



# Transmission Project Review Process Stakeholder Meeting

*July 29, 2025*



# Safety Orientation: Remote Workplace



## Earthquake

Know the safest places to duck, cover, and hold, such as under sturdy desks and tables.



## Fire

Know your exits, escape routes, and evacuation plan. If safe to do so, use your compliant fire extinguisher. Exit the house, and call 911.



## Active Shooter

Get out, hide out, take out, and call 911.



## Medical Emergency

Know who can perform first aid and CPR. Call 911 if you're alone or share your location with the call leader to send help.



## Psychological Safety

- ✓ I'm cared for.
- ✓ People have my back and I have theirs.
- ✓ It's safe to take risks.
- ✓ New ideas are welcome.
- ✓ I practice self-care.



## Ergonomics

- ✓ Practice 30/30 (every 30 minutes, move & stretch for 30 seconds).
- ✓ Schedule a virtual ergonomic evaluation through RSI Guard.
- ✓ Don't ignore RSI Guard break reminders.



## Emergency Planning

- ✓ Update emergency contacts via *PG&E@Work for Me*.
- ✓ Create or update your personal emergency preparedness plan at PG&E's Safety Action Center online.



## COVID-19

- ✓ Maintain at least 6' distance where possible.
- ✓ Wear your mask.
- ✓ Wash hands frequently.
- ✓ Visit the COVID-19 employee site for the latest updates and tips.



# Full-Day Virtual Meeting Logistics

## Meeting Agreements

- No confidential information will be discussed
- Be mindful that others in this virtual meeting may also have questions
- Please mute your line if you are not speaking
  - \*6 to unmute
- Use of parking lot for discussion topics

## Engaging in Discussion

- Presenters will present and then take live questions at the end of their allotted time.
- During the presentation you can put a question to chat and the question will be held until the end of the presentation.
- Raise your hand (icon)
- When asking questions, please state your name and organization

## Important

- We need to stick to schedule as presenters will be joining throughout the day at a specific times
- We welcome your ideas and feedback on how to improve this meeting in written comments

9:00	Welcome
9:15	PDS Summary
	Overview of Data Requests
	Steps Taken to Improve PDS
9:25	Stakeholder requested items
10:45	Break
11:00	Stakeholder requested items
12:00	Lunch
1:00	Stakeholder requested items
2:40	Break
2:55	Stakeholder requested items
3:15	Wrap-up



## May 2025 TPR Material

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Lorenzo Thompson & Nick Medina - *TPR Team*

<u>EVENT</u>	<u>DATE</u>
Data released	May 1, 2025
Date by which Stakeholders provide questions and comments	June 16
Written responses to Stakeholder questions and comments	July 7
Date by which Stakeholders and CPUC provide agenda items for upcoming Stakeholder meeting	July 14
★ Stakeholder Meeting	July 29
Stakeholders' questions and comments related to Stakeholder Meeting	August 13
Written responses to questions and comments related to Stakeholder Meeting	September 4
Last day for Stakeholders to submit project-specific, follow-up questions	September 12
Written responses to Stakeholder project-specific follow-up questions	September 26
Last day for Stakeholders to submit comments. There is no expectation of written responses.	September 30

★ You are here!



## TPR Material Shared and Questions Submitted

- PG&E's May 1, 2025, submission for all FERC-jurisdictional transmission capital projects of \$1 million or more incurred in past 5 years and anticipated to be incurred in the current year and next 4 years:
  - Project Data Spreadsheet (2,614 projects pulled March 11, 2025)
  - 95 Advance Authorizations/Business Case – Stage Gate 0 and 79 Business Cases/Project Charters. 31 documents redacted in the public version
  - The most current version of PG&E's Prioritization Procedures
- Stakeholder questions received by June 16, 2025
  - CPUC 11: 41 questions (252 subparts)
  - CPUC 12: 3 questions (20 subparts)
  - NCPA 6: 23 questions (41 subparts)
  - Cal Advocates 8: 5 questions (17 subparts)
- Project updates will be provided in the Nov 1, 2025, TPR submission.





# TPR Material Shared and Questions Submitted



## Quarterly Data Request Performance Overview (Q1 vs Q2)

On Time % Improvement

7.4

Tracking request volumes,  
on-time submissions,  
efficiency improvements  
across 2 quarters

% Reduction in Avg. Days

54.5

### Q1 2025

Total\_Requests

113

Total\_Subparts

287

On\_Time Requests

91

On\_Time Q1%

80.5%

Extended\_Requests

22

Average Days Extended  
Q1

1.42

### Q2 2025

Total Requests

74

Total Subparts

334

On Time  
Requests

64

On Time Q2%

86.5%



Extended  
Requests

10

Average Days Extended Q2

0.65







Director



Producer



Music  
Department



Legal  
Department



Writing credits  
(aka note taker)



Regulatory  
Department



Cast



# Steps Taken to Improve the Project Data Spreadsheet



Approval Documents  
Naming Convention



TPR Cycle 2 Requested PDS  
Corrections Inventory



IGP Data Field  
25 Update



Data Field 52 (Reason for  
Change in In-Service Date)



## Major Projects Update Stakeholder Requested Item #5

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Jason Castellanos, *Project Manager*

Josh Skelly, *Project Manager*

Derrick Hallum, *Project Manager*

Sanjeev Bhatawadekar, *Project Manager*

Ali Hasanain, *Project Manager*

Maryam Norouzi, *T-Line Asset Implementation*



## T.0010623 – Salinas Area Reinf Chulara Sub

- Scope: Build new 115 kV station near Chaular; convert existing Salinas-Spence 60 kV network to 115 kV and operate Salinas-Chaular system at 115 kV
- Project Driver: Major Distribution load growth expected in the area
- Project Status: Engineering
- FISD: 12/31/2032
- Risks: Long lead time for materials (transformers, breakers), land and permitting constraints
- Project Dependencies: Clearance coordination with Crazy Horse Canyon - Salinas - Soledad #1 and #2 115 kV Line Reconductoring project (T.0010638)



## T.0010623 – Salinas Area Reinf Chualar Sub

Planning Order	Order Description	MWC	T.Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5811927	Salinas-Firestone-Spence	60	T.0010623	\$ 13,505	\$ 69	3/27/2026	7/1/2025	10/25/2029	12/30/2032
5811925	New Chualar substation	61	T.0010623	\$ 3,111	\$ 39	11/5/2025	7/1/2025	6/9/2027	10/22/2027
5811924	Firestone substation conv	61	T.0010623	\$ 7,924	\$ 12	2/6/2026	7/24/2025	8/27/2027	12/31/2032
5811923	Industrial Acres conv	61	T.0010623	\$ 7,881	\$ 5	2/6/2026	7/24/2025	8/27/2027	12/31/2032
5811922	Buena Vista conv	61	T.0010623	\$ 2,787	\$ 16	1/12/2026	7/1/2025	8/11/2027	12/28/2027
5811926	Spence Tline	60	T.0010623	\$ 10,594	\$ 63	6/11/2026	5/15/2026	10/29/2029	10/9/2030



## T.0010465 – San Jose A – Substation Rebuild

- Scope: This project proposes to rebuild San Jose A Substation into a substation capable of serving new load. The rebuild will include one 115kV Breaker-and-a-Half (BAAH) GIS (Gas Insulated Switchgear) with transmission circuit breakers, distribution transformers, distribution switchgears and new 21kV and 12kV feeders. MN0
- Project Driver: Ability for PG&E to serve new load for transmission and distribution load growth expected in San Jose area.
- Project Status: Engineering
- FISD: 10/25/28
- Risks: Delay in procurement of long lead materials. Potential scope change due to additional increase in load growth. Land constraints in San Jose area.
- Project Dependencies: Construction of transmission interconnection lines with customers. Customers completing construction of their facilities for PG&E to interconnect with customers.

## Slide 14

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**MNO**      [@Castellanos, Jason] please review and populate  
Medina, Nick, 2025-07-15T21:16:16.047

**JA0 0**      Update completed  
Jayapalan, Amal, 2025-07-24T06:02:41.096





## T.0010465 – San Jose A – Substation Rebuild

Planning Order	Order Description	MWC	T.Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5811202	SAN JOSE A -SUBSTATION REBUILD - NEW BUS	46	T.0010465	\$ 65,490	\$ 482	11/4/2025	12/2/2024	4/17/2026	10/25/2028
5811941	San Jose A Rebuild DistrL	6	T.0010465	\$ 14	\$ 10	7/22/2025	11/6/2025	9/16/2026	1/13/2027
5811200	SAN JOSE A - SUBSTATION REBUILD SYS DESG	60	T.0010465	\$ 7,147	\$ 214	11/4/2025	12/9/2024	4/17/2026	10/25/2028
5811207	SAN JOSE A - SUBSTATION REBUILD BUS UPG	61	T.0010465	\$ 195,433	\$ 1,080	11/4/2025	11/1/2024	4/17/2026	10/25/2028

MNO

## Slide 15

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**MN0**      [@Castellanos, Jason] please review and populate  
Medina, Nick, 2025-07-15T21:16:03.603

**JA0 0**      [@Medina, Nick] - should we update all fields in this table?  
Jayapalan, Amal, 2025-07-17T13:50:25.288

**MN0 1**      Data pulled 7/14, so I wouldn't expect too much updates, but just review and update any glaring issues  
Medina, Nick, 2025-07-17T14:46:25.157

**JA0 2**      Complete  
Jayapalan, Amal, 2025-07-24T05:46:09.084



## T.0000155 – Lockeford – Lodi Area 230 kV Development

- Scope: The Lockeford-Lodi Area 230 kV Development Project will loop the Brighton – Bellota 230 kV Line into Lockeford 230 kV Substation to bring a new 230 kV source into the area. A new 230 kV double circuit tower line will be constructed to connect the existing Lockeford 230 kV Substation to a new 230 kV switching to be constructed near the City of Lodi's existing Industrial 60 kV Substation.
- Project Driver: existing T-Line reliability and future load growth (capacity)
- Project Status: Permitting
- FISD: 12/10/2029
- Risks : Certificate of Public Convenience and Necessity (CPCN)-permit delay
- Project Dependencies: Land right of way acquisition with all the landowners for permanent and temporary construction easement (TCE)



# T.0000155 – Lockeford – Lodi Area 230 kV Development

Planning Order	Order Description	MWC	T.Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5767239	230 kV T-Line LOCKEFORD - NEW INDUSTRIAL	60	T.0000155	\$ 55,429	\$ 19,352	10/20/2026	7/19/2018	7/6/2028	11/7/2029
5767209	LOOP IN BRIGHTON - BELLOTA INTO LOCKEFOR	60	T.0000155	\$ 28,859	\$ 1,481	3/7/2028	7/19/2018	11/15/2028	6/30/2030
5771389	LOCKEFORD SUBSTATION NEW 230 KV BAY	61	T.0000155	\$ 34,371	\$ 324	3/25/2027	7/19/2018	3/22/2028	1/30/2030
5767188	NEW 230 kV INDUSTRIAL SWITCHING STATION	61	T.0000155	\$ 35,184	\$ 1,392	3/25/2027	7/19/2018	6/15/2028	12/15/2029

\*The CPCN application provided PG&E's proposed schedule & costs based on the best information available at that time. PG&E continues to update its schedule & cost assumptions regularly as project permitting and development activities continue for internal planning purposes and provided those as part of the May 2025 TPR PS which may differ slightly from that in the CPCN application. However, the actual schedule cannot be known until the CPUC completes its permitting process. Total construction costs may also be impacted by CPCN requirements relating to design, routing, mitigation measures and other factors, which cannot be known until the CPUC completes its permitting process.



## T.0010534 – North Dublin-Vineyard Recond Project

- Scope: Reconductor North Dublin -Vineyard 230 kV line with minimum summer emergency rating of 1350 AMPS or higher conductor feasible with existing structure and will include any other limiting elements upgrade to achieve the new line rating.
- Project Driver: Existing T-Line reliability and future load growth (capacity)
- Project Status: Planning
- FISC: 9/2/2034
- Risks: Permitting and engineering timeline, operational restrictions on clearances / construction windows, long lead material
- Project Dependencies: project has not been kicked off, dependencies not known



## T.0010534 – North Dublin-Vineyard Recond Project

Planning Order	Order Description	MWCT	Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5811680	North Dublin-Vineyard Recond UG Seg 2&3	60	T.0010534	\$50,000	\$0	TBD	TBD	5/1/2031	5/1/2034
5811681	North Dublin-Vineyard Recond OH Seg 1	60	T.0010534	\$50,000	\$0	TBD	TBD	5/1/2031	5/1/2034
5811682	North Dublin-Vineyard Recond UG Seg 1	60	T.0010534	\$50,000	\$0	TBD	TBD	5/1/2031	5/1/2034



## T.0000156 – Wheeler Ridge Junction Substation

- Scope: This project will construct a new 230/115 kV transmission substation in the Bakersfield area to provide additional transmission capacity to serve electric customers in Kern County. The 230 kV and 115 kV buses will be constructed to a breaker-and-a-half (BAAH) configuration.
- Project Driver: The electric demand in the unincorporated area of Kern County is expected to continue growing in the area. The project protects against NERC P1, P2, P6, and P7 contingencies, which may result in thermal overloads and voltage issues on transmission lines.
- Project Status: Scoping/Permit development/Engineering
- FISC: 2/9/2033
- Risks: Permitting timeline, operational restrictions on clearances / construction windows, long lead material
- Project Dependencies: Permit approval, land acquisition, Wheeler Ridge Substation Tesla distribution bank project



[illegible]



## T.0000154 – Estrella 230 kV Transmission Substation

- Scope: Construct and own the new Union 70/21 kV Substation and associated transmission line work as defined by the CAISO's Transmission Plan. Union 70kv is connected to the new Estrella 230kv substation constructed and owned by Horizon West Transmission.
- Project Driver: Connecting the new Estrella Substation to the 230 kV and 70 kV systems will improve capacity and service reliability to PG&E customers in the Paso Robles area
- Project Status: Engineering
- FISC: 3/30/2029
- Risks: Permitting timeline, land acquisitions
- Project Dependencies: Permit approval, land acquisitions



