



## *Decision on ISO 2021-2022 Transmission Plan*

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ISO Board of Governors Meeting

General Session

March 17, 2022

# Introduction of the 2021-2022 Transmission Plan

- The annual transmission plan is being presented for approval
- At inflection point with an acceleration of new resource requirements to meet state policy goals and increases in the pace of load growth, with this, the capital costs within this years plan has increased from the plans in recent years
- The ISO is always focused on costs; recommendations are based on the long term effectiveness and efficiency of solutions

# The 2021-2022 Transmission Plan was developed through the ISO's annual study process

December 2020

April 2021

March 2022

## 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

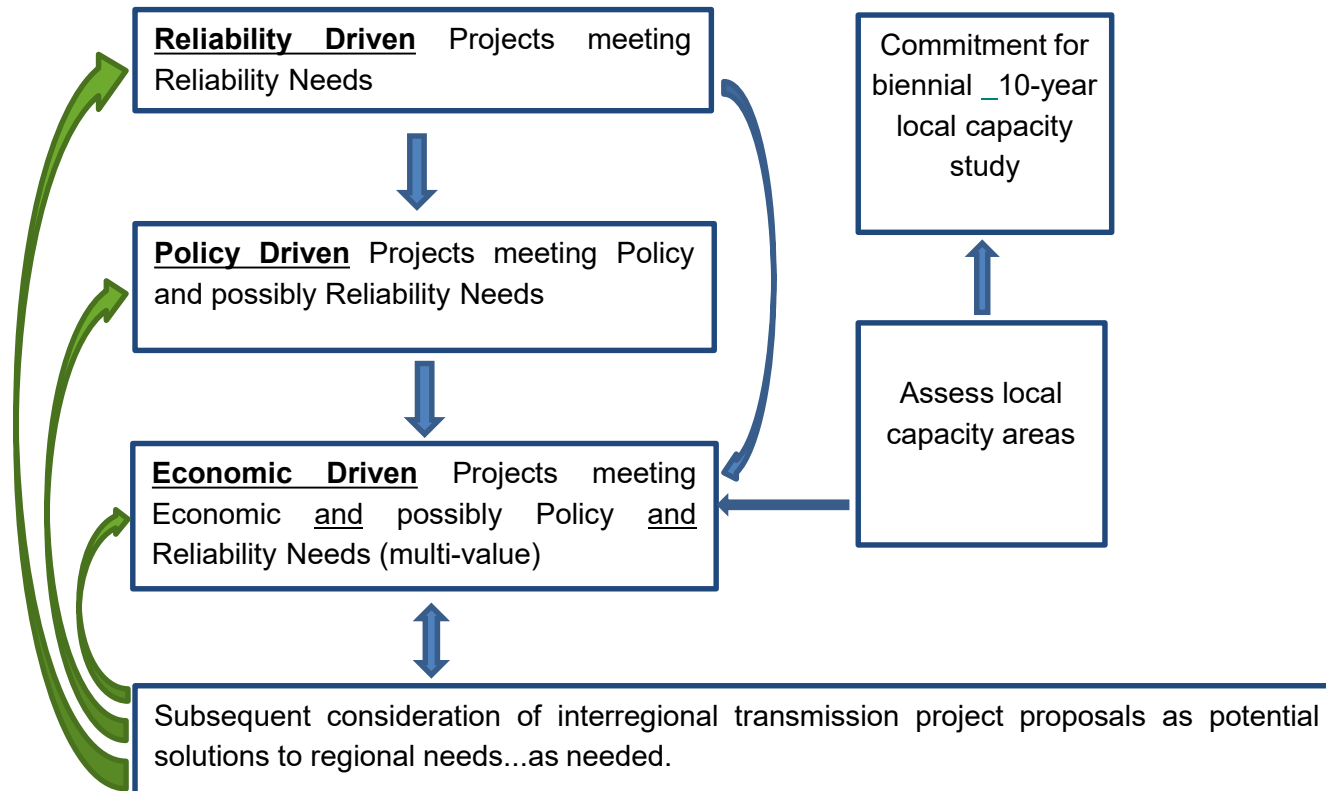
## Phase 3 Procurement

ISO Board of Governors for approval of transmission plan

# Emphasis in transmission planning cycle

- Need for new generation over the next 10 ten years has escalated rapidly, driving an accelerated pace for new transmission development in this and future planning cycles
  - Last year's planning cycle had 1,000 MW per year
  - This year's planning cycle includes 2,700 MW per year
  - Next year's planning cycle has 4,000 MW per year
- Combination of dramatically increasing pace of renewable generation and load forecast growth are driving an increase in transmission

