

The CAISO received comments on the topics discussed at the February 28, 2024 stakeholder call from the following:

- A. ACP – California
- B. Bay Area Municipal Transmission Group (BAMx)
- C. California Public Utilities Commission
- D. California Western Grid Development, LLC
- E. East Bay Community Energy
- F. EDF Renewables
- G. ENGIE NA
- H. Golden State Clean Energy
- I. Grid United LLC
- J. GridLiance West
- K. Kern to Southland Energy Link LLC
- L. LSA
- M. Natural Resources Defense Council, Inc.
- N. Northern California Power Agency
- O. Pacific Gas & Electric
- P. San Diego Gas & Electric
- Q. Silicon Valley Power
- R. Six Cities
- S. The WATT Coalition
- T. TransWest Express LLC

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 draft Reliability Assessment.
2. Please provide your organization's comments on the draft Policy Assessment.
3. Please provide your organization's comments on the draft Economic Assessment.
4. Please provide your organization's comments on the draft Frequency Response.
5. Please provide your organization's comments on the Economic Study Requests.
6. Please provide your organization's Maximum Import Capability (MIC) expansion requests. Any confidential details should not be included in this comment template and should instead be emailed to regionaltransmission@caiso.com
7. Please provide any additional comments on the February 28th, 2024 Stakeholder Meeting discussion.

1. Please provide your organization's comments on the draft Reliability Assessment.

No	Submitting Organization	Comment Submitted	CAISO Response
1A	ACP - California	No comment	
1B	Bay Area Municipal Transmission Group (BAMx)	<p>The Bay Area Municipal Transmission Group (BAMx)¹¹ appreciates the opportunity to comment on the California Independent System Operator (CAISO) Draft 2024-2025 Transmission Planning Process (TPP) Unified Planning Assumption and Study Plan (Draft Study Plan). The comments and questions below address the Study Plan posted on February 21, 2024, and discussed during the stakeholder meeting on February 28, 2024. We continue to see CAISO's desire to work with Stakeholders to enhance each year's plan. We look forward to working with the CAISO on this collaborative process.</p> <p><u>BAMx Supports the CAISO's Plan Not to Model the "On Hold" Projects</u></p> <p>Some transmission projects are "on hold," such as the Moraga-Sobrante 115 kV Line Reconductor.¹² The Study Plan states that these projects on hold will not be modeled in the starting base case. BAMx supports this assumption.</p> <p><u>Need for a Separate Stakeholder Process in Tandem with 2024-2025 TPP to Develop Criteria to Review Previously-Approved Projects</u></p> <p>While much work has been done to evaluate previously approved projects as a one-time effort, a need exists for developing criteria for not assuming the existence of all previously-approved in CAISO TPP base cases. BAMx's participation in tracking progress on approved CAISO projects that is afforded under the transmission review processes, such as PG&E Stakeholder Transmission Asset Review (STAR), has illustrated how different transmission projects are prioritized for funding and many reasons that drive project delays and reprioritization. Therefore, criteria must be developed based on further details concerning development efforts after initial CAISO approval. BAMx urges CAISO to conduct a stakeholder process</p>	<p>ISO will look into need for previously approved projects on a case-by-case basis.</p>

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		in tandem with the CAISO 2024-2025 TPP to develop transmission project reevaluation criteria. For the details on this initiative, please refer to BAMx comments on the CAISO's discretionary policy initiatives catalog submission, dated February 28, 2024.[3]	
1C	California Public Utilities Commission	<p>Staff of the California Public Utilities Commission's Energy Division (CPUC Staff or Staff) develop and administer energy policy and programs to serve the public interest, advise the CPUC, and ensure compliance with CPUC decisions and statutory mandates. CPUC Staff provide objective and expert analyses that promote reliable, safe, and environmentally sound energy services at just and reasonable rates for the people of California.[1] Further, CPUC Staff advocate on behalf of California ratepayers at the Federal Energy Regulatory Commission (FERC), under whose jurisdiction the 2023-2024 Transmission Planning Process falls. CPUC Staff appreciate this opportunity to comment on this process.</p> <p style="text-align: center;">Sensitivity Studies</p> <p>In the 2024-2025 Transmission Planning Process Unified Planning Assumptions and Study Plan, the CAISO stated that the reliability analysis will include sensitivity studies identified in Table 2.10-3. The CPUC requests that the CAISO include the cases that are associated with each of the sensitivity scenarios presented on Table 2.10-3 for the planning areas that required them.</p>	Your comment is noted.
1D	California Western Grid Development, LLC	Cal Western is submitting an economic study request for the Pacific Transmission Expansion Project (PTE or PTEP) in the 2024-25 TPP. As described in detail below we ask PTEP be evaluated as a Multi-value Project, that provides reliability, economic, policy and deliverability benefits.	Pages 1 and 2 of the ISO Transmission Economic Assessment Methodology (TEAM) describes how the reliability, policy and economic needs are combined in a multi-value framework.
1E	East Bay Community Energy	No comment	
1F	EDF Renewables	No comment	
1G	ENGIE NA	No comment	
1H	Golden State Clean Energy	No comment	

No	Submitting Organization	Comment Submitted	CAISO Response
1I	Grid United LLC	No comment	
1J	GridLiance West	No comment	
1K	Kern to Southland Energy Link LLC	No comment	
1L	LSA	No comment	
1M	Natural Resources Defense Council, Inc.	The Natural Resources Defense Council (NRDC) generally supports the proposed study design for the Reliability Assessment. We appreciate that CAISO has identified a 15-year planning horizon with 2034 and 2039 selected as the longer-term study years. This is a positive step forward from the 12-year planning horizon in the 2023-2024 study plan. The 15-year planning horizon is more appropriate to keep pace with the development needed to achieve California's decarbonization goals given the long lead times and typical delays of transmission development. We encourage CAISO to continue to identify at least 15-year planning horizons in future TPPs, although we recommend planning for a 20-year horizon, if not longer.	Your comment is noted
1N	Northern California Power Agency	No comment	
1O	Pacific Gas & Electric	<p>PG&E appreciates the opportunity to provide comments on the draft study plan for the 2024-25 Transmission Planning Process. Below please find PG&E's comments and recommendations.</p> <p style="padding-left: 40px;">A. A Process with Additional Analytical Work Streams is Needed to Address the Requirements of SB 887 and Potential Natural Gas Retirements. PG&E Requests the CAISO Further Define Outputs Related to Modeled Natural Gas Retirement in the Base Case and Sensitivity.</p> <p>PG&E appreciates the high-gas retirement portfolio adopted by the California Public Utilities Commission (CPUC) for sensitivity analysis by the CAISO in the 2024-2025 TPP. It is rational for the CPUC and the CAISO to begin developing a potential high-gas retirement process by looking specifically at local capacity areas first given recent legislation (i.e., SB 887). However, as highlighted in PG&E's comments in CPUC's Integrated</p>	Comments noted.

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		<p>Resource Planning (IRP) proceeding, an orderly retirement process for existing natural gas facilities and a simultaneous transition to alternative resources cannot be properly captured within the existing IRP and TPP framework. Such a process will require coordination of multiple analytical workstreams, leveraging existing IRP and TPP mechanisms to create actionable insights, among other things. Specifically, IRP and TPP analytical workstreams will need to identify both transmission and non-transmission solutions to ensure development of a resource portfolio that will substantially reduce “non-preferred resources in local capacity areas[.]”¹¹ and determine whether specific non-preferred resources in local capacity areas can be retired or would be more cost-effective to maintain for reliability purposes. PG&E re-iterates conceptual steps below, which will require engagement and refinement that could be part of a process to address the requirements of SB 887, and that can help the transition toward potential retirements of existing natural gas facilities in local capacity areas beginning with the 2024-2025 TPP base case and sensitivity: ¹²</p> <ol style="list-style-type: none"> <li data-bbox="562 906 1213 1503"> 1. Identification of Hourly Transmission Deficiency¹³, Transmission Solution(s), and Costs: As part of the TPP, the CAISO should identify: (1) the hourly transmission deficiency to meet load pockets or NERC reliability requirements, and (2) the cost of any proposed transmission solution(s), when modeling the portfolio for existing natural gas facility retirements in each local capacity area. The hourly transmission deficiency identified can then be used to identify potential non-transmission solutions as an alternative in such local capacity areas. For example, the transmission solution and associated cost that is identified to resolve the hourly transmission deficiency in a local capacity area could help determine if the need is better satisfied by either: (a) deferring non-preferred generation in favor of increased transmission in such area, which enables more system energy be delivered to meet local load, or (b) identifying a combination of 	<p>The ISO performs power flow studies on various snap shot scenarios and develops mitigations to address identified reliability issues. If the mitigation involves energy-limited non-transmission solutions, the ISO will verify the sufficiency of the solution by checking the hourly needs.</p>

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		<p>non-transmission solutions locally (e.g., solar, storage, load management, thermal utilizing clean fuels, long-duration storage, etc.) to meet that same need as a more cost-effective solution.</p> <p>a. Multiple Analytical Time Horizons: Hourly transmission deficiencies should be shown over multiple time horizons (e.g., 5, 10, and 15 years) to ensure that any identified transmission alternatives are more cost effective over a reasonable planning time horizon.</p> <p>2. Use Hourly Transmission Deficiencies to Identify Non-Transmission Solution(s), Align on a Single Solution Given Assumed Costs: Non-transmission solutions (i.e., supply-side resources, load management, or a combination of both) that address the hourly transmission needs are identified and benchmarked on a cost basis against transmission solution(s). The final solution will be determined as one of the following: (a) transmission solution is selected and natural gas facility is still needed for system reliability; (b) transmission solution is selected and natural gas facility can be retired; (c) non-transmission solution is selected and natural gas facility is still needed for local or system reliability; or (d) non-transmission solution is selected and natural gas unit is not needed for local or system reliability and can be retired.</p> <p>3. Solution and Portfolio Verification: If non-transmission solution is selected, CAISO and CPUC models will need to be re-run with non-transmission solutions within CAISO portfolio to ensure reliability and decarbonization targets are still achieved. It is critical for both the CAISO and CPUC to have confidence in the solution given their differing authority.</p>	<p>The ISO performs power flow studies on various snap shot scenarios and develops mitigations to address identified reliability issues. If the mitigation involves energy-limited non-transmission solutions, the ISO will verify the sufficiency of the solution by checking the hourly needs.</p>

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		<p>4. Non-Transmission Procurement Feedback: If a non-transmission solution is selected, and procurement is ordered by the Commission, there should be a mechanism in place to address a potential divergence from estimated solution costs.</p> <p>PG&E provides these comments to highlight additional work that is needed and a potential starting point for discussion, however the potential components outlined above are conceptual and will need refinement with the help of all stakeholders. PG&E requests the CAISO detail the outputs of their retirement analysis to align on the 2024-2025 TPP Study scope for both base case and sensitivity analyses related to natural gas retirements. As described above, PG&E believes the key components needed to address the requirements of SB 887 and develop a potential process to retire existing natural gas facilities, include: (1) locational granularity,¹⁴ (2) benchmarking of transmission and non-transmission solutions to contain costs, reduce build, and increase feasibility, and (3) confirmation that any resulting portfolio will meet all reliability and decarbonization criteria in a cost-effective manner.</p> <p>B. PG&E South Bay Sensitivity Case</p> <p>Regarding the PG&E South Bay Sensitivity Case, PG&E agrees with the necessity to evaluate the South Bay Area transmission system, its load serving capabilities and limitations given the projected high load growth due to development of EV charging, commercial, industrial, and data centers in the area. PG&E looks forward to the opportunity to collaborate with the CAISO to further explore and clearly define the parameters of the study including the details of the load growth scenario in and around the South Bay.</p>	<p>Comment noted.</p>
1P	San Diego Gas & Electric	<ul style="list-style-type: none"> Regarding Imperial Valley (IV) 230kV Overstressed Breakers Mitigation Plans, we conducted a feasibility study on incorporating bus series reactors into the 230kV IV bus to address the overstressed breaker issues. The associated cost estimate, along with 	<p>The ISO will review the alternatives proposed by SDG&E to mitigate the SCD concerns at Imperial Valley and Miguel 230 kV substations and will consider them as projects under review for potential approval as an extension of the 2023-2024 Transmission Plan.</p>