# T.0000154 – Estrella 230 kV Transmission Substation

Planning Order	Order Description	MWCT	Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5810240	REC SAN MIGUEL-PASO ROBLES 70KV PH.2 ENG	60	T.0000154	\$ 5,533	\$ 210	9/3/2025	5/19/2015	11/4/2026	4/1/2027
5806384	UNION-SAN MIGUEL_PASO ROBLES 70KV - ENG	60	T.0000154	\$ 22,859	\$ 5,686	8/1/2025	5/19/2015	8/16/2027	3/30/2029
5805505	REC SAN MIGUEL-PASO ROBLES 70KV PH.2 EST	60	T.0000154	\$ 10,847	\$ 4,069	9/5/2025	5/19/2015	11/6/2026	4/1/2027
5771719	UNION-SAN MIGUEL_PASO ROBLES 70KV - EST	60	T.0000154	\$ 42,374	\$ 11,128	8/1/2025	5/19/2015	8/2/2027	3/30/2029
5771718	MORRO BAY - CAL FLATS 230KV LINE SHOOFLY	60	T.0000154	\$ 995	\$ 121	8/2/2023	3/1/2021	1/5/2027	3/10/2027
5767231	RECOND. SAN MIGUEL-PASO ROBLES 70KV PH.1	60	T.0000154	\$ 16,834	\$ 7,070	4/3/2024	5/19/2015	11/3/2025	4/22/2026
5767230	ESTRELLA_CPUC LIC PER	60	T.0000154	\$ 3,061	\$ 1,393		5/1/2018		12/30/2026
5767208	MORRO BAY-CAL FLATS 230KV INTERCONNECTIO	60	T.0000154	\$ 9,170	\$ 1,392	8/2/2023	5/19/2015	1/5/2027	5/26/2028
5554011	ROW UNION-SAN MIGUEL_PASO ROBLES 70KV	60	T.0000154	\$ 1,085	\$ 224				
5554010	ROW SAN MIGUEL-PASO ROBLES 70KV PH. 2	60	T.0000154	\$ 785	\$ 4				
5554009	ROW SAN MIGUEL-PASO ROBLES 70KV PH.1	60	T.0000154	\$ 643	\$ 455				
5805698	TEMPLETON SUB-INSTALL REVERSE POWER RELA	61	T.0000154	\$ 1,415	\$ 25	2/8/2024	8/24/2023	7/26/2027	9/30/2027
5805506	TERMINAL UPGRADES PASO ROBLES SUB	61	T.0000154	\$ 815	\$ 105	7/31/2025	8/25/2023	11/4/2025	2/6/2026
5771722	MORRO BAY: UPGRADE 230KV RELAY	61	T.0000154	\$ 1,961	\$ 45	2/11/2024	8/24/2023	7/1/2027	7/23/2027
5771721	CALIFORNIA FLATS: UPGRADE 230KV RELAY	61	T.0000154	\$ 2,264	\$ 52	1/31/2024	8/24/2023	5/28/2027	7/16/2027
5767207	UNION 70KV SUBSTATION	61	T.0000154	\$ 53,484	\$ 12,841	8/2/2023	10/2/2025	7/20/2027	5/26/2028
5553459	LAND PURCHASE FOR 70KV SUBSTATION	61	T.0000154	\$ 806	\$ 401				



## T.0007072 -- IGNACIO-MARE ISL 115KV (IGN SUB/HWY SUB)

- Scope: Replace 34 deteriorated towers along the Ignacio-Mare Island #1 and #2 115 kV transmission line.
- Project Driver: The replacement of the 34 towers in the scope of this project will address NERC non-compliances from Ignacio Substation to Highway Substation and improve the overall safety and reliability of the system due to the condition of these towers.
- Project Status: Major Project Close (6 structures replaced), remaining scope moved to routine programmatic work
- In-Service Date: 12/31/24
- Phases 4-6: have been reclassified as routine programmatic work and is no longer part of the major project
  - Phase 4 (T.0011035)
  - Phase 5 (T.0011036)
  - Phase 6 (T.0011037)



# T.0007072 -- IGNACIO-MARE ISL 115KV (IGN SUB/HWY SUB)

Planning Order	Order Description	MWC	T.Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5801466	IGNACIO - MARE ISLAND TWR REPL PHASE 3	70	T.0007072	\$ 12,799	\$ 12,799	7/16/2024	11/1/2023	11/13/2024	12/13/2024
5798400	IGNACIO - MARE ISLAND TWR REPL PHASE 2	70	T.0007072	\$ 20,829	\$ 20,829	7/16/2024	1/14/2022	11/27/2023	12/19/2023
5792138	IGNACIO-MARE ISL	70	T.0007072	\$ 17,848	\$ 17,848	7/16/2024	1/14/2022	2/28/2023	3/20/2023
5801467	IGNACIO - MARE ISLAND TWR REPL PHASE 4	70	T.0011035	\$ 52,615	\$ 803	7/29/2025	7/17/2024	11/17/2025	12/19/2025
5806102	IGNACIO - MARE ISLAND TWR REPL PHASE 5	70	T.0011036	\$ 42,774	\$ 82	6/1/2026	1/17/2025	11/19/2026	12/4/2026
5806103	IGNACIO - MARE ISLAND TWR REPL PHASE 6	70	T.0011037	\$ 59,718	\$ -	4/9/2027	9/1/2026	12/21/2027	12/31/2027



## T.0004271 -- Morgan Hill-Watsonville 115kV Area Reinforcement

- Scope: Rebuild roughly 15 miles of Metcalf-Green Valley line by replacing 118 structures and reconductoring line. Install OPGW, Build new 4-bay BAAH bus at Morgan Hill and loop in lines. Protection modifications at Metcalf, Llagas and Green Valley
- Project Driver: Accommodate increased load capacity and meet clearance requirements for the new OPGW shield wire, and the conductor line to ground clearance
- Project Status: Engineering
- FISC: 12/26/28
- Risks: Permit to Construct vs. Notice of Construction could add 2 years to the project schedule
- Project Dependencies: N/A



# T.0004271 -- Morgan Hill-Watsonville 115kV Area Reinforcement

Planning Order	Order Description	MWC	T.Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5810958	Morgan Hill - Green Valley: IT	60	T.0004271	\$16	\$16				
5786320	METCALF - LLAGAS 115KV INTO MORGAN HILL	60	T.0004271	\$24	\$24	08/01/2025	11/1/2018	8/17/2026	11/23/2027
5782106	METCALF - GREEN VALLEY 115KV: RECONDUCTO	60	T.0004271	\$66,253	\$7,780	10/7/2019	11/1/2018	4/27/2027	8/28/2028
5531782	METCALF - GREEN VALLEY 115KV: ACQUIRE EA	60	T.0004271	\$3,408	\$28			7/1/2024	5/17/2027
5786319	LLAGAS SUB: 115kV PROTECTION MODS	61	T.0004271	\$1,293	\$70	7/28/2025	1/2/2020	4/4/2028	8/2/2028
5782117	MORGAN HILL SUB: 115kV BAAH CONVERSION	61	T.0004271	\$61,312	\$15,838	6/5/2025	8/27/2018	8/27/2026	12/26/2028
5782115	METCALF SUB: 115kV PROTECTION MODS	61	T.0004271	\$1,214	\$33	5/13/2025	12/3/2019	4/18/2028	12/7/2028
5782114	GREEN VALLEY SUB: 115kV PROTECTION MODS	61	T.0004271	\$1,251	\$52	5/13/2025	1/2/2020	5/2/2028	12/20/2028





# Shunt Splice Replacement Program Stakeholder Requested Item #13

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Christine Zimmerman – *Project Manager*

Chandini Prasad – *Sr. Electric Standards & Strategy Engineer, T-Line Asset Strategy*

George Kataoka – *Principal, Capital Recovery Financial Analyst, Capital Accounting*

- Shunt Splice Program - install splice shunts on existing transmission conductor splices in HFTD and HFRA regions to prevent splice failures.
- A splice shunt is a device installed over an existing splice. Splice shunts add electrical conductivity and provide a level of mechanical strength to conventional conductor splices (twist, compression, etc.).
- This program proposes to install splice shunts on 25 circuits in 2025 to reduce the risk of failure due to splices on conductors within HFTD and HFRA areas.





## Shunt Splice Program Overview

- The work identified in the 2023-2025 target is prioritized based on location in HFTD Tier 2/3 and HFRA, and presence of known splices of higher failure risk.
- T-Line Asset Strategy identifies the splice candidates (specific locations on the circuit)
- Field assessment is conducted to verify the physical details for engineering.
- Engineering then prepares an Issued for Construction (IFC) package, which is passed on to the construction team.
- The construction team uses existing clearances to complete the assigned shunting work.
- Once the work is completed GIS mapping documents the completed work.



## Shunt Splice Work Plan

- Status: Completed 12 of 25 circuits to meet our 2025 WMP Goal.  
YTD Spend is \$1.7M

Year	Shunt Splices	*Cost	*Unit Cost
2025	25 circuits	\$5M	\$150k - \$200k
2026	250 splices	\$2.5M	\$5.3k
2027	250 splices	\$2.5M	\$5.3k
2028	250 splices	\$2.5M	\$5.3k

*\*Estimate - variables include, access to splices (helicopter, bucket truck), road condition (improve road for access), vegetation, permits, etc..*

- PG&E evaluated Preformed Line Productors (PLP) Splice Shunts to determine if they are suitable to restore electrical conductivity and the mechanical strength to compromised overhead distribution conductor splices. These tests were also applicable to transmission splices as they included 4/0 AAC conductor, which is a common type and size conductor used in transmission. Based on the assessment:
  - Splice shunts would fully restore the electrical conductivity in compromised splices.
  - Splice shunts would meet and/or exceed the mechanical strength requirements outlined in GO95.
  - Splice shunts could be considered a viable solution for splice life extension as an alternative to replacement.
- PG&E also conducted a condition assessment on a transmission line featuring a ClampStar pilot installation that had been in service for approximately 10 years. Based on the assessment:
  - The conductor and splice within the ClampStar exceeded the PG&E breaking strength requirement of 3830 lbs for 4/0 AAC.
  - The ClampStar was able to meet or exceed 98% of PG&E breaking strength requirement with a simulated fully compromised splice by severing the conductor in half.



## Shunt Splice Accounting

- Shunt splice costs will primarily be recorded to FERC Electric Transmission Plant Account 356, Overhead conductors and devices.
- Account 356 has a TO21 settlement annual depreciation rate of 3.16% and an average service life of 65 years.
- PG&E capitalizes shunt splices in sets of 3 in line with PG&E's capital retirement unit within Account 356



## **Grid Enhancing Technologies Stakeholder Requested Item #14**

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Raji Shah – *Principal, Grid Innovation Engineer, Transmission Asset  
Management*



# Ambient Adjusted Ratings

**Technology:** Ambient Adjusted Ratings (AAR) and Dynamic Line Ratings (DLR)

**Description:** Expected to enhance grid operation by optimizing the system to perform more accurately to real-time weather conditions rather than a conservative static assumption.

- This means reducing risk via reduced ratings when appropriate and increasing ratings/total transfer capabilities when we can safely do so.
- Upon implementation, PG&E is expecting lines to have increased capacity available providing operational flexibility more often than reduced ratings.

## Current Status:

- PG&E has partnered with GE to develop a tool in order to optimize and automate the AAR calculation process.
- A rigorous selection process has identified detailed line exceptions to the AAR process. A few of the high level exceptions identified are:
  - Various known asset health concerns
  - Pending scheduled maintenance work
  - Physical ground or wire clearance issues
  - Concerns on maintaining 500kV system through adjusted ratings
- Costs associated with the AAR implementation are captured in the May 2025 TPR PDS under the following POs: 5555924 Enterprise FERC 881 and 5800498 FERC Order 881

## Next Steps:

- PG&E's AAR implementation planned by Spring of 2026.



**Technology:** Dynamic Line Ratings (DLRs):

**Description:**

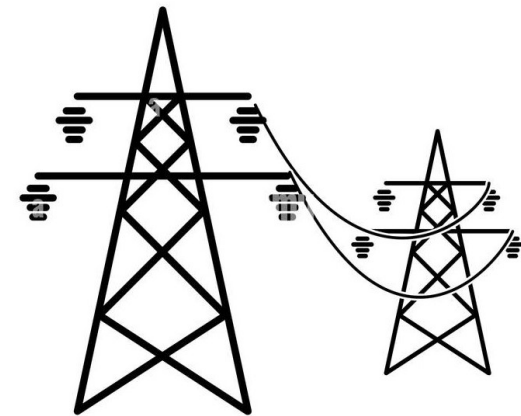
- Solutions typically range from digital DLR to sensor based to more novel vibration-based technologies.
- What all of them have in common is a fluctuating dynamic line rating based on the inputs of their tools which considers changing windspeeds.
- Solving for DLR calculations is only one facet of implementing DLR. The true challenge comes with the operational process.

**Current Status:**

- PG&E is exploring dynamic line rating technology through the EPIC program.

**Next Steps:**

- A planned pilot of 3-4 vendors over approximately 4 circuits over ~12-18 months is expected to occur.
  - PG&E has narrowed the vendor options and is planning to award the winners in the upcoming months.
  - Partnering with EPRI for calibration and validation.
- In addition to the DLR benefits for these chosen vendors, the asset health monitoring capabilities will also be assessed at the selected locations.





# High Temperature Low Sag Conductors

**Technology:** High Temperature Low Sag (HTLS)

**Description:** Conductors designed to operate efficiently at high temperatures without significant loss of:

1. Mechanical strength
2. Minimizing sag under thermal stress
3. Allowing for increased capacity
4. Improved reliability

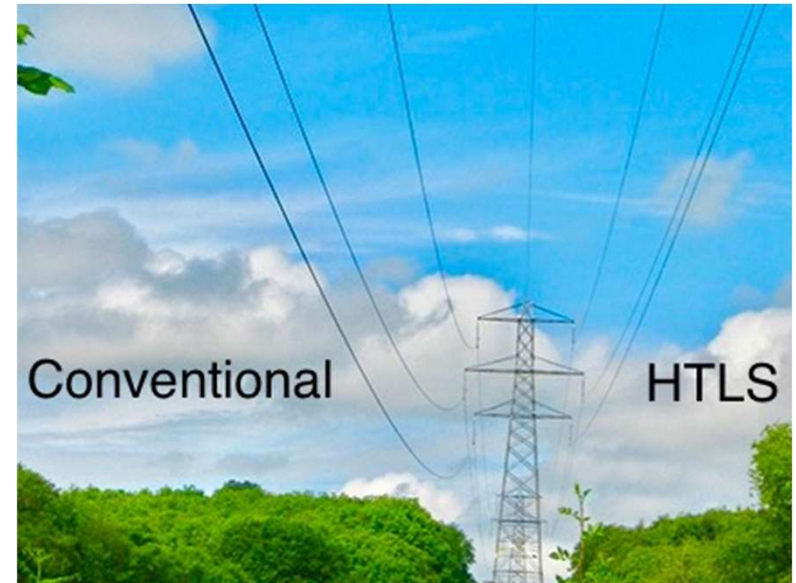
Installed on existing structures with minimal changes, making them a cost-effective solution for increasing transmission capacity.

