SILICON VALLEY POWER.
CITY OF SANTA CLARA

Powering The Center of What's Possible

May 13, 2025

Chair Severin Borenstein
Vice Chair Joe Eto
Governor Angelina Galiteva
Governor Mary Leslie
Governor Jan Schori

California Independent System Operator
250 Outcropping Way
Folsom, CA 95630

RE: SVP Comments to the Board of Governors on the 2024-2025 Transmission Plan Regarding South Bay Reinforcement Project

Dear Chair Borenstein and Governors,

The City of Santa Clara, dba Silicon Valley Power (SVP), applauds CAISO staff and management for the work done under the 2024-2025 Transmission Plan. As CAISO is aware, SVP's load is expected to grow significantly during SVP's 10-year planning horizon, primarily driven by hyper-scale data centers. Specifically, SVP's 10-year planning horizon anticipates SVP's 1-in-10 peak load forecast to increase to 1,636 MW by 2035. For perspective, SVP's current peak load is 713 MW. SVP sincerely appreciates CAISO's focus on addressing the transmission capacity deficit in the San Jose Area, particularly as it relates to SVP's service territory. SVP supports the proposed South Bay Reinforcement Project, which entails the reconductoring of five 115 kV lines and reconfigurations of the 115 kV system in the San Jose area, recommended for approval by CAISO in the Draft 2024-2025 Transmission Plan.

For the reasons stated below and its comments submitted to CAISO on April 29, 2025, **SVP respectfully requests that the Board and CAISO Management include the Kifer Receiving Station (KRS) to FMC 115kV line reconductoring (Reconductoring Project) in the South Bay Reinforcement Project scope**.

Previously in our letter to the Board of Governors, dated November 5, 2024, we supported the CAISO-proposed "Hybrid" transmission project, the first two elements of which were approved by the CAISO Board in November 2024. The third element of the Hybrid project includes a high capacity 230 kV AC circuit between PG&E's San Jose B and SVP's NRS Substation. SVP supports the approval of this project, which would increase SVP's import capability and improve the San Jose area's overall reliability. SVP also supports additional reliability projects in the South Bay area that are recommended for approval in the 2024-2025 transmission plan, such as the

Greater Bay Area 500 kV Transmission Reinforcement and Metcalf Substation 500/230 kV Transformer Bank Addition.

On April 29, 2025, SVP submitted written comments to CAISO on the Draft 2024-2025 Transmission Plan (See Attachment 1), detailing the need for additional reinforcements to expand upon the CAISO staff-recommended South Bay Reinforcement Project. These incremental reinforcements are necessary to address the adverse impacts of the "Hybrid" project and South Bay Reinforcement project on SVP's transmission system and surrounding PG&E systems. With the CAISO-proposed "Hybrid" and South Bay Reinforcement Projects, SVP's independent analysis (detailed in Attachment 1) showed that significant reliability overloads occurred on a section of the KRS – FMC 115 kV line, requiring mitigation measures to maintain operational stability under credible NERC and CAISO planning standards. SVP's comments also explained that the Trimble – San Jose B 115 kV line reconductoring included in the South Bay Reinforcement Project shares common underground and overhead sections with the KRS – FMC 115 kV line for more than 2.5 miles. **Aligning the reconductoring of both these 115kV lines provides cost-effective logistical synergies while securing system reliability and ensuring a future-ready transmission network.** The size requirements for the new conductor for the KRS – FMC 115 kV line will depend on the feasibility of accommodating both the 115 kV lines on the existing transmission infrastructure; that is, conduits/trenches for the underground section and towers for the overhead section, and the need to upgrade them as necessary. However, those details can be developed as the reconductoring projects are designed.

Based on all of the above, it is our hope CAISO will include the Reconductoring Project within the South Bay Reinforcement Project scope, without further delay, in the Final 2024-2025 Transmission Plan.

SVP thanks the CAISO Board and Management for the opportunity to provide these comments and hopes to work closely with the CAISO and PG&E to address SVP's, and the South Bay region's, urgent reliability needs.

