

The CAISO received comments on the topics discussed at the November 13, 2024 stakeholder call from the following:

- A. 174 Power Global
- B. Bay Area Municipal Transmission group (BAMx)
- C. California Environmental Justice Alliance - Regenerate California Campaign and Center for Energy Efficiency & Renewable Technologies
- D. California Public Utilities Commission – Energy Division
- E. California Public Utilities Commission – Public Advocates Office
- F. California Western Grid Development, LLC.
- G. California Wind Energy Association
- H. Center for Energy Efficiency and Renewable Technology
- I. City of Palo Alto
- J. Clearway Energy Group
- K. Defenders of Wildlife
- L. Energy Project Solutions
- M. ENGIE NA
- N. Golden State Clean Energy
- O. Hetch Hetchy Water and Power
- P. Large-scale Solar Association (LSA)
- Q. Leeward Renewable Energy
- R. Mary Wiley Trust
- S. Gridliance West
- T. PG&E
- U. Port of Oakland
- V. Section 20, LLC.
- W. Silicon Valley Power
- X. SSA Terminals
- Y. Terra-Gen, LLC.
- Z. Valley Electric Association

Copies of the comments submitted are located on the Transmission Planning Process page at:

<https://stakeholdercenter.caiso.com/RecurringStakeholderProcesses/2024-2025-Transmission-planning-process>

The following are the CAISO's responses to the comments

1. Please provide your organization's comments on the Recommended Reliability Projects less than \$50 million for the North Region
2. Please provide your organization's comments on the Recommended Reliability Projects less than \$50 million for the South Region
3. Please provide your organization's comments on the MIC Expansion Requests
4. Please provide your organization's comments on the Preliminary Policy Assessment Results for the SCE & GLW areas
5. Please provide your organization's comments on the Preliminary Policy Assessment Results for the SDG&E area
6. Please provide your organization's comments on the Preliminary Policy Assessment Results for the PG&E area
7. Please provide your organization's comments on the Preliminary Economic Analysis Results
8. Please provide any additional comments on the November 13, 2024 Transmission Planning Process Stakeholder Meeting

1. Please provide your organization's comments on the Recommended Reliability Projects less than \$50 million for the North Region

No	Submitting Organization	Comment Submitted	CAISO Response
1A	174 Power Global	No comment	
1B	Bay Area Municipal Transmission group (BAMx)	<p>The Bay Area Municipal Transmission group (BAMx) appreciates the opportunity to comment on the CAISO's 2024-25 Transmission Planning Process. The comments and questions below address the material presented at the CAISO Stakeholder meeting on November 13, 2024.</p> <p>Pittsburg-Kirker 115kV Line Section Limiting Elements Upgrade Project</p> <p>During the 2024-2025 TPP stakeholder meeting on November 13, 2024, the need for the Pittsburg-Kirker 115kV Line Section Limiting Elements Upgrade Project was identified, starting in 2026, for a NERC category P0 issue. The estimated in-service date for this project is 2028 or earlier. BAMx asks CAISO to consider a plan to address the NERC category P0 issues if this project cannot be completed prior to 2026.</p> <p>Jefferson-Stanford 60 kV Recabling Project</p> <p>BAMx supports the project's approval as it is driven by the NERC category P0 based on the real-time non-coincident load at Stanford, and the lower cost mitigation alternatives are deemed infeasible.</p> <p>Moraga 230/115kV Transformer Bank Addition Project</p> <p>The need for the new 230/115 kV transformer bank at Moraga Substation is driven by the P6 contingency, where two of the three transformers at the substation are lost. BAMx appreciates the CAISO's consideration and ultimate rejection of lower-cost alternative mitigations, such as BESS, RAS, and power flow controller devices. However, we are unsure whether the CAISO considered dynamic bus series reactors as a potential mitigation measure.</p>	Your comment has been noted and plans to address issues in the interim are considered.
1C	California Environmental Justice Alliance	The Regenerate California Campaign supports the recommended reliability projects for the North Region. We note that three of the recommended projects, the Pittsburg to Kirker upgrade, the Sobrante 230 kV bus upgrade and the Moraga 230/115 kV transformer bank addition are driven by load growth. We recommend that the CAISO encourage PG&E to reach out to the local communities	Your comment is noted and we will ask PG&E for community outreach.

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		about these projects to explain the benefits and the opportunity for additional local clean energy development. In addition, as mentioned above, the Regenerate California Campaign requests modeling show how the project would impact gas-fired power plant operations in EJ communities	
1D	California Public Utilities Commission – Energy Division	The CAISO has provided alternatives for the six projects in the PG&E area and Staff commends the effort to clearly present such alternatives and the rationale behind their recommendations. CPUC Staff appreciate that battery storage was considered for each of these projects. CPUC Staff request that the CAISO share cost estimates that were developed for the alternatives with stakeholders. We further encourage CAISO to consider and document its analysis of a full range of other alternatives to new transmission facilities, including grid enhancing technologies, whenever possible.	Your comment is noted and GET alternatives will be considered.
1E	California Public Utilities Commission – Public Advocates Office	<p>The Public Advocates Office at the California Public Utilities Commission (Cal Advocates) provides these comments on the California Independent System Operator's (CAISO) 2024-2025 Transmission Planning Process – Policy and Economic Preliminary Assessment and Study Updates meeting on November 13, 2024. Cal Advocates is an independent ratepayer advocate with a mandate to obtain the lowest possible rates for utility services, consistent with reliable and safe service levels and the state's environmental goals. [1]</p> <p><u>Alternative Analysis Recommendations</u></p> <p>Cal Advocates appreciates that CAISO provided information on the alternative mitigations considered for the proposed projects. Cal Advocates recommends that CAISO continue to provide this information and also provide the following additional information:</p> <ol style="list-style-type: none"> 1. The type of power flow technology considered. 2. A dynamic line rating (DLR) impact analysis for all the identified line issues. DLR alone or in combination with other solutions could assist with line congestion and lower the total mitigation costs for ratepayers. 3. The estimated costs for all alternatives considered. <p><u>North Region Recommendation</u></p> <p>Cal Advocates observes that there is a North American Electric Reliability Corporation (NERC) violation expected by 2026 on the</p>	Your comment is noted and interim mitigation measures will be considered.

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		<p>Pittsburg-Kirker 115 kilovolt (kV) line, and the proposed solution to address this NERC violation is not expected to be in place until 2028.^[2] There is also a NERC violation expected in 2026 at the Moraga 230/115 kV Transformer Bank Addition project and the proposed solution to address this NERC violation is expected by 2031.^[3]</p> <p>Cal Advocates requests that CAISO and the Pacific Gas and Electric Company (PG&E) provide information on their interim solutions to address the potential NERC violations starting in 2026 at the facilities mentioned. Cal Advocates seeks to confirm that any proposed interim solutions will also be used and useful after 2031.</p>	
1F	California Western Grid Development, LLC.	No comment	
1G	California Wind Energy Association	No comment	
1H	Center for Energy Efficiency and Renewable Technology	No comment	
1I	City of Palo Alto	<p>The City of Palo Alto Utilities (CPAU) appreciates the opportunity to comment on the CAISO's 2024-25 Transmission Planning Process. The comments and questions below address the material presented at the CAISO Stakeholder meeting on November 13, 2024.</p> <p>The Ames-Adobe Creek-Palo Alto 115 kV Line</p> <p>CPAU submitted a request window (RW) project for the Ames-Adobe Creek-Palo Alto 115 kV line, proposing three configurations. CPAU is pleased that the CAISO is considering the Ames-Adobe Creek-Palo Alto 115 kV Line as a reliability alternative in the current TPP cycle.¹ This project offers significant reliability benefits, addressing overloads from the substantial load increase in the Greater Bay Area as identified in the CAISO 2024-2025 TPP reliability assessment. In addition to mitigating NERC planning criteria P2, P6, & P7 violations while enhancing regional reliability, it provides CPAU with a second power source. All three (3) configurations proposed by CPAU provide a 115 kV interconnection outside the common corridor near the airport flight path. In the event of an outage at the Palo Alto switching station, CPAU's Colorado substation, or a common corridor outage, the CPAU load can be served from this diverse source at the Adobe Creek substation. The CPAU-proposed project is superior in terms of both</p>	Your comment is noted.

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		reliability and cost-effectiveness over other mitigation alternatives, such as reconductoring the overloaded 115kV lines, as mentioned in CAISO's reliability assessment discussion ² as demonstrated in the CPAU RW application. CPAU, therefore, urges the CAISO staff to recommend the approval of the Ames-Adobe Creek-Palo Alto 115 kV Line in the Draft 2024-2025 Transmission Plan.	
1J	Clearway Energy Group	No comment	
1K	Defenders of Wildlife	No comment	
1L	Energy Project Solutions	No comment	
1M	ENGIE NA	No comment	
1N	Golden State Clean Energy	No comment	
1O	Hetch Hetchy Water and Power	<p>The City and County of San Francisco (CCSF) appreciates the opportunity to comment on the CAISO's 2024-25 Transmission Planning Process (TPP). The comments and questions below address the material presented at the CAISO Stakeholder meeting on November 13, 2024.</p> <p>On October 15, 2024, CCSF proposed a project in the CAISO 2024-2025 TPP Request Window (RW) that would utilize the existing 100-mile Moccasin-Warnerville-Newark 115kV line Right-of-Way (RoW) to rebuild either a new approximately 70 mile High Voltage Direct Current (HVDC) line or a 230kV Alternating Current (AC) line between the Warnerville and Newark substations. CCSF is pleased that the CAISO is considering this Warnerville-Newark Transmission Expansion Project (WaNTEP) as a reliability alternative in the current TPP cycle.[1] CCSF notes that WaNTEP AC and HVDC configurations are highly effective in addressing the NERC and CAISO planning criteria violations, such as P0, P1, P2, P3, P6, and P7 overloads on several Greater Bay Area (GBA) transmission facilities identified in the Baseline Case in 2034 and 2039 as included in its RW application.</p>	Your comment is noted.
1P	Large-scale Solar Association (LSA)	No comment	
1Q	Leeward Renewable Energy	No comment	
1R	Mary Wiley Trust	No comment	
1S	Gridliance West	No comment	
1T	PG&E	No comment	
1U	Port of Oakland	No comment	
1V	Section 20, LLC.	No comment	
1W	Silicon Valley Power	The City of Santa Clara, dba Silicon Valley Power (SVP), appreciates the opportunity to comment on the CAISO's 2024-25 Transmission Planning Process. The comments and questions below address the	Your comment is noted



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		<p>material presented at the CAISO Stakeholder meeting on November 13, 2024. SVP acknowledges the significant efforts of the CAISO and PTO staff to develop this material.</p> <p>South Bay 115kV Systems Reinforcement Project (Conceptual)</p> <p>PG&E proposed a “South Bay 115kV Systems Reinforcement Project (Conceptual)” during the September 24th stakeholder meeting. [1] One element of PG&E’s proposal is to upgrade the PG&E and SVP 115kV corridor. SVP supports Alternative 1A, which includes reconductoring the Kifer-FMC 115kV line. During the November 13th stakeholder meeting, the CAISO indicated that submission for the South Bay 115 kV System Reinforcement Project was “incomplete” and that they do not have any “confirmed alternative” for this project. SVP agrees with the conceptual nature of the PG&E project submittal. However, given the major P1 overloads on the Kifer-FMC 115kV line identified as early as in 2029, especially with the modifications to the 2021-2022 transmission plan approved by the CAISO Board on November 12, 2024 [2], SVP urges the CAISO to approve the <i>reconductoring of the Kifer-FMC 115kV line</i> in the current planning cycle, and consider the remaining portions of the <i>South Bay 115kV Systems Reinforcement Project</i> in the subsequent planning cycle(s). These NERC and CAISO planning criteria violations are described in detail in SVP’s comments on the CAISO Stakeholder meeting on September 23-24, 2024. [3] SVP looks forward to working with the CAISO as it works diligently on developing projects to protect against possible NERC TPL-001-5 violations due to load increase in the SVP and San Jose areas.</p>	
1X	SSA Terminals	No comment	
1Y	Terra-Gen, LLC.	No comment	
1Z	Valley Electric Association	No comment	

2. Please provide your organization's comments on the Recommended Reliability Projects less than \$50 million for the South Region

No	Submitting Organization	Comment Submitted	CAISO Response
2A	174 Power Global	No comment	
2B	Bay Area Municipal Transmission group (BAMx)	No comment	
2C	California Environmental Justice Alliance	No comment	
2D	California Public Utilities Commission – Energy Division	The CAISO has provided alternatives for this project in the SDG&E area and Staff commends the effort to clearly present such alternatives and the rationale behind their recommendation. CPUC Staff appreciate that battery storage was considered for this project. We encourage full consideration of other non-wire alternatives. CPUC Staff request that the CAISO share cost estimates that were developed for the alternatives with stakeholders.	Referring to the reliability concerns identified in the reliability assessment to increase the load serving capability to Coronado Island, non-wire alternatives such as energy storage, power flow control devices and RAS were not adequate alternatives to mitigate the reliability concern. Therefore, the ISO did not proceed to estimate the costs for these alternatives.
2E	California Public Utilities Commission – Public Advocates Office	<u>Coronado Island Reinforcement Phase 1</u> Since the proposed reinforcement project at Coronado Island is needed to respond to the U.S. Navy's expected additional load in 2028, the U.S. Navy should fund all phases of the Coronado Island Reinforcement project [1] The U.S. Navy has significant operations on Coronado Island. For consistency with the Federal Energy Regulatory Commission (FERC) Order No. 1000 Cost Allocation Principle 1, cost allocation should be at least roughly commensurate with estimated benefits.[2]	The CAISO has performed an analysis on the need for upgrade. SDG&E and FERC will determine how the revenue requirements will be allocated.
2F	California Western Grid Development, LLC.	No comment	
2G	California Wind Energy Association	No comment	
2H	Center for Energy Efficiency and Renewable Technology	No comment	
2I	City of Palo Alto	No comment	
2J	Clearway Energy Group	No comment	
2K	Defenders of Wildlife	No comment	
2L	Energy Project Solutions	No comment	
2M	ENGIE NA	No comment	
2N	Golden State Clean Energy	No comment	
2O	Hetch Hetchy Water and Power	No comment	
2P	Large-scale Solar Association (LSA)	No comment	
2Q	Leeward Renewable Energy	No comment	
2R	Mary Wiley Trust	No comment	
2S	Gridliance West	No comment	

No	Submitting Organization	Comment Submitted	CAISO Response
2T	PG&E	No comment	
2U	Port of Oakland	No comment	
2V	Section 20, LLC.	No comment	
2W	Silicon Valley Power	No comment	
2X	SSA Terminals	No comment	
2Y	Terra-Gen, LLC.	No comment	
2Z	Valley Electric Association	No comment	