**Current Status:**

- One type of HTLS has already been deployed.
- An additional type has been identified for further pilot and future deployment opportunities.
- No additional requirements for conductor inspection beyond regular visual and infrared system cadence.
- Per manufacture expected engineered life is ~40 years.

**Next Steps:**

- Considering utilizing HTLS for all reconductoring where feasible.
- Continued pilot opportunities for new installations.
- Monitor existing locations for performance.



**Technology:** Advanced Power Flow Controller (APFC)

**Description:** Advanced power flow controllers are power electronics-based devices used to control power flow by acting as an adjustable series capacitor or series reactor to increase or reduce flow as required by electric grid conditions. These device characteristics and flexible capabilities help extend asset life and increase transmission capacity by unlocking existing grid potential, making it a cost-effective alternative solution to reconductoring transmission lines.

**Current Status:**

- We are currently piloting Smart Wires SmartValve units, a type of Advanced Power Flow Controller (APFC), at a PG&E substation to mitigate future line overloads. The target in-service date is Q1 2026.

**Next Steps:**

- Assess the SmartValve technology and its performance with pilots
- Evaluate feasibility of additional pilot projects to use SmartValves on five other transmission lines that are projected to see overload conditions in the Bay Area





## **Systemwide Idle Line Removal Updates Stakeholder Requested Item #18**

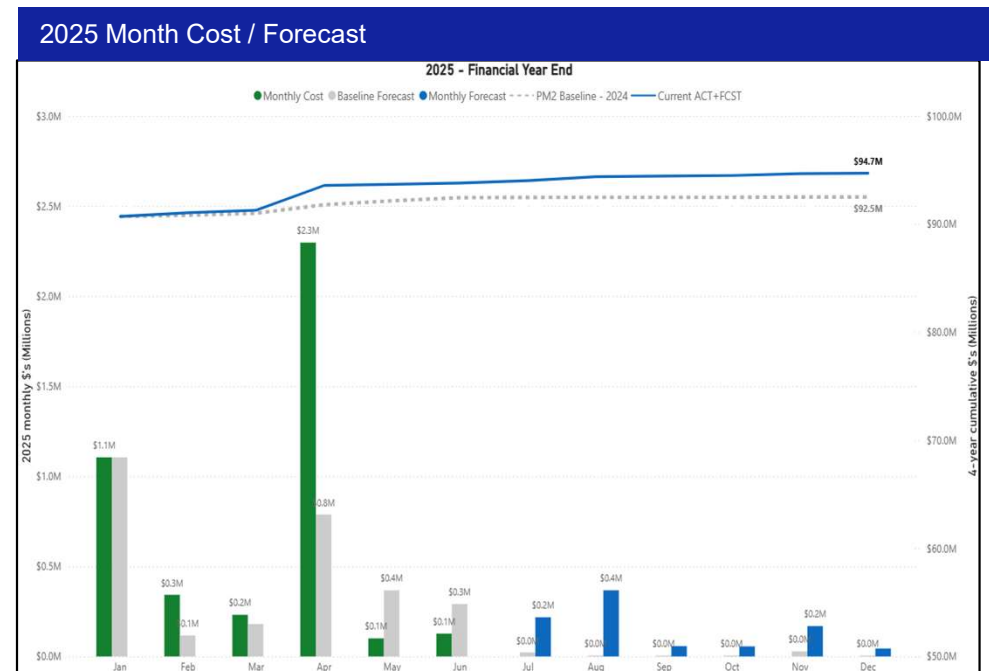
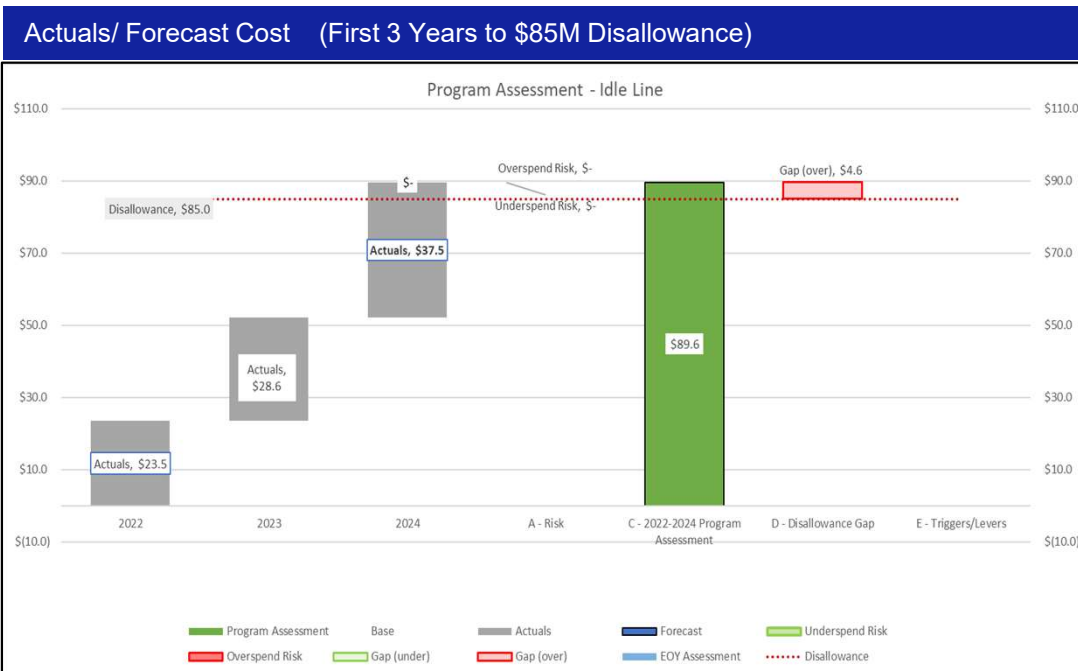
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Chase Chaussee — *Sr. Consulting Project Manager, Transmission Operations*

Dipo Toriola — *Electric Standards & Strategy Engineer, T-Line Asset Strategy*



# Systemwide Idle Line Removal Update



**Note:** In collaboration with Operations, Accounting, Finance Ops, we have reviewed all orders and ensured all costs incurred has been allocated to OBS order up to \$85M.





# Systemwide Idle Line Removal Update

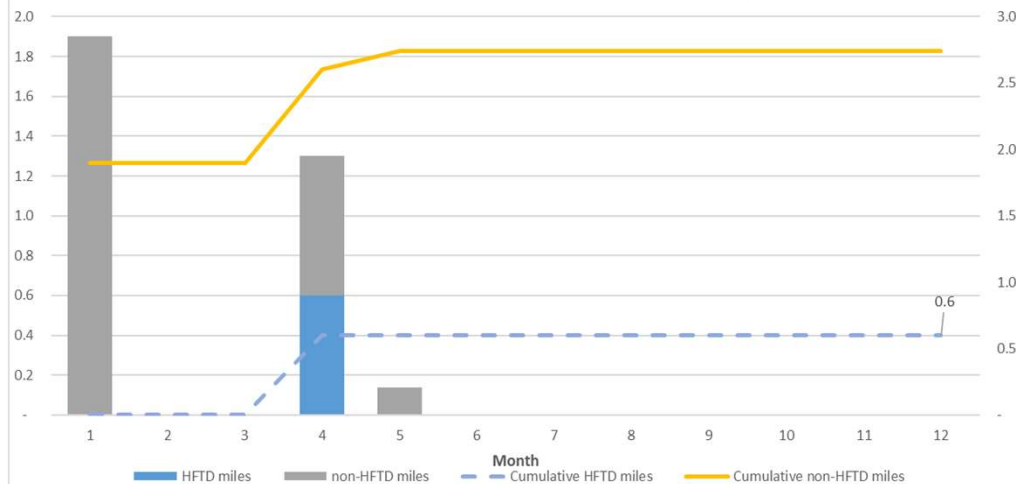
## 2025 Milestones

Order#	Project/Circuit Name	OPDAT	Construction Finish	HFTD Miles
74046314	STANDARD #1 AND #2	10-Jan-25 A	10-Jan-25 A	
74046314	GEYSERS #17-FULTON_EAGLE ROCK-FULTON_SILVERADO	07-Apr-25 A	07-Apr-25 A	0.6
31616000	THERMAL ENERGY TAP	22-Apr-25 A	22-Apr-25 A	
35575474	WESTINGHOUSE TAP	23-May-25 A	23-May-25 A	

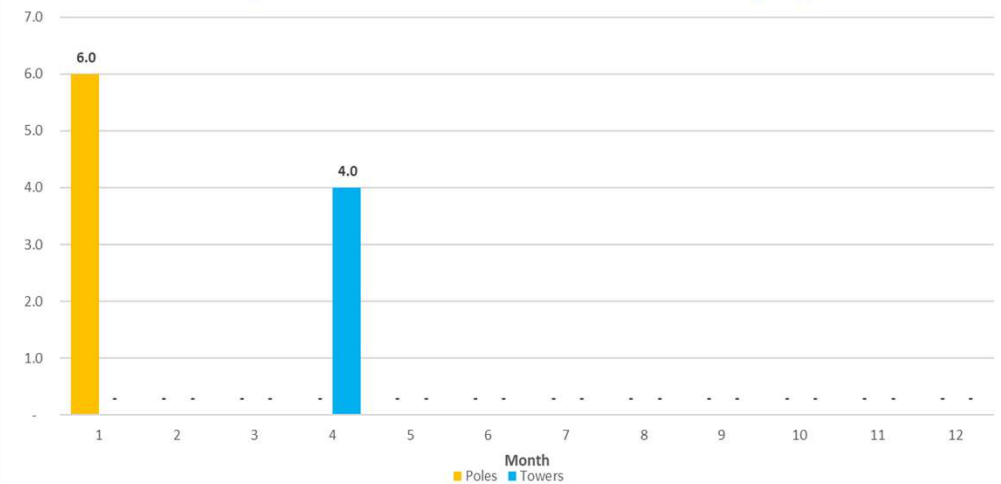
**BOLD** = Activity is complete/has been acutalized.

<sup>1</sup> = 2025 WMP Projects (0.6mi total)

2025 TOTAL MILES (HFTD miles + non HFTD miles)



2025 (Poles & Towers Removed from Transmission Asset registry)





## Beyond the \$85M Disallowance

- PO 5510559 Systemwide Idle Line Removal: forecast placeholder for future work beyond the \$85M Disallowance. This forecast is subject to reprioritization

2026	2027	2028	2029
\$1M	\$1M	\$3M	\$3M

- When a given project is implemented, it will receive a unique PO and forecast transferred to that unique PO:

PO	Description	MWC	2025 Actual	2025 Forecast
5549441	Mendocino #1 (engineering)	93	\$185	\$797
5545724	Caribou-Palermo 10391 Remove Structures	93	\$706	\$40
5548073	Geysers #17-Fulton 230kV Removal	93	\$1,828	\$121



# Temporary Power Costs in Capital Orders

## Stakeholder Requested Item #19

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Joe Metcalf – *Electric Program Manager, Temporary Generation*



- Temporary generation is used during planned work to provide electric service to customers (i.e., keep customers online) while PG&E performs capital work & takes clearances that would otherwise stop electric service to customers.
- Based on the scope of the work, the project team initiates the request for temporary generation by submitting an electronic Temp Gen Intake Request form.
- Capital project managers are responsible for managing the budget of their projects and to ensure that the cost of temporary generation fits within their project budget.
- The customer revenue is not credited to the PO for which temporary generation is utilized because: (1) PG&E is not aware of any FERC accounting instruction that requires crediting; and (2) trying to pinpoint a specific portion of retail customer revenues associated with temporary generation would be complex and have a de minimis impact on the overall capital project costs.

## Capital Orders with Temporary Generation

- During the twelve-month period of June 1, 2024, to May 30, 2025, temporary generation supported 54 capital projects.
  - TPR CPUC ED 1 Q27 provides capital orders through May 2024
  - June 2024 – May 2025 capital orders



TPR TG 2024 -  
2025

- The majority of the projects, or 61%, were for pole replacement, followed by pole reframing, switch replacement, insulator replacement, and other miscellaneous capital work.



