



Decision on ISO 2023-2024 Transmission Plan

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Board of Governors Meeting

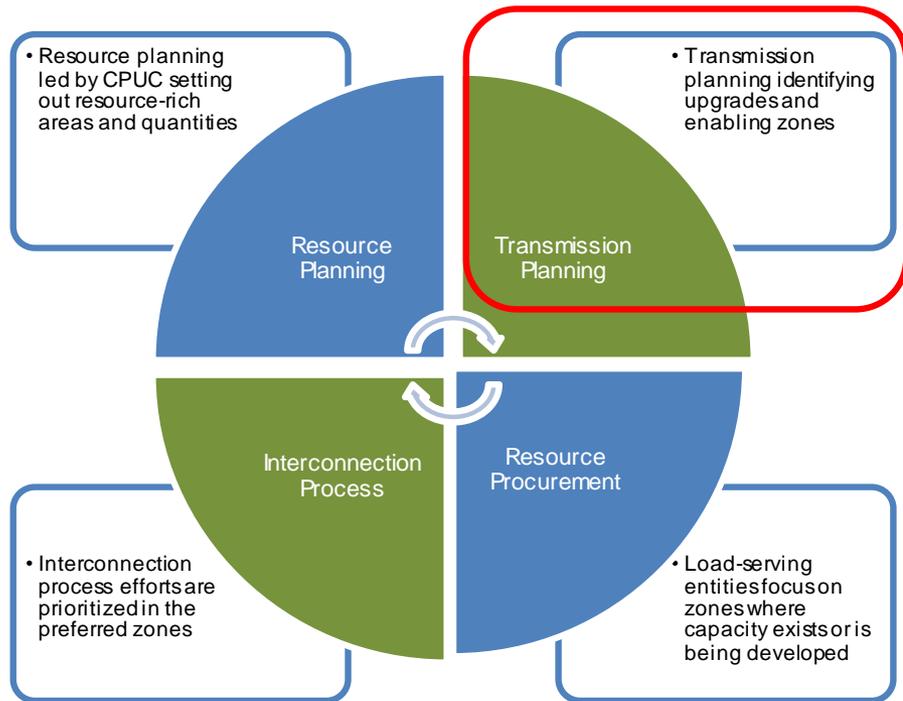
General Session

May 23, 2024

Introduction of the 2023-2024 Transmission Plan

- The annual transmission plan is being presented for approval
- The acceleration of new resource requirements, particularly the inclusion of offshore wind in the North Coast area in the CPUC base portfolio, to meet state policy goals and increases in the pace of load growth are the drivers of the capital costs within this year's plan
- The ISO is always focused on costs; recommendations are based on the long term effectiveness and efficiency of solutions

Transmission Planning and Generation Interconnection are two of four fundamental and interwoven processes:

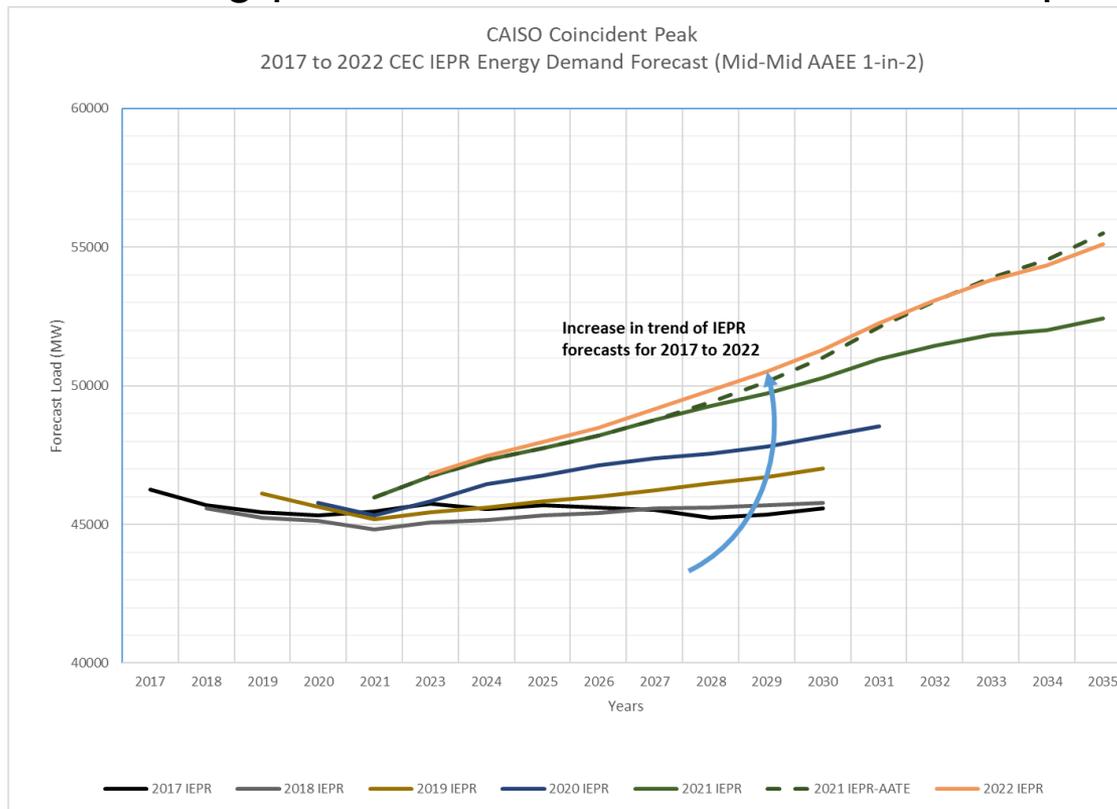


The strategic direction for transformational change was established in the CPUC/CEC/ISO Memorandum of Understanding signed in December 2022 to:

- Tighten the linkage between resource and transmission planning, procurement direction, and the ISO interconnection process to the greatest extent possible.
- Create formal linkage between CEC SB 100/IEPR activities and the ISO and CPUC processes
- Reaffirm the existing state agency and single forecast set coordination

California's climate change goals are driving escalating load forecasts

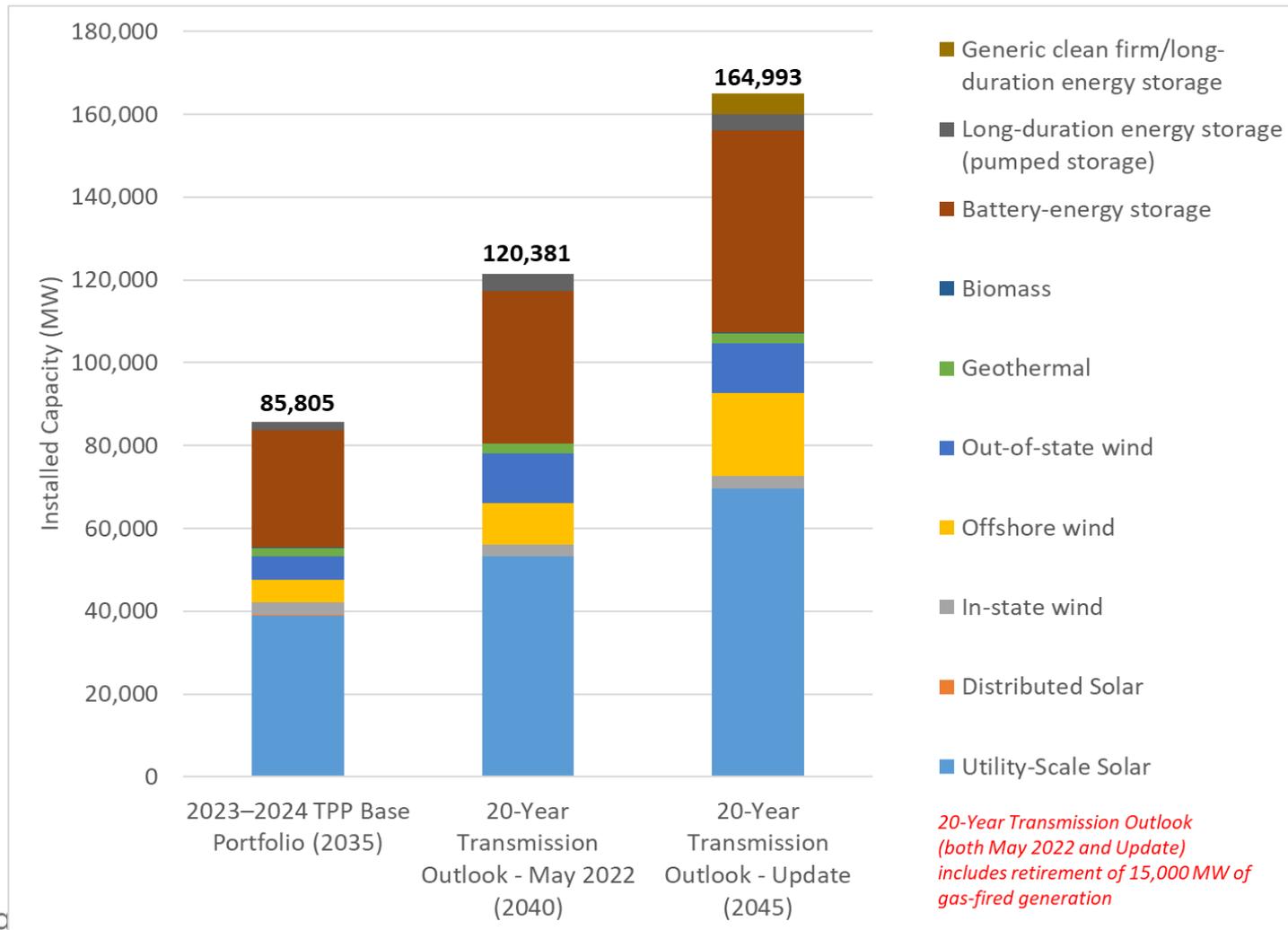
The CEC's load forecast is used in both the CPUC's Integrated Resource Planning process and the ISO's transmission planning process.