3. Please provide your organization's comments on the MIC Expansion Requests			
No	Submitting Organization	Comment Submitted	CAISO Response
3A	174 Power Global	No comment	
3B	Bay Area Municipal Transmission group (BAMx)	No comment	
3C	California Environmental Justice Alliance	In general the Regenerate California Campaign supports MIC Expansion Requests that result in the firm delivery of renewable, clean, non-combustion power sources into load pockets that continue to rely on fossil fuel resources to meet local capacity requirements. As mentioned above, the Regenerate California Campaign requests modeling to show how the projects would impact gas-fired power plant operations in EJ communities and, in particular given Clean Power Alliance's Southern California location, Aliso Canyon-supplied generators.	<p>Thank you for your support.</p> <p>MIC expansion and MIC expansion request apply only to interties with other control areas across the west.</p> <p>Transmission expansion into load pockets inside the CAISO is done for reliability, policy and/or economic reasons.</p>
3D	California Public Utilities Commission – Energy Division	CPUC staff appreciate CAISO's efforts to expand MIC in certain cases for the benefit of California ratepayers.	Thank you for your support.
3E	California Public Utilities Commission – Public Advocates Office	No comment	
3F	California Western Grid Development, LLC.	No comment	
3G	California Wind Energy Association	No comment	
3H	Center for Energy Efficiency and Renewable Technology	The Center for Energy Efficiency and Renewable Technologies (CEERT) supports MIC Expansion Requests that result in the firm delivery of power sources like geothermal into load pockets that continue to rely on fossil fuel resources to meet local capacity requirements. The MIC expansion requests from the Clean Power Alliance which serves Los Angeles and Ventura Counties and California Community Power, a joint powers agency, serving 112 municipalities meet this criterion.	<p>Thank you for your support.</p> <p>MIC expansion and MIC expansion request apply only to interties with other control areas across the west.</p> <p>Transmission expansion into load pockets inside the CAISO is done for reliability, policy and/or economic reasons.</p>
3I	City of Palo Alto	No comment	
3J	Clearway Energy Group	No comment	
3K	Defenders of Wildlife	No comment	
3L	Energy Project Solutions	No comment	
3M	ENGIE NA	No comment	
3N	Golden State Clean Energy	No comment	
3O	Hetch Hetchy Water and Power	No comment	
3P	Large-scale Solar Association (LSA)	No comment	
3Q	Leeward Renewable Energy	No comment	
3R	Mary Wiley Trust	No comment	

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3S	Gridliance West	No comment	
3T	PG&E	No comment	
3U	Port of Oakland	No comment	
3V	Section 20, LLC.	No comment	
3W	Silicon Valley Power	No comment	
3X	SSA Terminals	No comment	
3Y	Terra-Gen, LLC.	No comment	
3Z	Valley Electric Association	No comment	

4. Please provide your organization's comments on the Preliminary Policy Assessment Results for the SCE & GLW Areas

No	Submitting Organization	Comment Submitted	CAISO Response
4A	174 Power Global	<p>On behalf 174 Power Global, a utility scale renewable power plant and energy storage developer headquartered in Irvine, CA actively engaged in the advancement of over 10GW of renewable PV and Battery Energy Storage capacity in the CAISO market, I am pleased to take this opportunity to encourage your decisive support of the proposed 500kV Trout Canyon-Lugo transmission line in the 2024 – 2025 Transmission Planning Process (TPP).</p> <p>The proposed transmission line will bring much needed deliverability and reliability to the GridLiance West (GLW) system. It will provide much-needed relief to long-standing constraints and overloads in the East of Pisgah area. And Lugo-Trout compliments the 500kV Lugo-Eldorado-Sloan Canyon upgrades extending to the Harry Allen and Meade substations to provide increased transmission capacity and reliability to integrate much-needed generation to serve CAISO load.</p> <p>Through its subsidiary companies, 174 Power Global is actively sponsoring over 1GW of PV generation 1.5GW of energy storage capacity to this network. Our commitment is supported by the region's excellent solar resource complimented by BESS to provide fully dispatchable cost-effective renewable energy to the central CAISO region. Trout-Lugo will singularly enhance this capability by adding up to 4GW of long-term deliverability for Load Serving entities. These objectives provide a meaningful and near-term contribution to fulfill California's renewable goals.</p> <p>We encourage and support CAISO's prompt and comprehensive action to advance the Trout Canyon-Lugo transmission line. And we appreciate CAISO's clear and definitive support of this much needed policy-based transmission system upgrade to support the significant generation and energy storage planning already in process.</p>	The comment has been noted.
4B	Bay Area Municipal Transmission group (BAMx)	<p>Alternatives Considered to Address On-peak Deliverability Constraints</p> <p>CAISO's November 13th 2024-2025 TPP stakeholder meeting presentation describes that the CAISO considers the following two alternatives to address on-peak deliverability constraints before considering the transmission upgrade alternatives under the High System Needs (HSN) conditions. [1]</p>	When applicable, yes, a combination of RAS and generic battery-storage relocation was considered. One example was the alternative to mitigate GLW area constraint under 2034 base portfolio where a combination of RAS and generic battery-storage relocation was proposed.

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		<ul style="list-style-type: none"> RAS or other operating solutions Reducing generic battery-storage where applicable <p>BAMx would like to seek clarification on whether the CAISO considers a combination of RAS/operating solutions and generic battery-storage reductions in addition to considering them as standalone mitigation measures. Presumably, a combination of such measures would likely be more effective than relying solely on one type of such mitigation measure.</p> <p>2034 Base Portfolio On-Peak Eldorado – McCullough Constraint</p> <p>BAMx commends CAISO's efforts in evaluating multiple mitigation measures to address the <i>Eldorado – McCullough</i> path constraint for the 2034 Base Portfolio during on-peak conditions. CAISO identified four potential transmission upgrades that may be sufficient to mitigate the constraint. Cost estimates were provided for one of the four identified mitigation options: the <i>Trout Canyon – Lugo 500kV line (\$2B)</i>. Please provide details of the <i>Trout Canyon – Lugo 500kV line</i> project. For instance, the construction of the new Trout Canyon 500kV bus, the installation of multiple 500/230kV transformers, the assumed rating of the new Trout Canyon – Lugo 500kV DCTL, etc. BAMx recommends that CAISO provide cost estimates for the remaining three mitigation alternatives to help stakeholders evaluate the cost-effectiveness of these alternatives. While selecting a potential mitigation measure, BAMx also urges the CAISO to identify the congestion/economic benefits of the candidate policy project. For example, the <i>Trout Canyon – Lugo 500 kV line</i> may effectively address the SCE East of Pisgah and Lugo – Victorville congestion.</p> <p>2034 Base Portfolio On-Peak GLW-VEA Constraint</p> <p>CAISO indicated that RAS plus a reduction in generic battery storage or the <i>Trout Canyon – Lugo 500 kV line</i> are potential mitigation measures for addressing the 2034 Base Portfolio On-Peak GLW-VEA constraint. Separately, the <i>Marketplace – Adelanto AC-DC conversion</i> mitigation option was identified multiple times in the Preliminary Policy Assessment for fixing constraints in the SCE areas. BAMx questions why the CAISO has not considered the <i>Marketplace – Adelanto AC-DC conversion</i> mitigation alternative to address the GLW-VEA constraint.</p>	<p>Trout Canyon 500kV bus and 500/230kV transformers were approved in 2022-23 TPP under the Core GLW Upgrade project. The Trout Canyon – Lugo 500kV line will be a single 500kV transmission circuit with series compensation. Trout Canyon – Lugo 500kV line will address Lugo – Victorville constraint. If the alternatives to be considered are determined to be effective at addressing the identified constraints, then we will need to consider their costs and include them in the report.</p> <p>Marketplace – Adelanto AC-DC conversion will not mitigate GLW-VEA constraint.</p>



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4C	California Environmental Justice Alliance	<p>For the SCE Northern Area (Antelope Valley) the preliminary policy assessment finds that the Midway-Whirlwind 500 kV line is overloaded in both the on-peak and the off-peak case for 2034. The Regenerate Campaign recommends that the CAISO adopt a durable, long-term solution for this constraint that increases the supply of clean energy resources in the SCE Metro area.</p> <p>For the SCE Eastern Area (Riverside and Arizona) we note that the preliminary policy assessment finds that constraints identified in the base case for 2034 and 2039 can be addressed through the centralized remedial action scheme (CRAS). However, for the 2039 sensitivity case which assumes significant increases in gas-fired generation not retained in Southern California there will be constraints that arise that require transmission solutions. We understand that the sensitivity case also assumes that no offshore wind resources will be developed by 2039. While it is still early to fully understand the implications of the change in administration on the development of offshore wind, it would be prudent to consider alternative pathways to meet California's decarbonization commitments.</p> <p>The Regenerate California Campaign recommends that the CAISO consult with the California Public Utilities Commission (CPUC) on this matter. Acceleration of decision making on new 500 kV lines from Red Bluff to Devers and Devers to Mira Loma may be warranted in the 2024-2025 Transmission Plan.</p> <p>The Regenerate California Campaign also notes that the CAISO anticipates constraints on WECC Path 42 between the Imperial Irrigation District (IID) and Southern California Edison (SCE) system. It anticipates that SCE and IID will evaluate mitigation options for this constraint. For the East of Pisgah Area (Inyo-Mono and Southern Nevada) the CAISO preliminary assessment finds that clean energy resources totaling 4,535 megawatts under the 2039 base 3 case scenario and 6,688 megawatts under the sensitivity case scenario would be undeliverable without significant mitigation.</p> <p>2 The three identified mitigations are the Trout Canyon to Lugo 500 kV line, the Marketplace to Adelanto AC-DC conversion and the interregional Western Bounty HVDC project. The Regenerate California Campaign recommends that these alternatives be evaluated in a transparent manner and that the results of the evaluation be presented at a CAISO stakeholder meeting. Also, as mentioned above, the Regenerate California Campaign</p>	The comment has been noted

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		requests modeling show how these projects would impact gas-fired power plant operations in EJ communities and any Aliso Canyon-supplied generators.	
4D	California Public Utilities Commission – Energy Division	<p>During the SCE-GLW Preliminary Policy Assessment Results presentation, seven (7) projects had recommended mitigations as “TBD,” including all three (3) East of Pisgah Interconnection Area projects. CPUC staff appreciates the effort to present all mitigation options and notes that with the already tight timeline in the TPP, it is important that these recommended mitigations and their costs be timely presented to stakeholders.</p> <p>As described in more detail below in #8, CPUC staff appreciate the CAISO identifying locations where the need for policy-driven upgrades driven by CPUC’s TPP portfolio’s mapped storage can potentially be mitigated by reducing the storage mapped to those locations. CPUC staff seek additional details as to how much generic storage would need to be reduced to mitigate the identified issue for the GLW-VEA area constraint.</p>	The comment has been noted
4E	California Public Utilities Commission – Public Advocates Office	<p>For CAISO’s policy project proposals to address the issues identified with the integration of the California Public Utilities Commission’s (CPUC) 2034 and 2039 portfolio resources, Cal Advocates recommends the following:</p> <p>A. <u>CAISO should consider DLR, advanced power flow control devices, advanced conductors, and transmission switching options as alternatives to any new regional transmission facilities or upgrades to existing facilities.</u> This recommendation is consistent with FERC Order No. 1920. FERC Order No. 1920 requires that regional transmission planners evaluate the cost effectiveness of the mentioned grid enhancing technologies (GETs) when considering new regional transmission facilities or upgrades to existing regional transmission facilities to meet long-term needs. [1] For example, CAISO should provide information on whether one of the GETs mentioned could ensure deliverability at the Calcite Lugo 230 kV line constraints. CAISO anticipates that 30 megawatts (MW) of the 2039 CPUC base portfolio resources behind this constraint may not be deliverable. [2] Cal Advocates request CAISO assess and confirm whether a combination of a reduction in generic energy storage, GETs or an operational solution would provide sufficient capacity to ensure</p>	<p>The comment has been noted</p> <p>Regarding the Calcite – Lugo 230kV line constraint, there is an existing Transmission Line Rating Remediation (TLRR) project set to be completed by 2030 to fix the existing line sagging discrepancies, which will provide a new line rating of 289 MVA normal and emergency. Given this is a P0 overload in the 15-year case, any mitigation and cost should justify for the upgrade, so it is recommended to relocate the 30MW undeliverable generic energy storage.</p>

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		<p>deliverability of the CPUC portfolio resources behind the constraint. There are other areas on the CAISO controlled grid where GETs solution could assist with effectively integrating the CPUC portfolio resources more cost effectively than a traditional wire solution.</p> <p>B. <u>CAISO should consider the reduction of generic energy storage as part of all mitigations to reduce the size of the transmission investment needed.</u> For example, based on CAISO's assessment, the reduction of generic energy storage at the Midway-Whirlwind 500 kV constraint is not sufficient to ensure the deliverability of the 2034 CPUC portfolio resources behind the constraint. [3] However, if the reduction of generic energy storage is possible, this reduction should be part of any mitigation solution to assist with selecting the most cost-effective solution for ratepayers.</p> <p>C. <u>CAISO should provide the cost and effectiveness of all solutions considered.</u> This request is consistent with the requirements in FERC Order No. 1920. FERC Order No. 1920 mandates that determinations for long-term regional transmission facilities provide the "estimated cost and measured benefits of each alternative...evaluated." [4] For example, CAISO has determined that during 2039 peak hours the Lugo – Victorville and Eldorado - McCullough constraints would not have the capacity to deliver the CPUC portfolio resources behind them. CAISO provides possible transmission upgrade options but only provides costs for the most expensive option. [5] Cal Advocates requests that CAISO provide the costs and effectiveness for all the alternative options that are applicable.</p> <p>D. <u>CAISO should confirm whether the integration of previously approved projects would change their project need determinations.</u> For example, CAISO states that its Production Cost Modeling (PCM) results for the East of Pisgah area "did not model any Eldorado – McCullough 500 kV shortcircuit duty mitigation." [6] Cal Advocates requests CAISO confirm whether the inclusion of approved Southern</p>	<p>The ISO considers relocating generic energy storage along with other solutions to mitigate the issue when applicable.</p> <p>In particular, the Midway-Whirlwind 500 kV overload was identified in the SSN and Off Peak scenarios. Therefore, any mitigation proposed should provide economic benefits.</p> <p>If the alternatives to be considered are determined to be effective at addressing the identified constraints, then we will need to consider their costs and include them in the report.</p> <p>All previously approved TPP projects were modeled in all study cases. The CAISO is working with SCE and LADWP to investigate different alternatives to mitigate Eldorado 500kV SCD issue. The Eldorado-McCullough 500kV line constraint mitigation will coordinate with Eldorado 500kV SCD mitigation if possible.</p>