Sincerely,

Nicolas Procos
Chief Operating Officer

Cc:

Mr. Elliot Mainzer, President and Chief Executive Officer, CAISO
Mr. Mark Rothleder, Senior Vice President and Chief Operating Officer, CAISO
Mr. Neil Millar, Vice President, Transmission Planning and Infrastructure Development, CAISO
Mr. Jeff Billinton, Director, Transmission Infrastructure Planning, CAISO
Mr. Binaya Shrestha, Manager-North, Transmission Infrastructure Planning, CAISO

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Attachment 1: SVP's Comments on the CAISO Draft 2024-2025 Transmission Plan

California ISO

Submit comment on Draft 2024-2025 Transmission Plan

2024-2025 Transmission planning process

1. Please provide your organization's comments on Reliability-driven Projects Recommended for Approval.

The City of Santa Clara, dba Silicon Valley Power (SVP), appreciates the opportunity to comment on the CAISO Draft 2024-2025 Transmission Plan ("Draft Plan," hereafter). The comments and questions below address the material presented at the CAISO Stakeholder meeting on April 15, 2025, and the 2024-25 TPP draft report posted on March 31, 2025. SVP acknowledges the significant efforts of the CAISO staff to develop this comprehensive report.

SVP Supports the CAISO-Proposed "Hybrid" Transmission Project and South Bay Reinforcement Project for the San Jose Area

The CAISO-proposed "Hybrid" transmission project ("Hybrid project," hereafter) is comprised of the following network additions:

1. A new Newark to NRS high capacity 230 kV AC line;
2. A new 1,000 MW HVDC link between Metcalf and San Jose B 230 kV; and
3. A new high capacity 230 kV AC line between San Jose B and NRS.

SVP's independent assessment indicates that the third element of the Hybrid project, that is, adding the high capacity 230 kV AC line between San Jose B and NRS, which is recommended for approval in the Draft Plan[1], would increase SVP's import capability and improve the San Jose area's overall reliability. However, SVP's assessment indicates a potential adverse impact on SVP's transmission system and surrounding PG&E systems.

[1] See "San Jose B-NRS 230 kV line", pp. 69-70, 2024-2025 Transmission Plan Draft, March 31, 2025.

SVP also supports the newly proposed South Bay Reinforcement Project,[2] which is expected to address several overloads identified in the Draft Plan with the Hybrid project. However, SVP's studies indicated that the Kifer (KRS) – FMC 115 kV line will be adversely impacted and overloaded with the proposed project additions under credible NERC & CAISO contingency conditions that must be addressed if the new San Jose B and NRS 230kV line element of the Hybrid project and the South Bay Reinforcement Project are approved.

SVP's Load Continues to Grow at a Dramatic Rate, and CEC and SVP Expect Significant Load Growth Over the Next Several Years

As the CAISO is aware, SVP's load is expected to grow considerably in the next several years, primarily driven by hyper-scale data centers.[3] SVP has had seven new 60 kV-connected data centers come into service in the past three years, one 60 kV-connected data center is under construction and expected to be in service this summer, eleven 60 kV-connected data centers are waiting for SVP's approval to connect to the SVP system contingent upon the completion of the CAISO-proposed "Hybrid" Transmission projects and South Bay Reinforcement Projects, and SVP is actively working with twelve future data center customers. Each of these existing and future data centers are expected to ramp up significantly in the future 10-year planning horizon and beyond, causing SVP's 1-in-10 peak load forecast to increase to 1,368 MW in 2034. The 2035 1-in-10 peak load forecast is even higher at approximately 1,636 MW, which assumption will be incorporated into the 2025-2026 Transmission Plan.