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		<p>supplemental materials, were submitted to CAISO for further consideration. The previous alternative, which involved replacing the 63kA breakers with 80kA breakers in IV, was deemed infeasible from a construction perspective.</p> <ul style="list-style-type: none"> • Concerning Miguel (ML) 230kV Overstressed Breakers Mitigation plans, as the 80 kA breaker upgrade is not feasible, and our preferred alternative of opening one of the "X" breakers causes some power flow issues. We've been exploring the options listed below and will tentatively update the ISO by the end of May 2024: • Adding a 3-Ohm Current Limiting Reactor to TL23026 and opening one of the "X" breakers (TL23041C or TL23042C). • Installing Current Limiting Reactors in series with Miguel's 230 kV bus. • Adding a 2nd Bay Boulevard to Silvergate 230 kV transmission Line (in parallel with TL23026) and opening one of the "X" breakers (TL23041C or TL23042C). • Reconducting Sycamore– Scripps 69 kV (TL6916) and opening one of the "X" breakers (TL23041C or TL23042C). 	
1Q	Silicon Valley Power	<p>The City of Santa Clara <i>dba</i> Silicon Valley Power (SVP) appreciates the opportunity to comment on the California Independent System Operator (CAISO) Draft 2024-2025 Transmission Planning Process (TPP) Unified Planning Assumption and Study Plan (Draft Study Plan). The comments and questions below address the Study Plan posted on February 21, 2024, and discussed during the stakeholder meeting on February 28, 2024. SVP acknowledges the significant efforts of the CAISO staff in developing the Study Plan.</p>	The comment has been noted.
1R	Six Cities	No comment	
1S	The WATT Coalition	The Working for Advanced Transmission Technologies Coalition (WATT) provides these comments on the California Independent	

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		<p>System Operator's (CAISO) 2024-2025 Transmission Planning Process (TPP) Draft Study Plan.</p> <p>The WATT Coalition is a trade association of Grid Enhancing Technology companies, renewable energy developers, clean energy financiers, and utilities working to lower energy costs, improve reliability and accelerate clean energy deployment through deployment of Grid Enhancing Technologies (GETs). GETs are hardware and/or software that dynamically increase the capacity, efficiency, reliability or safety of existing power lines, faster and at lower cost than traditional grid buildout. GETs include Dynamic Line Rating (DLR) systems, Advanced Power Flow Control systems and Topology Optimization software.</p> <p>GETs should be studied in all transmission planning work, as they can increase the value of transmission upgrades and sometimes reduce the amount of infrastructure needed.</p> <p>These modeling results and case studies showcase the potential value of considering GETs in transmission planning:</p> <ul style="list-style-type: none"> • In <u>modeling of the SPP system in Kansas and Oklahoma</u>, the Brattle Group found that GETs could increase utilization of the built and planned 345kV lines in the states by 15-22%. • An <u>empirical analysis</u> of the operational efficiencies and risks posed by static ratings, Ambient Adjusted Ratings (AAR,) and DLR found that DLR exceeds static ratings 94-97% of the time with an average increase of 47% in line capacity. The average capacity increase with DLR was over 16% higher than AAR. • Smart Wires Inc. power flow control technology will <u>allow an addition 170 MW of power to be transferred</u> into New South Wales and is expected to deliver net benefits of up to \$268 million to electricity customers. • National Grid UK is deploying 48 Smart Wires Inc. SmartValve power flow control devices at three 	<p>As described in section 1.4.2 of the CAISO's 2023-2024 Transmission Plan Report, the ISO typically considers advanced conductors and power flow controllers as planning tools providing an alternative to other capital expenditures. We also consider dynamic thermal line ratings and topology optimizations in accessing operational benefits through additional capacity providing economic or emergency measure uses.</p>

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		<p>substations. <u>These devices will enable 1.5 GW of new renewable energy</u> in that system, enough to power 1 million homes and deliver net savings of over \$500 million.</p> <ul style="list-style-type: none"> • National Grid ESO finds topology optimization increases transfer capability by <u>3-12% on large interfaces</u>. • Topology optimization studies in PJM, MISO, SPP and ERCOT markets show <u>reduced congestion costs by 25-50% and reduce renewables curtailment by 50%</u>. <p>The study "<u>Time Series Power Flow and Contingency Analysis with Weather Adjusted Line Ratings: A Synthetic WECC Case Study</u>" by staff at AES Corporation demonstrates a robust methodology for incorporating DLR into planning. In the study, Weather-Adjusted Line Ratings (WALR) provided an 80+% reduction in the total overloaded hours as compared to the base case, for lines that were overloaded by over 30%, despite some lines experiencing slightly increased overloads. WALR effectively reduced the net number of overloads by 67% from the base case, eliminating 18,005 cumulative hours of overloads and only causing an additional 355 hours of overloads.</p> <p>DLR should be prioritized on lines that may see reduced capacity when utilities comply with Order 881 requiring Ambient Adjusted Ratings (AAR) on all lines. AAR, based solely on ambient temperature, may reduce the carrying capacity of lines during key summer heat events. Given the lines were likely operated safely at a higher rating for years, DLR could recover that capacity and potentially unlock more, or let operators know when the line capacity should truly be rated below today's static rating for safety.</p> <p>In addition, DLR should be prioritized on lines in high wind, low temperature areas because DLR tends to provide the highest rating improvement in these areas.</p>	

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		CAISO should explore available modeling tools to include DLR, advanced power flow control and topology optimization in the power flow modeling. These technologies should also be included in the list of lower-cost alternatives to traditional infrastructure for corrective action plans listed on page 52 of the presentation.	
1T	TransWest Express LLC	No comment	

2. Please provide your organization's comments on the draft Policy Assessment.

No	Submitting Organization	Comment Submitted	CAISO Response
2A	ACP - California	No comment	
2B	Bay Area Municipal Transmission Group (BAMx)	<p>Further Remapping of Portfolio Resources Needs to Be Considered</p> <p>BAMx applauds the transparency regarding the information provided by the CPUC Energy Division (ED) and CAISO staff in identifying the 2024 and 2039 Base portfolio transmission capability exceedances. The data shared by the CPUC in the Final Dashboard for the 2024-2025 TPP and also included in the CAISO's February 28th presentation indicate that there are as many as 6 and 16 constraints; the CPUC staff has estimated, based on the transmission capability data provided by the CAISO, where major area delivery network upgrades (ADNU) would be triggered with high likelihood in the Base Portfolio in 2034 and 2039, respectively. Furthermore, there are as many as 7 and 5 additional constraints, where ADNUs would be triggered with medium likelihood in the Base Portfolio in 2034 and 2039, respectively. Given the large scale and scope of these major ADNUs that the Base portfolio is expected to trigger based on the initial resource to busbar mapping, BAMx encourages the CAISO to make every effort to determine whether remapping some of the resources in the Base portfolio can result in minimizing the need and scope of some of the ADNUs.</p>	<p>Consistent with CPUC's guidance and previous TPP cycles, the ISO will consider reducing or removing generic battery storage, where appropriate, before moving forward with any new policy-driven transmission upgrades associated specifically with storage mapping in this planning cycle. Also, the ISO will consider alternative and potentially less costly upgrades particularly in cases where the amount of resources behind the exceedances may not warrant the size and cost of the upgrades identified in the 2023 White Paper.</p>
2C	California Public Utilities Commission	<p style="text-align: center;">Cost Information</p> <p>During discussions on cost-effective solutions, the CAISO mentioned that evaluations are still in the Study Plan stage and that cost information will be shared at the November 2024 TPP meeting. The CPUC Staff encourages the CAISO to share this information, as well as the amount of capacity expected for such projects, as soon as the information is available.</p> <p style="text-align: center;">Deliverability Assessment</p> <p>Additionally, the CAISO identified examples of what revisions to the Deliverability Assessment Methodology were applicable to</p>	<p>Your comment is noted.</p> <p>A summary of those revisions are in this presentation:</p>

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		the transmission studies, including the “10% change” and cascading outage risks for P7 until the upgrades are in place. Please provide a summary of revisions that can be reviewed by stakeholders.	https://stakeholdercenter.caiso.com/InitiativeDocuments/Presentation-Generation-Deliverability-Methodology-Review-Jan11-2023.pdf
2D	California Western Grid Development, LLC	<p>Cal Western is submitting an economic study request for the Pacific Transmission Expansion Project (PTE or PTEP) in the 2024-25 TPP. As noted in detail below we ask PTEP be evaluated as a Multi-value Project, that provides reliability, economic, policy and deliverability benefits.</p> <p>Cal Western asks CAISO recognize one of the important Policy benefits of PTEP is compliance with the SB887 requirement to substantially reduce reliance on fossil generation in transmission constrained local areas by 2035.</p>	Your comment is noted.
2E	East Bay Community Energy	No comment	
2F	EDF Renewables	No comment	
2G	ENGIE NA	<p>Before addressing specific deliverability upgrades identified in the scoping draft, Engie wants to address an important issue that has arisen the GIR process but has direct bearing on the Policy Assessment. Specifically numerous GIR studies are triggering short circuit duty (SCD) upgrades that have very long lead times, usually in the range of 5-6 years but sometimes as long as 8.5 years. But for these upgrades, some projects could be online years sooner as typical plan of service upgrades can be performed in a 2-3 year timeframe. Although this issue has arisen before C14, it is especially pronounced in the C14P2 studies released in January. For this reason, it is a new issue that needs increased attention. CAISO should include in its policy assessment an evaluation if some of these SCD mitigations (usually breaker replacements) are needed for the policy portfolio and, if so, consider them as policy upgrades. Furthermore, CAISO should (1) evaluate PTO methodologies to make sure they are consistent and accurately forecast need for SCD mitigation and (2) implement policies that allow projects to interconnect subject to annual assessments of near term SCD breaker capacity or “headroom” so that these long lead time upgrades do not unnecessarily delay a project’s</p>	<p>Short circuit studies including long term studies are part of the TPL-001-5 reliability assessment portion of the TPP based on the CPUC base portfolio and are performed by PTOs. The ISO does consider SCD mitigations identified by PTOs for approval as reliability projects.</p> <p>Your comment is noted. Engies’ proposal regarding allowing projects to interconnect subject to annual assessments of near term SCD breaker capacity or “headroom” is not clear. If the annual assessments indicate there is no SCD “headroom” the projects</p>