Back at 11:00

**BREAK**



## **Supply Chain Issues Stakeholder Requested Item #16**

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*Alper Ismail Bayrakdar - Category Lead, T&D Material Sourcing*



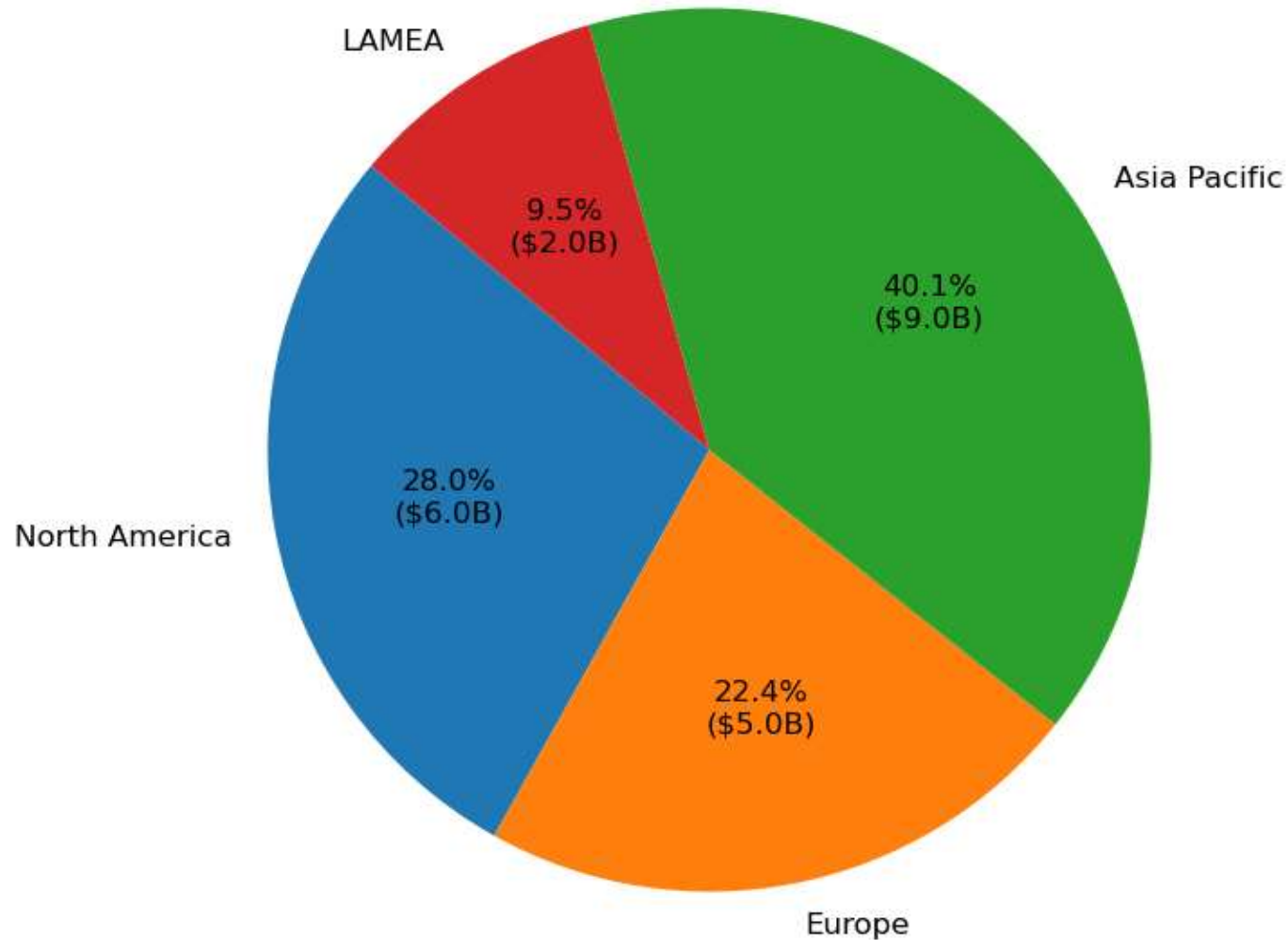
# Material Supply Chain – Circuit Breakers (Industry)

- **Demand** - Increasing Investments: Growing investments in the industrial sector and infrastructure development
- **Renewable Energy** - Rising installation of renewable energy systems
- **Market Growth**  
Projected Growth: The market is expected to grow ~ \$42.5 billion by 2032  
Regional Dominance: Asia Pacific leads with a 40% market share
- **Challenges**  
High Initial Costs: The high initial cost of advanced circuit breakers, component shortages and logistics delays, regulatory Complexity: Varying standards across regions
- **Opportunities**  
Technological Advancements: Adoption of smart and digital circuit breakers  
Eco-friendly Solutions: Innovations in eco-friendly circuit breakers
- **Lead Times**  
Supply Chain Disruptions: Initial disruptions due to labor and component shortages  
Manufacturing Hubs: Asia Pacific remains a key manufacturing hub
- **Costs**  
Maintenance Costs: Stringent environmental regulations and high maintenance costs. Inverse effects of tariffs.



# Material Supply Chain – Circuit Breakers (Market Size)

Global Circuit Breaker Market by Regions (Total: \$23.20 Billion)

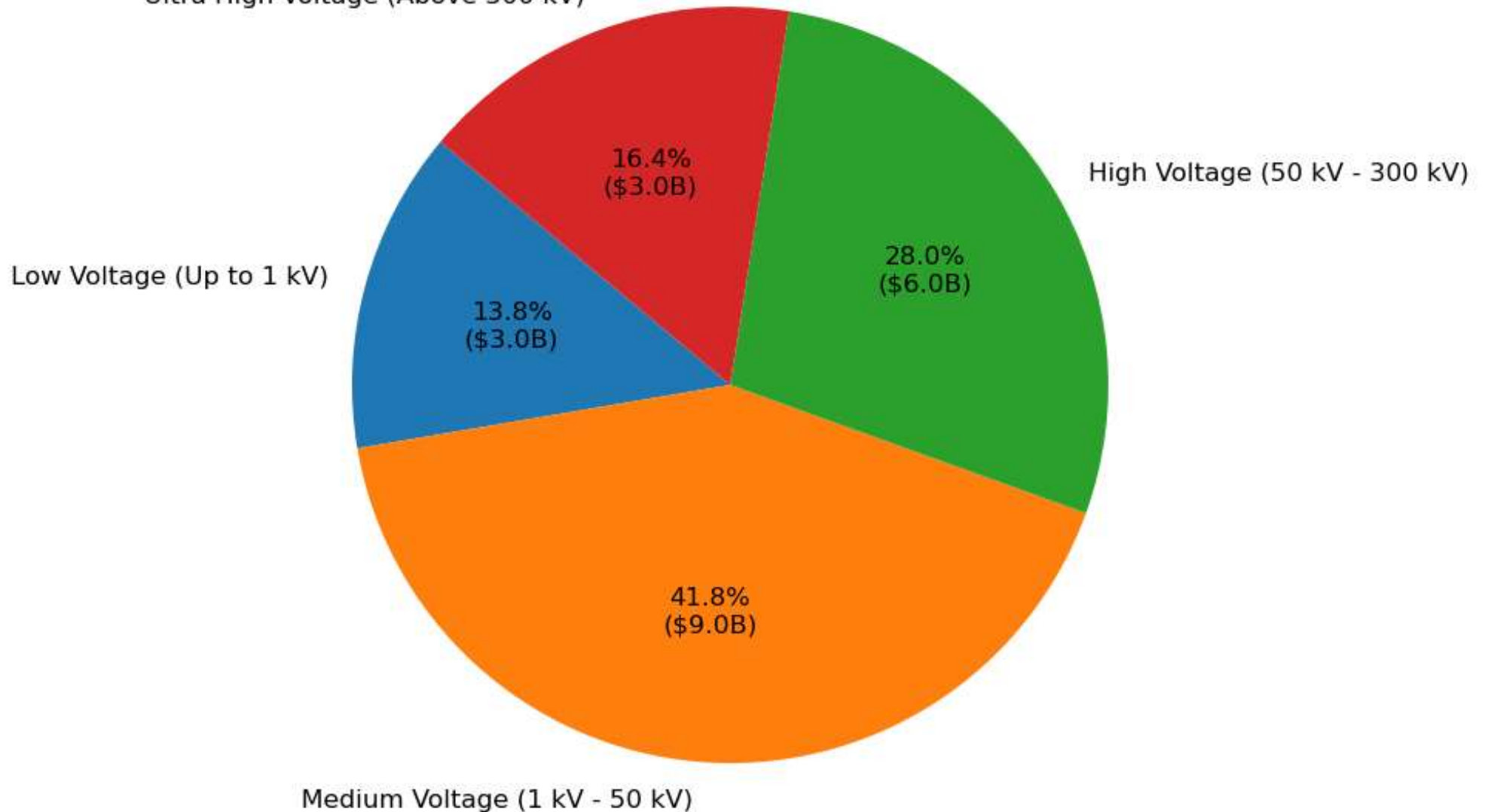




# Material Supply Chain – Circuit Breakers (Market Size)

Global Circuit Breaker Market by Voltage Categories (Total: \$23.20 Billion)

Ultra High Voltage (Above 300 kV)





## Material Supply Chain – Circuit Breakers (Suppliers)

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- **Mitsubishi Electric** - Roughly 5-10% market share. Mitsubishi Electric is involved in electrical and electronic equipment, including circuit breakers
- **Siemens** - Around 15-20% market share. Siemens offers a wide range of circuit breakers and is a prominent player in the industrial and commercial sectors.
- **Hitachi Energy** (former ABB) - About 15-20% market share. ABB is well-known for its electrical equipment and automation products, including circuit breakers.
- **GE Grid Solutions** - Around 5-10% market share. GE offers circuit breakers and other electrical equipment mainly focused on grid solutions.





# Material Supply Chain – Circuit Breakers (Mitigation)

- **Diversifying Suppliers:**  
PGE to diversify its supplier base to reduce dependency on a single supplier and mitigate the risks associated with supply chain disruptions. Engineering team diligently working on approving more manufacturers
- **Building Strong Supplier Relationships:**  
Developing strong relationships and long-term contracts with key suppliers to ensure priority in production schedules and more reliable delivery times
- **Long-Term Contracts and Agreements:**  
Establishing long-term contracts with suppliers to lock in production capacity and secure better terms, thereby reducing lead times and ensuring a steady supply of critical components
- **Bulk Purchasing:**  
In the talks to make bulk purchases to benefit from economies of scale and secure priority in production schedules, helping to mitigate the impact of increased lead times. Utilizing OBS (other balance sheet) accounts for advanced purchases
- **Increasing Inventory Levels:**  
Revisiting inventory parameters to buffer against supply chain disruptions and reduce the impact of increased lead times
- **Implementing SAP ordering**  
Taking an advantages of SAP ordering with standard SKUs



# Power Transformer Market Observations and Strategic Initiatives

## Summary

Power Transformers range in power output from 2 to 420MVA. PG&E's transmission class Power Transformers range from 115 to 500kV and are used to transfer energy over long distances. PG&E's distribution Power Transformers range from 60 to 230kV and are used to step down the voltage serving commercial, industrial, agricultural and residential customers. Procurement and Transformer manufacturing is a complex process that requires prequalification of manufacturers, a competitive bidding process on a per project basis, the purchase of raw materials, long lead time subcomponents and special modes of transportation due to their size and weight.

## Key Market Observations

- Demand continues to outpace supply. The combination of aging infrastructure, expanding the grid, increased demand from the Commercial and Industrial, Renewable, and Data Center sectors have caused a spike in demand. Lead times have expanded from one year to two to four years. Power Transformer demand is projected to continue to grow for another 10 years
- Cost of Transformers have gone up significantly due to increased market demand and high raw material and subcomponent costs
- Favorable factory lead times do not last long. In a short period of time, factories can oversell their capacity which result in suppliers being selective in the bids they participate, reducing the number of proposals received

## Strategic Initiatives

- Due to extended lead times PG&E has been working on expanding our supplier pool. PG&E is in the process of evaluating new suppliers. Five developing suppliers have active pilot awards
- In 2024 PG&E put together a five-year demand forecast and purchased 150 Power Transformers in effort to support projected demand and offset extended lead times
- PG&E is partnering with key suppliers to establish slot programs to support demand outside of the five-year forecast



## CWIP Ratebase Incentive Projects Stakeholder Requested Item # 3

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Jason Castellanos, *Project Manager*

Cait Ribeiro, *Project Manager*

Tim Criner, *Project Manager*

Marco Rios - *Sr Mgr, Elec. Transmission Planning*

Paul Gill, *Substation Asset Management*

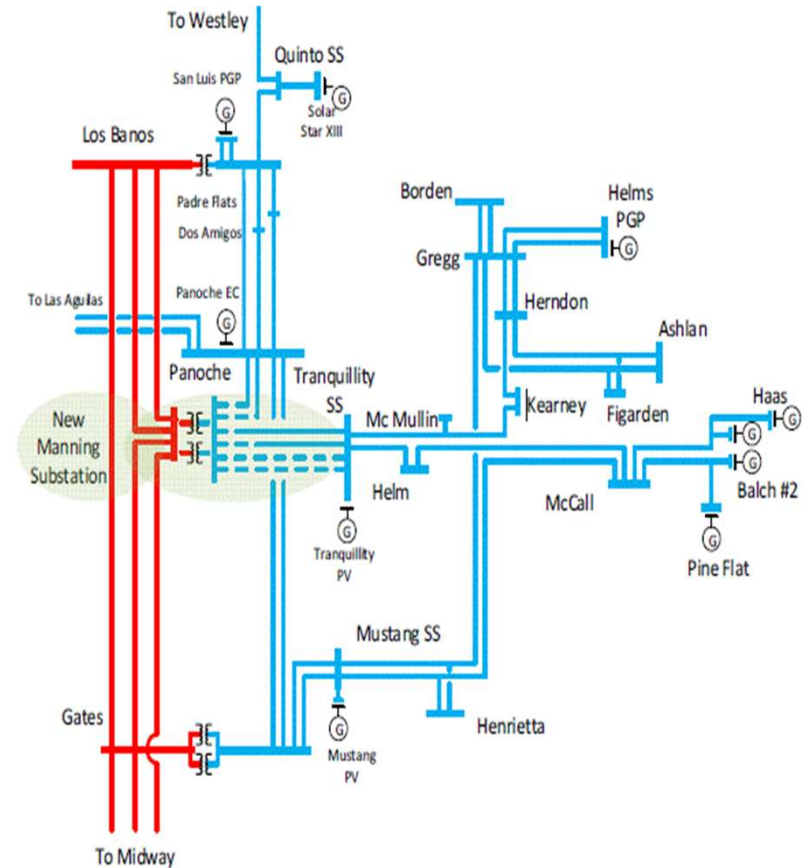
George Kataoka, *Capital Accounting*



# T.0009194 Manning New 500kV Sub Connection

## Scope:

- LS Power to construct a new 500kV/230kV Substation.
- LS Power to construct 2 new 230kV transmission lines between Manning substation and Tranquillity SW Sta.
- PG&E to loop the Los Banos – Gates No.1 500kV line and the Los Banos – Midway No. 2 500kV line
- PG&E to modify 500kV Transposition structure locations on the Los Banos – Gates No.1 500kV line and the Los Banos – Midway No. 2 500kV line
- PG&E to loop the two existing Panoche – Tranquillity 230kV lines into the new 500kV Manning substation
- PG&E to reconductor the two Manning – Tranquillity 230kV lines from loop in point to Tranquillity SW Sta.
- PG&E to modify the Gates 500kV Series Capacitor Banks 1&2 (SC1 & SC2) reactance to maintain 500kV line compensation and upgrade 500kV line protection. Upgrade Panoche 230kV Bus section D to BAAH, replace all overstressed breakers in 230kV Bus Section E, replace all overstressed 115kV breakers. Build Telecom yard and install Telecom enclosure at Manning Substation to facilitate monitoring the status of Manning substation. Build 230kV BAAH bays 4 & 6 at Tranquillity Switching Station to accommodate two new 230kV lines from Manning Substation to Tranquillity Switching Station, replace and extend main bus 1 & 2 from BAAH bay 4 to bay 6. Upgrade 500kV line protection at Los Banos and Gates Substations. Install 500kV line disconnect switches at Los Banos and Midway Substations.