The Hybrid Project Requires KRS – FMC 115 kV Line Reconductoring

SVP used the CAISO 2024-2025 TPP final reliability assessment 2034 cases (October 2024 posted version) for the Greater Bay Area (GBA) Summer Peak conditions to perform steady state power flow analysis to assess any potential adverse impacts of the Hybrid project, the new 4th Metcalf 500/230 kV transformer, the new Greater Bay Area 500 kV Transmission reinforcement project and South Bay Reinforcement project on SVP's system. Table 1 below summarizes SVP's findings that show overloads on the FMC – San Jose B and KRS – FMC JCT 115 kV lines. CAISO has discussed using an HVDC Run Back scheme with SVP to mitigate overloads caused by these project additions. The loadings in Table 1 indicate that the use of an HVDC Run Back scheme could be an effective mitigation strategy.

[2] See "South Bay Reinforcement Project", pp. 70-72, 2024-2025 Transmission Plan Draft, March 31, 2025.
[3] SVP's load growth includes load where back-up generation has been granted CEC-approved small generator exemptions for the hyper-scale data centers in SVP's service territory.

Table 1: SVP Studies Showing Instances in 2034 Where the San Jose B HVDC Runback Scheme Fixes or Reduces Overloads

Overloaded Facility	Contingency	2034 +24-25 TPP Projects	2034 + 24-25 TPP Projects + HVDC Run Back
FMC-SANJOSEB 115kV #1	P1-2: SANJOSE B-NRS #1 230kV	**105.8%**	42.1%
	P6-1: San Jose B to NRS 230kV and Newark to NRS 230kV	**122.8%**	67.9%
KRS-FMC JCT 115kV #1	P1-2: SANJOSE B-NRS #1 230kV	**128.8%**	23.9%
	P6-1: San Jose B to NRS 230kV and Newark to NRS 230kV	**154.8%**	65.4%

The HVDC Run Back scheme is effective in mitigating some issues on the FMC – San Jose B and KRS – FMC JCT 115 kV lines, as shown in Table 1; however, the use of the HVDC Run Back scheme causes new overloads and increased loadings on the Northern part of the SVP system between Newark, NRS, and KRS as shown in Table 2.

Table 2: SVP Studies Showing Instances in 2034 Where the San Jose B HVDC Runback Scheme Causes New Overloads or Increased Loading North of SVP

Overloaded Facility	Contingency	2034 + 24-25 TPP Projects	2034 + 24-25 TPP Projects + HVDC Run Back
LS ESTRS-SSS 230kV #1	P1-2: NRS -Newark D 230 KV	82.3%	**123.0%**
	P6-1: San Jose B to NRS 230kV and Newark to NRS 230kV	**106.1%**	**107.5%**
NEWARK D-NRS 400 115kV #1	P6-1: NRSriser - SSS and Newark to NRS 230kV	43.7%	**121.1%**
ZNKER J2-KRS 115kV #1	P6-1: NRSriser - SSS and Newark to NRS 230kV	43.7%	**102.9%**
NEWARK F-NRS 300 115kV #2	P6-1: NRSriser - SSS and Newark to NRS 230kV	29.7%	**109.2%**
LS ESTRS-NORTECH 115kV #S5-reactor	P6-1: NRSriser - SSS and Newark to NRS 230kV	60.2%	**116.4%**
NORTECH-NRS 300 115kV #1	P6-1: NRSriser - SSS and Newark to NRS 230kV	43.4%	**101.0%**

In addition to the new overloads and increased loadings to the North of SVP that would be caused by the use of an HVDC Run Back, use of this scheme would also cause new overloads South of

SVP, as noted in Table 3. The San Jose A – San Jose B and Metcalf – Baily 115 kV lines become overloaded with the use of a HVDC Run Back scheme under contingency conditions.