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		<p>COD even if the project remains needed in future years. By adding this scope to the policy assessment, truly long lead time SCD projects will not be the reason why additional policy projects cannot interconnect on a timely basis.. Engie encourages CAISO to explain how it will incorporate this new data into its TPP analysis.</p> <p>Engie North America (Engie) is concerned that the scope of upgrades being identified in the Transmission Planning Process are not aggressive enough to provide the deliverability necessary to meet the state’s reliability and climate goals. Lack of transmission is a significant bottleneck to clean energy deployment, particularly for Northern CA where power futures are indicating an increasing premium for NP15 while recent large transmission investments are primarily benefiting Southern CA. CAISO’s 20 Year Transmission Outlook and sensitivity results demonstrate potential “least regrets” transmission upgrades that CAISO can pursue in this cycle. Engie encourages CAISO to use these results to adopt more aggressive mitigations in areas where the CPUC’s resource portfolio triggers the need for upgrades.</p> <p>Engie appreciates that CAISO’s presentation includes data showing the constraints triggered by the CPUC’s 2024-25 TPP resource portfolio. Slides 66-71 provide data from the CPUC’s busbar mapping process showing which constraints are triggered by the 24-25 TPP portfolio and notes about their likelihood of requiring an upgrade. This data highlights the constraints and potential upgrades that CAISO likely will prioritize in near term TPP cycles. Although the CPUC already posted this data as part of its busbar mapping results, including it in the CAISO’s presentation emphasizes the importance of these upgrades and adds transparency to the planning process. Developers can use this information to track the viability of current and/or future project locations, resulting in a more efficient project development process.</p>	<p>connected based on the policy Engie is proposing may not be allowed to generate until the SCD mitigations are in place.</p> <p>The ISO notes that the draft 2023-2024 recommends approval of major 500 kV transmission projects in northern California that will allow integration of portfolio OSW while at the same time reinforce the Northern backbone 500 kV system.</p> <p>Your comment is noted. The ISO notes that CPUC’s analysis is based on the ISO’s transmission capability estimates whitepaper. As noted in the whitepaper, transmission capability estimates are estimates developed primarily based on the location, mix and size of resources in the ISO generation interconnection queue and certain other assumptions described in the white paper. The accuracy of these estimates depends, among other things, on the deviation of the resource portfolios from the commercial interest that these estimates are primarily based on. The final determination of the transmission upgrades needed by the resource portfolios is made during the policy-driven assessment the ISO conducts as part of the TPP.</p>

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		<p>Two critical constraints that are listed as “low” or “medium” priority deserve CAISO’s attention in the 24-25 TPP cycle.</p> <ol style="list-style-type: none"> 1. Birds landing – Contra Costa 230kV line: This constraint is listed as having a “medium” likelihood of triggering upgrades in both 2034 and 2039 because “... resource amounts mapped to Glenn, Eagle Rock and Lakeville are not likely to impact the limit ADC [Area Deliverability Constraints] behind constraint per CAISO staff feedback” (see slide 66). Engie understands this to mean that there may be enough capacity behind this constraint to support deliverability allocations to all the MWs mapped to this area. Engie encourages CAISO to conduct a sensitivity analysis to determine whether higher renewables and storage volumes or expedited gas plant retirements would support the approval of the mitigation identified in the whitepaper as a “least regrets” option that aligns with the state’s climate and reliability objectives. 2. Windmaster – Delta pumps 230kV line: This constraint is listed as having a “low” probability of triggering upgrades in both 2034 and 2039 because “... mapped resources unlikely to trigger exceedance and similar exceedance in 23-24 TPP” (see slide 66). Engie understands this to mean that an upgrade proposed for approval in the 2023-24 TPP would accommodate all the MWs allocated to this area in the 2024-25 TPP portfolio. If CAISO does not approve an upgrade to alleviate this constraint in the 2023-24 TPP, Engie encourages CAISO to consider doing so in the 2024-25 cycle. Although the resources mapped to this constraint exceed the existing capability by a relatively small amount, the upgrade identified in the whitepaper would unlock significant capacity (over 6000 MWs) and provide significant opportunity for reliability benefit for the PG&E Greater Bay zone. 	<p>The CAISO cannot recommend a policy driven upgrade unless it is identified in the base portfolio transmitted by the CPUC.</p> <p>See response above</p>

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		<p>There are also two constraints that are not triggered by the CPUC's 24-25 TPP portfolio that deserve CAISO's attention. Etiwanda - Rancho Vista and Antelope - Vincent are both constraints that appear to be resolved by relatively low-cost upgrades and unlock significant transmission capability. Although they are not triggered by the 2024-25 TPP portfolio, Engie requests that CAISO provide more detail about their potential effectiveness. For example, it is unclear whether these constraints are nested behind others that would also have to be resolved to unlock potential in this region. CAISO should highlight which upgrades have low cost and high impact and encourage the CPUC to allocate resources to these areas so that the most cost-effective upgrades can be triggered through the resource planning process.</p> <p>Finally, the Vaca Dixon – Tesla 500kV line is listed as having a “high” likelihood of being triggered, but CPUC staff notes encourage CAISO to “assess potentially less costly alternatives or co-optimizing with potential upgrades needed for North Coast offshore wind resources mapped” (see slide 69). Engie supports this request if any lower cost upgrades sufficiently increase transmission capability at this constraint. The upgrade identified in the whitepaper unlocks over 8500 MW, making it by far the most important upgrade identified for the PG&E North of Greater Bay and PG&E Greater Bay transmission zones. A less costly alternative would be ideal if it results in similar benefits.</p>	<p>The ISO has provided the transmission related information to allow the CPUC to make the assessment described in the comment. The portfolio mapping is a result of such assessment. Comments related to the portfolios should be directed to the CPUC.</p> <p>The comment is noted</p>
2H	Golden State Clean Energy	No comment	
2I	Grid United LLC	No comment	
2J	GridLiance West	No comment	
2K	Kern to Southland Energy Link LLC	No comment	
2L	LSA	LSA appreciates the additional transparency that CAISO has provided by including the CPUC's busbar mapping results in its February 28 th presentation. Slides 66 – 71 provide data from the CPUC's busbar mapping dashboard showing the constraints triggered by the 2024-25 TPP portfolio. The data includes	The comment is noted.

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		<p>CAISO’s preliminary indication of whether the constraints have a “low”, “medium”, or “high” likelihood of triggering an upgrade in this TPP cycle, pending further analysis. This information helps stakeholders identify priority upgrades and track progress through the transmission planning process.</p> <p>In some cases the notes indicate that CAISO may be hesitant to approve an upgrade when the estimated exceedance is low. For example, the Colorado River – Red Bluff constraint has a “low” likelihood of being triggered in 2039 and the notes indicate that</p> <p style="padding-left: 40px;">“Amount of resources mapped results in an exceedance of the identified and already approved upgrade. CAISO staff have identified a New 500 kV Colorado River-Red Bluff line with a \$357million cost estimate from previous studies that could alleviate an exceedance. However, given the relatively small size of exceedance compared to capacity of constraint and comparable, CAISO staff noted that an additional upgrade may not likely be needed, but full TPP analysis is necessary to confirm.” (see slide 71)</p> <p>LSA looks forward to the results of CAISO’s full analysis of this and other areas where exceedances are relatively low and encourages consideration of sensitivities to determine what level of mitigation will be necessary. LSA notes that in some cases, like Colorado River – Red Bluff, the exceedance is low, but the upgrade that the resource exceeds was only recently approved in 2021, which suggests that CAISO can be more aggressive in determining the appropriate mitigation for triggered constraints. If CAISO had approved a more aggressive mitigation in 2021, there may not have been a need for yet another upgrade in this area in the 2024-25 cycle. Since the need for new solar and other resources will continue to rise to meet the state’s goals, LSA encourages CAISO to continue to use sensitivities and the 20-year outlook results to justify aggressive mitigations for triggered upgrades.</p>	

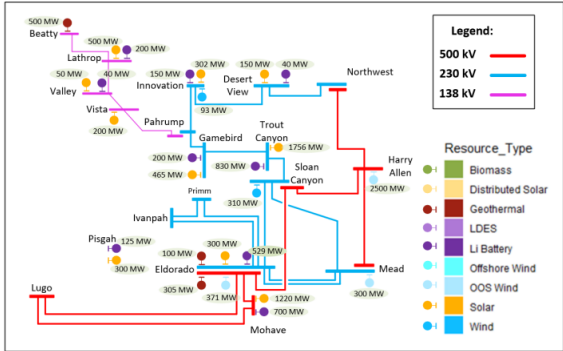
No	Submitting Organization	Comment Submitted	CAISO Response
2M	Natural Resources Defense Council, Inc.	<p>NRDC is encouraged that the sensitivity portfolio (25 MMT by 2035) assumes high gas retirement. Per the SB100 starting point scenario that assumes 15,000 MW of natural gas power plant capacity would be retired by 2040, the 20-Year Transmission Outlook assessed 14,408 MW of gas-fired generation to be retired in the CAISO system by 2040. Given the 15-year planning horizon in this draft study plan projects to 2039, we appreciate the sensitivity portfolio that assumes 15,966 MW of gas generation will retire by 2039 as it most appropriately aligns with both the 20-Year Outlook and SB100. This is a positive improvement from the 23-24 TPP that included 4,500 MW of gas retirements. Therefore, the sensitivity should be given priority, as the 8,100 MW of gas retirements by 2039 in the base portfolio is insufficient.</p> <p>Additionally, we believe that the level of forecasted offshore wind underestimates the amount that will be needed in order to align with other state planning processes such as the California Energy Commission's (CEC) planning goal of 25 GW by 2045 and the CEC's analysis of SB 100 in which the model selected 10,000 MW of offshore wind built out by 2045. In contrast, the draft study plan only includes 4,531 MW of offshore wind for the 2039 base portfolio. Since offshore wind is a long lead resource, it will require significant investment in infrastructure and supply chain buildout, including ports and transmission.</p>	<p>The comment is noted.</p> <p>Comments regarding the resource portfolios should be directed to the CPUC.</p>
2N	Northern California Power Agency	<p>Northern California Power Agency (NCPA) appreciates the CAISO including non-CPUC jurisdictional LSE resource planning assumptions in the 2024-2025 transmission planning process. To the extent there are inconsistencies between the planning assumptions contained in a non-CPUC jurisdictional LSE's resource planning documentation (applicable to a non-CPUC jurisdictional LSE's portfolio) and assumptions that are being made by the CPUC (as reflected in applicable CPUC planning documentation), NCPA requests that CAISO defer to and use the planning assumptions contained in a non-CPUC jurisdictional LSE's resource planning documentation. For example, the sensitivity portfolio developed by the CPUC lists certain NCPA natural gas generating facilities as scheduled to</p>	<p>Your comment is noted.</p> <p>The high gas generation retirement sensitivity portfolio is an informational only portfolio designed to provide some insight</p>

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>be retired on or prior to 2039. These assumptions are simply incorrect. The CPUC did not consult with NCPA, the resource owner, as to whether such retirement assumptions contained in their planning documentation are accurate. NCPA has not announced its intention to retire its natural gas generating facilities prior to 2045. In fact, as reflected in the 2024 Inter-Agency Resource Planning documentation NCPA has submitted into the 2024-2025 transmission planning process, NCPA confirms that the units identified by the CPUC as subject to retirement are scheduled to operate through at least 2045. NCPA is also currently exploring the opportunity to upgrade many, if not all, of its natural gas generating facilities so that they will be able to operate using hydrogen gas as fuel (rather than natural gas) in the future, resulting in an extending life of such facilities beyond 2045 (then operating non-emitting resources to support of NCPA's environmental goals). As to the CPUC planning and facility retirement assumptions NCPA refers to herein, please see the CPUC, Gas Capacity Not Retained Assumption List for the Base Case and Sensitivity Portfolios, (Feb. 15, 2024) https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2023-irp-cycle-events-and-materials/assumptions-for-the-2024-2025-tpp/gasnotretained_mappingresults.xlsx and NCPA's IARP at 4-7.</p> <p>NCPA's goal is to ensure the CAISO has the most accurate information available for use in its transmission planning efforts, to ensure the results of the transmission planning studies are consistent with both CPUC and non-CPUC jurisdictional LSE planning assumptions.</p>	<p>regarding the transmission requirements associated with high gas fired generation retirement. As such, none of the incremental gas generation included in the Gas Capacity Not Retained Assumption List for the sensitivity portfolio has announced an intention to retire and the assumption used in the sensitivity portfolio for the informational only sensitivity study.</p>
20	Pacific Gas & Electric	No comment	
2P	San Diego Gas & Electric	<p>Individual resource charging capability continues to be something that should be analyzed from a policy perspective. Current policy studies only look at one aspect of storage</p>	<p>As indicated in the CPUC's Busbar Mapping Criteria¹, battery charging capability is one of the criteria the CPUC considers when mapping stand-alone battery storage to local capacity areas. The</p>