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>California Edison short circuit mitigation projects would reduce the need for mitigations in the East of Pisgah area. [7]</p> <p>The following are recommendations for specific projects.</p> <p>a. <u>Gridliance West-Valley Electric Association Constraint</u></p> <p>To address the anticipated undeliverable CPUC portfolio resources at the Gridliance West-Valley Electric Association constraint, CAISO lists only the TroutCanyon – Lugo 500 kV Line as the only possible transmission upgrade. Cal Advocates recommends that CAISO compare the costs and benefits of the TroutCanyon – Lugo 500 kV project with the proposed Mead – Adelanto Project Upgrade (MAP Upgrade project). The MAP Upgrade project would use an existing transmission right-of-way to increase the capacity of the existing Mead – Adelanto line from High-Voltage Alternating Current (HVAC) to High-Voltage Direct Current (HVDC). This conversion is expected to increase the Mead - Adelanto line capacity from 1,291 megawatt (MW) to 3,500 MW. As a result, the MAP Upgrade project would provide increased transmission capacity between southern California and southern Nevada, and specifically along the Eldorado-Lugo corridor. This project alternative is also anticipated to cost \$1.1 billion, which is significantly less than the proposed \$2 billion for the Trout Canyon-Lugo 500 kV project. It is worth noting that the Trout Canyon-Lugo 500 kV line would need to establish a new transmission corridor across the California desert and for this reason is a riskier project than the proposed MAP Upgrade project, which involves upgrading an existing line. A project that involves establishing a new utility right-of-way is more likely to have delays and cost over-runs.</p> <p>b. <u>Eldorado – McCullough Constraint</u></p> <p>Cal Advocates requests CAISO confirm whether GETs or a combination of GETs and reduction of energy storage or another solution could ensure deliverability of the CPUC portfolio resources at the Eldorado – McCullough constraint. Based on the CAISO's assessment, reducing generic energy storage at the Eldorado – McCullough constraint is not sufficient to ensure the deliverability of all the 2034 CPUC portfolio resources proposed at the constraint. However, reduction of energy storage and GETs could be part of the solution to reduce the cost of solution for ratepayers. [10]</p>	<p>Appreciate the comment. However, MAP project will not address GLW-VEA area constraint</p> <p>Comment has been noted</p>

No	Submitting Organization	Comment Submitted	CAISO Response
4F	California Western Grid Development, LLC.	No comment	
4G	California Wind Energy Association	<p>SCE Northern Area</p> <p>Development of cost-effective and IRP-planned resources in the SCE Northern Area, and specifically in the Tehachapi wind resource area, has been hampered by near-zero TPD capacity for that area as well as the CAISO-imposed Windhub Substation export limit under the extreme system event criteria – potential blackout condition due to simultaneous loss of both 500kV lines from Windhub. CalWEA's studies show that the addition of a 230kV double-circuit transmission line using high-capacity double-bundle conductors from the Windhub 230kV bus to the Vincent 230kV bus would obviate the need for the export capacity limit out of the Windhub substation. Further, when combined with a low-cost fix (<\$20M) to eliminate the ground clearance limitation for the Antelope Vincent 500kV line, this 230kV line upgrade would add more than 3,000 MW of TPD capacity to the Tehachapi wind resource area at Windhub, Whirlwind, and/or Antelope Substations. More than double that amount of solar and wind capacity is included in the 2024-25 CPUC portfolio as well as the CPUC's draft 2025-26 portfolio. Thus, CalWEA strongly recommends that CAISO consider approving the Windhub-to-Vincent 230kV line and addressing the ground clearance limitation for the Antelope Vincent 500kV line as part of its 2024-25 TPP.</p> <p>East of Pisgah ("EOP") Area</p> <p>CalWEA urges CAISO to address the lack of deliverability capacity in the East of Pisgah ("EOP") area where numerous cost-effective renewable energy and storage resources have located. This can be done simply by responding to the most recent CPUC Preferred System Plan (as well as the plans from the previous few cycles). To that end, we recommend that CAISO approve the Trout Canyon-Lugo 500kV line already vetted as part of the 2022-23 TPP. This upgrade relieves the identified EOP deliverability constraints, providing much-needed deliverability capacity for EOP resources. This upgrade will also eliminate the dependency on multiple complex RASs being considered and already planned for the area that will not add sufficient TPD capacity and could compromise the reliability and flexibility of CAISO's grid operations. In addition, given the State's plan to import out-of-state ("OOS") wind energy from New Mexico and Wyoming wind areas via EOP, CalWEA recommends that such OOS wind resources be</p>	<p>In this year's policy assessment, the Windhub area export constraint was only exceeded in the 2039 High Gas Retirement Sensitivity Portfolio. Therefore, the ISO will continue to look at this constraint in future planning cycles.</p> <p>No issues were identified in the policy assessment related to the Antelope-Vincent constraint.</p> <p>The comment has been noted</p>

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>accommodated via subscribed DC EHV lines directly from those areas into the Los Angeles Basin (e.g., Lugo 500kV Substation).</p> <p>CalWEA's analysis indicates that the TroutCanyon-Lugo upgrade will increase the EOP TPD capacity from its current zero level to levels high enough to accommodate the deliverability capacity of all stranded Cluster 14 and earlier-queued EOP resources, including OOS wind imports (assuming injection at the Harry Allen 500kV bus and Lugo 500kV bus), while still leaving some TPD capacity for allocation to Cluster 15 projects.</p>	
4H	Center for Energy Efficiency and Renewable Technology	CEERT supports the evaluation of the identified transmission alternatives to increase deliverability from these areas.	The comment has been noted
4I	City of Palo Alto	No comment	
4J	Clearway Energy Group	<p>Clearway appreciates the opportunity to provide comments on CAISO's Preliminary Policy Assessment Results for the SCE and GLW areas. The TPP's 2034 portfolio shows the need for an upgrade in the East of Pisgah (EOP) region; CAISO should not rely on RAS for mitigation but should instead plan to build additional transmission capacity. RAS is an appropriate mitigation for a small number of new resources, but RAS is not a long-term solution. Removal of a large amount (~0.5 GW) of energy storage resources from this area in the remapping is not justified – this change distorts the original portfolio transmitted by the CPUC and only serves to delay needed upgrades. The TPP's 2039 portfolio exacerbates the need for an upgrade in the EOP region, with nearly 7 GW of portfolio resources remaining undeliverable without an upgrade. The CAISO's recent 20-Year Transmission Outlook also shows the need for an upgrade in the EOP region. The issuance of FERC Order No. 1920, which mandates longer-term planning to increase the pace of transmission grid expansion, coupled with the fact that major transmission upgrades take well over a decade to complete, all point to the value of approving an upgrade in the EOP region now.</p> <p>The TroutCanyon to Lugo 500kV upgrade would mitigate all the constraints CAISO has identified in preliminary policy results and provide a long-term solution in the EOP and southern NV region. The need for the TroutCanyon to Lugo upgrade has been identified in multiple TPP cycles and the upgrade was previously recommended for approval in the draft 2022-23 TPP. However, the upgrade was removed shortly before final approval because of the possibility of an alternative project to replace it. In the 2024-25 TPP, the need for the TroutCanyon to Lugo upgrade persists as a need for the region to ensure deliverability in the EOP and southern NV regions. Therefore,</p>	The comment has been noted

No	Submitting Organization	Comment Submitted	CAISO Response
		Clearway recommends that the Trout Canyon to Lugo upgrade be recommended for approval in the 2024-25 TPP.	
4K	Defenders of Wildlife	Mitigating the significant constraints that limit the deliverability of solar from the San Joaquin Valley to California ratepayers should be prioritized before consideration of the costly Trout Canyon – Lugo 500kV line.	The comment has been noted
4L	Energy Project Solutions	No comment	
4M	ENGIE NA	<p>ENGIE North America ("ENGIE") appreciates the acknowledgment of the Western Bounty Transmission Project ("Western Bounty") as a potential Mitigation Option for the 2034 and 2039 On-Peak Eldorado - McCullough Constraint on PDF pages 126 and 131 and the 2039 On-Peak Lugo - Victorville Constraint on PDF page 132 in the November 13th presentation 2024-2025 Transmission Planning Process - Policy and Economic Preliminary Assessment and Study Updates Presentation ("Presentation").</p> <p>ENGIE is proposing the Western Bounty Transmission Project which is an interregional, +/- 525 kV HVDC transmission system that would enable 12 gigawatts of transmission capacity between the central 'hub' in Nevada and the project's four termination points: SCE's Lugo-Vincent 500 kV line and LADWP's Adelanto Substation in California, BPA's Grizzly Substation in Oregon, and Idaho Power's Hemingway Substation in Idaho. Western Bounty was submitted to the Interregional Transmission Planning (ITP) process during the Q1 2024 window for the biannual ITP planning cycle in all three Western transmission planning areas: NorthernGrid, WestConnect and the CAISO.</p> <p>Western Bounty could provide an additional route between California, and Nevada, a path that is currently constrained. Additionally, Western Bounty could also enhance grid reliability by providing additional north to south transmission alternatives to the Pacific DC Intertie ("PDCI") and California-Oregon Intertie ("COI") which are both currently fully subscribed. In the event of significant weather events or natural disasters, alternative north to south routes could enhance regional grid reliability. The CAISO Winter Conditions Report for January 2024[1] highlighted the importance of interregional transfer capabilities during the extreme weather event in the Pacific Northwest over the Martin Luther King Jr. Day weekend in 2024. The report stated that "[c]ongestion between California and the Pacific Northwest limited the volume of exports to the Pacific Northwest. No exports could flow on the Nevada-Oregon Border ("NOB") intertie because of a forced outage on the high-voltage lines, which transfer electricity from the Desert</p>	The comment has been noted



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>Southwest to the Pacific Northwest." Western Bounty could provide an additional connection allowing for the sharing of geographically diverse resources in times of need throughout the Western Interconnection. Additionally, the proposed Western Bounty Transmission Project route is sited primarily in desert areas which would limit the line's exposure to fire damage, and further enhance grid reliability and resiliency.</p> <p>The Western Bounty Transmission Project could further enhance grid reliability and resiliency by providing interregional connections in the West with access to significant amounts of geographically diverse, non-coincident renewable resources. The February 2024 CPUC approved 25MMT Core portfolio includes over 8.9GW of Nevada solar, wind and geothermal resources and will be utilized in forecasting for the 10-year planning horizon in the 2024-2025 TPP. Western Bounty as a whole is a transformational project that can substantially increase transmission capacity throughout the Western Interconnection on an interregional basis, while unlocking and enabling between 15-29GW (or more) of otherwise inaccessible high-quality remote Nevada renewable resources, broken out into 5 GW of Nevada geothermal, 12 GW of Nevada wind, and 12 GW of Nevada utility-scale PV solar. Western Bounty would unlock currently stranded economical wind, solar and geothermal resources in Central and Northern Nevada that could be used to help meet California's policy needs at a lower price than intrastate California resources. The Nevada resources unlocked by Western Bounty are geographically much closer to the state of California compared to other resource rich areas of the West requiring less transmission buildout to bring a significant amount of renewable generation to California load centers.</p> <p>Western Bounty would enable an alternative route for Nevada renewable resources to southern California load centers and alleviate congestion at the known transmission bottlenecks between Southern Nevada and Southern California. Not only can Western Bounty alleviate known constraints in these two areas, the Project could also provide additional resiliency and redundancy by adding a second diverse, bidirectional North/South route from Southern California to Nevada and ultimately to the Pacific Northwest.</p> <p>ENGIE would like to encourage the discussion of Western Bounty as a potential Mitigation Solution to the Eldorado - McCullough and Lugo - Victorville Constraints described in the Presentation on PDF pages</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		126, 131 and 132. ENGIE is available as a resource for any questions that the CAISO may have about the project.	
4N	Golden State Clean Energy	No comment	
4O	Hetch Hetchy Water and Power	No comment	
4P	Large-scale Solar Association (LSA)	CAISO has identified the Trout Canyon – Lugo 500 kV line as a potential solution for multiple constraints triggered by the 2024-25 TPP portfolio. This mitigation was also noted in CAISO's most recent 20-Year Transmission Outlook, which detailed the projects necessary to accommodate the 2045 scenario. LSA strongly recommends that CAISO approve this or a comparable upgrade for the area.	The comment has been noted
4Q	Leeward Renewable Energy	<p>Leeward Renewable Energy ("LRE") appreciates the opportunity to provide comments in this step of the CPUC's 2024-25 Transmission Planning process. LRE encourages the advancement of the Trout Canyon-Lugo 500kV transmission project ("Trout Canyon-Lugo Line").</p> <p>LRE is a Dallas-based utility-scale renewable energy project developer and long-term owner-operator. LRE currently has a 4,000 MW portfolio of operating projects across the country, with 775 MW of wind, solar and battery storage assets serving CAISO both in and out of the State of California. LRE has significant additional development prospects targeting to meet the growing needs of the California market.</p> <p>Given the consistent and forecasted demand growth across CAISO and shaping renewable energy projects under development to meet that growing demand, LRE believes that CAISO should take a leadership position to aggressively pursue transmission upgrades which will result in reliability and cost savings and further enhances interstate cooperation in Nevada. Resource portfolio exercises indicate growing demand year-after-year in CAISO, and there would be little risk for stranded assets. Additionally, behind various areas of constraint, developers such as LRE are positioning projects to serve the CAISO market to meet growing demands.</p> <p>Specifically of interest to LRE, the Trout Canyon-Lugo Line would unlock significant capacity in a number of areas in southern Nevada that would deliver substantial capacity to CAISO. In its 20-year Transmission Outlook, CAISO anticipates construction of the Trout Canyon-Lugo Line in its planning. Given the resources and transmission assets needed to reach the 2045 Scenario, it is likely that it is not if the Trout Canyon-Lugo Line will be built but when.</p>	The comment has been noted

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>While LRE has a direct commercial interest in the construction of the Trout Canyon-Lugoline, the line's construction does not automatically guarantee that LRE's projects will advance, as LRE is not the only developer seeking to build projects behind the point of congestion. LRE anticipates the highly competitive market for renewable project development in southern Nevada, with multiple projects and developers, will exceed the expanded capacity of the proposed line. By advancing development of the Trout Canyon-Lugo Line, CPUC will unlock competition among developers with projects behind the point of congestion interested in serving the CAISO market. Simply put, the Trout Canyon-Lugo Line can unlock a critical portion of Southern Nevada for cost-competitive projects to benefit CAISO in terms of deliverability and reliability.</p> <p>LRE appreciates the consideration and review of these comments and encourages CAISO to commit to the future by supporting the Trout Canyon-Lugo Line.</p>	
4R	Mary Wiley Trust	On behalf of the Mary Wiley Trust, landowner of 5,000 acres in Southern Inyo County, California, I am writing to express our strong support for the inclusion of the Trout Canyon-Lugo transmission line in the '24-'25 Transmission Planning Process (TPP). See comments below.	The comment has been noted
4S	Gridliance West	<p>GridLiance West (GLW) appreciates that CAISO is continuing to evaluate the Lugo – Victorville, Eldorado – McCullough, and GLW – VEA constraints and area solutions. All three constraints remain a significant impediment for California to meet its clean-energy policies. It is imperative that CAISO address these constraints in this planning cycle in a proactive and cost-effective manner to improve the deliverability of renewable projects in GLW's system and surrounding systems in the East of Pisgah (EOP) interconnection area. An immediate transmission solution is required to ensure that high-quality renewable resources, including wind, solar, and geothermal, are delivered to load centers, grid reliability of the CAISO is enhanced within the EOP region, and additional imports through Harry Allen, Eldorado, and other significant desert area tie points are enabled.</p> <p>Of the solutions proposed, the Trout Canyon – Lugo 500 kV project continues to be the most cost-effective solution to enable 6.8 GW of incremental renewable generation in EOP to be delivered to CA load centers and meet the following policy-driven needs:</p>	The comment has been noted