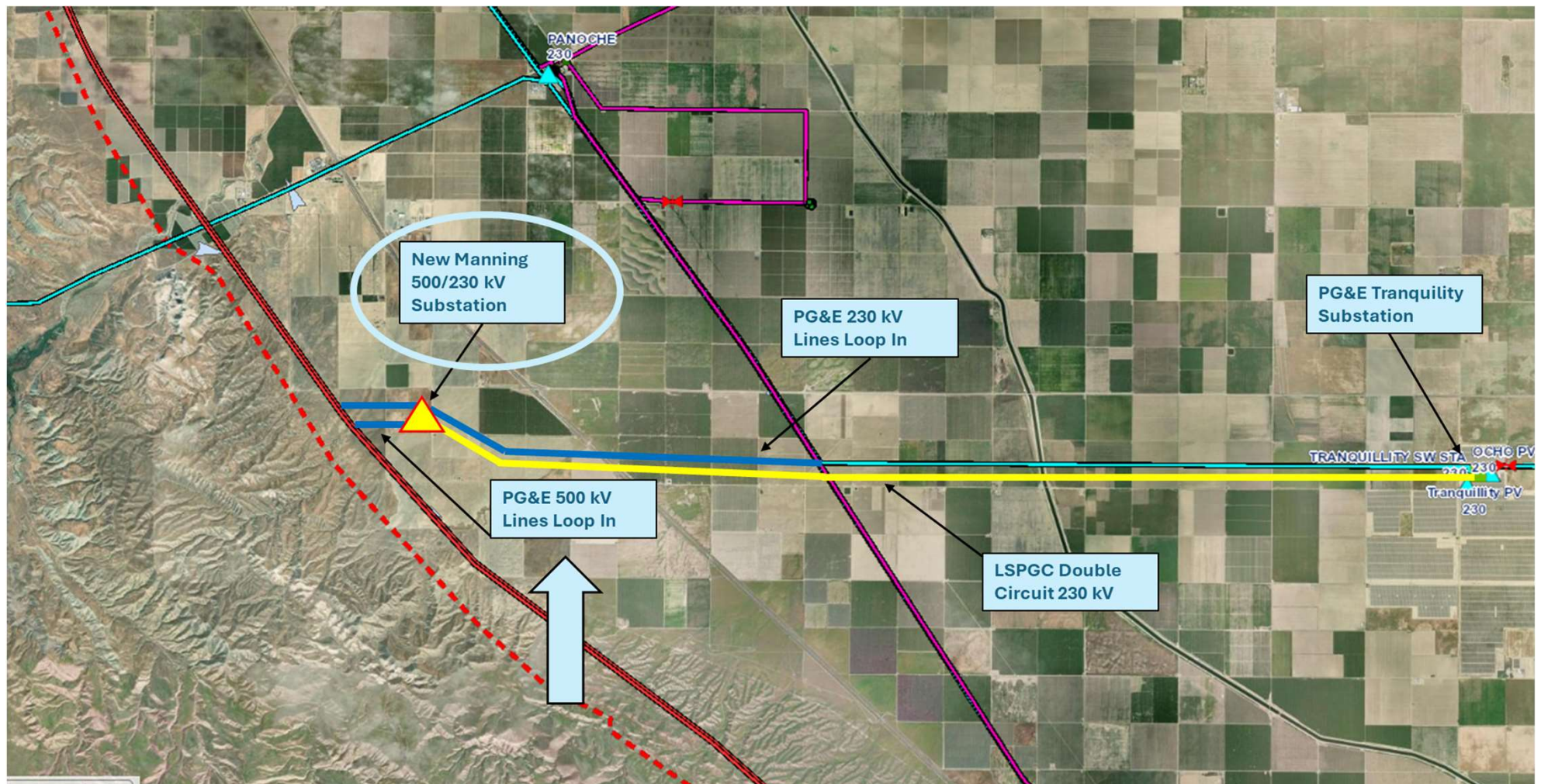




# T.0009194 Manning New 500kV Sub Connection

Planning Order	Order Description	MW C	T.Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5809641	Panoche-Excelsior SW STA #1 & #2 115Kv	60	T.0009194	\$ 2,764	\$ 84	6/27/2025	5/15/2024	5/4/2026	12/1/2026
5809640	Manning: Panoche SS Pan EC, Las Ag	60	T.0009194	\$ 2,391	\$ 190	8/7/2025	5/15/2024	4/23/2026	5/31/2028
5809639	Manning: Gates-Panoche #1 & #2 230kV	60	T.0009194	\$ 7,024	\$ 152	6/27/2025	5/15/2024	5/1/2026	5/31/2028
5809623	Manning: Tranq POCO Man-Tranq#3	60	T.0009194	\$ 1,490	\$ 51	8/7/2025	5/15/2024	3/2/2027	5/31/2028
5804811	Recond Panoche-Manning-Tranquility#1	60	T.0009194	\$ 56,324	\$ 1,123	7/15/2025	1/2/2024	10/6/2026	5/31/2028
5804801	Loop 2 Panoche-Tranq lines in Manning	60	T.0009194	\$ 19,508	\$ 611	8/7/2025	1/2/2024	1/6/2027	5/31/2028
5804800	Loop Los Ban-Gates#1 & Los Bano-Mid#2	60	T.0009194	\$ 25,113	\$ 676	9/26/2025	1/2/2024	7/3/2026	5/31/2028
5560999	Land Acquisition	60	T.0009194	\$ 4,727	\$ 93				3/31/2027
5809979	Manning Sub: Panoche Eng Centr	61	T.0009194	\$ 25	\$ 25	4/9/2025	8/1/2023	11/1/2027	5/31/2028
5809978	Manning Sub: Las Aguilas Sw Sub	61	T.0009194	\$ 1,960	\$ 115	4/9/2025	8/1/2023	11/1/2027	5/31/2028
5809028	Manning Sub: Manning Telecom and Testing	61	T.0009194	\$ 7,052	\$ 545	4/9/2025	8/1/2023	7/6/2026	5/31/2028
5808684	Manning: Panoche Sub Replace CB 102, 132	61	T.0009194	\$ 4,977	\$ 79	4/9/2025	8/1/2023	1/11/2027	5/31/2028
5804878	Manning Sub: Gates Protection Upgrade	61	T.0009194	\$ 1,902	\$ 510	4/9/2025	8/1/2023	11/1/2027	5/31/2028
5804813	Manning Sub: Tranquillity BAAH	61	T.0009194	\$ 17,598	\$ 1,332	4/9/2025	8/1/2023	7/6/2026	5/31/2028
5804806	Manning Sub: Panoche BAAH	61	T.0009194	\$ 84,531	\$ 3,987	4/9/2025	8/1/2023	7/6/2026	5/31/2028
5804805	Manning Sub: Midway Protection Upgrade	61	T.0009194	\$ 1,870	\$ 229	4/9/2025	8/1/2023	11/1/2027	5/31/2028
5804804	Manning Sub: Los Banos Protection Upgrade	61	T.0009194	\$ 5,116	\$ 405	4/9/2025	8/1/2023	11/1/2027	5/31/2028





## LS Power Scope:

- LS Power to construct a new 500kV/230kV Substation.
- LS Power to construct (2) new 230kV transmission lines between Manning substation and Tranquility SW Sta.

## PG&E Scope:

- Loop the Los Banos – Gates No.1 500kV line and the Los Banos – Midway No. 2 500kV line into Manning Substation.
- Loop the two existing Panoche – Tranquility 230kV lines into the new 500kV Manning substation, reconductor the two Manning – Tranquility 230kV lines to higher capacity.
- Replace 500kV Transposition structures on Los Banos – Gates No.1 500kV line and the Los Banos – Midway No. 2 500kV lines.

# T.0009189 Loop Vaca Dixon-Tesla in Collinsville

Planning Order	Order Description	MWC	T.Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5804858	Loop Vaca Dixon-Tesla in Collinsville	60	T.0009189	\$ 40,799	\$ 1,580	8/19/2025	7/25/2023	6/4/2027	5/30/2028
5804803	Pittsburg: Connect 2 230 & inst bus reac	61	T.0009189	\$ 28,810	\$ 1,132	7/24/2024	7/25/2023	4/30/2027	5/26/2028
5804802	Tesla: Upgrade system protection	61	T.0009189	\$ 8,171	\$ 271	7/24/2024	7/25/2023	8/19/2027	5/30/2028
5804724	Vaca Dixon Sub 500kV Series Cap Bk2 Mod	61	T.0009189	\$ 35,691	\$ 460	7/24/2024	7/25/2023	5/28/2027	5/30/2028

- Scope:** LS Power to install a new 500kV substation in the town of Collinsville. PG&E to tap into existing 500kV line to loop in and out of the new substation. PG&E to replace remote end relays at Vaca Dixon and Tesla substations and install IT yard adjacent to new substation. Furthermore, modify series Cap bank at Vaca Dixon, install new and relocate existing 230kV line breakers including installation of 115kV reactors at Pittsburg substation.
- Status:** Substation and T-line designs are in progress anticipating to complete by end of 2025. The 230kV breakers for Pittsburg are procured with delivery date of July 2027 and the 115kV reactors are procured with delivery date in March 2028. The Proponent's Environmental Assessment (PEA) application was submitted to CPUC by LS Power in July of 2024 and the Project Team is currently collaborating with LS Power on Data Requests from the CPUC.