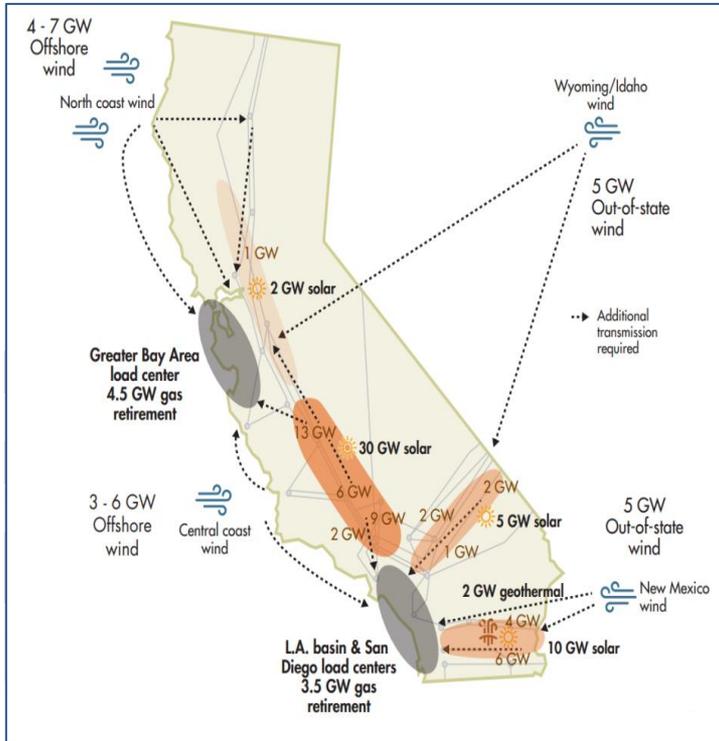
The ISO uses:

- 1-year-in-10 weather event forecast for local reliability studies
- 1-year-in-5 weather event forecast for bulk system reliability-driven and policy-driven studies
- 1-year-in-2 weather event forecast for economic (market efficiency) studies