Table 3: SVP Studies Showing Instances in 2034 Where the San Jose B HVDC Runback Scheme Causes New Overloads South of SVP

Overloaded Facility	Contingency	2034 + 24-25 TPP Projects	2034 + 24-25 TPP Projects +HVDC Run Back
SN JSE A-SANJOSEB 115kV #1	P6-1: NRSriser - SSS and Newark to NRS 230kV	44.8%	**117.2%**
MTCALF D-BAILY J3 115kV #2	Base system (n-0)	83.3%	**115.8%**
	P1-2: SANJOSE B-NRS #1 230kV	46.8%	**111.1%**
	P1-2: NRS -Newark D 230 KV	84.8%	**134.8%**
	P6-1: NRSriser - SSS and Newark to NRS 230kV	83.2%	**133.3%**
	P6-1: San Jose B to NRS 230kV and Newark to NRS 230kV	52.6%	**120.5%**

SVP's study results showed that applying a 0 MW HVDC Run Back scheme on the Metcalf-San Jose B HVDC line can either completely mitigate or significantly reduce overloads along the San Jose B – FMC – KRS 115 kV path for P1 and P6 contingencies. However, use of the HVDC Run Back scheme causes the system north of SVP and parts of the 115 kV system south of the San Jose area to experience increased loading or new overloads along the following lines:

- Los Esteros - SSS 230 kV
- Newark - NRS 115 kV #1 & #2 lines
- Zanker - KRS 115 kV lines
- Los Esteros - Nortech - NRS 115 kV lines
- San Jose A – San Jose B 115 kV line
- Metcalf - Baily 115 kV lines

Avoiding a KRS – FMC JCT 115 kV mitigation by applying a 0 MW HVDC Run Back scheme on the San Jose B HVDC causes new reliability overloads that will need to be addressed concurrent with the Hybrid project's in-service dates of 2028 & 2030. An optimal Run Back point between 0 and 1,000 MW may exist where an HVDC Run Back scheme on the San Jose B HVDC may be more effective than a 0 MW setting. To determine the optimal point, SVP submits that a comprehensive study covering various years and seasonal conditions should be conducted. CAISO should perform this study to ensure that one or multiple HVDC MW Run Back setpoints effectively mitigate all overloads without creating new ones. Implementing such an automatic operation could lead to hundreds of potential setpoints for contingencies, seasonal conditions, and different operating year combinations. Having this type of scheme would increase both complexity and the risk of HVDC Run

Back mis-operations. Therefore, SVP suggests that the most cost-effective and reliable solution would be to reconductor the KRS – FMC JCT 115kV line instead of using an HVDC Run Back scheme as a mitigation measure.

KRS – FMC 115 kV Line Reconductoring Synergies with the "South Bay Reinforcement Project"

The KRS – FMC Jct 115 kV line is 5.7 miles long and is comprised of both overhead and underground conductors. Given its relatively short length, the cost of reconductoring this line would be small in comparison to the overall $205 million - $410 million estimated cost[4] of the South Bay Reinforcement Project. Using PG&E's per unit cost estimates, SVP estimates that the KRS – FMC Jct 115 kV reconductoring will incrementally increase the cost of the South Bay Reinforcement Project in the range of $5-$10 million.

The Trimble – San Jose B 115 kV line reconductoring included in the South Bay Reinforcement Project, is planned to be capable of achieving 3,000 Amps (598 MVA), and this line shares common towers and underground sections with the KRS – FMC Jct 115 kV line for more than 2.5 miles. From the clearance and logistical standpoint, completing both reconductoring projects simultaneously would be cost-effective and practical. For example, if some of the towers need additional reinforcements to carry the reconductored lines, then that determination can be made if both the circuits are considered for reconductoring at the same time. Similarly, if the shared underground section needs to be abandoned to facilitate the construction of a new underground segment capable of carrying 3,000 Amps, both circuits can be upgraded simultaneously. Therefore, it will be cost-effective to reconductor both KRS – FMC Jct 115 kV and Trimble – San Jose B 115 kV lines simultaneously. As mentioned earlier, SVP's load assumed in the 2025-2026 TPP is higher than the one assumed in the current planning cycle and will likely worsen the loading on the KRS – FMC Jct and FMC Jct – FMC 115 kV lines. Therefore, delaying approval until the next TPP cycle would not only exacerbate the overloading issue, but is also likely to sacrifice any cost-savings that could be available by reconductoring the KRS - FMC 115 kV line simultaneously with reconductoring the Trimble – San Jose B 115 kV line.