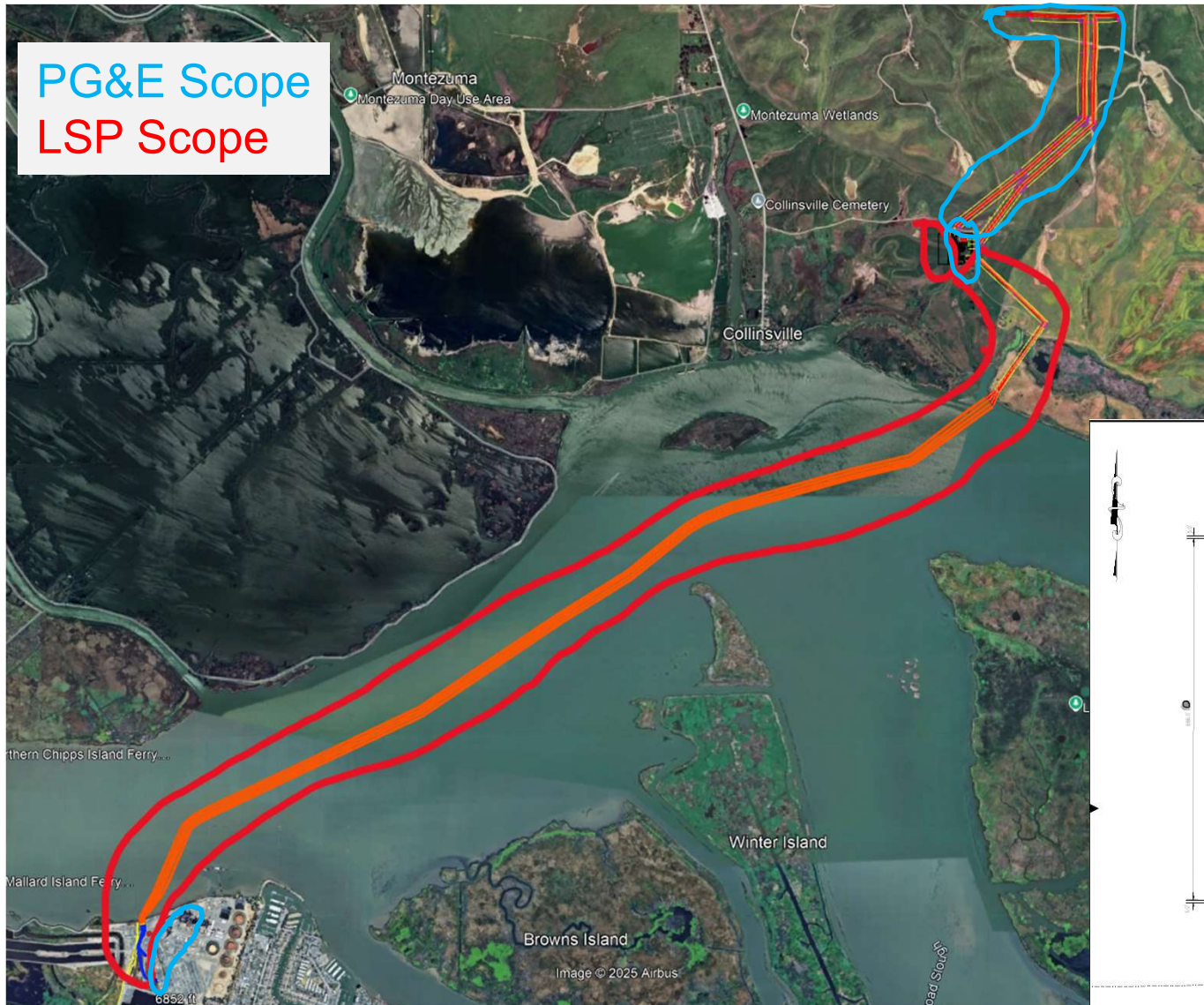




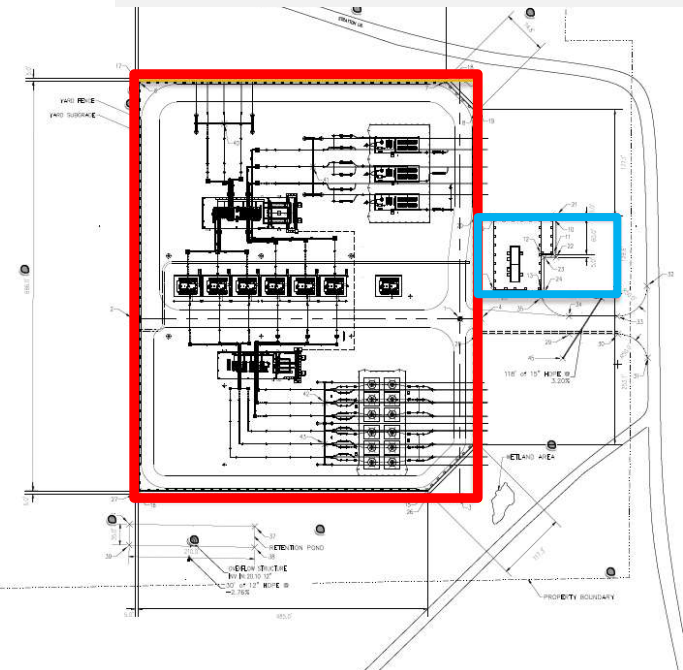


# PG&E vs. LS Power Mapping

## T.0009189 Loop Vaca Dixon-Tesla in Collinsville



### Collinsville Substation & PG&E Communications Yard



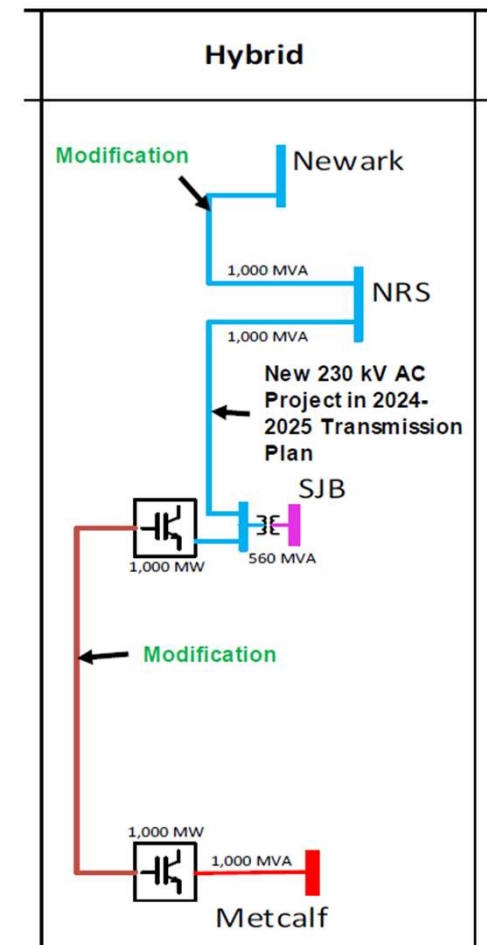




# T.0009168 Newark – NRS 230 kV Project

Planning Order	Order Description	MWC	T.Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5806599	Newark - HVDC Connection - TLine	60	T.0009168	\$ 1,916	\$ 68	6/24/2025	9/15/2023	8/14/2026	5/28/2027
5804787	Newark: HVDC Connection	61	T.0009168	\$ 22,364	\$ 4,277	6/24/2025	7/13/2023	8/14/2026	5/28/2027

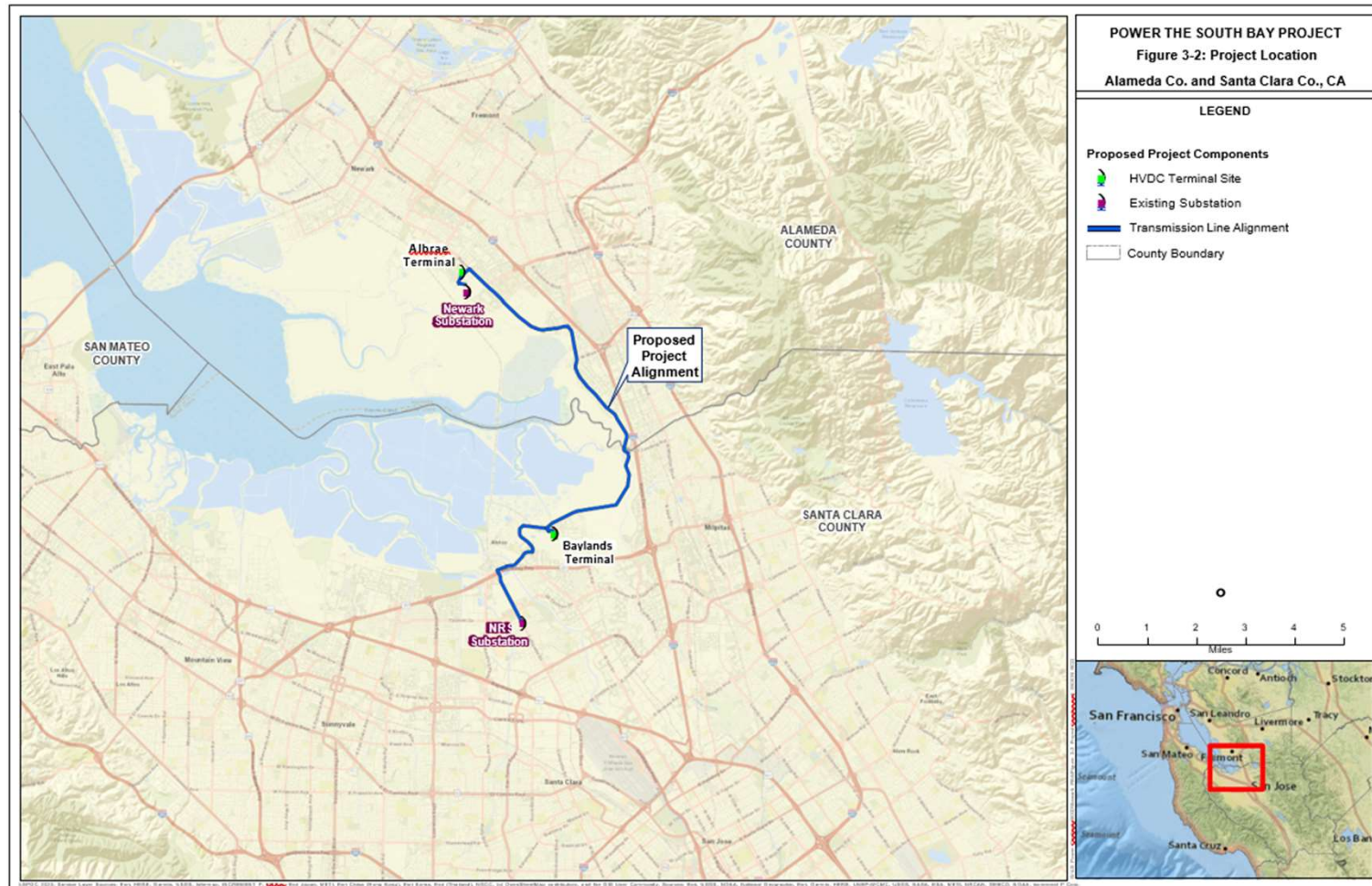
- Based on the CAISO decision in November 2024, the scope of the Newark to NRS connection was changed to a 1,000 MVA 230 kV Alternating Current (AC) circuit.
- The overall impact on the PG&E scope of work and completion timeline due to the CAISO rescoping of the Newark (a.k.a., Power the South Bay) project was evaluated and scope update was completed by PG&E in June 2025.
  - The effect on interconnection process(es), if any, due to CAISO scope change from DC to AC is being evaluated by PG&E in coordination with LS Power and Silicon Valley Power (SVP), who owns and operates the NRS Substation.





# T.0009168 Newark - PG&E vs. LS Power Mapping

- PG&E's responsibility includes upgrades within Newark Substation and transmission line from Newark to the point of interconnections to connect with LS Power.
- LS Power responsibility includes transmission line between Northern Receiving Station (NRS) and Newark Substation. Based on November 2024 decision by CAISO, the HVDC Terminal Sites (Albrae and Baylands) are not required since the entire transmission line between NRS and Newark Substations was changed to an AC circuit.



Note: HVDC Terminal Sites (Albrae and Baylands) are not required based on November 2024 CAISO decision.

Reference: LS Power Certificate of Public Convenience and Necessity (CPCN) application and Proponent's Environmental Assessment (PEA) for Power the South Bay Project, May 17, 2024

## Slide 61

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**MNO**

[@Jayapalan, Amal] for Newark HVDC b) Please provide a map or diagram that includes the major segments of these projects and identify the major segments for which PG&E is responsible and LS Power is responsible. Please highlight how these projects tie to each other and illustrate dependencies to other major projects planned in the South Bay (e.g., San Jose A – Substation Rebuild).

Similar to that of Metcalf HVDC below

Medina, Nick, 2025-07-21T16:58:44.100

**MNO 0**

[@Castellanos, Jason]

Medina, Nick, 2025-07-21T18:40:14.043

**JA0 1**

Map and details of PG&E vs LS Power responsibilities added

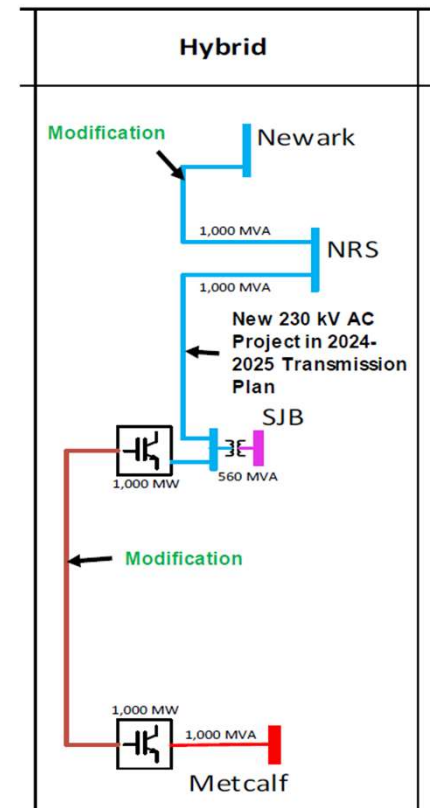
Jayapalan, Amal, 2025-07-24T06:14:57.773



## T.0009169 Metcalf - HVDC Connection

- Based on the CAISO decision in November 2024, the scope of the project was changed to a 1,000 MW HVDC link between Metcalf 500 kV and San Jose B 230 kV substation and a 230/115 kV transformer to connect to PG&E's San Jose B 115 kV substation.
- The overall impact on the PG&E scope of work due to the CAISO rescoping of the Metcalf (a.k.a., Power the Santa Clara Valley) project was evaluated and PG&E will additionally install a 230kV GIS and two 560MVA 230/115kV autotransformers at San Jose B.
  - PG&E reviewed and updated the PG&E scope based on the scope change mandated by the November 2024 CAISO decision.
  - PG&E will be completing the project in two phases
    - Phase 1: Upgrade 500 kV Metcalf substation; rebuild 115kV San Jose B substation including one 560MVA 230/115kV autotransformer; transmission line connections at Metcalf and SJB to LS Power HVDC line.
    - Phase 2: Addition of a new 230kV switchyard at San Jose B substation.
  - CAISO did not change the scope from DC to AC for the Metcalf-to-San Jose B line and hence interconnection process(es) are not be impacted.

MN0



## Slide 62

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**MNO**

[@Castellanos, Jason] please review and populate  
Medina, Nick, 2025-07-15T21:25:35.298



# T.0009169 Metcalf - HVDC Connection

Planning Order	Order Description	MWC	T.Dot	EAC	ITD	Scope Document Approval	Eng Start	Construction Start	FISD
5810781	San Jose B Relocate 4 feeders	6	T.0009169	\$ 5,309	\$ 705		8/16/2024	9/12/2025	11/7/2025
5810185	Metcalf - HVDC - Distribution Fiber Rout	6	T.0009169	\$ 676	\$ 18		8/12/2024	1/5/2026	2/20/2026
5810184	San Jose B - HVDC - Distribution Relocat	6	T.0009169	\$ 4,642	\$ 407		10/2/2024	1/5/2026	1/26/2026
5806625	San Jose B - HVDC Connection - TLine	60	T.0009169	\$ 7,929	\$ 98	3/26/2024	9/15/2023	2/25/2027	12/30/2027
5815774	Metcalf Security Fence 0057	61	T.0009169	\$ 596	\$ 4	7/18/2025		10/22/2025	1/30/2026
5813144	San Jose B 230kV GIS	61	T.0009169	\$ 149,245	\$ 9	12/12/2025	1/2/2025	8/11/2028	6/28/2030
5807758	San Jose B - HVDC - San Jose A RE	61	T.0009169	\$ 988	\$ 83	10/28/2024	7/12/2023	7/16/2027	12/30/2027
5807739	San Jose B - HVDC - Trimble RE	61	T.0009169	\$ 970	\$ 19	7/26/2024	7/12/2023	9/21/2026	12/30/2027
5804789	San Jose B: HVDC Connection	61	T.0009169	\$ 234,923	\$ 22,503	7/23/2025	7/13/2023	1/5/2026	12/30/2027
5804788	Metcalf: 500kV HVDC Connection	61	T.0009169	\$ 141,731	\$ 2,755	6/30/2025	7/13/2023	2/20/2026	12/30/2027
5555161	San Jose B - HVDC - South Transition RE	61	T.0009169	\$ 374	\$ 11	7/26/2024	7/12/2023	3/22/2027	12/30/2027
5555160	San Jose B - HVDC - North Transition RE	61	T.0009169	\$ 315	\$ 14	7/26/2024	7/12/2023	3/16/2027	12/30/2027