No	Submitting Organization	Comment Submitted	CAISO Response
		<ul style="list-style-type: none"> • Mitigate the GLW – VEA Area Constraint: 1,892 MW undeliverable baseline and portfolio resources in 2034; 1,217 in 2039 Base Case and 2,223MW in the Sensitivity Case • Mitigate the Lugo – Victorville Area constraint: 4,535 MW undeliverable baseline and portfolio in the 2039 Base Case and 6,688MW in the Sensitivity Case • Mitigate the Eldorado – McCullough Area constraint: 2,759 MW undeliverable baseline and portfolio resources in 2034; 4,047 MW in the 2039 Base Case, and 4,890 MW in the Sensitivity Case • Improve the deliverability of GLW and VEA area resources: There continues to be significant commercial interest in the GLW area as GLWs queue exceeds 18 GW through Cluster 15. Furthermore, the Trout Canyon-Lugo 500kV project enables future connections to other resource areas, providing CAISO access to Nevada's renewable-rich areas, including geothermal, and is a critical integration mitigation for significant amount of out-of-state wind planned in CAISO's 2024 20-year Outlook. <p>The need for the Trout Canyon-Lugo 500 kV project is further reinforced by the generation mapped by the California Public Utilities Commission's (CPUC's) Integrated Resource Plan (IRP). The 2024 - 2025 CPUC base portfolio highlights the need for improved deliverability in the southern Nevada region. Specifically, 2,761 MW of Full Capacity Deliverability Service (FCDS) are mapped to Trout Canyon and north in 2035, and 9,964 MW of FCDS resources in EOP. CAISO also added 1,000 MW of unaccounted resources for TPD allocation in the CAISO 2034 base case at Trout Canyon. Furthermore, the CPUC's preliminary mapping for the 2025-2026 TPP shows a high level of mapped resources in these areas, including 3 GW of Wyoming wind and 1.1 GW of Idaho wind mapped to Harry Allen and Eldorado. If not addressed, this will likely cause the Lugo – Victorville, Eldorado – McCullough, and GLW – VEA constraints to bind again in the 2025-2026 TPP, and Trout Canyon – Lugo 500 kV will continue to be required.</p> <p>Regarding costs, while the primary driver of the project need is policy, in the 2023-2024 TPP CAISO estimated the total benefit of Trout Canyon – Lugo 500 kV line to be \$930 Million. Additionally, CAISO had previously estimated the Trout Canyon – Lugo 500 kV line project to</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>cost around \$1,500 to \$2,000 Million (\$8.3MM/mile to \$11.1MM/mile). However, GLW believes the project can be completed for \$1,000 to \$1,300 Million (\$5.0MM/mile to \$6.5MM/mile), highlighting that Trout Canyon-Lugo's Benefit-Costratio is nearly 1.0. Recent transmission projects in the area that were procured competitively, such as Harry Allen-Eldorado (\$3.4 MM/mile) and SWIP North (\$3.8MM/mile), provide a good comparison. And finally, given that the Trout – Lugo 500 kV project would be a Phase 3 competitive solicitation, the Trout Canyon-Lugo 500kV project would be bid with significant cost containment due to the ability to route through BLM 368 corridors (more than 80% of route on BLM land) and existing transmission ROWs.</p> <p>While other solutions have been identified to resolve the EOP constraints, none provide the same long-term policy, reliability, and economic benefits in EOP, Eldorado Valley, and southern Nevada as the Trout Canyon- Lugo 500 kV project.</p> <p>Other alternative solutions currently considered include:</p> <ul style="list-style-type: none"> • Marketplace – Adelanto AC-DC Conversion: This alternative is not a viable mitigation as it would require additional transmission upgrades to address GLW-VEA area constraints, aggravate Path 26 congestion, and does not provide enough transmission capacity to meet the portfolio need. In addition, the Marketplace – Adelanto project's cost needs to be evaluated. It should be a concern for both CAISO and California ratepayers as HVDC equipment is supply-constrained and has been subject to significant cost overruns, which LS Power recently experienced on its 2022 TPP Projects in the San Jose Area. GLW estimates that the project cost of the Marketplace – Adelanto Project would be significantly higher than the Trout Canyon-Lugo 500kV Project. • Western Bounty HVDC: Much like the Marketplace- Adelanto project, this DC solution does not mitigate the GLW – VEA area constraint. While GLW is supportive of Western Bounty's Segment 2 and Segment 3, which show great benefit as an interregional solution when connected to GLW's system, the current routing for Segment 1, the California-Nevada segment, should be evaluated further by CAISO. Given the permitting challenges associated with routing a 	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>new greenfield transmission line through the Owens Valley, GLW has concerns with the project's ability to meet a potential online date for EOP. Western Bounty should be considered as a complementary project to Trout Canyon-Lugo, not as an alternative solution.</p> <ul style="list-style-type: none"> • Remedial Action Schemes (RAS): While RAS, in general, play a vital role in ensuring grid stability, they are best viewed as complementary to, rather than substitutes for, long-term transmission solutions. Four RAS are currently proposed on GLW's system, creating serious grid planning and operational challenges for GLW. Additional RAS does not solve the underlying need for transmission. Delaying a transmission solution is not a viable response, given the commercial interest in the area and California's need for future renewable integration. • Reducing Generic Battery Storage: Reducing generic battery storage in the EOP area will increase the cost of siting batteries in a different location and make it more difficult for the state to achieve RPS goals. Additionally, shifting battery siting is a short-term solution that does not fully solve all constraints. • 10 Ohms series reactor on Eldorado—McCullough Line: While a 10 Ohms series reactor on the Eldorado-McCullough line would help reduce transmission losses, it does not address any of the other constraints solved by the Trout Canyon—Lugo 500 kV project and would not be sufficient to enable long-term deliverability from the EOP region. This alternative does not increase transmission capacity, nor does it enable renewables; it should not be considered a viable policy-driven transmission solution. <p>GLW urges CAISO to approve the Trout Canyon-Lugo 500kV project in the 2024-2025 TPP as a solution to boost deliverability from the southern Nevada region to California load centers. This project's approval will help GLW fully realize its value proposition to CAISO and help CAISO achieve California's policy objectives.</p>	
4T	PG&E	No comment	
4U	Port of Oakland	No comment	
4V	Section 20, LLC.	On behalf of the Section 20, LLC, landowner of 800 acres in Southern Inyo County, California, I am writing to express our strong support for	The comment has been noted

No	Submitting Organization	Comment Submitted	CAISO Response
		the inclusion of the TroutCanyon-Lugo transmission line in the '24-'25 Transmission Planning Process (TPP). See comments below.	
4W	Silicon Valley Power	No comment	
4X	SSA Terminals	No comment	
4Y	Terra-Gen, LLC.	<p>Terra-Gen appreciates the opportunity to comment on the CAISO's 2024-25 Transmission Planning Process (TPP) preliminary policy assessment results.</p> <p>Terra-Gen highlights that the development of new resources in SCE's Northern Area and the Tehachapi area has been hindered by significant constraints. These constraints have resulted in no remaining Transmission Plan Deliverability (TPD) capacity for the area and CAISO-imposed export limits on the Windhub Substation, stemming from risks under extreme N-2 system event that would result in potential blackout conditions due to simultaneous loss of both 500 kV lines from Windhub.</p> <p>Terra-Gen has coordinated independent analysis that indicates that constructing a new 230 kV double-circuit transmission line with high-capacity double-bundle conductors between Windhub 230 kV and Vincent 230 kV bus can effectively address these limitations. This upgrade would not only eliminate the existing export capacity restrictions on the Windhub Substation but would also unlock an additional 3,000 MW of TPD for the Tehachapi area, which can be interconnected through Windhub, Whirlwind, and/or Antelope Substations. Based on these findings, Terra-Gen requests that CAISO include consideration of the Windhub to Vincent 230 kV line and Antelope to Vincent upgrades in its 2024-25 TPP.</p>	<p>In this year's policy assessment, the Windhub area export constraint was only exceeded in the 2039 High Gas Retirement Sensitivity Portfolio. Therefore, the ISO will continue to look at this constraint in future planning cycles.</p> <p>No issues were identified in the policy assessment related to the Antelope-Vincent constraint.</p>
4Z	Valley Electric Association	No comment	

5. Please provide your organization's comments on the Preliminary Policy Assessment Results for the SDG&E Area			
No	Submitting Organization	Comment Submitted	CAISO Response
5A	174 Power Global	No comment	
5B	Bay Area Municipal Transmission group (BAMx)	No comment	
5C	California Environmental Justice Alliance	No comment	
5D	California Public Utilities Commission – Energy Division	No comment	
5E	California Public Utilities Commission – Public Advocates Office	Refer to Cal Advocates comments in response to question 2.	
5F	California Western Grid Development, LLC.	No comment	
5G	California Wind Energy Association	No comment	
5H	Center for Energy Efficiency and Renewable Technology	No comment	
5I	City of Palo Alto	No comment	
5J	Clearway Energy Group	No comment	
5K	Defenders of Wildlife	No comment	
5L	Energy Project Solutions	No comment	
5M	ENGIE NA	No comment	
5N	Golden State Clean Energy	No comment	
5O	Hetch Hetchy Water and Power	No comment	
5P	Large-scale Solar Association (LSA)	No comment	
5Q	Leeward Renewable Energy	No comment	
5R	Mary Wiley Trust	No comment	
5S	Gridliance West	No comment	
5T	PG&E	No comment	
5U	Port of Oakland	No comment	
5V	Section 20, LLC.	No comment	
5W	Silicon Valley Power	No comment	
5X	SSA Terminals	No comment	
5Y	Terra-Gen, LLC.	No comment	
5Z	Valley Electric Association	No comment	

6. Please provide your organization's comments on the Preliminary Policy Assessment Results for the PG&E Area			
No	Submitting Organization	Comment Submitted	CAISO Response
6A	174 Power Global	No comment	
6B	Bay Area Municipal Transmission group (BAMx)	During the 2024-2025 TPP stakeholder meeting on November 13, 2024, CAISO provided updates on the PG&E North of Greater Bay, PG&E Greater Bay, PG&E Greater Fresno, and PG&E Kern interconnection areas. Mitigations for most constraints were listed as TBD. Once these mitigation options have been identified, BAMx urges CAISO to provide detailed results, including the preferred mitigation projects and the other alternatives considered as part of the Draft Transmission Plan.	All preferred alternatives will be presented as part of the draft transmission plan.
6C	California Environmental Justice Alliance	The CAISO has identified 40 constraints on the PG&E 70 kV, 115 kV and 230 kV system. Fifteen are located in the Greater Fresno Area, 7 in the Kern Area, 8 in the North of the Bay Area and 10 in the Greater Bay Area. No specific mitigations for these constraints have yet been identified although it is probable that many will require reconductoring of existing lines. Some may be resolved by remedial action schemes and some by the relocation of battery storage projects in the base portfolio. The Regenerate California Campaign recommends that advanced high capacity AC conductors be considered that would increase the hosting capacity of the PG&E system particularly in the Greater Fresno and Kern areas. Also, as mentioned above, the Regenerate California Campaign requests the modeling show how the projects would impact gas-fired power plant operations in EJ communities and Aliso Canyon-supplied generators (if any.)	High capacity AC conductors will be considered where applicable.
6D	California Public Utilities Commission – Energy Division	During the PG&E area presentation, it was stated that although some facilities and constraints have been identified, not all Preliminary Mitigation Recommendations have been evaluated and CAISO will provide the recommended mitigation solutions in the Draft Transmission Plan (currently scheduled for March 31, 2025). While the CPUC understands these are preliminary results, this does not match what has been provided in the other Preliminary Policy Assessment presentations or the expectation of the TPP timeline and will mean that stakeholders have several fewer months than expected to conduct their own analysis and review. The CPUC continues to recognize the importance of CAISO providing information to stakeholders in a timely manner and to provide the Preliminary Policy Assessment Results, including both mitigations and their potential costs, as soon as possible.	The comment has been noted
6E	California Public Utilities Commission – Public Advocates Office	For the PG&E service area, CAISO determined that line reconductoring is the only transmission upgrade option to ensure deliverability of the	The comment has been noted



No	Submitting Organization	Comment Submitted	CAISO Response
		CPUC portfolio resources at 10 constraints.[1] CAISO anticipates that for five of these constraints, the undeliverable resource amount will be less than 100 MW.[2] Cal Advocates recommends that CAISO consider a combination of an operational solution, GETs, and reduction in generic energy storage to ensure deliverability of the CPUC portfolio resources at these constraints.	
6F	California Western Grid Development, LLC.	No comment	
6G	California Wind Energy Association	<p>The welcome addition of the Collinsville Substation and the addition of Collinsville-to-Pittsburg 230kV cables in the 2022-23 TPP was hampered by the fact that the Collinsville Substation became a bottleneck for deliverability capacity for practically all queued projects in PG&E's North of Greater Bay Area ("NGBA") and even for many projects in the Greater Bay Area ("GBA") that did not have such a constraint before the Collinsville addition. This concern became even more acute after CAISO approved the Fern-Road-to-Humboldt-to-Collinsville 500 kV upgrade as part of the 2023-24 TPP. The Collinsville deliverability bottleneck will not only prevent Humboldt offshore wind resources from attaining FCD status but will also deprive at least 1,000 MW of in-state wind in Northern California from obtaining deliverability capacity. CalWEA's studies show that the addition of a Collinsville-to-Tesla 500kV line upgrade will address all these deliverability concerns. Hence, CalWEA strongly recommends that CAISO consider approving a Collinsville-to-Tesla 500kV line upgrade as part of its 2024-25 TPP.</p> <p>The CPUC's 2024-25 busbar mapping includes 2,259 MW of wind energy in Northern California, and there is 900 MW of demonstrated commercial interest in Lassen County. Thus, Northeastern California is a very promising area for wind resource development. However, CAISO has no high-voltage transmission infrastructure anywhere close to this wind resource area (thus active developments are currently in the NV Energy queue). A 230kV or 500kV substation located north of the City of Susanville, along with a 230kV or 500kV line to Round Mountain or Fern Road Substation, should also be seriously considered as part of the CAISO 2024-25 TPP. Consideration should then be made to connect this high voltage infrastructure with the planned NVE 500kV line (as part of its Greenlink expansion project plans) in that same area as part of the CAISO 2025-26 TPP. This would offer an additional path for Northwest and Wyoming OOS wind resources to reach CAISO loads.</p>	<p>The comment has been noted</p> <p>The comment has been noted</p>

