects.

- Scope of Proposal

The CAISO is also interested in evaluating general interest from California LSEs in accessing out-of-state wind resources in other states including Wyoming, New Mexico, and Arizona through planned or future transmission projects.

Similar to Proposal A, in addition to resource portfolio requirements, if there is keen interest and commitment on behalf of the LSEs along with proven benefits to California ratepayers, then the ISO would further explore the potential of adding a particular transmission project to the rate base and operating the transmission line as a participating transmission owner (PTO) in the CAISO footprint.

- Level of Commitment

As in Proposal A, the California ISO plans to release a request for expressions of interest, as part of this engagement process following the stakeholder engagement kick-off workshop. The expression of interest request will help the ISO gauge interest from LSEs in contracting with out-of-state wind resources from Wyoming, New Mexico, and Arizona.

Since this is a broader proposal encompassing many states, the objectives of the request for expression of interest, are to (a) help the ISO gauge interest from LSEs in procuring contracts with out-of-state wind resources in other states and (b) understand if there are particular transmission projects that the ISO should prioritize in its review and consideration process.

7 Process Timelines

Action	Due Date
- Release of Issues Paper	June 20, 2022
- Stakeholder Engagement Call <ul style="list-style-type: none">o Scope of initiative	June 27, 2022
- Stakeholder Comments Due	July 11, 2022
- Release of Expressions of Interest	July 18, 2022
- Responses Due	August 08, 2022
- Stakeholder Call	August 22, 2022

8 Conclusions and Next Steps

The ISO will engage stakeholders to explore developing transmission projects which will enable access to out of state resources which will help ensure that California meets its resource adequacy requirements in an economically efficient manner, while continuing to ensure the resilient and reliable operation of the electricity grid.

The ISO will work collaboratively with all stakeholders through engagement sessions, workshops, and competitive procurement mechanisms such as expression of interest, as appropriate, in order to achieve the objectives of this initiative.

At the ends of this engagement, the ISO expects to develop a strategic and sustainable roadmap for accessing out of state resources which will support resource adequacy and optimization, timely transmission infrastructure build, grid reliability, and economic efficiency objectives.