MNO

## Slide 63

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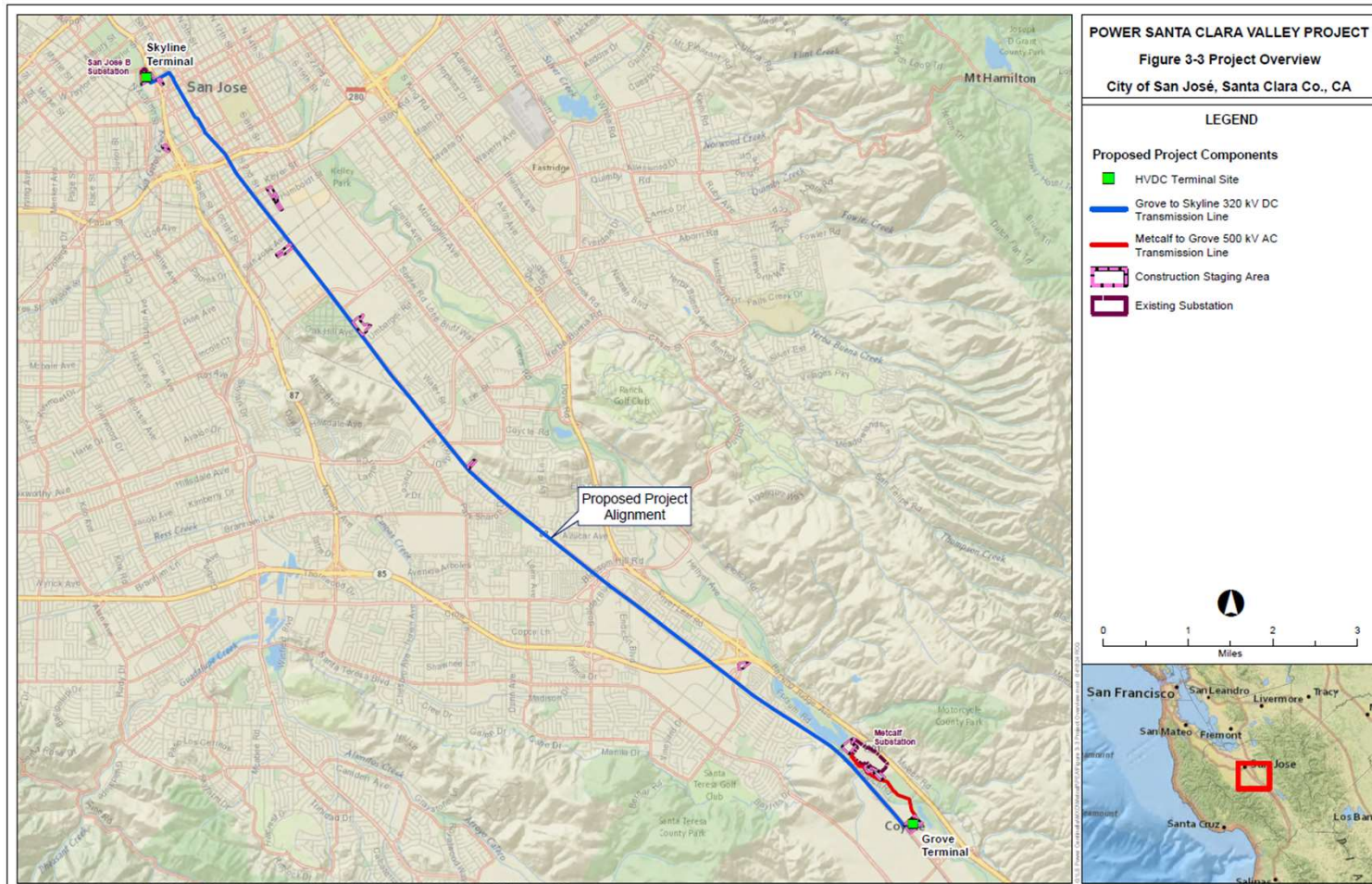
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[@Castellanos, Jason] please review and populate  
Medina, Nick, 2025-07-15T21:25:21.388



# T.0009169 Metcalf - PG&E vs. LS Power Mapping

- PG&E's responsibility includes upgrades within the Metcalf and San Jose B Substations and transmission lines from Metcalf and San Jose B Substations to the point of interconnections to connect with LS Power.
- LS Power responsibility includes the Skyline and Grove HVDC Terminal sites and the transmission lines (Skyline-Grove, Grove-Metcalf Substation and Skyline-San Jose B Substation).

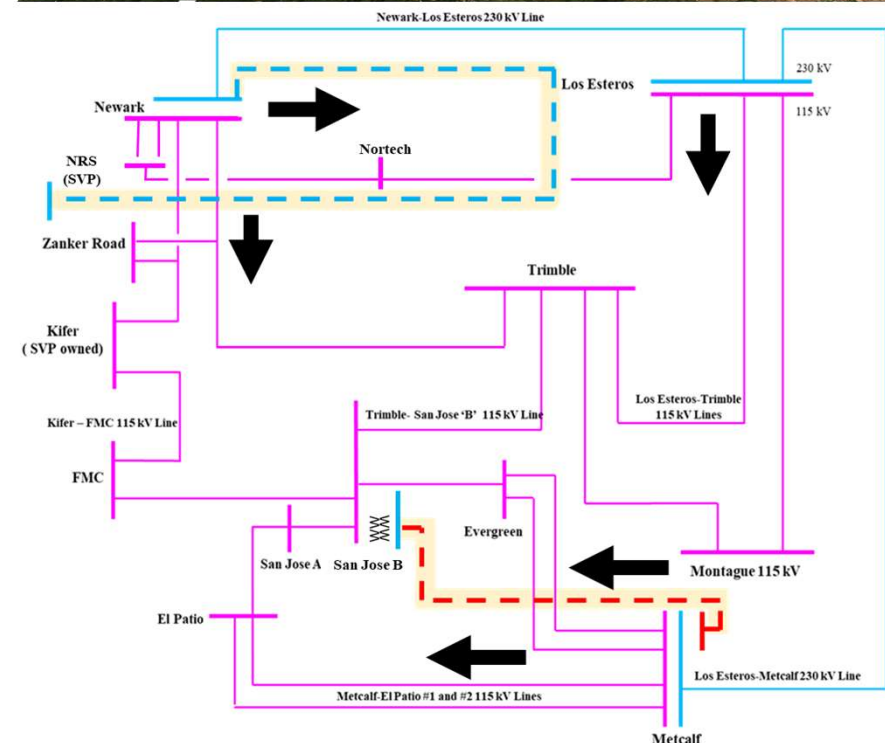
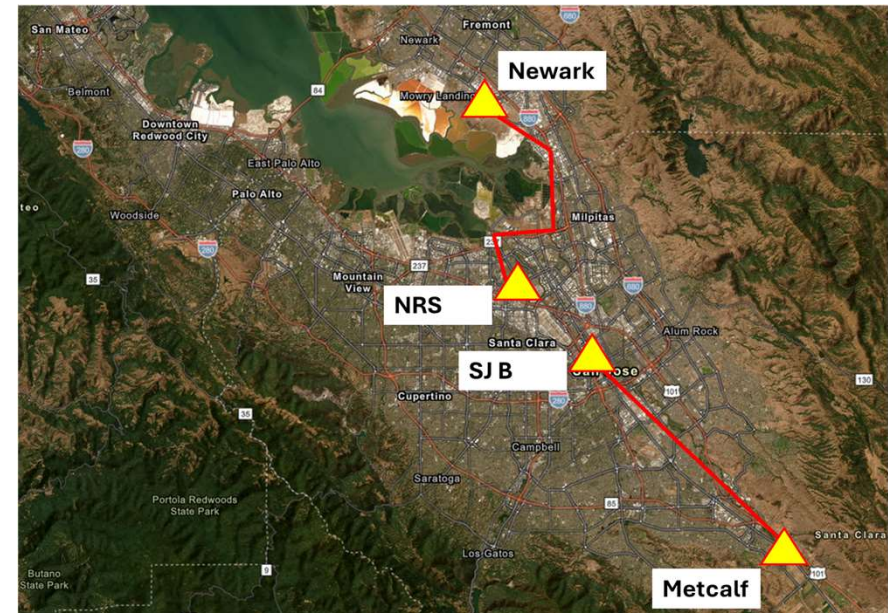


Note: The location of Grove terminal is being evaluated and will be finalized by LS Power.

Reference: LS Power Certificate of Public Convenience and Necessity (CPCN) application and Proponent's Environmental Assessment (PEA) for Power the Santa Clara Valley Project, April 29, 2024



- Metcalf, Newark, Los Esteros supply 230 kV power to a network system of 115 kV and 60 kV lines, serving several transmission and distribution stations in the South Bay Area
- The new LS Power lines will be interconnected with the existing grid and will support the area's load growth
- By 2030 the San Jose B-NRS 230 kV line is expected to be added to San Jose B Substation
- Data centers located in the area will connect across the 115 kV network and will rely on these and others capacity upgrades – coordinated between large load interconnection process and TPP





## AC vs DC Interconnection

- The process for AC and DC interconnection will remain the same as the connection to PG&E transmission system will be AC in both cases.
- The only change will be the technical interface of the DC system, which will require different set of protection requirements.



# How CAISO Rescoping of LS Power Projects Affects PG&E Ability to Recover Costs

- Capital Cost Recovery:
- FERC approved the CWIP Incentive for these projects in Docket No. EL24-107-000 on July 25, 2024
- Changes in rescoping will be picked up in the recorded CWIP balances (Schedule 32) as included in the CWIP incentive
- The downstream resulting differences in plant additions will be picked up in the TO21 Formula Model, Schedules 7 (Plant) and 9 (Forecast Additions).
- Once operative, these projects will resume normal utility rate making and the costs will be recovered from rate payers
- If any of these projects are cancelled by CAISO or from risks outside PG&E's control, abandoned plant cost recovery will be utilized, which was approved by FERC in this same July 25, 2024 FERC Order



# Competitively-Bid Projects Interconnected by PG&E Stakeholder Requested Item #4

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Cait Ribeiro – *Project Manager*

Marco Rios - *Sr Mgr, Elec. Transmission Planning*



# T.0006815 - LSPower Round Mountain Area 500kV Dynamic

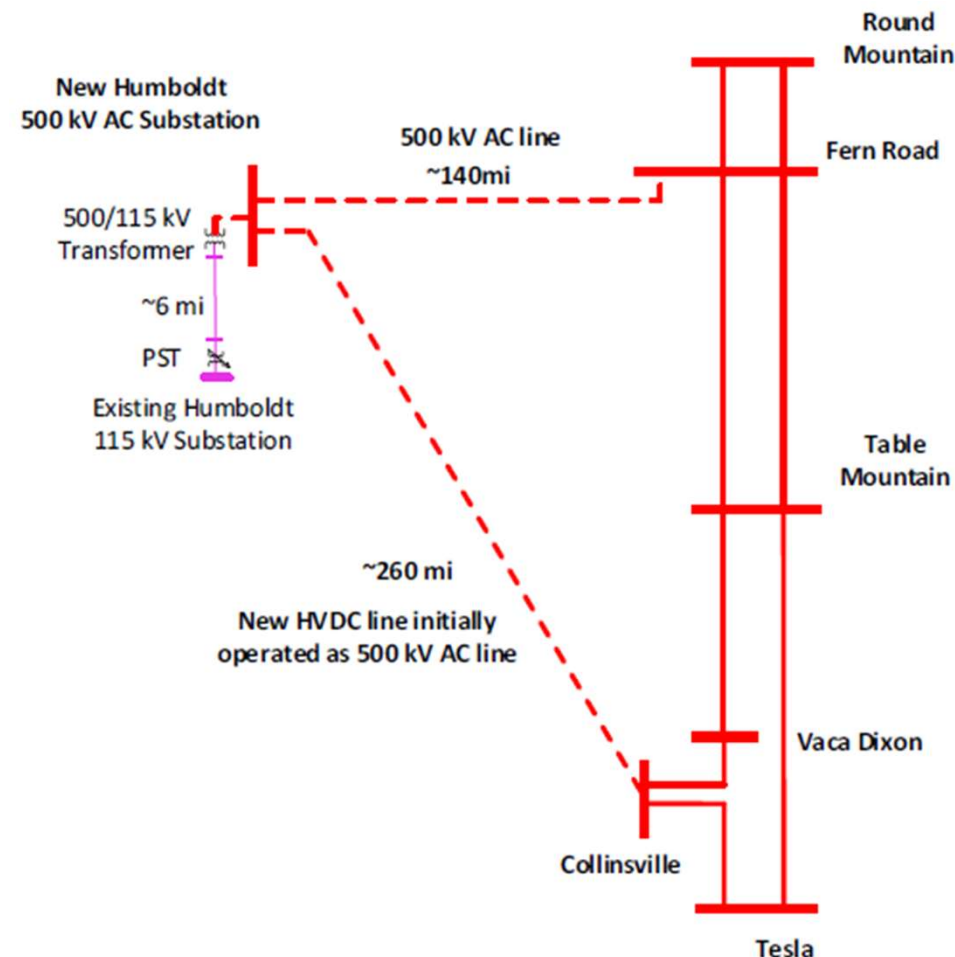
- Project Status: Construction
  - Costs
    - Inception to Date: \$100,370M
    - Estimate at Completion: \$182,209M
  - Scope
    - Interconnect new Transmission Owner (TO) LS Power Grid California's Fern Road Substation STATCOM Facility to the Round Mountain-Table Mountain 500kV line. Reduce RM 500 kV Series Cap Banks 3&4 reactance. Reduce TM 500 kV Series Cap Banks 1&2 reactance
  - Challenges:
    - Contractor performance challenges with Fixed Series Capacitor (SC) commissioning
    - Design changes driven by assorted operational and system studies results (Seismic, Harmonic, TRV, MOV, RTDS, etc)
    - Third party Utility LSPower collaboration, data sharing and coordinated commissioning sequencing
  - Projects Dependent on T.0006815: None directly, general 500kV clearance congestion impacts
- Milestones
    - Kickoff: 6/2/21
    - Engineering Start: 5/3/21
    - Engineering End: 10/17/25
    - Construction Start: 2/15/23
    - FISC: 10/17/26



## T.0004672 - Gates: 500 kV Dynamic Voltage Support

- Project Status: Operational
- Costs
  - Inception to Date: \$81.878M
  - Estimate at Completion: \$84.643M
- Scope
  - Interconnect new Transmission Owner (TO) LS Power Grid California's Orchard Substation STATCOM Facility to Gates 500kV Bus
- Challenges (realized):
  - Implementation of many newer technologies : GIB (Gas Insulated Bus), DTS (Distributed Temperature Sensing) Fiber, XLPE (Underground 500kV line)
  - Workmanship issues associated with fiber installation
  - Third party Utility LSPower collaboration, data sharing and coordinated commissioning sequencing
- Projects Dependent on T.0004672: None. Project complete.
- Milestones
  - Kickoff: 1/19/21
  - Engineering Start: 9/1/21
  - Engineering End: 5/30/24
  - Construction Start: 4/3/23
  - FISC: 1/28/25

- Please provide an update for the following two projects:
  - Humboldt 500 kV Substation and 500 kV line to Collinsville
  - Humboldt to Fern Road 500 kV Line
- California ISO approved these transmission upgrades as part of its 2023-2024 transmission plan to support offshore wind development in the Humboldt Wind Energy Area.
- On May 16, 2025, the California ISO announced selection of Viridon as the approved project sponsor who will finance, build, own and operate both projects. PG&E is responsible for the local 115 kV connection.
- In-service date for the projects is June 2034
- PG&E will work with both Viridon and LS Power as the owner of Fern and Collinsville to interconnect the transmission projects.