No	Submitting Organization	Comment Submitted	CAISO Response
6H	Center for Energy Efficiency and Renewable Technology	CEERT strongly supports consideration of the use of advanced high capacity conductors as a solution to improve deliverability across the PG&E system.	High capacity AC conductors will be considered where applicable.
6I	City of Palo Alto	No comment	
6J	Clearway Energy Group	The CAISO should approve a lasting solution for the constraint seen near the Vaca and Contra Costa area and not rely on RAS for mitigation for 1.7 GW of undeliverable capacity in the 2039 sensitivity case	CAISO is evaluating all constraints from the perspective of longevity and cost effectiveness.
6K	Defenders of Wildlife	See our response to Question #7	
6L	Energy Project Solutions	No comment	
6M	ENGIE NA	<p>CAISO's preliminary analysis has identified numerous transmission constraints across the system. However, CAISO's initial findings do not clarify whether they will recommend the development of new infrastructure to address these constraints as opposed to relying on Remedial Action Schemes (RAS). Developing transmission infrastructure to mitigate these constraints is crucial for California to achieve its reliability and climate goals. The resource portfolios necessary to meet the state's objectives continue to grow annually, supporting the case for transmission upgrades, which generally offer more grid capacity compared to RAS solutions.</p> <p>ENGIE specifically encourages CAISO to advocate for transmission upgrades in regions where the Transmission Capability Estimates Whitepaper demonstrates the potential for significant grid capacity additions at relatively low costs. For instance, in the PG&E Greater Bay Area, CAISO's analysis indicates 3,626 MW undeliverable behind the Tesla-Westley 230kV Line Constraint and 2,848 MW undeliverable behind the Las Positas – Newark 230kV Line Constraint by 2039. The Whitepaper outlines cost-effective mitigations for constraints involving the Tesla and Newark areas. Assuming these Whitepaper mitigations effectively resolve the identified constraints, Engie urges CAISO to prioritize them over potential RAS solutions that may not provide equivalent grid capacity. It is imperative that California prioritizes the development of transmission infrastructure to ensure a reliable, sustainable, and resilient energy system for the future.</p> <p>Furthermore, the Whitepaper lists several mitigations in commercially significant areas that appear to be highly cost-effective. Examples are provided in the table below. It remains unclear whether CAISO is considering some or all of these upgrades. Engie encourages CAISO to recommend these cost-effective upgrades where appropriate to resolve constraints identified in the 2024-25 TPP process.</p>	<p>CAISO will only consider RAS where it is the best solution and fits within the ISO Planning Standard for RAS development.</p> <p>Where constraints are identified CAISO will take into consideration upgrades identified in the Transmission Capability Estimates Whitepaper. Please note these upgrades are a starting point and may not exactly reflect what is proposed in the transmission plan.</p>



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6N	Golden State Clean Energy	<p>As discussed in our response to question 7 regarding the economic analysis, Golden State Clean Energy (“GSCE”) urges CAISO consider its policy assessment in tandem with the economic analysis. The sensitivity portfolio in this TPP cycle has a similar amount of capacity as the draft 15-year base case portfolio in the CPUC’s recently published initial busbar mapping for the 2025-2026 TPP, and this is particularly true in the Fresno area.^[1] CAISO’s policy and economic studies should use the sensitivity analysis to right-size upgrades for long-term needs, including needs that appear in the coming IRP portfolio. This comprehensive transmission planning provides greater efficiency and long-term reliability compared to planning piecemeal upgrades over successive TPP cycles.</p> <p>GSCE also observes that many of the deliverability constraints identified in the Fresno area preliminary policy assessment are lower voltage facilities. GSCE recommends CAISO consider whether an additional substation in the Fresno area would allow for portfolio resources to be re-mapped to this new substation and avoid being mapped to places that impact the low voltage system, such as a new 500/230 kV substation that ties into the 500 kV system. Alternatively, it may also be reasonable to re-map resources to the Manning Substation. This could help right-size 500 kV upgrades as CAISO continues to explore the significant congestion on the Path 15 corridor and the Moss Landing-Las Aguilas 230 kV line.</p> <p><u>15-Year Portfolio Study</u></p> <p>GSCE is concerned that the proposed policy study approach to the 15-year portfolio may under-plan the transmission system for solar</p>	<p>Policy and Economic Studies are coordinated to determine preferred mitigations where necessary.</p> <p>The comment has been noted</p>																																																																																																																																				



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		<p>resources. In this first TPP cycle using the new 15-year study horizon required by SB 887, CAISO is not performing a secondary system need ("SSN") or off-peak analysis for year 15. [2] Only the high system need ("HSN") analysis will be conducted for year 15 of the base case and sensitivity portfolio. Solar has a higher production value during the off-peak and SSN hours, but it has a very low output in HSN hours that generally occur during the net system peak after sunset. This study approach will not assess the full grid impact of solar appearing in year 15. Thus, CAISO is unlikely to identify any policy-driven transmission necessary to connect solar in the 15-year portfolio. The SSN and off-peak study information for the 15-year base case and sensitivity portfolio could also be helpful to informing both the policy and economic analysis.</p> <p>To the extent CAISO is unable to conduct a full SSN and off-peak analysis for the entire portfolio, GSCE urges CAISO to conduct Fresno area SSN and off-peak studies for the 15-year base case and sensitivity portfolio at a minimum. Considering the relationship between the economic and policy studies, it is reasonable to perform these studies for the Fresno area to better inform both the detailed economic studies the CAISO is planning to conduct for this region and the long-term LCR studies examining the Fresno area's interaction with the Greater Bay Area. It is also reasonable because solar, which would be most negatively impacted by the omission of a SSN and off-peak study, is a dominant resource in the Fresno area, and there is a substantial increase in Fresno area solar between the 10-year base case (3.5 GW), the 15-year base case (6.4 GW), and the 15-year sensitivity portfolio (11.2 GW). CAISO should ensure these large amounts of solar in the 15-year base case and sensitivity portfolio are not being excessively curtailed and that they are able to bring the policy benefits of serving Bay Area load.</p>	<p>SSN and Off-Peak studies are considered informational as part of the deliverability methodology, they can be used to inform or enhance mitigations to meet all study scenarios but are not intended for mitigation approval independently.</p>
60	Hetch Hetchy Water and Power	<p>CAISO's preliminary policy-driven deliverability assessment results identify the following deliverability constraints. [1]</p> <ul style="list-style-type: none"> • Cayetano-Lone Tree (USWP-Cayetano) 230kV Line (2034 Base on-peak); • Eastshore-San Mateo 230kV Line (2034 Base on-peak); • Las Positas-Newark 230kV Line (2039 Base on-peak); • Tesla-Westley 230 kV Line (2034 and 2039 Base on-peak); • Los Banos-Manning #1 500kV Line (2034 Base off-peak); • Los Banos-Manning #2 500kV Line (2034 Base off-peak); 	<p>The comment has been noted</p>

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		<ul style="list-style-type: none"> Manning -Gates 500kV Line (2034 Base off-peak); and Moss Landing-Las Aguilas Switching Station 230kV Line (2034 Base off-peak) <p>As demonstrated in CCSF's RW application, WaNTEP helps reduce the loadings on all the above-mentioned deliverability constraints and several other parallel 230kV GBA import facilities, both under the normal and contingency conditions. Given the strong corroborating evidence found in the CAISO's preliminary policy-driven deliverability assessment regarding the identified on-peak deliverability constraints, we urge that the CAISO evaluate WaNTEP as a reliability project that also has public policy benefits in the current TPP.</p>	
6P	Large-scale Solar Association (LSA)	No comment	
6Q	Leeward Renewable Energy	No comment	
6R	Mary Wiley Trust	No comment	
6S	Gridliance West	No comment	
6T	PG&E	No comment	
6U	Port of Oakland	<p>The Port of Oakland (Port), established in 1927 as an independent department of the City of Oakland, serves as trustee for all Port property under the California Tidelands Trust. It operates four primary lines of business: Aviation, Maritime, Commercial Real Estate (CRE), and Utilities. Port operations, along with those of its tenants and customers, collectively drive significant local, regional, national, and global economic activity, supporting over 98,000 jobs across the region.</p> <p>The Port of Oakland's Seaport is among the ten busiest container ports in the United States and serves as one of four major West Coast gateways for containerized shipments. It is the primary maritime link for international cargo flows to and from Northern California, the agricultural Central Valley, and western Nevada and is a significant export Port of California and US agricultural and other products. The Oakland International Airport (OAK) is a critical component of the San Francisco Bay Area's transportation infrastructure, ranking as the region's leading airport for air cargo, second in aircraft movements, and third in passenger volume. The Port is uniquely the only port authority</p>	The comment has been noted



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		<p>in the state that operates a publicly owned utility (POU), which provides electric utility services to Port-operated and tenant-operated facilities.</p> <p>As a stakeholder and a publicly owned utility (POU) with distribution facilities that are interconnected with PG&E at transmission and distribution levels, the Port of Oakland appreciates the opportunity to provide input on the 2024-2025 CAISO Transmission Planning Process. The Port's unique position as a major driver of regional industrial and commercial growth and its critical role in supporting California's zero-emission and climate resilience policies underscore the importance of prioritizing electrical infrastructure improvements in the Oakland area.</p> <p>The Port is a recipient of multiple state and federal grants supporting sustainable infrastructure development. These include grants under the EPA's Clean Ports program, MARAD's Port Infrastructure Development Program (PIDP), the Trade Corridor Enhancement Program (TCEP) administered by CalSTA, and funding from the Inflation Reduction Act and the Bipartisan Infrastructure Law. These grants underscore the Port's commitment to advancing green and resilient infrastructure, including electrification projects and clean energy initiatives, which align with CAISO's goals. The Port intends to integrate these grant-funded efforts with the transmission planning process to optimize resources and accelerate project implementation.</p> <p>The Port appreciates CAISO's efforts in addressing the increasing energy demands of the Oakland area and looks forward to continued collaboration to ensure the timely and efficient delivery of these critical infrastructure projects. The Port would like to provide the following specific comments with regard to the Preliminary Reliability Assessment Results provided at the 2024-2025 Transmission Planning Process Stakeholder Meeting held on November 13, 2024:</p> <p><u>PG&E's Proposed North Oakland Reinforcement Project:</u></p> <ul style="list-style-type: none"> • The Port supports and is committed to actively participating in the planning process for PG&E's North Oakland Reinforcement Project. • Significant industrial and commercial growth at the Port, driven by electrification policy reforms, has resulted in 	



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		<p>substantial load increases. This includes the urgent need for expanded Electric Vehicle (EV) charging infrastructure to support sustainable operations at the Port of Oakland Seaport.</p> <ul style="list-style-type: none"> The Port strongly advocates for the soonest possible in-service date for the North Oakland Reinforcement Project, currently planned for May 2032, as State requirements for electrification are even more aggressive for seaports. Accelerating this timeline will better align with the immediate and growing demands of industrial electrification and EV infrastructure expansion. The Port supports PG&E's proposal to rebuild two existing 115kV lines to a four-line configuration. This solution appears to be the most viable and efficient approach to increasing capacity in the North Oakland area and meeting the region's near-term energy demands. <p><u>PG&E's Proposed South Oakland Reinforcement Project</u></p> <ul style="list-style-type: none"> The Port supports the conceptual planning and studies for increased transmission capacity to the South Oakland area and is eager to actively participate in this process. Like the North Oakland area, industrial and commercial load in South Oakland is rising significantly, driven by the electrification of facilities and operations at OAK and surrounding areas. Specifically, forecasted activity growth and electrification of facilities and equipment will require more demand. The Port emphasizes the urgency of PG&E's efforts to develop a comprehensive study for the South Oakland Area. Timely planning and execution are essential to accommodate the rapidly evolving energy needs of this region. The success of OAK and other sustainable initiatives depends on timely investments in transmission capacity. The Port strongly urges prioritizing the development of South Oakland capacity 	

No	Submitting Organization	Comment Submitted	CAISO Response
		expansion plans to ensure alignment with these transformative projects.	
6V	Section 20, LLC.	No comment	
6W	Silicon Valley Power	No comment	
6X	SSA Terminals	<p>As a tenant of the Port of Oakland, we support PG&E's Proposed North Oakland and South Oakland Reinforcement Projects. These projects are essential for ensuring reliable power supply and advancing sustainable growth across the seaport and airport.</p> <p>We are actively collaborating with the Port on its groundbreaking zero-emission transformation. These partnerships include shared investments under the historic \$322 million EPA Clean Ports grant, which supports the transition of the Oakland Seaport to nearly 100% zero-emission operations. Upgrading transmission capacity in North and South Oakland is essential to enabling these initiatives. Reliable energy supply is essential to support cargo handling operations, airport operations, seaport logistics, and clean energy investments, ensuring that our Oakland seaport and airport remains competitive as a global trade and transportation hub.</p> <p>Accordingly, Port tenants urge CAISO and PG&E to prioritize the North Oakland Reinforcement Project (rebuilding two existing 115 kV lines to a four-line configuration) and expedite its completion ahead of the current 2032 schedule. Additionally, we applaud PG&E's focus in addressing South Oakland transmission capacity to support rapidly growing energy demands. Aligning project timelines with our electrification efforts will ensure that investments in zero-emission equipment achieve maximum impact.</p> <p>Together with the Port and our community partners, we are committed to transforming the Port of Oakland Seaport and Airport into a global leader in sustainable transportation and goods movement operations, advancing environmental and economic benefits for the region.</p>	Your comment is noted.
6Y	Terra-Gen, LLC.	<p>Terra-Gen has reviewed past TPP upgrades and notes that some prior upgrades have exacerbated other constraints and a lack of attention on addressing certain planning areas are of key concern.</p> <p>In the 2022-23 TPP, CAISO included the Collinsville Substation and the connection of Collinsville to Pittsburg 230 kV upgrades and the 2023-24 TPP included the Fern Road to Humboldt to Collinsville 500</p>	Your comment is noted. The CAISO is actively working with CPUC to include reasonable amount of commercial interest resources in the 2025-2026 TPP portfolio. The CAISO will study the portfolio provided by the CPUC and will recommend transmission upgrades as needed to make the portfolio resources deliverable.



