



Agenda and Overview 2022-2023 Transmission Planning Process - Update

Jeff Billinton

Director, Transmission Infrastructure Planning

*2022-2023 Transmission Planning Process Stakeholder Meeting
July 6, 2022*

2022-2023 Transmission Planning Process Stakeholder Meeting - Agenda

Topic	Presenter
Overview	Jeff Billinton
Higher Levels of Electrification for use in the 2022-2023 TPP	Nathan Barcic - CPUC
High Electrification Scenario and the Additional Transportation Electrification Demand Forecast	Mike Jaske - CEC
High Electrification Sensitivity Portfolio	Jared Ferguson - CPUC
Studies Update	Jeff Billinton David Le
Wrap-up & Next Steps	Elizandra Casillas



2022-2022 Transmission Planning Process Studies Update

Jeff Billinton

Director, Transmission Infrastructure Planning

David Le,

Sr. Advisor, Regional Transmission - South

2022-2023 Transmission Planning Process Stakeholder Meeting

July 6, 2022

2022-2023 Transmission Planning Process

January 2022

April 2022

March 2023

Phase 1 – Develop detailed study plan

State and federal policy

CEC - Demand forecasts

CPUC - Resource forecasts and common assumptions with procurement processes

Other issues or concerns

Phase 2 - Sequential technical studies

- Reliability analysis
 - Renewable (policy-driven) analysis
 - Economic analysis
- Publish comprehensive transmission plan with recommended projects

Phase 3 Procurement

CAISO Board for approval of transmission plan

2022-2023 Transmission Plan Study Plan

- Reliability Assessment to identify reliability-driven needs
- Policy Assessment to identify policy-driven needs
- Economic Planning Study to identify needed economically-driven elements
- Other Studies
 - Local Capacity Technical studies
 - Long-term local capacity technical study will be conducted
 - Maximum Import Capability expansion requests
 - Long-term Congestion Revenue Rights
 - Frequency response
 - Special Studies

2022-2023 Transmission Planning Process

Key Inputs - Update to Final Study Plan

The CPUC and CEC submitted letter to CAISO on July 1, 2022 with the following recommendations for 2022-2023 transmission planning process:

1. To use the 2021 Integrated Energy Policy Report (IEPR) Additional Transportation Electrification scenario as its load assumptions for 2022-23 Transmission Planning Process (TPP) base and sensitivity case studies
2. To study the 30 million metric ton (MMT) High Electrification policy-driven sensitivity portfolio transmitted herein as in the 2022-23 TPP High Electrification Sensitivity Scenario
3. To continue studying the deliverability needs and corresponding transmission needs related to out-of-CAISO long-lead time resources, such as out-of-state wind and geothermal resources beyond the CAISO's balancing area authority.

2022-2023 Transmission Planning Process

Key Inputs - in Final Study Plan

- Portfolio included in CPUC Decision 22-02-004 for use in CAISO 2022-2023 transmission planning process
<https://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&docid=451412947>
 - Baseline portfolio
 - Reliability, Policy and Economic Assessments
 - Sensitivity portfolio
 - For special study
- 2021 IEPR California Energy Demand forecast adopted by the CEC on January 26, 2022
<https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2021-integrated-energy-policy-report/2021-1>