SVP Recommends CAISO to Stage Reconductoring of the FMC Jct – FMC 115 kV Line

Once the KRS–FMC Jct 115 kV line is reconductored, the 1.58-mile FMC Jct – FMC 115 kV line will become the limiting element at 307 MVA. Under contingency conditions forecast for 2034, this line is projected to reach 95% of its emergency rating, as shown in Table 5 below.

[4] See "South Bay Reinforcement Project", page 72, 2024-2025 Transmission Plan Draft, March 31, 2025

Given SVP's growing load forecast, which will be incorporated into the next TPP cycle, this line is expected to exceed its emergency rating within the 10-year planning horizon. To ensure long-term system reliability, SVP recommends staging the reconductoring of the FMC Jct – FMC 115 kV line following the completion of the KRS – FMC Jct 115 kV line reconductoring project. This phased approach will provide operational flexibility while reducing disruption and ensuring a smooth transition in system upgrades. SVP urges CAISO to approve this reconductoring effort, upgrading the FMC Jct – FMC 115 kV line to 3,000 Amp capacity as the next step in strengthening the transmission network.

Table 5: Examples of SVP 2034 Loadings approaching 100% on the FMC Jct – FMC 115 kV line

Overloaded Facility	Contingency	Emergency Rating (MVA)	SBLM 2034+24-25 TPP Projects
FMC-FMC JCT 115kV #1	P1-2: SANJOSE B-NRS #1 230kV	307.1	79.3%
	P6-1: San Jose B to NRS 230kV and Newark to NRS 230kV	307.1	**95.2%**

SVP's Closing Comments

SVP supports the CAISO-proposed Hybrid transmission project and the new South Bay Reinforcement Project, recognizing their importance in enhancing regional reliability and addressing growing energy demands. However, SVP's independent analysis shows that with these projects in their current composition, significant overloads on the KRS – FMC Jct 115 kV line will remain, requiring mitigations to maintain operational stability under credible NERC & CAISO planning standards. Reconductoring the KRS – FMC Jct 115 kV line is essential to mitigating these impacts, ensuring seamless integration with planned infrastructure improvements, and proactively addressing SVP's and the overall South Bay region's rapidly growing load.

Once the KRS–FMC Jct 115 kV line is reconductored, the FMC Jct–FMC 115 kV line will become the limiting element. Given SVP's growing load forecast, which will be incorporated into the next TPP cycle, the FMC Jct – FMC 115 kV line is expected to exceed its emergency rating under contingency conditions within the 10-year planning horizon. To maintain long-term system reliability, the reconductoring of the FMC Jct–FMC 115 kV line should be staged following the completion of the KRS–FMC Jct reconductoring project. This phased approach will provide operational flexibility, minimize disruptions, and ensure a smooth transition in system upgrades.

Further, aligning the KRS–FMC Jct 115 kV line reconductoring effort with the South Bay Reinforcement Project, given its shared towers and underground sections with the Trimble–San Jose B 115 kV line, provides cost-effective logistical synergies while securing system reliability. Given the relatively small cost relative to the broader transmission upgrades already included in the plan, and the substantial reliability benefits gained, SVP urges CAISO to approve this reconductoring effort in the current planning cycle to ensure a resilient, future-ready transmission network.

2. Please provide your organization's comments on Frequency Response.
No comments at this time.

3. Please provide your organization's comments on Maximum Import Capability Expansion Requests.
No comments at this time.

4. Please provide your organization's comments on Policy-driven Projects Recommended for Approval.
No comments at this time.

5. Please provide your organization's comments on the Economic Assessment.
No comments at this time.

6. Please provide your organization's additional comments on the Draft 2024-2025 Transmission Plan April 15, 2025 stakeholder call discussion.

No comments at this time.