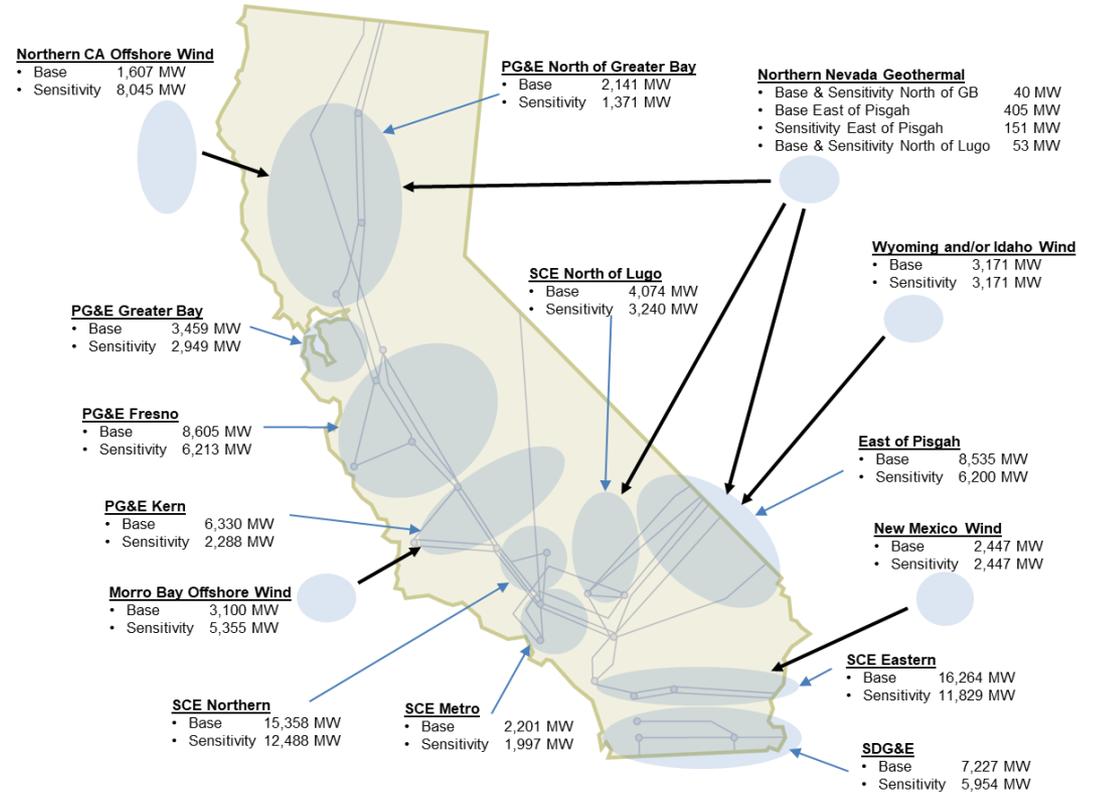
Portfolios – 2023-2024 Transmission Planning Process and 20-Year Transmission Outlook



2023-2024 draft transmission plan continues to use zonal approach which enables clear direction and prioritization