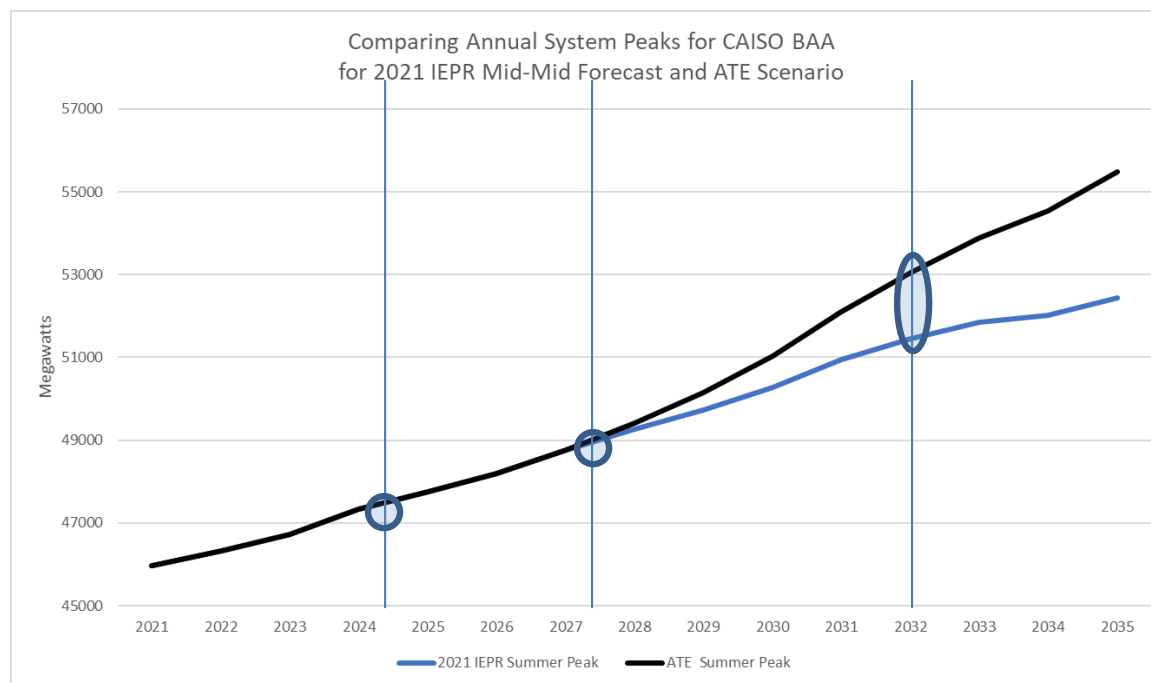
2022-2023 Transmission Planning Process

Key Inputs – Update to Final Study Plan

- Portfolio included in CPUC Decision 22-02-004 for use in CAISO 2022-2023 transmission planning process
<https://docs.cpuc.ca.gov/SearchRes.aspx?docformat=ALL&docid=451412947>
 - Baseline portfolio
 - Reliability, Policy and Economic Assessments
 - Sensitivity portfolio
 - 30 MMT High Electrification policy-driven sensitivity portfolio (transmitted on July 1, 2022)
- 2021 Integrated Energy Policy Report (IEPR) Additional Transportation Electrification demand scenario adopted by the CEC on May 24, 2022
<https://efiling.energy.ca.gov/GetDocument.aspx?tn=243354>

2022-2023 Transmission Planning Process Reliability Assessment

- Study Years
 - 2024, 2027 and 2032



Transmission Planning Process - Portfolios

	Portfolios for 2020-2021 Plan (2030)	Portfolios for 2021-2022 Plan (2031)	Authorized near and mid term (2025) procurement	Preferred System Plan (2025)	Preferred System Plan (2032)	30 MMT High Electrification Sensitivity Portfolio (2035)
Solar	6,763	13,044	12,800 *	11,000	17,506	40,879
Wind	992	4,005		3,531 in state 0 OOS 0 offshore	3,531 in state 1,500 OOS 1,708 offshore	3,797 in state 4,828 OOS 4,707 offshore
Battery storage	1,376	9,368		11,317	13,571	28,402
Gas-fired						
Biomass				107	134	134
Geothermal	0	651	1,000 likely beyond 2026	114	1,160	1,786
Pumped Hydro / Long Duration	1,256	627	1,000 likely beyond 2026		1,000	2,000
Total	10,387	27,695	14,800	26,069	40,110	86,535
Gas retirements	0	0			~1,000	-1,000

* NQC value as opposed to installed capacity

Table does not include behind-the-meter resources and supply-side demand response

2022-2023 Transmission Planning Process Policy Assessment

- Study year 2032
- 38 MMT preferred system plan (PSP) portfolio from CPUC Decision 22-02-004
- Updating the deliverability dispatch assumptions
 - *Based on CAISO stakeholder call on June 6, 2022*
- CPUC and CEC has recommended:
 - To continue studying the deliverability needs and corresponding transmission needs related to out-of-CAISO long-lead time resources, such as out-of-state wind and geothermal resources beyond the CAISO's balancing area authority.

2022-2023 Transmission Planning Process Policy Assessment

- CPUC and CEC letter indicated the following:
 - Based on the long lead time resources mapped in the portfolios for the policy and reliability driven base case and the High Electrification sensitivity study, it is important that CAISO begin undertaking necessary studies to inform and enable the development of incremental transmission capacity to support these long lead-time resources while preserving the existing transmission capacity that has been allocated to other projects earlier in the queue.
- The assessment of the out-of-state wind and the geothermal resources beyond the CAISO's balancing area authority will consider the transmission needs including the transmission planning deliverability (TPD) that has already been allocated through the CAISO generation interconnection process