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>kV upgrade. While addressing some needs, these upgrades have exacerbated other constraints affecting projects in PG&E's North of Greater Bay Area (NGBA) and Greater Bay Area (GBA) regions. The Collinsville-Tesla 500 kV constraint has been identified by CAISO as a severely limiting constraint due to these prior upgrades shifting flows and resulting zero MWs of deliverability available at 173 of the 175 POIs in the NGBA, with all 173 of these POIs behind the Collinsville-Tesla 500 kV constraint. As a result, development of future renewable and storage projects within the NGBA is not possible and much of the GBA is also similarly limited. The CPUC's IRP portfolio has now included changes to delay mapping significant MWs of resources in these planning areas out to 2039, a shift from previously included resource MWs in the 2034 portfolios. These portfolio needs are captured in CAISO's 20-year outlook, therefore, rather than delaying, Terra-Gen urges CAISO to take a least regrets approach and address these NGBA constraints now to allow for more viable projects to come online sooner rather than later.</p> <p>Terra-Gen recommends CAISO consider studying upgrades to the Collinsville to Tesla line to increase the voltage to 500 kV. Terra-Gen believes this upgrade can effectively alleviate major deliverability constraints and urges CAISO to consider approving this crucial upgrade as part of the 2024-25 TPP.</p>	
6Z	Valley Electric Association	No comment	

7. Please provide your organization's comments on the Preliminary Economic Analysis Results

No	Submitting Organization	Comment Submitted	CAISO Response
7A	174 Power Global	No comment	
7B	Bay Area Municipal Transmission group (BAMx)	<p>BAMx appreciates CAISO's thorough analysis of the Production Cost Modeling (PCM) economic studies for the years 2034 and 2039. The insights provided on congestion-causing elements have been invaluable in understanding the models and impact of assumptions used.</p> <p>East of Pisgah Congestion</p> <p>During the 2024-2025 TPP stakeholder meeting on November 13, 2024, CAISO presented summary information on the constrained elements within the <i>East of Pisgah</i> area. It was noted that the preliminary PCM for this cycle did not include any short circuit duty (SCD) mitigations for the <i>Eldorado – McCullough 500 kV</i> line, unlike the 2023-2024 TPP PCM, which did include these mitigations. [1] BAMx recommends that CAISO consider integrating the SCD mitigations for the <i>Eldorado – McCullough 500 kV</i> line into this cycle's PCM. Incorporating these mitigations could potentially eliminate some or all of the \$8.3 million congestion costs observed along the <i>Eldorado – McCullough 500 kV</i> path.</p>	<p>This comment has been noted.</p> <p>The CAISO is working with SCE and LADWP to investigate different alternatives of the SCD mitigations. Some alternatives, such as upgrading the circuit breakers, may not help to mitigate the congestion.</p>
7C	California Environmental Justice Alliance	<p>The CAISO's preliminary assessment has identified increased congestion of specific elements of the CAISO system. These include the Moss Landing – Las Aguilas 230 kV line linking the Bay Area to the Central Valley, the Path 15 Corridor running through the San Joaquin Valley, the Path 26 Corridor linking the SCE and PG&E transmission systems and transmission in the SCE metro area. The Regenerate California Campaign expects that further production cost modeling could indicate that expanded transmission in these areas will yield economic benefits to California's ratepayers. Production cost modeling for the electric grid is a complex process that requires a wide range of inputs to accurately simulate and predict the comprehensive costs and benefits of generating electricity.</p>	<p>This comment has been noted.</p> <p>CO2 emission has been included in the CAISO TPP PCM, with associated cost that is based on the CEC's IEPR report</p> <p>Gas generator retirement assumption is included in the CPUC portfolio and has been taken as input to the PCM.</p> <p>The CAISO will evaluate the economic study requests.</p>



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>It is important that economic analysis be conducted with a broad focus on electricity pricing, resource adequacy, grid reliability and environmental impacts. The Regenerate California Campaign urges the CAISO to carefully evaluate the carbon emissions and other environmental effects of different transmission portfolios. Local resource adequacy has been a long-standing concern of the Campaign and evaluation of the sensitivity portfolio represents the first time the CAISO has an opportunity to consider accelerating the retirement of gas-fired generation.</p> <p>We urge the CAISO to include in its economic modeling explicit consideration of the environmental costs associated with the continued operation of gas-fired generation.</p> <p>Specifically, we would like to see weighting given to the impacts of gas-fired generation in disadvantaged communities which already experience other significant environmental burdens.</p> <p>The Regenerate California Campaign is aware that 17 transmission projects have been submitted for economic evaluation in this year's transmission planning process. We encourage the CAISO to specify, in the evaluation of these projects, which increase deliverability between the Central Valley and the Los Angeles Basin and the Greater Bay Area, and to consider their impact on reducing fossil fuel emissions in these urban areas. Projects that meet these criteria include, but are not limited to 1) Upgrades on PG&E 500 kV lines to add new circuits on segments - Los Banos to Gates 500 kV, Gates to Midway 500 kV, Tesla to Los Banos 500 kV, Gates to Diablo 500 kV; 2) Monarch 500 kV transmission project associated with the Fresno County solar plus storage projects in the Western Area Power Administration queue; 3) Kern-Southland Energy Link project (Midway - Pardee - El Nido HVDC) 4) Del Amo to El Nido underground HVDC line and 5) Del Amo to El Nido underground 230 kV line</p>	
7D	California Public Utilities Commission – Energy Division	No comment	
7E	California Public Utilities Commission – Public Advocates Office	<p><u>Recommendation for Congestion on Path 15</u></p> <p>Based on the production cost modeling (PCM) results, increased congestion on Path 15[1] will occur “every month of the year and mostly in solar hours,” which are the hours between 8 am and 5 pm.[2] This increased congestion is due to high volumes of new CPUC portfolio resources. Additional energy storage in the area should assist with this congestion. Cal Advocates also notes that the congestion costs on Path 15 are expected to reduce from \$232.81</p>	<p>This comment has been noted.</p> <p>Both 2034 and 2039 base portfolio PCMs will be used in the economic assessment in the 2024-2025 TPP cycle.</p>



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>million in 2034 to \$203.31 million by 2039^[3] and with the sensitivity portfolio the congestion could be reduced even further by 2039 to \$183.53 million.^[4] Based on these results, Cal Advocates recommends that the benefit cost ratio (BCR) analysis for the Path 15 transmission mitigation consider the congestion costs in 2039 versus 2034. Additionally, Cal Advocates recommends that any proposed Path 15 transmission mitigation be designed to address the expected congestion in 2039 versus 2034.</p> <p><u>Recommendation for Congestion at PG&E Moss Landing Las Aguilas 230 kV</u></p> <p>The PG&E Moss Landing – Las Aguilas 230 kV line is also expected to have increased congestion with the integration of the new CPUC portfolio resources. This congestion will also occur “every month of the year and mostly in solar hours,” which are hours between 8 am and 5 pm.^[5] Additional or strategically located energy storage should assist with this congestion. Cal Advocates recommends CAISO evaluate the effectiveness of a combination of energy storage and the Warnerville-Newmark Transmission Expansion project to address congestion at the PG&E Moss Landing Las Aguilas 230 kV line. The proposed Warnerville-Newmark Transmission Expansion project is parallel to PG&E Moss Landing – Las Aguilas 230 kV line and would likely alleviate the anticipated congestion in the area.</p> <p><u>Path 26 Corridor</u></p> <p>Cal Advocates notes that congestion costs on Path 26 are also expected to reduce from \$189 million in 2034 to \$139.54 million by 2039.^[6] Based on these results, Cal Advocates recommends that the BCR analysis for the Path 26 transmission mitigation consider the congestion costs in 2039 versus 2034. Additionally, Cal Advocates recommends that any proposed transmission mitigation for Path 26 be designed to address the expected congestion in 2039 versus 2034.</p> <p>Cal Advocates also recommends CAISO evaluate the effectiveness of the Western Bounty project to address congestion on Path 26 and meet other policy and economic needs. Specifically, the Western Bounty Transmission project^[7] could be an alternative to the proposed Southwest Intertie Project-North (SWP-North), which still has an unknown status.^[8] This project has two HVDC lines, one line</p>	



No	Submitting Organization	Comment Submitted	CAISO Response
		connects a new substation in southern Nevada to new substations adjacent to Southern California Edison's and Los Angeles Department of Water and Power's substations. The second line connects the new southern Nevada substation to a new substation in Idaho. <u>[9]</u>	
7F	California Western Grid Development, LLC.	<p>California Western Grid Development LLC ("Cal Western") appreciates the opportunity to submit comments on the CAISO November 13, 2024, Stakeholder Meeting regarding the 2024-25 TPP Policy and Economic Assessment and Study Updates.</p> <p>Cal Western has three comments and or requests:</p> <ol style="list-style-type: none"> 1. Support – Cal Western supports CAISO's preliminary list of high priority study areas to receive detailed consideration for economic study in the 2024-25 TPP. 2. Request for additional information – Cal Western urges CAISO to share with stakeholders the gas plant usage findings from 2024-25 TPP production cost modelling and especially gas plant usage in transmission constrained local areas. This information is vital to California meeting its environmental goals, including the goal to reduce reliance on gas plants in transmission constrained local areas by 2035. CAISO has not given this information sufficient visibility in the past. 3. Request update to CAISO TEAM methodology valuation – as described in detail below, Cal Western urges CAISO to use battery storage as the marginal RA resource in its TEAM valuation approach in its 2024-25 TPP economic studies and especially the LCR Studies that will be the subject of the CAISO December 9 Stakeholder Meeting. <p>Support Preliminary List of High Priority Study Areas: Cal Western supports CAISO's preliminary list of high priority study areas to receive detailed consideration for economic study in the 2024-25 TPP shown on presentation slide No. 52. We especially urge the CAISO to do an in-depth economic analysis of proposed projects that reduce congestion in and into the SCE Metro Area (LA Basin) and reduce congestion on Path 26. Cal Western is confident that when CAISO reviews Cal Western's Pacific Transmission Expansion Project (PTEP) the findings will show that PTEP is able to reduce congestion on Path 26 and congestion into and within the SCE Metro Area.</p>	<p>This comment has been noted.</p> <p>The CAISO can consider evaluating gas-fired generator usage in the next step of economic assessment.</p>



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>Additional benefits of PTEP include significantly reducing LCR needs for Western LA, meeting the policy objective of allowing delivery of clean resources into local load centers (especially transmission constrained West LA) and provide needed local frequency and voltage support. The environmental benefits of PTEP include reduced CO2 emissions, reduced Nox, Sox and PM2.5 emissions to the benefit of disadvantage communities and the larger LA Basin population. PTEP also reduces exposure to wildfire risks and reduced dependence on Aliso Canyon</p> <p>Finally, on October 15, 2024, Cal Western submitted the PTEP project as a Request Window Submission for Reliability Assessment in the 2024-25 TPP. ("October 15th Filing"). Our filing provides details regarding the reliability and other benefits provided by PTEP that together make it the optimal reliability solution.</p> <p>We urge CAISO to evaluate PTEP based on the cumulative Economic, Reliability and Policy benefits that the Project provides. And, based on this assessment, we urge CAISO to approve a subsea transmission project from the Diablo Canyon / Morro Bay area to the existing Coastal transmission system in West LA. We also urge the CAISO to utilize the results of the High Gas Plant Retirement Sensitivity Analysis and the results of the LCR study to "rightsize" the transmission facilities approved in this 2024-25 TPP.</p> <p>Request For Additional Information Be Shared with Stakeholders:</p> <p>Cal Western asks that CAISO share with stakeholders gas plant utilization information that is available from the CAISOs Production Cost Modelling (PCM) runs and LCR study. This can be done in summary form, but the critical information TPP stakeholders need is the forecast of how gas plant utilization or capacity factors change over the planning horizon in CAISO LCR studies and economic studies for each of the CPUC base resource plans and High Gas plant Retirement Sensitivity Portfolio.</p> <p>This information should be relatively easy for CAISO staff to retrieve from the production cost modelling runs that CAISO undertakes to perform economic studies and LCR studies.</p>	



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>This information is critical to stakeholders. Here is why:</p> <p>When the CPUC approved the base case resource portfolios that are being used in the 2024-25 TPP they depended on an expectation that as new clean resources are added to the portfolio, gas plants rise in the dispatch stack and generation from gas plants is replaced by new clean resources.</p> <p>The CPUC said it this way in Decision 24-02-047:</p> <p style="padding-left: 40px;">“Over time, the capacity factors of thermal resources continue to decrease over time as their energy output is offset in the dispatch stack by zero marginal-cost renewables.” [1]</p> <p>However the CPUC understands there is a potential flaw in their logic because gas plants located in transmission constrained local areas may have to run more than their RESOLVE and SERVM models forecast because those CPUC models do not have the granularity to determine if new clean resources added to the portfolio can actually be delivered to the transmission constrained urban areas in California and displace the use of gas plants in those urban areas.</p> <p>According to CPUC Decision 24-02-047:</p> <p style="padding-left: 40px;">“Conducting locational analysis within the context of IRP is difficult, because much of our analysis historically has been focused at the system level. The CAISO, however, has the ability to do much more granular and detailed analysis of local reliability needs. Therefore, we find it prudent to ask the CAISO to conduct this sensitivity analysis for the 2024-2025 TPP.” [2]</p> <p>Furthermore, the CPUC has stated that 70% of the gas plants in the base case portfolio being used in this 2024-25 TPP are in transmission constrained local areas. In other words, the CPUC RESOLVE and SERVM models cannot accurately forecast gas plant utilization for 70 percent of the gas plants in the base or sensitivity resource portfolios.</p>	



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>Cal Western strongly urges the CAISO to provide the critical gas plant utilization forecasts that can be derived from the CAISOs more granular models that are capable of forecasting the actual expected gas utilization of plants located in transmission constrained local areas. An example of the kind of information Cal Western is requesting can be found in Appendix J of the 2022-23 TPP Final Report at Figure J.3.2-77 Western LA Basin LCR Sub-area 2032 Forecast Hourly Profiles. To the extent this information is available by December 9, 2024, it should also be provided to the CPUC and all Stakeholders at the December 9, 2024, TPP Stakeholder meeting.</p> <p>Request Update to CAISO TEAM Methodology Valuation for the 2024-25 TPP:</p> <p>Cal Western urges CAISO to modify and update its historic assumption that gas plants are the <u>marginal system RA resource</u> in TEAM valuations. In previous TPP cycles the CAISO has assumed gas plants are the marginal RA resource when evaluating LCR benefits of proposed transmission projects.</p> <p>This assumption used by CAISO in past TEAM valuations is out of date. The netCONE of utility scale batteries has continued to fall. In an independent study commissioned by Cal Western, consulting firm E3 concluded that in the 2030s batteries should be assumed by CAISO as the marginal system RA resource. The results of the E3 Study are included in Cal Western's October 15th Filing.</p> <p>Also critically important, E3 found that existing gas resources in transmission constrained local areas such as the LA Basin should continue to be assumed to be the <u>marginal local RA resource</u> in TEAM valuations. The rationale is that utility scale batteries located in transmission constrained local areas have limited use, they cannot be fully charged for use in the following day since the local area transmission constraints limit access to clean energy resources outside of the local area. For example, CAISO found in the 2022-23 TPP LCR studies that no more than 1,141 MW of local batteries could be located in West LA due to Transmission constraints into West LA. [3] By the early 2030's this 1,141 MW of local area batteries in West LA are expected to be fully built out.</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>Cal Western urges CAISO to update its TEAM assumptions regarding marginal <u>local</u> and <u>system</u> RA resources in this 2024-25 TPP.</p> <p>Cal Western also urges CAISO to identify this change to LCR valuation at the upcoming 2024-25 TPP Stakeholder meeting on December 9 to allow stakeholders an opportunity to comment.</p> <p>In summary, Cal Western (1) supports CAISO preliminary list of high priority economic study areas to receive detailed consideration for economic study in the 2024-25 TPP, (2) Requests additional information on gas plant utilization from CAISO economic and LCR Studies, and (3) <u>Requests CAISO assume utility scale batteries are the marginal system RA resource and in areas where local transmission constraints limit battery usage, and continue to assume gas plants are the marginal local RA resource in TEAM methodology</u> Economic and LCR Study valuations in the 2024-25 TPP.</p>	
7G	California Wind Energy Association	No comment	
7H	Center for Energy Efficiency and Renewable Technology	<p>CEERT supports CAISO's identified high-priority study areas for the 2024-2025 transmission planning process, particularly those addressing congestion in the LA Basin and on Path 26. We urge CAISO to conduct a thorough and comprehensive economic analysis of the proposed Pacific Transmission Expansion Project (PTEP).</p> <p>CEERT requests that CAISO make available detailed gas plant utilization data from its production cost modeling to stakeholders. This information is needed in order to evaluate the course of California's clean energy transition and efforts to reduce on-going reliance on gas-fired generation in constrained areas.</p> <p>CEERT also supports Cal Western's request for an update to CAISO's TEAM methodology. It is becoming clear that battery storage has become the marginal resource adequacy (RA) resource. It should be used in CAISO economic evaluations.</p>	<p>This comment has been noted.</p> <p>The CAISO presented the preliminary high priority study areas based on the preliminary production cost model in the November 13 stakeholder meeting. The CAISO will continue to finalize the production cost model and evaluate economic study requests. Based on that, the CAISO will select the final high priority study areas that will receive detailed analysis.</p>
7I	City of Palo Alto	No comment	
7J	Clearway Energy Group	No comment	
7K	Defenders of Wildlife	The PG&E Fresno zone has the highest base case curtailment ratio in California. The PG&E Moss Landing – Las Aquilas 230kV and Path 15 Corridor have the highest base case congestion costs by far. The Preliminary Economic Analysis results make a clear and strong case for prioritizing mitigating the congestion on Path 15 and the Moss	This comment has been noted.