# Studies are sequentially coordinated as a part of the transmission planning process



## The ISO's reliability analysis led to the following:

- 16 reliability driven projects were identified totaling \$1.412 billion
- Significant load growth in the San Jose area resulted in the following two specific projects that make up \$1.125 of the \$1.412 billion:
  - San Jose Area HVDC Lines (Newark to NRS)
  - San Jose Area HVDC Line (Metcalf – San Jose)
- Two of the previously approved projects in PG&E service territory are recommended to remain on hold for further review of storage procurement to mitigate the constraints

# New Reliability-Driven Projects Recommended for Approval

No.	Project Name	Service Area	Expected In-Service Date	Project Cost
1	San Jose Area HVDC Line (Metcalf – San Jose)	PG&E	2028	\$425M-\$615M
2	San Jose Area HVDC Line (Newark - NRS)	PG&E	2028	\$325M-\$510M
3	Table Mountain second 500/230 kV transformer	PG&E	2027	\$38.4M - \$76.8M
4	Antelope 66 kV Short Circuit Duty Mitigation Project	SCE	2026	\$55M
5	<i>Cortina 230/115/60 kV Transformer Bank No. 1 Replacement Project</i>	<i>PG&amp;E</i>	<i>2027</i>	<i>\$21M - \$42M</i>
6	<i>Coppermine 70 kV Reinforcement Project</i>	<i>PG&amp;E</i>	<i>2027</i>	<i>\$15.8M - \$31.6M</i>
7	<i>Weber-Mormon Jct Line Section Reconductoring Project</i>	<i>PG&amp;E</i>	<i>2027</i>	<i>\$9.3M - \$18.6M</i>
8	Series Compensation on Los Esteros-Nortech 115 kV Line	PG&E	2023	\$10M-\$15M
9	<i>Manteca-Ripon-Riverbank-Melones Area 115 kV Line Reconductoring Project</i>	<i>PG&amp;E</i>	<i>2028</i>	<i>\$6.8M - \$13.6M</i>
10	Atlantic 230/60 kV transformer voltage regulator	PG&E	2026	\$5M - \$10M
11	Devers 230 kV Reconfiguration Project	SCE	2023	\$6M
12	<i>Contra Costa PP 230 kV Line Terminals Reconfiguration Project</i>	<i>PG&amp;E</i>	<i>2025</i>	<i>\$5M - \$10M</i>
13	Victor 230 kV Switchrack Reconfiguration	SCE	2023	\$5M
14	Metcalf 230 kV Substation Circuit Breaker #No 292 Upgrade	PG&E	2025	\$0.9M - \$1.35M
15	<i>Vasona-Metcalf 230 kV Line Limiting Elements Removal Project</i>	<i>PG&amp;E</i>	<i>2025</i>	<i>\$0.6M - \$1.2M</i>
16	Cooley Landing Substation Circuit Breaker No #62 Upgrade	PG&E	2026	\$0.75M - \$1.13M

# Previously Approved Projects Recommended to remain on Hold

Projects	PTO	Status
North of Mesa Upgrades	PG&E	On hold (Recommending procurement of storage as mitigation plan)
Wheeler Ridge Junction Station Project	PG&E	On hold (Recommending procurement of storage as part of mitigation plan)
Moraga-Sobrante 115 kV Line Reconductor	PG&E	On hold



# Policy-driven analysis

- CPUC’s 2019-2020 Integrated Resource Planning cycle provided resource planning assumptions to the ISO:
  - Base portfolio based on its “46 MMT scenario” that includes 27,695 MW of renewable and storage resources, and
  - Two sensitivity portfolios for information purposes
    - 38 MMT scenario with 31,848 MW of renewable and storage
    - 30 MMT scenario with 33,227 MW of renewable and storage with focus on offshore wind
- The ISO performed policy-driven study assessments of the 46 MMT scenario and identified six new Category 1 policy-driven transmission needs for a total of \$1.512 billion.

# New Policy-Driven Projects Recommended for Approval

No.	Project Name	Service Area	Expected In-Service Date	Project Cost
1	New Collinsville 500 kV substation	PG&E	2028	\$475M-\$675M
2	New Manning 500 kV substation	PG&E	2028	\$325M - \$485M
3	GLW/VEA area upgrades	GLW/VEA	TBD	\$278M
4	Reconductor Delevan-Cortina 230kV line	PG&E	2028	\$17.7M-\$35.4 M
5	Reconductor Rio Oso-SPI Jct-Lincoln 115kV line	PG&E	2028	\$10.6M - \$21.2M
6	Laguna Bell-Mesa No. 1 230 kV Line Rating Increase Project	SCE	2023	\$17.3M