2022-2023 Transmission Planning Process

Long-Term Local Capacity Requirement Assessment

- CAISO conducts a long-term local capacity study within the transmission planning process every two years
 - Study year 2032
 - Consistent with the base assumptions:
 - 2021 Integrated Energy Policy Report (IEPR) Additional Transportation Electrification demand scenario
 - 38 MMT preferred system plan (PSP) portfolio from CPUC Decision 22-02-004

2022-2023 Transmission Planning Process Special Studies

- The CAISO will be conducting two special studies:
 - High Electrification Sensitivity Scenario
 - Reduced Reliance on Aliso Canyon Gas Storage

High Electrification Sensitivity Scenario

- Study Assumptions
 - Study year 2035
 - 2021 Integrated Energy Policy Report (IEPR) Additional Transportation Electrification demand scenario
 - 30 MMT High Electrification policy-driven sensitivity portfolio

High Electrification Sensitivity Scenario

Studies to be conducted

- The study will include:
 - Reliability Assessment
 - Policy Analysis
 - Production cost simulation
- Transmission alternatives will be identified to address potential reliability and policy driven transmission need based upon the longer-term higher electrification load scenario and resource portfolio

High Electrification Sensitivity Scenario Assessment Schedule

- Reliability assessment results:
 - To be presented at the September 27-28, 2022 stakeholder meeting
- Policy assessment and production cost simulation preliminary results:
 - To be presented at November 17, 2022 stakeholder meeting
- Mitigation alternative analysis:
 - To be incorporated in the Draft 2022-2023 Transmission Plan and presented to stakeholders in 2023

Reduced Reliance on Aliso Canyon Gas Storage Special Study

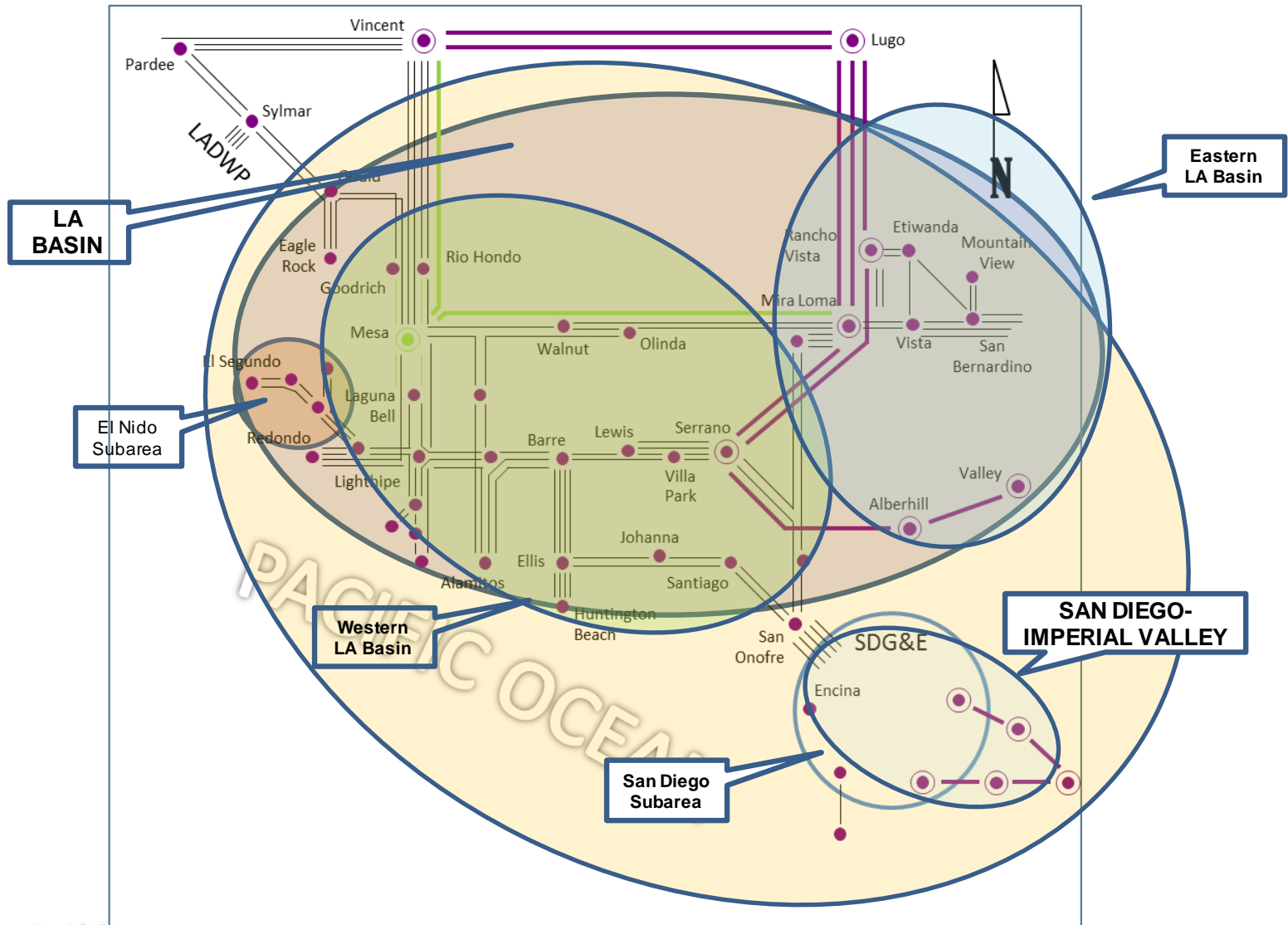
1. Study Objective:

- The ISO performs the local reliability assessment for the LA Basin and San Diego-Imperial Valley areas in the absence of Aliso Canyon gas storage to complement the CPUC Order Instituting Investigation (I.17-02-002) proceeding.

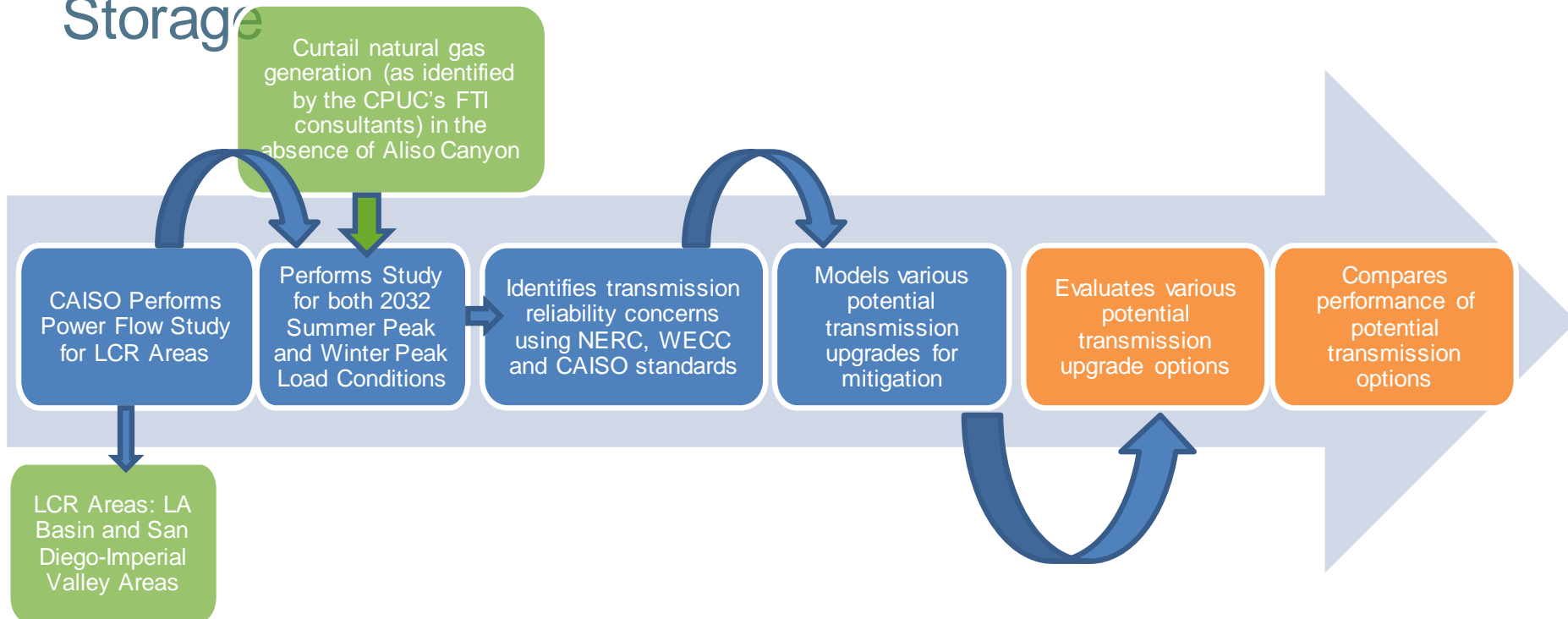
2. Study Scopes:

- Performs reliability assessments for the LA Basin and San Diego-Imperial Valley local capacity requirement areas with the gas-fired generation curtailment due to absence of the Aliso Canyon gas storage
- Identifies reliability concerns and evaluates potential transmission upgrade options

LA Basin and San Diego-Imperial Valley Areas



Power Flow Assessment for the LA Basin and San Diego-Imperial Valley LCR Areas with Gas Generation Curtailment due to Absence of Aliso Canyon Gas Storage



LCR Area: Local Capacity Requirement Area

Summary of power flow base cases for the study

	Power Flow Cases	Study Case Descriptions
1	2032 Summer peak	Models 1-in-10 AAEE 2 & AAFS 4 demand with Additional Transportation Electrification (ATE) forecasts
2	2032 Winter peak	67% of the Summer peak load condition

Sources for gas-fired generation curtailment in the absence of Aliso Canyon gas storage

- The list of gas-fired generation to be curtailed is obtained from FTI Consulting (CPUC's consultant) study that is part of the CPUC Aliso Canyon Oil Phase 3 (I.17-02-002)
 - [FTI Final Report Supporting Materials](#)
 - Summary Gas Demand Table with Curtailments – Final Shortfall Models – Prepared for the CPUC.xlsx
 - Look for generation that has a zero value in the “Supported per Hydraulic Models”, but non-zero value in the “Requirements per PLEXOS Model”

Gas-fired generation curtailment in the study

PTO Area	Number of Generation Facilities	Total Curtailment (MW)
SCE	41	3,083
SDG&E	15	645
Total	56	3,728

- FTI Consulting has determined approximately 56 generating facilities would be required to be curtailed in the absence of the Aliso Canyon gas storage.
- The estimated total curtailment is about 3,700 MW for generating facilities in the SCE and SDG&E service areas.
- A summary of the gas-fired generating facilities that are subject to curtailment in the absence of Aliso Canyon gas storage is included in the Backup section of this presentation.

Discussion on the study process

- The ISO will perform a local area reliability assessment for the LA Basin and San Diego-Imperial LCR areas
 - Identified impacted gas-fired generating facilities (i.e., generation curtailment) will be modeled off-line in the power flow study cases
- Applicable NERC, WECC and CAISO reliability standards will be applied for the study.
- Both summer peak and winter peak assessments will be performed for the ten-year study cases (i.e., 2032 summer peak and winter peak).

Discussion on the study process (cont'd)

- As part of the study, the CAISO will identify potential reliability concerns due to curtailment of gas-fired generation in the LA Basin and San Diego-Imperial Valley LCR areas in the absence of Aliso Canyon gas storage.
- The CAISO will evaluate potential transmission upgrade options to mitigate identified reliability concerns
 - The CAISO will utilize the list of potential transmission upgrades identified in the 20-Year Transmission Outlook as a guide in evaluating potential mitigation in the LA Basin and San Diego LCR areas.

Discussion on the study (cont'd)

- The following are some potential transmission upgrade options that were identified in the 20-Year Transmission Outlook that may be selected depending on the reliability concerns identified in the study:
 - Diablo – South HVDC
 - Devers – La Fresa HVDC
 - Lugo – LA Basin HVDC
 - Sycamore – Alberhill HVDC
 - North Gila – Imperial Valley #2 500kV Line
 - Other potential transmission upgrade options that could be received from the CAISO Request Window for the 2022 – 2023 Transmission Planning Process.

Reduced Reliance on Aliso Canyon Gas Storage Special Study Schedule

	Actions	Target Completion Date
1	Outreach to the CPUC to obtain relevant information related to specific generation facilities that were curtailed in the FTI Consulting's Order Instituting Investigation (OII) Phase 3 Study	4/1/2022 (Completed)
2	Present study scope to the stakeholders	7/6/2022
3	Perform study for the 2032 study cases	8/15/2022
4	Evaluate potential transmission options for 2032 study cases	11/14/2022
5	Present study findings to the stakeholders	11/17/2022
6	Complete documenting study results in the draft Transmission Plan	December 2022 – January 2023



Next Steps 2022-2023 Transmission Planning Process - Update

Elizandra Casillas
Stakeholder Engagement and Policy Specialist

2022-2023 Transmission Planning Process Stakeholder Meeting
July 6, 2022

Comments

Draft 2022-2023 Transmission Planning Process - Update

- Comments due by end of day July 20, 2022
- Submit comments through the ISO's commenting tool, using the template provided on the process webpage:
- <https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/2022-2023-Transmission-planning-process>