No	Submitting Organization	Comment Submitted	CAISO Response
		Landing – Las Aguilas 230kV to facilitate tapping the full potential of solar development in the San Joaquin Valley – particularly those lands subject to retirement from agriculture due to lack of water for irrigation. As demonstrated by the preliminary <u>busbar mapping results</u> released by the CPUC on November 1, 2024, the San Joaquin Valley within PG&E Fresno, PG&E Kern, and PG&E Greater Bay Area has significant solar and storage resources with significantly reduced potential environmental and land use conflicts. Mitigation to relieve congestion and serve solar and storage development in the San Joaquin Valley should be the highest priority for transmission investments.	
7L	Energy Project Solutions	No comment	
7M	ENGIE NA	No comment	
7N	Golden State Clean Energy	<p>Golden State Clean Energy (“GSCE”) appreciates the preliminary economic analysis and CAISO’s attention to congestion on the Path 15 corridor, the Moss Landing-Las Aguilas 230 kV line, and the Path 26 corridor. In particular, the Path 15 corridor and the Moss Landing-Las Aguilas 230 kV line provide important transmission pathways for cost-effective Fresno area solar and storage to serve load in the Bay Area. GSCE also looks forward to CAISO’s work this TPP cycle on the long-term LCR studies and efforts to reduce the Greater Bay Area’s local capacity needs. These results should be factored into the economic analysis of potential upgrades to the Path 15 corridor and the Moss Landing-Las Aguilas 230 kV line.</p> <p>GSCE supports 500 kV upgrade solutions to the significant and costly congestion observed in CAISO’s preliminary economic analysis of the Path 15 corridor and the Moss Landing-Las Aguilas 230 kV line. The 20-Year Transmission Outlook (2024) identified 500 kV upgrades to these two pathways as likely needed long-term.[1] CAISO suggested in the 2023-2024 Transmission Plan that upgrades to the Path 15 corridor and the Moss Landing-Las Aguilas 230 kV line likely should be planned in tandem, stating that “mitigations for one constraint may impact the flow and even aggravate the congestion on the other constraints because of the topology connection between these two constraints.”[2]</p> <p>This TPP cycle has a number of factors that point toward the time being right for CAISO to approve a large-scale, holistic transmission solution for the Central Valley and its ability to serve load in the Greater Bay Area, a solution that looks to both policy and economic studies and</p>	<p>This comment has been noted.</p> <p>Path 15 corridor congestion and Moss Landing – Las Aguilas 230 kV line congestion will be further investigated in the next step of the 2024-2025 TPP cycle. Different transmission alternatives of mitigation will be evaluated accordingly.</p>

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>is right-sized to be a cost-effective and efficient upgrade to meet the region's long-term needs. CAISO's TEAM values renewable generation integration, increased deliverability, and avoided cost of other projects.[3] Those factors should be considered alongside the significant congestion costs when examining future upgrades, considering the Fresno area sees about a 4.4 GW increase in resources between year 10 and year 15 of the base case and the 15-year sensitivity portfolio includes about a 5.6 GW increase compared to the 15-year base case portfolio. Further, the current draft IRP portfolio at the CPUC would include even more resources in the Fresno area, with year 15 of the proposed base case having about the same amount of resources as year 15 of this TPP cycle's sensitivity portfolio. CAISO's policy and economic studies should strongly consider the results of the sensitivity analysis so that any upgrades are right sized to accommodate the coming IRP, rather than leaving the region's upgrades to be planned over successive TPP cycles and risking less efficient planning solutions.</p> <p>The ultimate solution may require reconfiguring the underlying 230 kV system and lower voltages, but CAISO should embrace the need for a long-term solution and use the opportunity that comes from approving major 500 kV projects to help alleviate historical issues and complications in the area. This includes addressing the deliverability constraints identified in the Fresno area preliminary policy assessment that involves lower voltage facilities.</p> <p><u>Monarch</u></p> <p>GSCE appreciates CAISO including the Monarch transmission project in its economic planning study requests.[4] GSCE urges CAISO to consider Monarch as one of the priority economic requests to be studied because the Monarch transmission project has the potential to mitigate Path 15 corridor congestion, which is a major contributor to congestion in this TPP cycle, and Monarch would pair well with a Manning-Moss Landing 500 kV upgrade if Monarch is connected to the CAISO system as part of a broader regional upgrade.</p> <p>Monarch is likely to be a cost-effective upgrade to Path 15 because of the potential to involve participation from non-CAISO Balancing Authority members and may present an opportunity to plan and develop a hybrid project that has broad benefits while possibly</p>	



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>reducing CAISO customer costs. This transmission project and the corresponding solar and storage in the Western Area Power Administration Sierra Nevada Region queue could benefit LSEs in CAISO's footprint if CAISO were to study the transmission project with the view of the transmission capacity being shared between CAISO and the Balancing Authority of Northern California. GSCE is currently engaged in negotiations with an LSE in CAISO's footprint regarding this project, and thus there is existing commercial interest in Monarch within the CAISO BAA.</p> <p>GSCE believes that Monarch, in combination with a Manning-Moss Landing 500 kV line, provides a cost-effective, long-term solution to the region that meets both policy and economic needs.</p> <p><u>Conclusion</u></p> <p>GSCE strongly supports 500 kV upgrade solutions to the Path 15 corridor (in the form of the Monarch transmission project) and the Moss Landing-Las Aguilas 230 kV line (in the form of a Manning-Moss Landing 500 kV line) for policy and economic reasons, considering the ability of a broader regional plan to provide a long-term transmission solution while enabling additional renewable and storage resources in the Fresno area to serve load throughout northern California. CAISO should ensure any transmission upgrades to these pathways are aligned with the 20-Year Transmission Outlook's longer-term vision so transmission investments and development timelines are efficiently managed.</p>	
70	Hetch Hetchy Water and Power	<p>CAISO's preliminary economic analysis results indicate that the <i>PG&E Moss Landing-Las Aguilas 230 kV</i> line is one of the most congested paths. In particular, it identified the congestion cost of \$199 million in 2034 (page 26) and \$407 million in 2039 (page 43).^[1] These costs are nearly 7- and 15-times higher than the congestion costs of \$27 million identified in 2035 on the <i>PG&E Moss Landing-Las Aguilas 230 kV</i> line the CAISO reported in the 2023-2024 TPP.^[2]</p> <p>In the WaNTEP RW application, CCSF, had identified the effectiveness of WaNTEP in reducing congestion on the <i>PG&E Moss Landing-Las Aguilas 230 kV</i> line, both under the normal and contingency conditions. With the much higher level of congestion identified in the CAISO's preliminary economic assessment, we believe WaNTEP will have highly significant economic benefits. We, therefore, request that the</p>	This comment has been noted.



No	Submitting Organization	Comment Submitted	CAISO Response
		CAISO evaluate WaNTEP as a reliability project that also has economic benefits in the current TPP.	
7P	Large-scale Solar Association (LSA)	No comment	
7Q	Leeward Renewable Energy	No comment	
7R	Mary Wiley Trust	No comment	
7S	Gridliance West	<p>While GLW was encouraged that the EOP zone was a high-focus area, we wanted to highlight a few critical items regarding GLW's Economic Study Requests:</p> <p>Second Mead-Sloan 230kV Line:</p> <p>In the 2023-2024 TPP, CAISO stated that the Mead – Sloan Canyon 230 kV line remained a bottleneck for connecting local renewable resources to the system. Mitigation alternatives are expected to help mitigate the congestion and reduce renewable curtailment in the GLW/VEA area. Adding the second Mead – Sloan Canyon 230 kV line in the GLW/VEA area showed potential economic benefit to ISO's ratepayers. However, due to the limitation within the Mead Substation for adding another line position, further assessment for the feasibility and cost of adding the second Mead – Sloan Canyon 230 kV line would be conducted in coordination with GridLiance West and the facility owners of Mead substation.</p> <p>GLW wants to clarify that the existing Mead-Sloan 230kV line has double-circuit capable towers and is a low-cost solution that provides significant policy, reliability, and economic benefits. GLW looks forward to continuing to work with the CAISO and WAPA, the facility owners of the Mead substation, on a long-term solution to the issues in the Eldorado Valley area.</p> <p>Trout Canyon- Sagebrush 500kV:</p> <p>Given that the Trout Canyon-Lugo 500kV project is the best solution to solve all of the major constraints in EOP, the need for this 500KV upsizing project from GLW's Trout Canyon to NV Energy's Sagebrush station (a part of Greenlink West) as a further expansion is apparent. The 500kV upsize project is multi-valued and has a solid benefit-cost ratio (benefits exceeding \$360MM, which is above the 1.0 ratio) and</p>	This comment has been noted.



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>significant policy benefits. As noted in CAISO's tariff, policy-driven solutions are evaluated with the following key criteria:</p> <ul style="list-style-type: none"> • Commercial Interest: There is significant commercial interest in GLW's service area and beyond into southern and central Nevada, as evidenced by GLW's queue and the fact that developers in C-15 are continuing to advance under the new IC process with a merchant option. This project will be online in preparation for the massive build-out of southern Nevada renewables needed to meet demand in California load centers. • Costs: PU Cost Guides mark the project at ~\$350MM, which GLW has validated and will provide CAISO with a further refined P50 estimate during this cycle. This project continues to be a cost-effective solution compared to others, enabling 3 GW of FCDS in CAISO. • Environmental Evaluation: GLW has nearly completed with the permitting process, has acquired all the needed ROW for the project, and will receive 500kV approval (along with 230kV approval) next year by BLM. Taking advantage of this permitting process significantly benefits achieving a low-cost solution for this area. • CPUC Mapping: GLW's system continues to be mapped as a key resource area for CA to meet its 2045 goals. As noted in the 24-25 PD, the amount mapped within the area constraint aligns with previous amounts mapped in the 22-23 TPP sensitivity portfolio and 23-24 TPP. More resources will be mapped to GLW's system with additional transmission capacity. • Potential Future Connections: There are 6.2 GW of solar in Esmeralda that are apart of a programmatic EIS by BLM and ~2-3 GW of geothermal in the Dixie Valley area; building a bridge from GLW's system creates optionality for resources to go through GLW's 500kV system and be directly injected into the LA Basin via the Trout Canyon-Lugo 500kV Project. <p>GLW appreciates the opportunity to work with CAISO to further build out its system in EOP and implement this transmission solution which efficiently and effectively helps California meet its clean-energy policies.</p>	
7T	PG&E	No comment	

No	Submitting Organization	Comment Submitted	CAISO Response
7U	Port of Oakland	No comment	
7V	Section 20, LLC.	No comment	
7W	Silicon Valley Power	No comment	
7X	SSA Terminals	No comment	
7Y	Terra-Gen, LLC.	No comment	
7Z	Valley Electric Association	<p><u>Valley Comments to CAISO Regarding 2024-2025 TPP</u></p> <p>Valley Electric Association (Valley) appreciates the opportunity to comment on the CAISO's November 13, 2024 Transmission Planning Process (TPP) Meeting. The purpose of these comments is to provide CAISO with local insight regarding developers' interests in our area and to comment on Valley's support for the need of additional transmission infrastructure due to regional and U.S. market demands in the Valley Electric service area.</p> <p>There is unprecedented development interest in the Valley area for new energy resources, large load interconnections to the transmission grid, and new residential loads:</p> <ul style="list-style-type: none"> • New resource interest is largely due to Valley's unique solar-rich resource area with low development costs. As a result, there are 54 active CAISO-queued resource projects with almost 18 GW of PV and an additional 18 GW of storage in our area. • Large load developers, such as data centers, also see Valley as a unique area, likely due to low development costs and robust telecom. For instance, the CAISO is currently evaluating a System Impact Study for a large data center in the Valley Electric service area. Valley is observing interest from other large load customers as well – signaling intent for additional interconnection requests in the near future. • Valley is also experiencing vigorous interest in residential development, which will likely require adding multiple new distribution stations in the planning horizon. These new stations will be served off the transmission grid under the CAISO's Operational control. 	This comment has been noted.



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>Taken all together, these facts suggest the Valley area is a unique node for resource and large load development that will require new transmission infrastructure to support such development and maintain electrical grid efficiency and reliability.</p> <p>Two transmission proposals in the 2024-2025 TPP that Valley views would support resource and large load developments are i) the 500 kV upsizing of the already-approved GLW 230 kV upgrades and ii) the proposed Trout Canyon- Lugo 500kV line. Upsizing 500 kV may be needed to move the current queued and future resource projects to market efficiently. The Trout Canyon- Lugo 500kV line will relieve the near future energy resource bottlenecks at Trout Canyon substation. Two other proposed projects, the Sloan Canyon-Mead and Mead-Mohave projects, will also facilitate moving energy into the regional market</p> <p>The Valley area is in high demand for resource developers due to regional energy markets. Valley's area also appears to be in high demand by developers to meet U.S. and perhaps global market demand for AI and similar data services. From a local perspective, Valley sees the need for additional transmission backbone infrastructure that can be developed in an efficient and cost-effective manner and as soon as practical to meet regional and U.S. market needs. In summary and in consideration of the above factors, Valley supports the following projects in the current TPP cycle:</p> <ul style="list-style-type: none"> ▪ 500kV Upsizing of GLW's approved Core Upgrades based upon policy and economic needs. ▪ Trout Canyon – Lugo 500kV line based upon policy and economic needs. ▪ Sloan Canyon – Mead expansion based upon economic needs. ▪ Mead-Mohave expansion based upon economic needs. <p>Valley Electric appreciates CAISO's work and preparation for this TPP process, and thank you for this opportunity to provide additional facts for your consideration.</p>	

8. Please provide any additional comments on the November 13, 2024 TPP Stakeholder Meeting

No	Submitting Organization	Comment Submitted	CAISO Response
8A	174 Power Global	No comment	
8B	Bay Area Municipal Transmission group (BAMx)	BAMx applauds the CAISO staff's efforts in conducting the 2024-2025 TPP Policy and Economic studies and its ongoing stakeholder engagement.	
8C	California Environmental Justice Alliance	<p>The California Environmental Justice Alliance (CEJA), Sierra Club, Communities for a Better Environment (CBE), Central Coast Alliance United for a Sustainable Economy (CAUSE), and Center for Community Action and Environmental Justice (CCA EJ), together as the Regenerate California Campaign, appreciate the opportunity to submit these comments on the CAISO 2024-2025 Transmission planning process. Collectively, we lead the Regenerate California Campaign, where we share a vision for California's most impacted communities to have access to clean energy, good jobs, and clean air. Aligned with the clean energy goals and gas plan retirement outlined in key California policies, including Senate Bill (SB) 100, SB 887, and SB 350, we envision a future where all California gas plants are retired by 2035, prioritizing retiring those impacting environmental justice communities by 2030.</p> <p>The Regenerate California Campaign jointly submits these comments with Center for Energy Efficiency & Renewable Technologies (CEERT). Gas-fired power plants are retained due to grid limitations caused by decades of underinvestment in transmission and clean new energy sources targeted to Environmental Justice (EJ) communities. Grid constraints are also a barrier to beneficial load growth and the interconnection and operation of local clean energy resources including battery storage located in EJ communities. This underinvestment in the electric grid impairs air quality due to the continued use of polluting sources of electric generation, delays electrifying transportation which results in continued dependence on fossil fuels for transportation and increases the frequency and duration of outages during extreme weather events.</p> <p>The evaluation of policy-driven and economic-driven transmission projects that are being considered in this phase of the transmission planning process needs to provide priority weighting to the values of phasing out California's gas-fired power plants, in particular those plants located in EJ communities. The Regenerate California Campaign is focused on transmission and clean energy projects that can retire gas-fired power plants in areas like the San Joaquin Valley and the Los Angeles Basin. Additional grid investments must be paired with efforts by transmission owners and clean energy developers to</p>	Your comment is noted.