# Economic-driven analysis

- In the economic assessment the ISO:
  - Received a number of economic study requests, which included projects that would more reasonably be categorized as interregional transmission projects;
  - Received several proposed reliability projects that cited material economic benefits
- One new projects was found to be needed as an economic-driven project totaling \$40 million.
- The ISO will test interest in the Idaho/Wyoming resources that would underpin the SWIP North economic study request and will report back as an extension of this planning cycle

No.	Project Name	Service Area	Expected In-Service Date	Project Cost
1	Installing 10 ohms series reactors on the PG&E's Moss Landing – Las Aguilas 230 kV line	PG&E	2026	\$30-40M

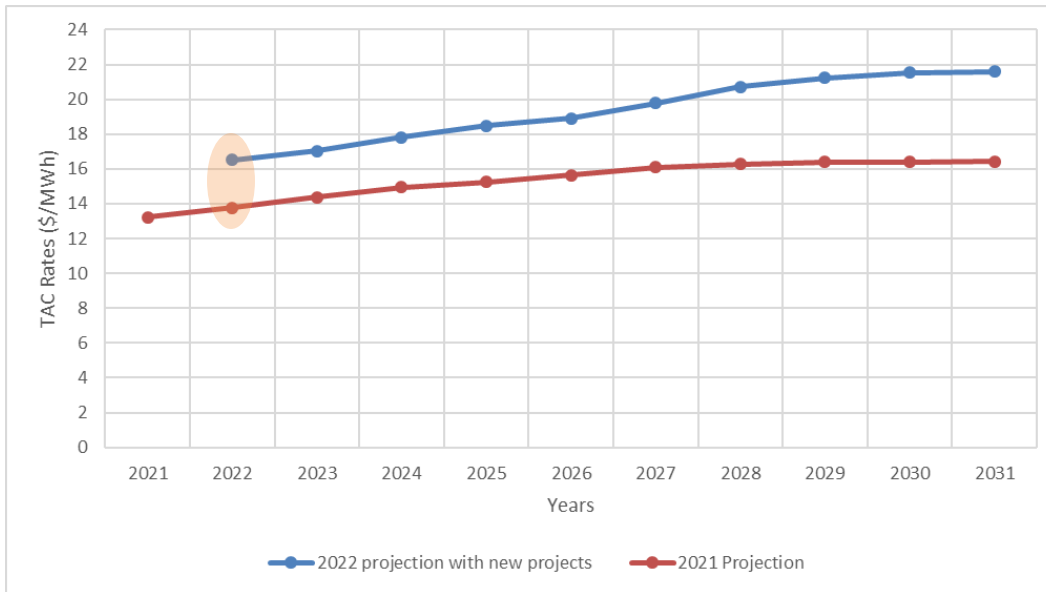
# 20-Year Transmission Outlook

- The ISO produced its first ever 20-Year Transmission Outlook in parallel with this year's planning cycle
- Provides a longer term view of transmission needed to reliably meet state clean energy goals
- In 2022 the ISO intends to:
  - Discuss findings in the ongoing SB 100 processes and potentially additional stakeholder sessions
  - Collect input on issues and parameters that could be considered and refined in a future outlook development cycle – thinking about 2023
  - Provide industry an update on the 20-Year Outlook activities and communicate intentions going forward, by year end

## Other Informational Studies

- ISO undertook additional informational studies to help inform future transmission planning or resource procurement processes:
  - Frequency response and dynamic system modeling
  - Wildfire assessment – SCE and SDG&E areas with an update of the PG&E North Coast and North Bay area
  - Studies of offshore wind and impacts of out of state wind resources

# The ISO has projected the impact of the capital projects on the regional high voltage transmission access charge:



- The increase of \$2.70 from last year's projection for January 1, 2022 to this year's actuals reflects the increase in utility operating costs and capital maintenance costs above the historical average projections for those non-ISO-approved costs.
- The ISO will continue to explore with stakeholders cost-effective solutions to meeting long term needs.
- The impact is projected from January 1, 2022 forward
- Includes capital projects in this year's plan and all other transmission plan projects not already energized.

# Stakeholder Comments

- General support for reliability, policy and economic assessment
- Requests for further consideration of alternatives to the recommended projects and consideration of the near-term solutions at lower costs should be pursued
- Concerns with respect to CPUC IRP portfolios mapping and discrepancy between mapping and procurement
- Concerns with over-reliance on remedial action schemes in lieu of transmission upgrades

# Summary

- The ISO found the need for 23 projects totaling \$2.964 billion, with four being eligible for competitive procurement:

Project	Need
San Jose Area HVDC Lines (Newark to NRS)	Reliability-driven
San Jose Area HVDC Line (Metcalf – San Jose)	Reliability-driven
Collinsville 500/230 kV substation	Policy-driven
Manning 500/230 kV substation	Policy-driven



# Management recommends the Board approve the 2021-2022 ISO Transmission Plan

- 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