¹ https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/2023-2024-tpp-portfolios-and-modeling-assumptions/mapping_methodology_v10_05_23_ruling.pdf, see for example page 19

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>resources (i.e., discharging) and ignores their charging characteristics. A minimum “chargeability” criteria for policy resources should be as important as their deliverability. One major reason for this is because charging competes with load consumptions at buses. CAISO’s current LCR charging studies are too broad to be able to capture the upcoming charging challenges that the IRP portfolios will pose in the coming years in load pockets. Further, it is not clear why the CAISO would require economic studies/needs to justify upgrades for one characteristic of storage resources (i.e., charging) but would require policy studies/needs for another characteristic of the same storage resources (i.e., discharging). At a minimum, our recommendation should be that the CAISO explores this important topic in a stakeholder meeting to gather additional feedback. Not properly considering how policy resources will charge from the grid could hamper the energy transition and the state’s policy goals.</p> <p>Additionally, SDG&E has noted in the past that the CEC IEPR has shifted the peak into solar production hours. Therefore SDG&E encourages CAISO to appropriately account for the solar production in policy studies and assess this effect on deliverability constraints.</p>	<p>CPUC uses the charging capability provided in the ISO’s LCR study reports to limit the amount of battery mapped to local capacity areas and sub-areas. In addition, the ISO will be performing long-term LCR studies as part of the current TPP, which will further assess charging limitations using the updated load and resource assumptions.</p>
2Q	Silicon Valley Power	<p>Consult with Public Utilities for Assumed POU-owned Generation Retirements in the Portfolios</p> <p>Table 1 below includes selected Publicly Owned Utility (POU)-owned gas-fired generation retirements assumed in 2034 and 2039 in the Base and High Gas Retirement Sensitivity portfolios. These assumptions may be inconsistent with the POU Integrated Resource Plans (IRP). For instance, SVP’s IRP does not assume the retirement of DUANE_1_PL1X3 by 2034 in its IRP. SVP appreciates that one of the stated purposes of the High Gas Retirement Sensitivity is to assess how transmission solutions compare to new clean capacity solutions in terms of cost and how they solve system and local reliability needs associated with the attributes of retired thermal plants. Since some of these assumptions may deviate from the POU IRPs,</p>	<p>The ISO understands that the CPUC’s portfolios including the gas-fired generation methodology and assumptions were developed with stakeholder input. Stakeholders should direct resource assumption related concerns to the CPUC ideally before the portfolios are adopted by the CPUC and transmitted to the ISO.</p> <p>As can be seen from the table included in the comment, DUANE_1_PL1X3 is included in the Gas Capacity Not Retained Assumption List for the high gas generation retirement sensitivity portfolio only. The ISO considers the high gas generation retirement sensitivity portfolio as an informational only portfolio designed to provide insight regarding the transmission requirements associated with high gas fired generation retirement. As such, none of the incremental gas generation included in the Gas Capacity Not Retained Assumption List for the sensitivity portfolio has announced</p>

No	Submitting Organization	Comment Submitted	CAISO Response																																																																																																																																																																																
		<p>SVP requests the CAISO to consult with the non-CPUC-jurisdictional entities before finalizing the generation retirement assumptions in the Base and Sensitivity portfolios.[1]</p> <p style="text-align: center;">Table 1: POU-Owned Generation Retirements in the Base and High Gas Retirement Sensitivity portfolios: 2034 and 2039</p> <table border="1" data-bbox="516 506 1197 846"> <thead> <tr> <th>2034 & 2039 Base Case</th> <th>2034 High Gas Ret. Sens.</th> <th>2039 High Gas Ret. Sens.</th> <th>RESOURCE_ID</th> <th>GEN_UNIT_NAME</th> <th>NET_DEPENDABLE_CAPACITY (MW)</th> <th>PTO_AREA</th> <th>OWNER_OR_OF</th> </tr> </thead> <tbody> <tr><td>YES</td><td>YES</td><td>YES</td><td>LODI25_2_UNIT1</td><td>LODI GAS TURBINE</td><td>25</td><td>PG&E</td><td>NCPA (MSS Agreement - S14)</td></tr> <tr><td>YES</td><td>YES</td><td>YES</td><td>CORONAS_6_CLRWTR</td><td>Clearwater Power Plant</td><td>28</td><td>SCE</td><td>City of Riverside (MSSA)</td></tr> <tr><td></td><td>YES</td><td></td><td>GLNARM_7_UNIT1</td><td>GLEN ARM UNIT 1</td><td>22.13</td><td>SCE</td><td>City of Pasadena</td></tr> <tr><td>YES</td><td>YES</td><td>YES</td><td>GLNARM_7_UNIT2</td><td>GLEN ARM UNIT 2</td><td>22.28</td><td>SCE</td><td>City of Pasadena</td></tr> <tr><td></td><td>YES</td><td></td><td>COLTON_8_AQUAMA1</td><td>HUGHAMMS UNIT 1 (CITY OF COLTON)</td><td>43</td><td>SCE</td><td>City of Colton</td></tr> <tr><td>YES</td><td>YES</td><td>YES</td><td>DUANE_3_PLXK3</td><td>DONALD VON RAESFELD POWER PROJ</td><td>147.8</td><td>PG&E</td><td>City of Santa Clara DBA Silicon Valley Power (MSS Agreem)</td></tr> <tr><td></td><td>YES</td><td></td><td>CSCGNR_1_UNIT1</td><td>GIANERA PEAKER UNIT 1</td><td>24.75</td><td>PG&E</td><td>City of Santa Clara DBA Silicon Valley Power (MSS Agreem)</td></tr> <tr><td></td><td>YES</td><td></td><td>CSCGNR_1_UNIT2</td><td>GIANERA PEAKER UNIT 2</td><td>24.75</td><td>PG&E</td><td>City of Santa Clara DBA Silicon Valley Power (MSS Agreem)</td></tr> <tr><td></td><td>YES</td><td></td><td>PALALT_7_CORUG</td><td>Cooperatively Owned Back-Up Generat</td><td>4.5</td><td>PG&E</td><td>NCPA (MSS Agreement - S14)</td></tr> <tr><td></td><td>YES</td><td></td><td>RVRSIDE_6_RERC13</td><td>Riverside Energy Res. 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2R	Six Cities	No comment																																																																																																																																																																																	
2S	The WATT Coalition	<p>Grid Enhancing Technologies should be modeled as potential upgrades in the deliverability assessments. One DLR deployment in the UK is estimated to provide an increase in capacity averaging more than 45%, which will allow 500 MW more renewable power to be carried. National Grid U.K. estimates the project will save £1.4 million (roughly \$1.75 million) in network operating costs – see the report “Building a Better Grid: How Grid Enhancing Technologies Complement Transmission Buildout” by the Brattle Group for this and other examples.</p>	The comment is noted.																																																																																																																																																																																
2T	TransWest Express LLC	<p>TransWest Express LLC (“TransWest”) appreciates the opportunity to provide comments on the draft 2024-2025 TPP Policy Assessment. TransWest’s comments are limited to the planned assessment within the East of Pisuah Area in southern Nevada. Specifically, TransWest has concerns with the amount of CPUC portfolio resources relying on the Harry Allen - Eldorado 500 kV transmission (“HAE”) line. These resources</p>	<p>Your comment is noted. The policy driven assessment will identify the deliverability issues associated with the portfolio resources delivered to the Harry Allen/Eldorado area. The results will be presented to stakeholders at the November meeting. The ISO will be open to considering TransWest’s project as a potential alternative depending on the results of the study.</p>																																																																																																																																																																																

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>include the the out-of-state wind resources mapped to the Harry Allen end of the HAE line and the resources associated with the approved and yet to be constructed Sloan Canyon 500 kV to HAE interconnection that is planned closer to Eldorado. Below is a snapshot of the area from the November 2023 TPP Policy Assessment meeting.</p> <p>Base Portfolio: East of Pisgah Area</p>  <p style="text-align: right;"> FCDS 9,225 MW Total 12,111 MW </p> <p>California ISO Page 79</p> <p>TransWest has designed the TransWest Express Transmission Project ("TWE Project") to bring Wyoming wind resources to the existing ISO system in Nevada near the Harry Allen 500 kV substation. TransWest has been working with CAISO, Participating Transmission Owner's and other utility planners to complete the interconnection and WECC studies to ensure thier is a reliable interconnection and respective Path Ratings are not being impacted. During these reliability studies, transmission planners from several groups identified that some of the study results may be impacted by the planned Sloan Canyon 500 kV interconnection to the HAE line and agered to support GLW's interconnection studies with DesertLink and any WECC studies that may be found required.</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>These interconnection and WECC reliability studies will not replace the TPP Policy Assessment analysis that TransWest believes is prudent to be conducted in the 2024-2025 TPP. Previous TPP analysis within the area has not identified a need for additional capacity, transmission solutions, in the area. However, in keeping with the proactive objectives outlined for the 2024-2025 TPP, TransWest believes a re-assessment should be made that is focused on the combined needs being placed on the single 500 kV HAE line, particularly on the segment between the Sloan Canyon interconnection and the Eldorado station. The CPUC portfolio includes thousands of MWs of resources with Full Capacity Deliverability Status ("FCDS") mapped to the HAE line near Harry Allen plus the resources associated with the Sloan Canyon 500 kV interconnection. TransWest has not conducted specific analysis to determine whether there is a Policy transmission need in this CAISO area. However, based on preliminary analysis, TransWest believes that this requested Policy Assessment meets the objectives outlined within the draft 2024-2025 TPP Study plan. Further, this area is quite complicated with several PTO' facilities converging several non-CAISO transmission owner facilities which would benefit from the CAISO's leadership in coordinating with the respective transmission planning authorities while meeting the TPP objectives to assess the needs within the existing CAISO system.</p> <p>TransWest is developing a 49-mile, 500 kV transmission line segment from the Harry Allen/Crystal Area to the Eldorado Valley southeast of metropolitan Las Vegas. This segment is located beyond the border of the existing CAISO system, is in parallel with the HAE line and could potentially serve as a HAE No. 2 line if needed. There are likely several potential transmission solutions available that could meet this potential need. TransWest has designed in some flexibility to the design of this segment should the ISO identify specific requirements for a solution and is prepared to work with the ISO planners, area transmission owners and stakeholders on this requested Policy Assessment.</p>	

3. Please provide your organization's comments on the draft Economic Assessment.			
No	Submitting Organization	Comment Submitted	CAISO Response
3A	ACP - California	No comment	
3B	Bay Area Municipal Transmission Group (BAMx)	No comment	
3C	California Public Utilities Commission	No comment	
3D	California Western Grid Development, LLC	<p>Cal Western is submitting an economic study request for the Pacific Transmission Expansion Project (PTE or PTEP) in the 2024-25 TPP. As noted in more detail below we ask:</p> <p>(1) PTEP be studied as a Multi-value Project that delivers economic, reliability, policy and deliverability benefits</p> <p>(2) CAISO use the recommendations of E3 when quantifying the economic benefits of the project. Most notably we ask CAISO recognize the marginal resource for system RA in the 2030s is utility scale batteries, and the marginal local RA resource for West LA continues to be thermal power plants. The cost of keeping those Western LA gas plants available for local RA in the 2030s should exceed the \$8.82 / kw / mo. to \$10.95 / kw / mo. paid by CDWR for AB 205 Strategic Reserve Capacity.</p> <p>(3) CAISO clearly articulate the value CAISO attributes to each of the PTEP economic, reliability, policy and deliverability benefits.</p> <p>See Cal Western overall comments below for more detail on each of these points</p>	This economic study request has been noted and is included in the final study plan.
3E	East Bay Community Energy	No comment	
3F	EDF Renewables	No comment	
3G	ENGIE NA	No comment	
3H	Golden State Clean Energy	No comment	
3I	Grid United LLC	No comment	
3J	GridLiance West	No comment	