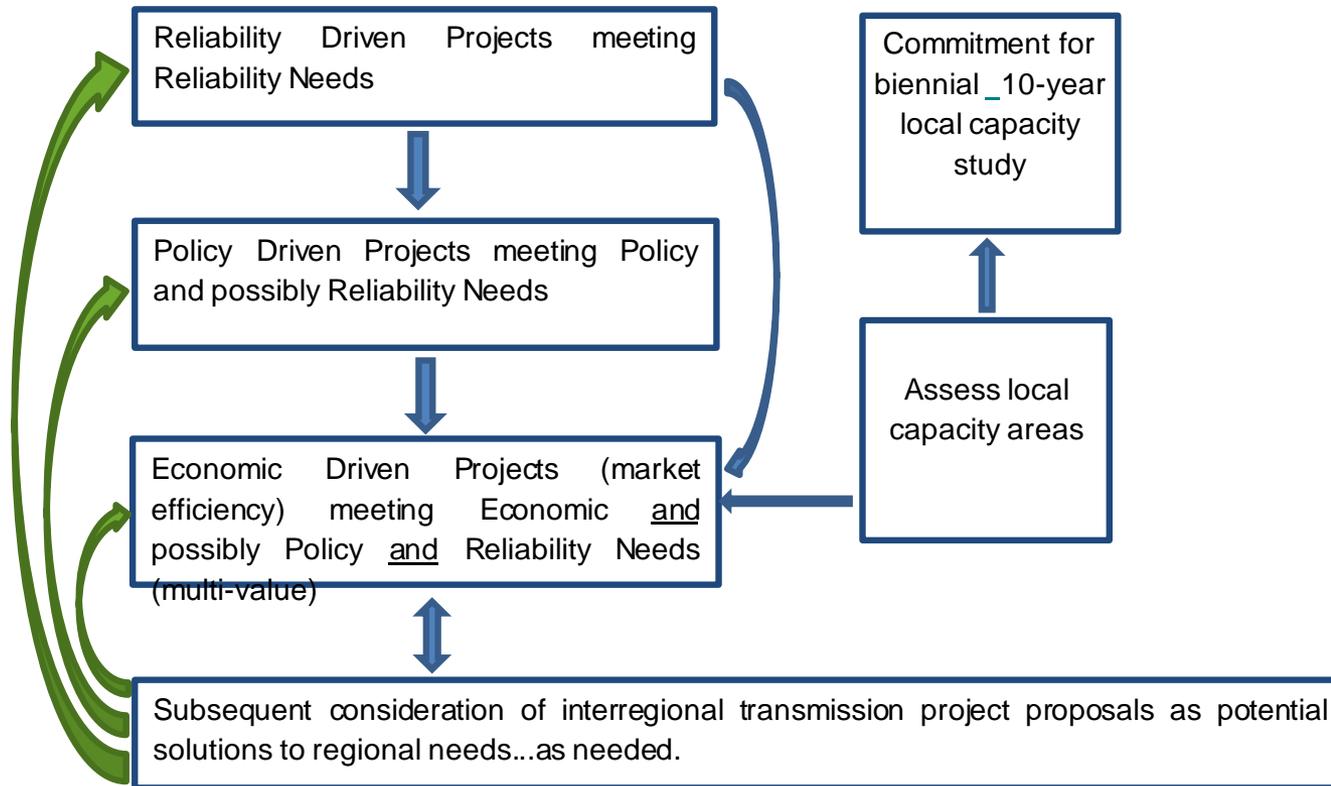


CAISO 20-year Transmission Outlook - 2022



ISO Revised Draft 2023-2024 Transmission Plan

Studies are coordinated as a part of the transmission planning process



Recommended Reliability-Driven Projects

- 19 reliability projects driven by load growth and evolving grid conditions as the generation fleet transitions to increased renewable generation have been recommended, totaling \$1.54 billion
- All are upgrades to the existing system or low voltage – not eligible for competitive procurement

No.	Project Name	PTO Area	Planning Area	Est. Cost (\$M)
1	Covelo 60 kV Voltage Support*	PG&E	North Coast/ North Bay	22
2	Martin-Millbrae 60 kV Area Reinforcement*	PG&E	Greater Bay Area	40
3	Atlantic High Voltage Mitigation*	PG&E	Central Valley	40
4	Mira Loma 500 kV Bus SCD Mitigation*	SCE	SCE Bulk	5
5	Inyo 230 kV Shunt Reactor*	SCE	North of Lugo	20
6	Etiwanda 230 kV Bus SCD Mitigation*	SCE	SCE Eastern	15
7	Eldorado 230 kV Short Circuit Duty Mitigation*	SCE	East of Lugo	48.8
8	Valley Center System Improvement	SDG&E	SDG&E	51
9	Camden 70 kV Reinforcement	PG&E	Greater Fresno	100
10	Gates 230/70 kV Transformer Addition	PG&E	Greater Fresno	72
11	Reedley 70 kV Capacity Increase	PG&E	Greater Fresno	98
12	Diablo Canyon Area 230 kV High Voltage Mitigation	PG&E	Central Coast & Los Padres	70
13	Crazy Horse Canyon - Salinas - Soledad #1 and #2 115 kV Line Reconductoring	PG&E	Central Coast & Los Padres	108
14	Vaca-Plainfield 60 kV Line Reconductoring	PG&E	Central Valley	68
15	Rio Oso - W. Sacramento Reconductoring	PG&E	Central Valley	97.4
16	Cortina #1 60 kV Line Reconductoring	PG&E	Central Valley	94.3
17	Salinas Area Reinforcement	PG&E	Central Coast & Los Padres	452.3
18	Tejon Area Reinforcement	PG&E	Kern	56
19	French Camp Reinforcement	PG&E	Central Valley	84.2
			Total	1,542

* These projects have already been approved by ISO Management, ahead of the rest of the Plan for approval by the ISO's Board of Governors, pursuant to the ISO's tariff, after stakeholders were informed of Management's intention to approve, and given an opportunity to raise concerns with Management or the Board of Governors.