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>engage impacted local communities and to promote local and regional clean energy development.</p> <p>It is imperative that both the policy-driven and the economic-driven projects analyses study impacts of the proposed transmission projects on operations at existing gas-fired power plants in and near EJ communities.</p> <p>In particular, the Regenerate California Campaign has reviewed CPUC's list of "not retained" gas plants in the base case and sensitivity cases. We found a number of gas plants in and near EJ communities that are not modeled to be retired by 2039.</p> <p>We ask that the CAISO ensure the following gas plants that are in and near environmental justice communities are modeled as "not retained" in the base and sensitivity cases for 2039 as part of the Policy and Economic Assessment</p> <ul style="list-style-type: none"> ● Wellhead Power Delano ● Harbor Cogen Combined Cycle ● McGrath Beach Peaker ● Walnut Creek Energy Park Unit 1 ● Walnut Creek Energy Park Unit 2 ● Walnut Creek Energy Park Unit 3 ● Walnut Creek Energy Park Unit 4 ● Walnut Creek Energy Park Unit 5 ● Los Esteros Energy Facility Aggregate ● Russell City Energy Center ● Delta Energy Center Aggregate ● Gilroy Energy Center Units 1&2 Aggregate ● Gilroy Energy Center, Unit 3 ● Cuyamaca Peak Energy Plant ● El Cajon Energy Center <p>Furthermore, we ask that the CAISO ensure that the three Once Through Cooling (OTC) Peaker Plants that were extended through 2026 are also modeled as "not retained" in the base and sensitivity cases. These include the following plants:</p> <ul style="list-style-type: none"> ● Ormond Beach Generating Station ● Alamos Energy Center ● Huntington Beach Energy Project <p>Additionally, we ask that CAISO identify impacts to the gas-fired power plants CAISO understands to be dependent on gas storage at the Aliso Canyon Gas Storage Facility.</p>	<p>As described in the December 2022 Memorandum of Understanding (MOU) between the CPUC, CEC and CAISO, the CAISO transmission planning process will consider and incorporate the scenarios and portfolios developed by the CPUC, and the subsequent CPUC permitting process will then give substantial weight to the project applications that are consistent with the final transmission plan. Adding the resources listed in Regenerate California Campaign's comments to the not retained assumptions in the CAISO transmission planning base cases would be counter to the MOU.</p> <p>The three OTC listed in the comments were modeled off-line in the 2024-2025 CAISO transmission planning base and sensitivity cases.</p> <p>The CAISO will continue to coordinate with the other entities to determine which gas-fired power plants are dependent on gas storage at the Aliso Canyon Gas Storage Facility, now that several large transmission projects are under development as a result of previous transmission plans.</p>

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		The Regenerate California Campaign appreciates the graphics that the CAISO used in its presentation that showed the relative location of projects included in the base case portfolio for 2034 and 2039. We request that the CAISO expand this to also show the locations of projects included in the 2039 sensitivity portfolio. We would also like maps that show the locations of gas-fired projects that would not be retained for both the base case portfolio and the sensitivity portfolio.	The comment is noted.
8D	California Public Utilities Commission – Energy Division	<p>CPUC staff note that the preliminary results identified at least one situation in the policy driven base case analysis and a few in the sensitivity analysis where the CAISO has noted that reducing mapped generic battery resources could mitigate the identified transmission issue.</p> <p>In the past few annual portfolios, the CPUC has asked the CAISO to consult the CPUC before moving forward with any new policy-driven transmission needs associated specifically with storage mapping in the CPUC's TPP portfolio for the planning cycle.</p> <p>In the CPUC Modeling Assumptions for the 2024-2025 Transmission Planning Process Report for the mapped portfolios (https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-tpp/2023-irp-cycle-events-and-materials/assumptions-for-the-2024-2025-tpp/modeling_assumptions_24-25tpp.pdf), staff noted the following:</p> <p>Battery Storage-Specific Transmission Upgrades and Battery Storage as Transmission Upgrade Alternatives As with past TPP portfolio transmittals,</p> <p>"CPUC staff acknowledge that, in some cases, more information is needed to understand the full impacts of the battery mappings, particularly in LCR areas, before new transmission projects are identified by the CAISO as needed. Accordingly, CAISO staff should consult CPUC staff before moving forward with any new policy-driven transmission upgrades associated specifically with storage mapping in this planning cycle. Additionally, to the extent that storage resources are required for mitigation of transmission issues identified in the CAISO's 2023-2024 Transmission Plan, CPUC staff would expect to coordinate with CAISO to enable small adjustments in the CPUC's</p>	The CAISO looks forward to continuing to work with the CPUC on battery mapping.



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>mapping of storage resources to allow for the inclusion of this storage in the CAISO's analysis of these 2024-2025 TPP portfolio."</p> <p>We appreciate CAISO's effort in identifying such situations this cycle. CPUC staff will work with CAISO to understand which locations have transmission issues that can be mitigated by reducing the generic battery storage mapped there, and more precisely how much storage would need to be reduced and thus also relocated. CPUC staff will seek to provide guidance for each identified location for the base case and sensitivity scenarios whether or not the storage should be relocated from the identified locations to mitigate potential policy-driven transmission needs in the 2024-2025 TPP and also seek to reflect such relocations in the mapping for the next TPP.</p> <p>Finally, CPUC Staff reiterates its concern regarding the timing of assessment results and the potential delay for stakeholders to review the CAISO's analyses. We commend CAISO staff who work to provide information on mitigations and costs as timely as possible, and CPUC Staff urge the CAISO to meet the deadlines in the already tight TPP timeline.</p>	
8E	California Public Utilities Commission – Public Advocates Office	The PG&E North of Greater Bay Area resource maps do not include newly approved 500 kV lines from the Humboldt area to Cottonwood and Collinsville substations.[1] While the 500 kV lines are not yet operational, CAISO should include them on the resource maps as they are now integrated into the existing grid footprint for TPP modeling purposes. If CAISO has a specific reason for not including these lines in the existing grid footprint, it should provide the reason.	<p>Due to the limited modelling of generation to 500 kV substations in the NGBA, the 500 kV system was not included. These diagrams are not intended to include a complete network diagram of the CAISO controlled system, with the goal of keeping the mapping simplified for better visibility.</p> <p>The CAISO will consider redesigning to include the 500 kV across all areas in future diagrams.</p>
8F	California Western Grid Development, LLC.	<p>As Cal Western stated in our comments on preliminary economic analysis results (above), we are requesting CAISO share important information with stakeholders at the upcoming December 9, 2024 Long-term LCR meeting.</p> <p>Specifically we request (1) gas plant utilization that CAISO finds in PCM and LCR Studies for each of the resource portfolios should be shared with stakeholders, and (2) a needed update to CAISO TEAM valuation to be used in 2024-25 TPP economic and LCR studies should be announced. Please see Cal Western comments above for the details.</p>	<p>LCR studies are power flow/reliability studies for peak load conditions only. They do not track plant utilization across time.</p> <p>The CAISO can consider evaluating gas-fired generator usage in the next step of economic assessment.</p>
8G	California Wind Energy Association	CalWEA encourages CAISO to provide to the CPUC and other stakeholders the detailed gas plant utilization forecasts that can be derived from the CAISO's models to inform the development of the	The production cost models utilized by the CAISO are posted on the ISO website for stakeholders to utilize to produce information that they need



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		CPUC's resource portfolios. The CPUC's September 11, 2024, Ruling Seeking Comments on Electricity Resource Portfolios for 2025-2026 Transmission Planning Process (atp. 11) assumes that its proposed portfolio will significantly reduce gas generation while retaining all existing gas fired capacity. However, the CPUC's RESOLVE and SERVM models cannot accurately forecast gas plant utilization for gas plants located in transmission constrained local areas. Therefore, information from CAISO's more granular models is necessary to fully inform CPUC decisions and ensure that gas generation (and related emissions) can be reduced without resolving local transmission constraints.	such as gas plant utilization. CAISOLCR studies are also posted that provide gas plant capacity requirements in local areas.
8H	Center for Energy Efficiency and Renewable Technology	CEERT requests that the CAISO provide the busbar mapping graphics for the sensitivity portfolio.	The ISO will consider development of the sensitivity busbar mapping in future planning cycles.
8I	City of Palo Alto	No comment	
8J	Clearway Energy Group	No comment	
8K	Defenders of Wildlife	Thank you for the informative workshop.	
8L	Energy Project Solutions	<p>On behalf of Energy Project Solutions (EPS), a consulting firm committed to developing and constructing renewable energy projects and transmission systems, I am writing to express our firm's support for the inclusion of the Trout Canyon-Lugo transmission line in the '24-'25 Transmission Planning Process (TPP).</p> <p>The recently released CAISO Preliminary Policy and Economic Results highlights significant constraints and overloads in the EOP planning area, severely affecting deliverability within the GridLiance West (GLW) system. The proposed Trout Canyon-Lugo transmission line serves as the optimal solution for addressing these challenges, distinguished by its ability to deliver over 3GW of firm capacity and offer enhanced expansion flexibility as additional generation resources become available in Southern Nevada and Southern California.</p> <p>As a 500kV AC solution, Trout Canyon-Lugo stands alone as the only effective means to improve deliverability and expansion options, in stark contrast to alternative measures like Remedial Action Schemes (RAS), Series Reactors, or DC solutions, which fall short of providing long-term solutions for the grid's evolving needs.</p> <p>The implications of this project extend beyond stabilizing the power grid and providing more regional connectivity – worthy goals in themselves.</p> <p>Trout Canyon-Lugo promises transformative impacts across the GridLiance West system, facilitating numerous solar project</p>	As detailed in Appendix F, a Wyoming wind sensitivity study was performed to evaluate a few alternatives to mitigate the constraints identified in EOP on-peak deliverability assessment and to bring in the additional 1,500 MW Wyoming wind beyond TransWestExpress capacity. The ISO will keep evaluating potential transmission upgrades in the future TPP cycles, and will not recommend any projects at this time. This will ensure consistency with the CPUC directive in the Decision for the 2025-2026 TPP. The directive aims not to trigger upgrades related to the additional out-of-state wind amounts in the portfolio that are beyond the amounts that can be accommodated on the already-identified and in-development transmission upgrades.



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>interconnections and unlocking billions of dollars in new investments. This vital boom in renewable infrastructure will spur job creation, spanning construction, environmental services, and consulting sectors, while advancing California's ambitious Renewable Portfolio Standard (RPS) targets.</p> <p>At Energy Project Solutions, we have witnessed the transformative power of dedicated investment and strategic planning in the renewable energy sector, growing from a startup to an organization with over 60 employees in just four years. EPS is one of the energy success stories, made possible by forward thinking planning and the methodical expansion of our national infrastructure crossing state lines.</p> <p>We believe the Trout Canyon-Lugo project is critical to sustaining the momentum of the interdependent relationship of Nevada and California, and represents a must-build for the green energy evolution which will ensure a resilient, future-forward power system.</p> <p>We urge CAISO to take decisive steps by prioritizing the Trout Canyon-Lugo transmission line in this planning cycle. Immediate action is essential to secure the benefits of this project for California and the western US region, contributing decisively to a sustainable, shared and prosperous energy future.</p> <p>Thank you for considering our perspective and for your commitment to advancing California's energy leadership.</p>	
8M	ENGIE NA	ENGIE appreciates the opportunity to provide comments to the Policy & Economic Preliminary Assessment and Study Updates	
8N	Golden State Clean Energy	No comment	
8O	Hetch Hetchy Water and Power	No comment	
8P	Large-scale Solar Association (LSA)	<p>The Large-scale Solar Association (LSA) appreciates CAISO's efforts to keep pace with the increasing volume of supply required by the CPUC's 2024-25 Transmission Planning Process (TPP) portfolio. CAISO's preliminary policy results indicate that the portfolio triggers numerous constraints across the system.</p> <p>LSA urges CAISO to take an aggressive stance when recommending upgrades to alleviate these constraints. Even when the portfolio slightly exceeds current grid capabilities, CAISO should consider proposing upgrades, as the portfolio is expected to grow annually in line with the</p>	See response to 8L.



No	Submitting Organization	Comment Submitted	CAISO Response
		<p>CPUC's objective of achieving netzero emissions by 2045, thus mitigating the risk of stranded assets.</p> <p>Upgrades should certainly be approved in areas highlighted by the 20-Year Transmission Outlook. For instance, as discussed under question 4, CAISO has identified the Trout Canyon – Lugo 500 kV line as a potential solution for multiple constraints triggered by the 2024-25 TPP portfolio. [1] This mitigation was also noted in CAISO's most recent 20-Year Transmission Outlook, which detailed the projects necessary to accommodate the 2045 scenario. [2] LSA strongly recommends that CAISO approve this or a comparable upgrade for the area, along with other suitable upgrades across the system.</p> <p>Furthermore, LSA encourages CAISO to consider an approach that could further reduce the risk of stranded assets. CAISO might implement a process by which it recommends conditional approval of upgrades, allowing transmission projects to commence initial, low-cost work for the development process while incorporating offramps at critical stages, such as obtaining permits. This method ensures that the full cost of the upgrade is not committed until the project's viability is confirmed. Consequently, CAISO would be able to endorse more projects, keeping pace with the rapidly growing need for new supply resources, while minimizing the risk of stranded assets.</p>	The comment is noted.
8Q	Leeward Renewable Energy	No comment	
8R	Mary Wiley Trust	No comment	
8S	Gridliance West	No comment	
8T	PG&E	No comment	
8U	Port of Oakland	No comment	
8V	Section 20, LLC.	No comment	
8W	Silicon Valley Power	No comment	
8X	SSA Terminals	No comment	
8Y	Terra-Gen, LLC.	No comment	
8Z	Valley Electric Association	No comment	