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3M	Natural Resources Defense Council, Inc.	No comment																																																																																																					
3N	Northern California Power Agency	No comment																																																																																																					
3O	Pacific Gas & Electric	<p>C. Updated Economic Study for Fresno Avenal Area to Reduce Transmission Congestion</p> <p>PG&E requests that the CAISO conduct an updated economic study to identify solutions to relieve transmission congestion in the Fresno Avenal area that includes lines such as the Gates-Tulare Lake 70kV line, the Gates Substation, and the Kettleman Hills Tap to Gates 70 kV line. Transmission congestion can increase consumer costs because it prevents low-cost energy, compared to other dispatched resources, from serving customers. The table below from public OASIS price data for an Avenal solar resource highlights the reoccurring negative prices and congestion impacting solar resources in the area. PG&E recommends the CAISO study the latest available data and identify cost-effective transmission or other solutions that would mitigate congestion in the Fresno Avenal area.</p> <p>Table 1 - Average Annual Day Ahead Locational Marginal Energy Prices for an Avenal Area Solar Resource</p> <table border="1"> <thead> <tr> <th>Year</th> <th>HE 1</th> <th>HE 2</th> <th>HE 3</th> <th>HE 4</th> <th>HE 5</th> <th>HE 6</th> <th>HE 7</th> <th>HE 8</th> <th>HE 9</th> <th>HE 10</th> <th>HE 11</th> <th>HE 12</th> <th>HE 13</th> <th>HE 14</th> <th>HE 15</th> <th>HE 16</th> <th>HE 17</th> <th>HE 18</th> <th>HE 19</th> <th>HE 20</th> <th>HE 21</th> <th>HE 22</th> <th>HE 23</th> <th>HE 24</th> </tr> </thead> <tbody> <tr> <td>2021</td> <td>147.9</td> <td>45.5</td> <td>44.1</td> <td>43.8</td> <td>45.6</td> <td>50.5</td> <td>57.8</td> <td>51.0</td> <td>33.3</td> <td>11.7</td> <td>-14.6</td> <td>-34.7</td> <td>-44.7</td> <td>-42.7</td> <td>-25.4</td> <td>5.1</td> <td>38.9</td> <td>66.6</td> <td>85.8</td> <td>91.4</td> <td>76.3</td> <td>65.4</td> <td>54.9</td> <td>50.4</td> </tr> <tr> <td>2022</td> <td>91.6</td> <td>88.0</td> <td>86.6</td> <td>85.0</td> <td>88.3</td> <td>95.3</td> <td>103.3</td> <td>85.6</td> <td>59.1</td> <td>31.2</td> <td>-16.1</td> <td>-36.2</td> <td>-36.9</td> <td>-50.3</td> <td>-33.8</td> <td>17.6</td> <td>60.2</td> <td>103.5</td> <td>129.9</td> <td>139.5</td> <td>124.4</td> <td>110.3</td> <td>98.6</td> <td>93.2</td> </tr> <tr> <td>2023</td> <td>61.1</td> <td>58.7</td> <td>57.3</td> <td>56.9</td> <td>59.1</td> <td>65.9</td> <td>73.1</td> <td>61.8</td> <td>33.8</td> <td>-4.4</td> <td>-38.2</td> <td>-57.2</td> <td>-59.9</td> <td>-55.6</td> <td>-43.2</td> <td>-8.1</td> <td>31.9</td> <td>66.3</td> <td>87.7</td> <td>95.3</td> <td>86.3</td> <td>77.9</td> <td>70.0</td> <td>64.6</td> </tr> </tbody> </table>	Year	HE 1	HE 2	HE 3	HE 4	HE 5	HE 6	HE 7	HE 8	HE 9	HE 10	HE 11	HE 12	HE 13	HE 14	HE 15	HE 16	HE 17	HE 18	HE 19	HE 20	HE 21	HE 22	HE 23	HE 24	2021	147.9	45.5	44.1	43.8	45.6	50.5	57.8	51.0	33.3	11.7	-14.6	-34.7	-44.7	-42.7	-25.4	5.1	38.9	66.6	85.8	91.4	76.3	65.4	54.9	50.4	2022	91.6	88.0	86.6	85.0	88.3	95.3	103.3	85.6	59.1	31.2	-16.1	-36.2	-36.9	-50.3	-33.8	17.6	60.2	103.5	129.9	139.5	124.4	110.3	98.6	93.2	2023	61.1	58.7	57.3	56.9	59.1	65.9	73.1	61.8	33.8	-4.4	-38.2	-57.2	-59.9	-55.6	-43.2	-8.1	31.9	66.3	87.7	95.3	86.3	77.9	70.0	64.6	This comment has been noted.
Year	HE 1	HE 2	HE 3	HE 4	HE 5	HE 6	HE 7	HE 8	HE 9	HE 10	HE 11	HE 12	HE 13	HE 14	HE 15	HE 16	HE 17	HE 18	HE 19	HE 20	HE 21	HE 22	HE 23	HE 24																																																																															
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No	Submitting Organization	Comment Submitted	CAISO Response
3S	The WATT Coalition	<p>Grid Enhancing Technologies should be studied in the production cost modeling in the economic assessment. The study should evaluate the potential for Dynamic Line Ratings, Advanced Power Flow Control and Topology Optimization to reduce congestion as compared to their cost to install. In some cases GETs may not fully resolve congestion, but they can make a significant improvement. PPL Electric Utilities reports that one installation of DLR reduced congestion costs from \$60 million in one year to below \$2 million the next. The DLR system itself cost less than \$250,000.</p> <p>GETs deployments can be completed in less than a year, compared to the long timelines for traditional transmission upgrades. They are also redployable – if a constraint is resolved by other upgrades, the GETs can be moved to a different line or substation. For instance, in 2006, AEP installed real-time line ratings on a congested 138 kV transmission line in Texas, which allowed them to <u>avoid a \$20 million upgrade</u> which would have quickly become a stranded asset as new lines were built to serve increased wind generation.</p>	This comment has been noted.
3T	TransWest Express LLC	No comment	

4. Please provide your organization's comments on the draft Frequency Response.			
No	Submitting Organization	Comment Submitted	CAISO Response
4A	ACP - California	No comment	
4B	Bay Area Municipal Transmission Group (BAMx)	No comment	
4C	California Public Utilities Commission	No comment	
4D	California Western Grid Development, LLC	No comment	
4E	East Bay Community Energy	No comment	
4F	EDF Renewables	No comment	
4G	ENGIE NA	No comment	
4H	Golden State Clean Energy	No comment	
4I	Grid United LLC	No comment	
4J	GridLiance West	No comment	
4K	Kern to Southland Energy Link LLC	No comment	
4L	LSA	No comment	
4M	Natural Resources Defense Council, Inc.	No comment	
4N	Northern California Power Agency	No comment	
4O	Pacific Gas & Electric	No comment	
4P	San Diego Gas & Electric	SDG&E appreciates CAISO's efforts to identify upcoming risks to the grid and the Frequency Response study provides a needed look into how CAISO will be able to meet BAL-003 standard requirements. SDG&E hopes that CAISO will consider expanding the study scope to include the latest portfolios (such as the 2039 base and sensitivity portfolios) associated with this and subsequent TPP cycles.	The frequency response study for the TPP 2025-2026 cycle will be based on the 2026 and 2029 Spring-Of-Peak base cases. With time permitting and with improvement of the process, CAISO will attempt to extent the analysis as much as possible.
4Q	Silicon Valley Power	No comment	
4R	Six Cities	No comment	
4S	The WATT Coalition	No comment	
4T	TransWest Express LLC	No comment	

5. Please provide your organization's comments on the Economic Study Requests			
No	Submitting Organization	Comment Submitted	CAISO Response
5A	ACP - California	No comment	
5B	Bay Area Municipal Transmission Group (BAMx)	No comment	
5C	California Public Utilities Commission	No comment	
5D	California Western Grid Development, LLC	<p>Cal Western is submitting an economic study request for the Pacific Transmission Expansion Project (PTE or PTEP) in the 2024-25 TPP.</p> <p>Dear CAISO Transmission Planning,</p> <p>California Western Grid Development LLC ("California Western Grid") appreciates the opportunity to comment on the CAISO's 2024-2025 Draft Study Plan ("Study Plan") and submit this economic study request for the Pacific Transmission Expansion Project ("PTE" or "PTEP"). We also hereby request that CAISO study the PTEP as a solution to the reliability needs described herein and as a transmission solution needed to accommodate deliverability and the State Public Policy needs identified in Senate Bill No. 887 ("SB 887"). Given that the PTEP addresses all these various needs, we request that the CAISO considers these study requests at the appropriate time in the 2024-2025 Transmission Planning Process ("TPP"). We also request that the PTEP be analyzed as a Multi-Value Project ("MVP") on the basis of its cumulative reliability, economic, deliverability, and public policy benefits, as contemplated and provided for in the Study Plan. We commend the CAISO for clarifying the role of MVP'S in the Study Plan. Analyzing all the benefits of a project is the best approach for "no regrets" planning.</p> <p>The PTEP is currently being studied in the 2023-2024 TPP as both a reliability and economic project and we also requested to be studied as an MVP project. As described there, PTEP is a controllable 2,000 MW HVDC system utilizing subsea cables, which the CAISO has found will allow existing power available at the Diablo Canyon 500 kV switchyard, new sources of offshore</p>	This economic study request has been noted and is included in the final study plan.