Previously-approved reliability-drive projects on hold

- For the previously approved transmission project on hold from the previous planning cycle, the management recommends the following:
 - Keep the Moraga- Sobrante 115 kV Line Reconductor project on hold;

Projects under further Review for Potential Approval in 2023-2024 Transmission Planning Process

- The ISO also continues working to refine its recommendation regarding the following three reliability-driven projects:
 - Oakland Area Reinforcement project;
 - Short Circuit Mitigation for Imperial Valley 230 kV Circuit Breakers; and
 - Short Circuit Mitigation for Miguel 230 kV Circuit Breakers.
- This work will be conducted as an extension of the 2023-2024 transmission plan, with ISO Board of Governors approval anticipated to be sought in Q2 or Q3 of this year.

Recommended Policy-Driven Projects

- To meet the renewable generation requirements established in the CPUC-developed renewable generation portfolios, an additional 7 transmission projects that are policy driven are recommended, totaling \$4.59 billion
- Two are eligible for competitive procurement
- A number of these projects are to integrate the offshore wind in the Humboldt area in the CPUC portfolio

No.	Project Name	PTO Area	Geographic Area	Cost (\$M)
1	Sobrante 230/115 kV Transformer Bank Addition	PG&E	GBA	40
2	New Humboldt 500 kV Substation with 500 kV line to Collinsville [HVDC operated as AC]	PG&E	NGBA	2740
3	New Humboldt to Fern Road 500 kV Line	PG&E	NGBA	1400
4	New Humboldt 115/115 kV Phase Shifter with 115 kV line to Humboldt 115 kV Substation	PG&E	NGBA	57
5	North Dublin - Vineyard 230 kV Reconductoring	PG&E	NGBA	233
6	Tesla - Newark 230 kV Line No. 2 Reconductoring	PG&E	NGBA	58
7	Collinsville 230 kV Reactor	PG&E	NGBA	58
			Total	4,586

Economic-Driven (Market Efficiency) Projects

- Economic studies investigating opportunities to reduce total costs to ratepayers through transmission upgrades not otherwise needed for reliably accessing renewables and serving load were conducted.
- No projects driven solely by market efficiency considerations are being recommended in this plan.

FERC Order 1000 Interregional Coordination Process

- The interregional transmission process is a two-year process coordinated with the other planning regions, NorthernGrid and WestConnect, for consideration of interregional transmission project proposals as potential solutions to regional needs
- The 2023-2024 transmission planning process is year two of the process and there were no projects identified in year one, the previous transmission planning process, to be brought into this year's planning cycle to be assessed

Stakeholder Comments

- General support for reliability, policy and economic assessment
- Concern about three recommended reliability-driven projects where only conceptual alternatives were submitted into request window
- Concerns of potential stranded assets or delay of recommended transmission due to floating offshore wind technical development currently underway

Summary

- 26 projects totaling \$6.1 billion were found to be needed
 - The ISO is also continuing to refine its recommendation regarding three reliability-driven projects as an extension of the 2023-2024 transmission plan, with ISO Board of Governors approval anticipated to be sought in Q2 or Q3
- Two projects eligible for competitive procurement:

Project	Need
New Humboldt 500 kV Substation with 500 kV line to Collinsville [HVDC operated as AC]	Policy-driven
New Humboldt to Fern Road 500 kV Line	Policy-driven

Management recommends the Board approve the ISO 2022-2023 Transmission Plan

- Continues to use a zonal basis for resource development as a foundation for interconnection process prioritization and focus for procurement activities
- Continues to pursue low emission strategies in addressing reliability needs on the ISO controlled grid
- Sets a foundation for higher renewable energy goals
- Provides for prudent and economic development of the transmission system