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>wind (“OSW”), or other new sources of renewable energy to be delivered to and between northern and southern California. CAISO has determined that a similar configuration can reduce Local Capacity Requirements (“LCR”) in the West LA Basin by approximately 1,993 MW, thereby displacing the need to rely on a similar amount of local capacity. An alternative topology with the same LCR benefit consisting of a new substation at Morro Bay looped into the existing Gates to Diablo Canyon 500 kV transmission line was also provided. California Western Grid requests the PTEP be studied in the 2024-2025 Transmission Planning Process (TPP), with the following HVDC converter stations:</p> <ul style="list-style-type: none"> • One 2,000 MW, ±525 kV HVDC bipole converter station located at the northern terminus of the project, connecting either at the Diablo Canyon 500 kV AC station or a future Morro Bay 500 kV AC station. • One 2,000 MW, ±525 kV HVDC bipole converter station located at a site in El Segundo, with underground HVDC cables from the shoreline to the converter, and the following AC connections: <ul style="list-style-type: none"> ○ Two 220 kV AC underground cable circuits to El Nido substation; and ○ Two 220 kV AC underground and offshore cable circuits to Redondo substation. <p>California Western Grid also encourages the CAISO to evaluate different configurations of the PTEP, to the extent CAISO Staff thinks appropriate, including multi-terminal configurations and alternative points of interconnection (POI).</p> <p>In the 2021-2022 TPP Report, the CAISO stated that</p> <p style="padding-left: 40px;">The potential PTE project benefit of reducing capacity requirements needs to be reassessed in future planning cycles as the assumptions change, particularly if the</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>need to retain the existing gas-fired fleet for system-wide resource reliability purposes is relaxed.</p> <p>Some of the assumptions related to the study of the PTEP have changed, which warrants the reassessment of the PTEP, and we call you attention to the following five factors:</p> <ol style="list-style-type: none"> Senate Bill No. 887 <p>In 2022, the Legislature unanimously approved, and the Governor signed, SB 887 into law. SB 887 identifies an urgent State Public Policy need for new transmission that can deliver renewable energy into currently transmission constrained load centers. SB 887 states that considering the CAISO's FERC approved tariff that requires the CAISO to plan and approve transmission needed to meet state, federal, and local public policy needs, the legislature expects CAISO to take notice of the State Public Policy needs identified in SB 887.</p> <ol style="list-style-type: none"> CAISO 20-Year Transmission Outlook <p>The CAISO's first-ever 20-Year Outlook was issued on January 31, 2022. In the Outlook, the CAISO states that</p> <p>The CAISO expects to conduct additional stakeholder dialogue through 2022 about the next steps as well as the long-term architecture set out in this 20-Year Outlook. Those additional efforts, together with the 20-Year Outlook and evolving resource planning and procurement, will inform the CAISO's annual transmission planning processes that approve and initiate specific projects.^[1]</p> <p>This 20-Year Outlook anticipated 15,000 MW of gas plant retirements by 2040, including 3 to 5 GW of retirements in the Los Angeles Basin and Big Creek-</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>Ventura area. [2] In the 20-Year Outlook, the CAISO found a need for an HVDC system from Diablo to LA and stated that the PTEP is an example of the line that is needed.[3]</p> <p>3. California Public Utilities Commission February 15, 2024, Decision <i>Adopting 2023 Preferred System Plan and Related Matters, And Addressing Two Petitions for Modification (R.20-05-003)</i>.</p> <p>This Decision by the California Public Utilities Commission (“CPUC”) transmits a Base Case Portfolio for the CAISO to use for transmission planning for the 2024-2025 TPP that will surely drive the need for significant new transmission and includes the following:</p> <ul style="list-style-type: none"> • “56.6 GW of new resources by 2035, on top of the dramatic increases already reflected in the pre-existing resource mix. [4] • The number of new renewable resources grows to 74.7 GW in the Commission’s base portfolio for 2039. A portfolio which, according to the Commission can be used by the CAISO to “inform and guide [transmission] upgrades recommended for approval for the 2035 portfolio.” [5] • A twenty-five million metric ton (“MMT”) target, high transportation electric loads, and 4.5 GW of OSW. <p>4. Even without the dramatic Increases in new generation reflected in the Base Case Portfolio, the CAISO is experiencing deliverability issues associated with interconnecting new generation.</p> <p>The PTEP provides several deliverability benefits to the Bulk Electric System. These include the ability to deliver power directly from Central California to West LA, offset LCR requirements within the LA Basin Local Capacity Area (“LCA”) and provide much needed transmission</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>capacity between northern and southern California. The PTEP previously demonstrated, as was confirmed by the CAISO, that it could reduce local capacity requirements within the LA Basin, potentially allowing for the replacement of up to 1,993 MW of thermal gas fired generation capacity. The PTEP will deliver 2,000 MW into the LA Basin, providing a 1:1 benefit in reducing the need for existing gas-fired generation in the LA Basin. These power injections also provide mitigation for some of the Southern California Edison ("SCE") metro area contingency overloads identified in the CAISO 2022-2023 Transmission Planning Process ("TPP").</p> <p>In addition, the PTEP provides significant benefits in mitigating constraints on transfer capacity flows on Path 26 which continues to be identified as a congested path. In the 2022-2023 TPP, the PTEP was identified as providing high effectiveness in relieving flows under contingency conditions.</p> <p>5. The CAISO has found that the PTEP provides valuable transfer capacity that can reduce reliance on the LA Area gas plants and the Aliso Canyon Gas Storage Facility</p> <p>At the November 17, 2022, stakeholder presentation, the CAISO provided the results of a sensitivity study showing that the PTEP could reduce dependence on the Aliso Canyon Gas Storage Facility ("Aliso Canyon") and allow, but not require, it to retire. This is an important option for the state and a meaningful benefit considering the State's desire to close that facility at some point in the near term. PTEP would also reduce reliance on Aliso Canyon prior to its retirement.</p> <p>In light of the preceding factors affecting the assumptions made in previous studies of the PTEP, we request the CAISO to study the PTEP as a transmission solution that will provide <i>multiple</i></p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>benefits to CAISO ratepayers, including mitigation of Path 26 congestion, reduced renewable curtailment, substantial Local Capacity Benefits and reduced reliance on gas plants by 2035, which SB 887 establishes as a public policy need.</p> <p>In California Western Grid's October 14, 2022, filing for the 2022-2023 TPP[6], we submitted an independent analysis performed by E3 of the benefits the PTEP will provide, <u>even if the gas plants remain in service through the study period ("E3 Analysis")</u>. The E3 Analysis is also discussed in California Western Grid's October 2023 request to be studied in the pending 2023-2024 TPP. California Western Grid hereby incorporates herein by reference these prior study requests and will not repeat the many benefits analyzed therein. The E3 analysis concludes that, without retirement of any gas generation and without quantifying many of the known benefits of the PTEP (wildfire risk reduction, reduced reliance on Aliso Canyon, air quality improvement especially among underserved communities), economic benefits of the PTEP would offset more than fifty percent (50%) of the PTEP's cost. And the benefits not quantified include environmental air quality benefits that lie at the core of the State's energy goals, as well as wildfire mitigation benefits that SB 887 requires to be considered in planning new transmission. Thus, we urge the CAISO to evaluate the benefits of the PTEP in terms of the <i>cumulative</i> "multi-valued" benefits the PTEP provides, including the benefit of accommodating the need for transmission to meet State Public Policy needs identified in SB 887. A silo approach to analyzing benefits is sure to ignore the true value of a project like the PTEP.[7] In terms of the quantifying the benefits of the PTEP, we request that the CAISO utilize the E3 methodology, which anticipates storage (not gas-fired generation) becoming the marginal Resource Adequacy ("RA") resources in the 2030's and beyond. The E3 methodology is described in detail in the October 14th filing. To the extent necessary or appropriate we will provide an update to the E3 Analysis prior to the CAISO's economic study.</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>Importantly, we disagree with the CAISO’s historic approach to continue using conservative valuations for LCR benefits as mentioned above. We believe the E3 methodology is a superior approach to calculating LCR benefits and should be used by the CAISO to quantify LCR reduction benefits.</p> <p>But even if the CAISO continues to use gas plants as the marginal RA resource in the 2030’s and beyond, the CAISO valuation understates the actual cost of LCR when procured from existing gas fired resources, especially in West LA. Based on the publicly available FERC EQR data for 2021, the weighted average price of local capacity contracts in the Western LA Basin ranges between \$4.86/kW-month and \$7.45/kW-month. This is based on an analysis of the publicly available FERCEQR data for existing RA contracts totaling 2,434 MW of existing gas plants in the LA Basin. This is in sharp contrast to the approximately \$2.00 / kw/mo. the CAISO has historically used as the cost of LCR procurement in the LA Basin.</p> <p>More recent events demonstrate how significantly the CAISO understates the cost of continued operation of gas plants in its LCR analysis, especially in transmission constrained local areas. The California Department of Water Resources recently contracted for resources needed to create the AB 205 California Strategic Reserve. It is an excellent example of the extraordinary prices that a fossil generator located in transmission constrained local area could demand for Local RA procured through the CPUC IRP proceeding or through the CAISO emergency procurement provisions. The capacity payments alone for the 2,859.3 MW of LA Basin strategic reserve from the Long Beach, Huntington Beach and Oxnard gas power plants ranged from \$8.82/kw/mo. to \$10.95 /kw/mo.[8]</p> <p>California Western Grid submits that the CAISO TPP will not achieve its objective of providing helpful information to State policy makers and regulatory agencies by continuing to use “conservatively” low or outdated values for local capacity.</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>We agree with and support the CAISO's previous comment to the CPUC that transmission solutions can have long lead times and, therefore "planning for transmission-dependent projects should start as soon as possible."^[9] Indeed, if the State is to reach its 2030, 2035, and 2045 greenhouse gas ("GHG") SB 100 requirements in a reliable and least-cost manner, the CAISO must begin planning <u>now</u> for transmission solutions that reduce LCRs that currently cause reliance on local fossil fuel-fired resources. To do so, the CAISO will need to change its highly conservative assumptions and use realistic capacity values in its economic analysis and begin to incorporate the added cost of operating and maintaining the generation plants that are providing LCR capacity.</p> <p>We appreciate the CAISO's consideration of these comments, and we urge the CAISO to re-study the PTEP in the 2024-25 TPP consistent with the comments herein. We are available to discuss the PTEP's many benefits with CAISO transmission planners at your convenience.</p> <p>Thank you for your consideration.</p>	
5E	East Bay Community Energy	No comment	
5F	EDF Renewables	EDF Renewables (EDFR) respectfully requests that the CAISO conduct economic studies in the 2024 – 2025 TPP from the attached list of proposed economic solutions. As part of this submission, EDFR includes a proposal for CAISO to implement temporary reconfigurations to address congestion and curtailment, with the NewGrid Inc. document referenced submitted to the designated email address for your review.	These economic study requests in the attachment have been noted and are included in the final study plan.
5G	ENGIE NA	No comment	
5H	Golden State Clean Energy	Golden State Clean Energy, LLC ("GSCE") submits the Monarch 500 kV Transmission Project as an Economic Planning Study Request that may 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 reducing CAISO customer costs. This transmission project is currently being studied by the Western Area Power	This economic study request has been noted and is included in the final study plan.

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>Administration (“WAPA”) Sierra Nevada Region (“SNR”) in relation to solar and storage projects in the WAPA SNR queue.^[1] GSCE understands that CAISO is aware of the Monarch project from an affected system perspective, but this transmission project and the corresponding solar and storage in the WAPA SNR 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>Monarch is reasonable to include in the Economic Planning Study because it has the potential to address congestion on Path 15 and elsewhere in the region, facilitate the integration of cost-efficient resources that can serve load in the Greater Bay Area, and facilitate the integration of renewable and storage resources in an important resource area in the San Joaquin Valley. In addition to potential economic benefits, Monarch can provide policy benefits to California and the CAISO controlled grid. As such, we proposed CAISO consider this project as a policy-driven project in the 2023-2024 TPP.^[2] Given those studies are ongoing and the results will not be available prior to CAISO finalizing the 2024-2025 TPP Study Plan, GSCE believes CAISO should continue to consider Monarch in the 2024-2025 TPP to the extent it does not approve of Monarch in the 2023-2024 TPP.</p> <p>In the 2023-2024 TPP preliminary assessment results CAISO presented on November 16, 2023, CAISO identified significant and increasing congestion on Path 15 as well as other Fresno area congestion. For example, PG&E Fresno area congestion increased from \$13.81 million in the final 2022-2023 Transmission Plan^[3] to \$147.60 million in the preliminary 2023-2024 results.^[4] The preliminary 2023-2024 results show similar, though not as significant, increases in Path 26 and Path 15 congestion that impacts access to cost-effective regional</p>	<p>This comment has been noted.</p>

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>renewables. GSCE recommends CAISO examine whether Monarch provides economic benefits related to congestion on Path 15, north of Los Banos, and potentially Moss Landing–Las Aguilas that are being prioritized for study in the 2023-2024 TPP economic assessment.</p> <p>Though the economic analyses have accurately identified significant congestion on key CAISO north/south transmission corridors and the PG&E Fresno area, GSCE believes CAISO’s current Transmission Economic Assessment Methodology (“TEAM”) may understate actual congestion at times. To ground truth CAISO’s current methodology, GSCE recommends CAISO compare historical actual congestion to its economic modeling results. Recent market reports suggest that congestion on Path 15 and Path 26 is already occurring. The CAISO Department of Market Monitoring (“DMM”) 2022 Annual Report identified a significant increase in congestion costs, with \$1.07 billion in day-ahead congestion rents representing 5.5 percent of day-ahead market energy costs.[5] The DMM 2022 Annual Report also identified the three constraints with the greatest annual impact on price separation as the Midway-Vincent #2 500 kV Line, the Quinto-Los Banos 230 kV Line, and the Panoche-Gates #2 230 kV Line. In total, the congestion on these lines significantly limited both north-to-south and south-to-north flows across the CAISO footprint.[6]</p> <p>Although DMM’s 2023 report has yet to be released, the second quarter of 2023 continued to show significant congestion impacts on Path 15, with the Gates-Midway #2 500 kV Line and the Los Banos-Gates 500 kV Line experiencing congestion in four and five percent of hours, respectively, in the day-ahead.[7] The third quarter of 2023 also shows significant day-ahead congestion in the area, with the Panoche-Gates #2 230 kV Line bound in 9.4 percent of hours, Moss Landing–Las Aguilas 230 kV bound in 19.3 percent of hours, and Los Banos-Gates 500 kV (30050_LOSBANOS_500_30055_GATES1_500_BR_1_2)</p>	

No	Submitting Organization	Comment Submitted	CAISO Response																																																																					
		<p>bound in 4.4 percent of hours, all of which increased average PG&E prices in the third quarter.[8]</p> <p>In addition to using historical data, the CAISO should consider whether its economic analysis is consistent with forward-looking price differentials for NP26, SP26, and ZP26. Energy futures prices on the Interconnection Exchange (“ICE”) indicate increasing price deviations between CAISO zones. The figure below shows the ICE futures forward-peak product for December 2023 through December 2030 with a roughly \$11/MWh on-peak price differential between NP15 and SP15.[9]</p> <div data-bbox="520 711 1192 1117" data-label="Figure"> <table border="1"> <caption>ICE On-Peak Futures (\$/MWH) - Estimated Data Points</caption> <thead> <tr> <th>Date</th> <th>NP15 On Peak (\$/MWH)</th> <th>SP 15 On Peak (\$/MWH)</th> </tr> </thead> <tbody> <tr><td>Dec-23</td><td>80</td><td>65</td></tr> <tr><td>Apr-24</td><td>45</td><td>30</td></tr> <tr><td>Aug-24</td><td>110</td><td>95</td></tr> <tr><td>Dec-24</td><td>105</td><td>90</td></tr> <tr><td>Apr-25</td><td>45</td><td>30</td></tr> <tr><td>Aug-25</td><td>105</td><td>90</td></tr> <tr><td>Dec-25</td><td>105</td><td>90</td></tr> <tr><td>Apr-26</td><td>45</td><td>30</td></tr> <tr><td>Aug-26</td><td>105</td><td>90</td></tr> <tr><td>Dec-26</td><td>105</td><td>90</td></tr> <tr><td>Apr-27</td><td>45</td><td>30</td></tr> <tr><td>Aug-27</td><td>105</td><td>90</td></tr> <tr><td>Dec-27</td><td>105</td><td>90</td></tr> <tr><td>Apr-28</td><td>45</td><td>30</td></tr> <tr><td>Aug-28</td><td>105</td><td>90</td></tr> <tr><td>Dec-28</td><td>105</td><td>90</td></tr> <tr><td>Apr-29</td><td>45</td><td>30</td></tr> <tr><td>Aug-29</td><td>105</td><td>90</td></tr> <tr><td>Dec-29</td><td>105</td><td>90</td></tr> <tr><td>Apr-30</td><td>45</td><td>30</td></tr> <tr><td>Aug-30</td><td>105</td><td>90</td></tr> <tr><td>Dec-30</td><td>105</td><td>90</td></tr> </tbody> </table> </div> <p>In sum, CAISO should explore modifications to TEAM or other potential enhancements to its economic analysis so to provide more accurate, robust studies to review economically driven projects and to right-size reliability and policy projects that can provide economic benefits.</p>	Date	NP15 On Peak (\$/MWH)	SP 15 On Peak (\$/MWH)	Dec-23	80	65	Apr-24	45	30	Aug-24	110	95	Dec-24	105	90	Apr-25	45	30	Aug-25	105	90	Dec-25	105	90	Apr-26	45	30	Aug-26	105	90	Dec-26	105	90	Apr-27	45	30	Aug-27	105	90	Dec-27	105	90	Apr-28	45	30	Aug-28	105	90	Dec-28	105	90	Apr-29	45	30	Aug-29	105	90	Dec-29	105	90	Apr-30	45	30	Aug-30	105	90	Dec-30	105	90	
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51	Grid United LLC	<p>Grid United LLC is pleased to submit the Del Amo to El Nido Underground Line project to the CAISO for consideration as an economic study request in the 2024-2025 Transmission Planning Process. The Del Amo to El Nido Underground Line intends to utilize a repurposed oil & gas pipeline to provide valuable right-of-way from the Del Amo Substation to the El Nido</p>	<p>This economic study request has been noted and is included in the final study plan.</p>																																																																					

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>Substation. The Del Amo to El Nido Underground Line project is a multi-value project with reliability, policy, and economic benefits, and enables the deliverability of cheaper FCDS resources deep into the LA Basin. The Del Amo to El Nido Underground Line project would provide a path from the Southern Area Reinforcement projects at Del Amo to El Nido, deep into coastal LA Basin. We respectfully request CAISO to study the Del Amo to El Nido Underground Line project for its ability to reduce LCR and reliance on Aliso Canyon storage by providing deliverability of cheaper resources into the LA Basin, the ability to provide voltage support to the coastal LA Basin system, and economic congestion management benefits.</p> <p>A more detailed description of economic study request is provided as an attachment</p>	
5J	GridLiance West	<p>GridLiance West respectfully requests that the CAISO conduct economic studies in the 2024 – 2025 Transmission Planning Process on the following 4 projects (see attached):</p> <ul style="list-style-type: none"> • Sloan Canyon- Mead • GLW Upsize to Sagebrush • Mead- Mohave • GLW Upsize to Esmeralda 	This economic study request has been noted and is included in the final study plan.
5K	Kern to Southland Energy Link LLC	<p>Kern-Southland Energy Link LLC is pleased to submit the Kern-Southland Energy Link (K-SEL) project to the CAISO for consideration as an economic study request in the 2024-2025 Transmission Planning Process. K-SEL intends on repurposing an existing underground Oil & Gas industry pipeline as the conduit for the below grade HVDC transmission cable and right-of-way, enabling the deliverability of cheaper FCDS resources deep into the LA basin. K-SEL is a multi-value project with reliability, policy, and economic benefits, and enables the deliverability of cheaper FCDS resources deep into the LA Basin. K-SEL would provide a path from Kern County to deep into the LA Basin in the form of a controllable DC tie that could be optimized to alleviate congestion on Path 26, which experienced nearly 3,500 hours of congestion and a total cost of</p>	This economic study request has been noted and is included in the final study plan.

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>congestion of ~\$72M in the CAISO 23-24 TPP economic assessment. We respectfully request CAISO to study K-SEL for its ability to reduce LCR and reliance on Aliso Canyon storage by providing deliverability of 2 GW of cheaper resources into the LA Basin without major upgrades to the intra-basin transmission system, the ability to provide voltage support to the coastal LA Basin system, and economic congestion management benefits from having a controllable North South backbone DC transmission link.</p> <p>A more detailed Economic Study request is included as an attachment</p>	
5L	LSA	No comment	
5M	Natural Resources Defense Council, Inc.	No comment	
5N	Northern California Power Agency	No comment	
5O	Pacific Gas & Electric	No comment	
5P	San Diego Gas & Electric	No comment	
5Q	Silicon Valley Power	No comment	
5R	Six Cities	No comment	
5S	The WATT Coalition	No comment	
5T	TransWest Express LLC	No comment	

6. Please provide your organization's Maximum Import Capability (MIC) expansion requests. Any confidential details should not be included in this comment template and should instead be emailed to regionaltransmission@caiso.com			
No	Submitting Organization	Comment Submitted	CAISO Response
6A	ACP - California	No comment	
6B	Bay Area Municipal Transmission Group (BAMx)	No comment	
6C	California Public Utilities Commission	No comment	
6D	California Western Grid Development, LLC	No comment	
6E	East Bay Community Energy	<p>Ava has actively participated in the CPUC's Integrated Resource Planning program (IRP). The IRP results in the base study portfolio used in the CAISO's transmission planning process (TPP). The CPUC's analysis has consistently shown a high reliance on out-of-state resources to meet California reliability, clean energy, and affordability targets. The base case portfolio anticipates large volumes of out-of-state wind and other resources that will require expanded import capacity. (See 2024-02025 TPP Draft Study Plan Table 2.6-1: Resource additions in the base and sensitivity portfolios (in MW), p. 44.) Ava anticipates that out-of-state resources will play an even larger role in serving California than the base case suggests in future years while the rate of import capacity expansion may not keep pace with the level of procurement needed or planned.</p> <p>Without expanded import capacity, California risks the achievement of its reliability and clean energy goals. Ava's experience provides an example of this looming challenge: In 2024 Ava was granted approximately 265 MW of maximum import capacity (MIC). Without including procurement of Wyoming-area out-of-state wind resources, we anticipate our portfolio will need as much as 60 percent of additional import capacity by 2030. Other California load serving entities (LSEs) have (or will have) similarly escalating needs for import capacity for out-of-state resources. LSEs may be able to rely on short-term MIC allocations in the near-term. However, if MIC expansion does not keep pace with procurement, California risks</p>	<p>The draft ISO 2023-2024 Transmission Plan includes a greatly extended section 6.1.2 Resource Adequacy import capability. Of significant importance is chapter 6.1.2.2 Maximum Import Capability expansions driven by the portfolio.</p> <p>Paloverde 500 kV, Mead 230 kV and SCE-IID are among many branch groups with future increases in MIC due to the portfolio.</p> <p>At this time, the NOB region does not have a policy driven MIC increase.</p>

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>procuring resources with capacity that cannot support California reliability and energy that cannot serve California needs. This challenge also presents a significant affordability issue as Californians may end up paying now for unusable capacity it cannot use <i>and</i> later need to procure additional capacity on an accelerated timeline.</p> <p>Ava has identified the following interties where expanded MIC is a high priority:</p> <ul style="list-style-type: none"> • Palo Verde 500kV (in and out of the busbar and surrounding areas) • Mead 230kV (in and out of the busbar and surrounding areas) • SCE_IID (in and out of the busbar and surrounding areas) • NOB region 	
6F	EDF Renewables	No comment	
6G	ENGIE NA	No comment	
6H	Golden State Clean Energy	No comment	
6I	Grid United LLC	No comment	
6J	GridLiance West	No comment	
6K	Kern to Southland Energy Link LLC	No comment	
6L	LSA	No comment	
6M	Natural Resources Defense Council, Inc.	No comment	
6N	Northern California Power Agency	No comment	
6O	Pacific Gas & Electric	No comment	
6P	San Diego Gas & Electric	No comment	
6Q	Silicon Valley Power	No comment	
6R	Six Cities	No comment	
6S	The WATT Coalition	No comment	
6T	TransWest Express LLC	No comment	

7. Please provide any additional comments on the February 28th, 2024 Stakeholder Meeting discussion.

No	Submitting Organization	Comment Submitted	CAISO Response
7A	ACP - California	<p>ACP-California appreciates the opportunity to comment on the Draft Study Plan for the 2024-25 Transmission Planning Process (TPP) and generally supports the CAISO's Draft Study Plan and approach. We also appreciate the ongoing efforts of CAISO to implement the <u>December 2022 Memorandum of Understanding</u> (MOU) and to continue to improve its transmission planning process, including performing longer-term and more proactive transmission planning.</p> <p>For the 2024-25 TPP, the Draft Study Plan proposes to use the MidBaseline load forecast from the 2023 Integrated Energy Policy Report (IEPR) which was adopted by the California Energy Commission (CEC) on February 14, 2024. We understand that a significant amount of effort went into creating this load forecast, including various workshops at the CEC. It is also our understanding that the California Energy Demand forecast contained in the 2023 IEPR represents a new methodology/approach to load forecasting than was used in previous IEPR load forecasts (e.g. the 2022 IPER). As CAISO is likely aware, in other proceedings and processes, some parties have raised concerns about the peak demand forecasts contained with in the 2023 IEPR load forecast. In particular, at least in the near- to mid-term, the load forecasts for the 2023 IEPR show noticeably lower peak demands than prior IEPR forecasts and than prior CAISO peaks.</p> <p>Underlying any load forecasting process is considerable uncertainty regarding the future. California, like other regions, is in the early stages of understanding the impacts from significant load drivers, including additional load from data centers, advanced manufacturing, and rising electrification driven by state policies, federal incentives, and growing consumer interest. While ACP-California recognizes that each of these components is contemplated within the load forecasting process, it may be reasonable to take a conservative approach assuming higher levels of load while these impacts are understood and the load forecasting process continues to evolve. In the context of long-</p>	<p>The California ISO (CAISO) collaborates closely with the California Energy Commission (CEC) to incorporate the latest Commission-adopted load forecast in the annual Transmission Planning Process. The CEC-adopted demand and energy forecast is the official forecast for the CAISO to use in the annual transmission planning process as the CEC demand forecast process is a public stakeholder process before being adopted by the CEC Commission. The CEC demand forecast is both being utilized by the CAISO for its annual Transmission Planning Process, as well by the CPUC for its Resource Adequacy and Integrated Resource Plan.</p> <p>Regarding the most recent CEC's 2023 IEPR demand and energy forecast, the CEC explained that the main drivers of the near-term reduction in the peak demand forecast are largely due to slower growth in projected households and population, increases in rooftop solar generation, and increases in electricity rates (see https://www.energy.ca.gov/sites/default/files/2024-05/2023_Integrated_Energy_Policy_Report_Highlights_ADA.pdf).</p>

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>term load growth, the primary downside risk of overestimating load is front-loading investments that will almost certainly be identified as necessary in the not so distant future</p> <p>ACP-California, therefore, encourages CAISO to work collaboratively with the CEC to further evaluate whether an alternative demand forecast (e.g., the 2022 IEPR forecast) should be used for the 2024-25 TPP, at least until there is a better understanding of the drivers of the lower demand forecast contained in the 2023 IEPR. Utilizing a past load forecast would help to ensure consistency in the CAISO's transmission planning efforts, by keeping the load forecasts more in line with what was used in recent planning processes. ACP-California encourages CAISO to collaborate with the CEC to understand the drivers of the lower load forecasts in the 2023 IEPR and to consider whether an alternative load forecast might be better situated for use in the 2024-25 planning process.</p> <p>Additionally, as part of the 2024-2025 TPP, and future TPP cycles, the CAISO should evaluate the transmission owners' timelines for commencing planning activities for transmission projects approved in prior TPP cycles. There is often a considerable delay between the CAISO's selection of a project in a TPP cycle and the commencement of planning and permitting activities. We recommend the CAISO work with the CPUC to ensure that the Transmission Development Forum captures project status data as soon as new TPP projects are approved. The CAISO and CPUC should ensure that development status data is also reflected in the Transmission Project Review process (CPUC Resolution E-5252). Tracking these projects earlier in the development cycle will ensure that the in-service dates for these projects are better represented in the Transmission Planning Process.</p> <p>And, finally, ACP-California recognizes that the TPP follows the direction for resource assumptions set out by the CPUC's Proposed Decision in the Integrated Resource Planning (IRP) process. The IRP base case portfolio includes 3,855 MW of Offshore Wind (OSW) in 2034 and 4,531 MW of OSW in 2039. However, the sensitivity case does not include any OSW capacity. It is important to recognize that there is a need for</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>transmission planning to be performed, and transmission solutions to be identified, for the full 10 GW of OSW covered by the current lease areas. This is particularly important considering that the current transmission planning timelines can extend up to thirteen years (or more). Thus, initiating sensitivity studies promptly is a wise and necessary measure to ensure the state understands potential future upgrades that may be needed to accommodate OSW resources. Therefore, ACP-California recommends that CAISO include 10 GW of OSW in a sensitivity analysis in the 2024-25 TPP. [1] Doing so would enhance the transmission planning for all resources with long lead times, including OSW.</p>	<p>The sensitivity portfolio is designed to provide insight regarding the transmission requirements associated with one or more aspects of the state's policy direction. The focus of the sensitivity portfolio may understandably vary from one TPP cycle to the next. In the 2023-2024 TPP, the sensitivity portfolio was intended to test a large amount of OSW wind. In the current TPP, the sensitivity portfolio is intended to test the impact of retirement of large amounts of gas-fired generation.</p>
7B	<p>Bay Area Municipal Transmission Group (BAMx)</p>	<p>BAMx Appreciates Commenting Opportunity BAMx appreciates the opportunity to comment on the draft Study Plan. BAMx would also like to acknowledge the significant effort of the CAISO staff in developing the Study Plan to date and their willingness to work with the stakeholders. We plan to work with the CAISO staff to continue improving and enhancing the Study Plan.</p>	<p>Thank you for your support and collaboration.</p>
7C	<p>California Public Utilities Commission</p>	<p>Contingency and Base Case Files Contingency Files and Reliability Assessment Base Cases are scheduled to be available from the CAISO on August 30, 2024, for the 2024-2025 TPP. The CPUC requests that the CAISO make every effort to provide the files before, or at least the same day, the preliminary reliability study results will be presented. CAISO is scheduled to present the preliminary reliability study on August 15, 2024. Receiving the files earlier would provide stakeholders more time to review and conduct a thorough analysis.</p>	<p>The base cases are not finalized until the studies have been completed. Usually some masking of potentially confidential information is required. The ISO will make every effort to meet or exceed the August 30 target.</p>
7D	<p>California Western Grid Development, LLC</p>	<p>No comment</p>	

No	Submitting Organization	Comment Submitted	CAISO Response
7E	East Bay Community Energy	No comment	
7F	EDF Renewables	No comment	
7G	ENGIE NA	No comment	
7H	Golden State Clean Energy	No comment	
7I	Grid United LLC	No comment	
7J	GridLiance West	No comment	
7K	Kern to Southland Energy Link LLC	No comment	
7L	LSA	No comment	
7M	Natural Resources Defense Council, Inc.	No comment	
7N	Northern California Power Agency	No comment	
7O	Pacific Gas & Electric	No comment	
7P	San Diego Gas & Electric	No comment	
7Q	Silicon Valley Power	<p>SVP Appreciates Commenting Opportunity SVP appreciates the opportunity to comment on the draft Study Plan. SVP plans to work with the CAISO staff to continue improving and enhancing the Study Plan.</p>	Thank you for your support and collaboration.
7R	Six Cities	<p><u>Integrated Resource Plans</u> As noted on slide 15 of the CAISO's February 28th presentation, the CAISO requests information regarding non-CPUC jurisdictional entities' integrated resource plans ("IRPs") for the purpose of integrating information contained in those plans into the study assumptions used for the CAISO's 2024-25 Transmission Plan. Two of the Cities—the Cities of Anaheim and Riverside—have public web pages where their IRPs are posted, and these are available via the following links: City of Anaheim, California: Integrated Resource Plan Anaheim, CA - Official Website City of Riverside, California: Power Resources Riverside Public Utilities (riversideca.gov) At this time, Anaheim has completed its 2023 IRP, which is the version that is posted on its website at the link provided above. Documents comprising Anaheim's 2023 IRP are also</p>	The ISO acknowledges the IRP plans of Six Cities and will work with non-CPUC LRA's to incorporate their plans into the 2024-2025 transmission planning process and future planning cycles.

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>publicly available via the California Energy Commission (“CEC”) website in <u>Docket No. 18-IRP-01</u>.</p> <p>Riverside’s updated IRP is expected to be posted on its website by approximately April 1, 2024.</p> <p>The City of Pasadena has likewise completed its 2023 IRP, and documents comprising its IRP are publicly available on the CEC website at <u>Docket No. 18-IRP-01</u>. Pasadena will publicly post its IRP on its website after its acceptance by the CEC with no changes requested.</p> <p>The City of Colton is in the process of completing an update to its IRP. Pending completion of this process, Colton will submit its current IRP to the CAISO via email to <u>regionaltransmission@caiso.com</u>.</p> <p>The City of Banning does not prepare an integrated resource plan. Instead, it prepares a periodic forecast of its load, and it procures resources on an as-needed basis to meet the forecasted load. The City’s most recent forecast document will be submitted via email to <u>regionaltransmission@caiso.com</u>.</p> <p>In the event that the CAISO has questions regarding the information in any of the Cities’ plans or would like to discuss approaches to incorporating the input and assumptions from these plans into the CAISO’s studies, the Cities are available to meet with the CAISO on an individual or joint basis. The Six Cities support the CAISO’s outreach to and coordination with publicly-owned utilities in the CAISO balancing area for purposes of planning the transmission system to meet the needs of all load-serving entities in the CAISO, and would also consider any recommendations from the CAISO for how best to present information in their IRPs in a format or structure that would facilitate alignment with CAISO transmission study activities from year-to-year, provided such recommendations can be implemented in a way that remains consistent with the CEC’s requirements, as applicable, and the needs and requirements of each City’s local regulatory authority.</p> <p><u>Generation Retirement Assumptions</u></p> <p>The Six Cities observe that among the inputs to the CAISO’s transmission planning studies are assumptions as to the</p>	<p>Comments regarding the portfolios including retirement assumptions should be directed to the CPUC. The ISO further notes that the majority of the generating units in the Gas capacity Not Retained</p>

No	Submitting Organization	Comment Submitted	CAISO Response
		<p>retirement of certain thermal resources. For example, the CAISO states on slide 33 of its February 28th presentation: Thermal Generation Retirement Assumptions in the Portfolios – Other thermal generators will be assumed to be retired in the long term base cases based on the Gas capacity Not Retained Assumption List for the Base Case and Sensitivity Portfolios provided by CPUC. The list identifies the specific units to be assumed retired for each category of thermal generation (CCGT and Peakers, CHPs) based on the selection criteria described in the workbook.</p> <p>The Six Cities understand that these projected retirement scenarios are intended to be used throughout the planning studies, as discussed on pages 43-45, 59, and 63-64. Among the units that are assumed to be retired in the Base and Sensitivity portfolios are resources owned and operated by the Cities of Anaheim, Colton, Pasadena, and Riverside, California. The Cities have reviewed the projected retirement assumptions in the CPUC’s “Gas Capacity Not Retained Assumption List,” and the listed dates do not, at this time, reflect official plans by any of the Cities to retire the listed resources by the specified dates. In general, the Cities have either identified other projected retirement dates or have not specifically identified any projected retirement dates for these units.</p>	<p>Assumption List are not intended to show official retirement dates. They are rather assumptions the CPUC developed for transmission planning purposes based on the methodology described on their website given the state’s long-term policy of decarbonizing the grid. The retirement assumptions will be used only in the long term studies (2034 and 2039)</p>
7S	The WATT Coalition	No comment	
7T	TransWest Express LLC	No comment	