# **COTA Bushing Replacement Program 2025-2029**

## **Stakeholder Requested Item #9**

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Manuel Munoz – *Elec Stds and Strategy Engr*





# COTA Bushing Replacement Program Overview

## Purpose:

- In July 2016, Trench - COTA manufacture send out a safety advisory to all Power utilities addressing the operational risk of all Trench COTA & OTAA Transformer bushing types, with voltage ratings 70kV and 115kV.
- In 2024, PG&E identified 39 Transmission Transformers with possible COTA type bushings installed and in-service. A subsequent inspection instructions and a Critical Product News Flash was sent out company-wide to identify all COTA & OTAA bushings installed on Transformers within T&D Substations.

## Inspection Results:

- There are no Transmission Transformers with COTA bushings replaced between the years 2020 and 2025.
- According to SAP and 2024/2025 field inspection: There are Zero Transmission Transformers with COTA bushings.
- Therefore, there will be no planned Transmission Transformer Replacements.
- However, for any unknown Transmission Transformer COTA bushings, Substation Asset Strategy will utilize the data from existing documented Maintenance process/procedure to trigger a condition-based replacement



Back at 1:00

**LUNCH BREAK**



## **Load Interconnection Processes Stakeholder Requested Item #10**

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Ben Moffat – *Sr. Manager, Electric Program Management*



## Rule 30 – Application Updates

*Please provide an update on PG&E's "Rule 30" application to the CPUC, reflecting any revisions PG&E may have made to its proposal. Include a description of any costs which would be borne by FERC jurisdictional ratepayers under PG&E's proposal, when and how ratepayers would be made aware of associated ratebase additions, and how stakeholders can keep apprised of any system impacts of projects under PG&E's proposal*

- On November 21, 2024, PG&E submitted proposed Electric Rule 30 application to the CPUC (Application 24-11-007). Electric Rule 30 addresses the interconnection of electric retail load customers interconnecting at transmission level voltages (e.g., data centers, EV charging, etc.).
- On January 24, 2025, PG&E filed a motion requesting the CPUC to approve interim implementation of Rule 30 until final ruling is made.
- On March 11, 2025, the Administrative Law Judge (ALJ) issued a scoping memo identifying the issues and schedule for the proceeding.
- On March 21, 2025, PG&E filed its supplemental testimony. PG&E's supplemental testimony organized the testimony to correlate to the issues identified in the ALJ's scoping memo and revised the initial prepared testimony to update references and reflect changes which occurred since the initial prepared testimony was filed.
- On June 20, 2025, the ALJ issued a proposed decision (PD) for interim implementation in response to PG&E's motion. The PD recognized the increased number of retail transmission applications and found it reasonable to grant PG&E's request with modifications. The CPUC is scheduled to vote on the PD July 24, 2025.
- A CPUC decision is scheduled for March 2026 per the ALJ's timeline in the scoping memo.
- Associated ratebase additions can be provided upon request from stakeholders via data requests



## Rule 30 Impact on TPR Projects

### Large Retail Load Projects in May 2025 TPR PS

Utility Unique ID 2	T Project Name
T.0000005	CHSR Interconnections, Sites 4-7
T.0000006	CHSR Interconnections, Sites 8-13
T.0005903	Private Load Interconnection Project
T.0006960	Private Load Interconnection Project
T.0007676	Private Load Interconnection Project
T.0008046	Private Load Interconnection Project
T.0008309	FMC: VTA 115kV Interconnect
T.0009031	Private Load Interconnection Project
T.0009133	Private Load Interconnection Project
T.0009652	Private Load Interconnection Project
T.0010081	Private Load Interconnection Project
T.0010100	Private Load Interconnection Project
T.0010142	Private Load Interconnection Project
T.0010517	Private Load Interconnection Project
T.0010520	Private Load Interconnection Project
T.0010809	L0006_BRITTON-MONTA VISTA & NEWARK-APPLIED
T.0010874	LC24-26 Private Load Interconnection Project
T.0010875	LC24-27 Private Load Interconnection Project
T.0010876	LC24-28 Private Load Interconnection Project

- Rule 30 is not expected to have a final decision until March 2026.
- PG&E is not sure what impact Rule 30 approval next year will have on Projects in the May TPR.
- Filter for “Load Interconnection” for Data Field 10 Secondary Purpose to find these projects. Work under MWC 82 (60/61 reconductoring projects for Nov 2025 TPR PS)



# Cluster Study 2024 Update

*Please provide an update on PG&E's Bay Area "cluster study" for new load interconnection projects, last discussed in the February 4, 2025 TPR Stakeholder Meeting.*

## 2024 Cluster Study Results

- 26 Initial Applications
- 7 Different Customers
- 17 PES Reports Issued
- 12 Projects Proceeding to Interconnection
- ~1.7 GW Studied
- ~940MW Proceeding to Interconnection
- Developed options that met all customer timelines
- ~\$200M cost savings
- ~180-day report delivery
- Efficiencies gained in scoping capacity work
- Consistent customer communication
- Implementation of new Electric Rule 30

## 2024 Cluster Customer Satisfaction Survey Results | Feedback

- Participants in the cluster study have **high praise for the process and design** of the study with an average score of 9 (10 being highest rating).
- One participant who has done many serial studies believes **this is pioneering work** and should become a template for the industry; another noted how **innovative** the cluster study is.
- PG&E's communication drives satisfaction levels among the participants, with a few citing specific PG&E employees for their work, and others noting how helpful and informative the pre-pilot, scoping and results meetings were.



# Generator Interconnection Network Upgrades and CAISO TPP Reliability and Policy-Driven Projects Through CAISO 2023-2024 TPP Stakeholder Requested Item #17

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Darrin Yoxtheimer – *Electric Program Manager*

Nick Medina – *Sr. Standards & Strategy Engineer, TPR Team*

David Corzilius – *Contract Specialist*



# Status of Projects $\geq$ 1MW Interconnecting to PG&E's Transmission System

PHASE	COUNT	MW
Study in Progress	145	47,926
GIA in progress	23	4663
Implementation (Included Suspensions)	74	16,174
In Service Date	8	514
COD	35	4514





# Generation Technologies Interconnection Process ( $\geq 1$ MW)

GENERATOR TYPE	STUDY IN PROGRESS	GIA IN PROGRESS	IMPLEMENTATION	IN SERVICE DATE	COD
Biomass/Biofuel	1 @ 10 MW				
Hydro/Pumped-Storage Hydro	1 @ 67 MW				
Photovoltaic/Solar	62 @ 22,405 MW				
Wind Turbine/Wind	3 @ 805 MW				
Combustion Turbine and Steam		1 @ 635 MW			
Compressed Air, BESS		1 @ 500 MW			



# Generation Technologies Interconnection Process ( $\geq 1$ MW)

## Cont'd

GENERATOR TYPE	STUDY IN PROGRESS	GIA IN PROGRESS	IMPLEMENTATION	IN SERVICE DATE	COD
Solar PV		5 @ 830 MW	16 @ 2680 MW	1 @ 200 MW	15 @ 1686 MW
Solar PV, Battery Energy Storage		8 @ 940 MW	21 @ 5190 MW	3 @ 180 MW	6 @ 1251 MW
Solar PV, Wind, Battery Storage		2 @ 500 MW	1 @ 400 MW		
Wind		1 @ 156 MW	8 @ 1532 MW	1 @ 91 MW	1 @ 46 MW
Energy Storage (Included Suspensions)	77 @ 24,139 MW	5 @ 1102 MW	27 @ 6267 MW		
Wind / Energy Storage			1 @ 104 MW		



# Generation Technologies Interconnection Process ( $\geq 1$ MW)

## Cont'd

GENERATOR TYPE	STUDY IN PROGRESS	GIA IN PROGRESS	IMPLEMENTATION	IN SERVICE DATE	COD
Energy Storage				3 @ 43 MW	10 @ 1487 MW
Synchronous Engine					1 @ 18 MW
Turbine					2 @ 26 MW
Storage/Compressed Air	1 @ 500 MW				



## Generation Interconnection Projects in TDF

- The TDF NU workbook & TPR PDS serve different purposes and audiences:
  - TDF projects are Network Upgrades. Generation Interconnection projects are not included in TDF.
  - TPR projects are at the PO level, with all work scopes under each T.dot project. Generation Interconnection projects are included in TPR
    - Network Upgrades can be a subset of generation interconnection projects or part of other maintenance/capacity projects



## CAISO TPP Projects Not in TPR

- Diablo Canyon Area 230 kV High Voltage Mitigation:
  - This project is included in the May 2025 TPR PS under T.0010474 Mesa: Install 115kV Shunt Reactors
- Collinsville 230 kV Reactor:
  - This is not included in the May 2025 TPR PS because it is an LS Power project and not a PG&E project
- CAISO 2024-2025 Transmission Plan
  - Expected to be included in November 2025 TPR PS as unique POs or Investment Codes (if cost is greater than \$1M with expenditures in the TPR window)



## **Cost Benefit Analyses (Data Field 66) Stakeholder Requested Item # 2**

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*Estella Chu – Principal, Risk Analysis*

*Ryan Blake, Director, Investment Planning*

*Joscelyn Wong – Sr. Manager, Integrated Grid Planning*



## Current Methodology

- Leverage PG&Es prioritization model (TCM) to establish baseline risk (wildfire & reliability) for each structure supporting the transmission lines.
- Prioritization models are calibrated to PG&Es enterprise risk values (wildfire & reliability) for transmission overhead lines.
- Project baseline risk is the sum of the baseline risks of the individual structures to be upgraded.
- **Effectiveness** estimated at 75% for all projects, which represents restoring line assets to standard operating conditions. This placeholder effectiveness value will be refined in future proceedings and will be informed by data.
- **Annual Risk Reduction** = Baseline Risk x Effectiveness
- **Benefit length** is estimated at 55 years and is based on a general financial service life for electric transmission assets.

$$\text{Formula: CBR} = \frac{\sum_{\text{year}=1}^{55} \text{NPV (Annual Risk Reduction)}}{\text{NPV (Total Project Cost)}} = \frac{\sum_{\text{year}=1}^{55} \text{NPV (Baseline Risk * Effectiveness)}}{\text{NPV (Total Project Cost)}}$$

A	B	C	D	E	F	G	H
Project	Structure ID	TCM PoF	Reliability Consequence	Reliability Risk (Column C x D)	Wildfire Consequence	Wildfire Risk (Column C x F)	Total Baseline Risk (Column E + G)
Project 1	Structure 1	0.20	5	\$1.0	20	\$4.0	\$5.0
Project 1	Structure 2	0.10	5	\$0.5	0	\$0.0	\$0.5
Project 1	Structure 3	0.30	2	\$0.6	5	\$1.5	\$2.1
Project 1 Total				\$2.1		\$5.5	\$7.6
Project 2	Structure 4	0.50	2	\$1.0	4	\$2.0	\$3.0
Project 2	Structure 5	0.10	2	\$0.2	4	\$0.4	\$0.6
Project 2 Total				\$1.2		\$2.4	\$3.6

### Current Gap

PG&E does not have a representative reliability consequence profile at an asset level that:

- accounts for potential outage risk for assets where there was no outage events in history
- reflects cascading outages and loss of large loads
- accounts for capacity risk

### Path Forward

- PG&E is contracting external consultant to support and solve for this gap. Contract is expected to commence in **Q4 2025**.



## RBPPF/CBR – Project Examples

- PO EX112927 -- Colgate - Alleghany Wood Structure Replacement

- Risk Reduction: 41.1

- CBR: 33.4

- RBBPF: 4.01113

RBPPF						
Compliance			Overall Funding			
Risk Reduction e	Capacity	Reliability	Business Continuity	Other TNS	Tier	
Tier 4	Tier 2	Tier 1	Tier 3	Tier 1	Tier 1	4.01113

- PO 5790356 -- Colgate-Grass Valley 60kV Structure Repl

- Risk Reduction: 5.1

- CBR: 20.6

- RBBPF: 3.00105

RBPPF						
Compliance			Overall Funding			
Risk Reduction e	Capacity	Reliability	Business Continuity	Other TNS	Tier	
Tier 1	Tier 1	Tier 1	Tier 3	Tier 1	Tier 1	3.00105

- PO 5777912 -- Pittsburg - San Mateo 230kV Twr Repl

- Risk Reduction: 18.9

- CBR: 76.4

- RBBPF: 4.03102

RBPPF						
Risk Reduction	Compliance	Capacity	Reliability	Business Continuity	Other TNS	Overall Funding Tier
Tier 3	Tier 4	Tier 4	Tier 4	Tier 1	Tier 1	4.03102



- PG&E deployed Copperleaf for IGP in 2024
  - Copperleaf enables bundled investment creation and portfolio optimization based on business constraints to create multi-year plan and outcomes
  - Creation of investment(s) for a circuit that bundles work together (e.g. reliability and capacity) and recommends an execution timeframe that maximizes values in terms of risk buydown for the dollars spent
- PG&E will be looking to automate the CBR calculations in Copperleaf when the models reach appropriate maturity.



# **PG&E Project Planning Strategy / Risk Based Portfolio Planning Framework and Integrated Grid Planning Stakeholder Requested Item # 1**

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Ryan Blake, *Director, Investment Planning*

Joscelyn Wong, *Sr. Manager, Integrated Grid Planning*

# Risk-Based Portfolio Prioritization Framework (RBPPF) Guiding Principles

## The Guiding Principles of the RBPPF as Captured in RISK-5004S are:

- Establish a consistent and comparable approach to categorizing and valuing proposed investments across PG&E consistent with PG&E's True North Strategy and the CPUC's Risk-based Decision-making Framework (RDF).
- Establish requirements to ensure a robust review and calibration process related to Value Category scoring and final assignment of proposed investments to Funding Tiers.
- Ensure that records related to implementation of the RBPPF are handled in compliance with the Company's records retention standards and policies and are sufficiently robust and transparent to comply with directives in the CPUC's RDF OIR.



# RBPPF Granularity

## Value Category Scoring

Risk Reduction

Compliance

Capacity

Reliability

Other True North  
Strategy Objectives

Business Continuity

### Generally:

In the TPR: Overall RBPPF is a single score based on highest score of each category (e.g. all categories 5 and one category 5 are both 5)  
Because 5 is a minimum threshold – value range in 5 is the widest

### Double click into the value categories:

Risk Reduction scoring is based on 1) CBR >1 and 2) RAMP y/n

- CBR is a program calculation (not project by project)
- RAMP risks are determined based on company safety risk ranking

Compliance is based on 1) requirement date and 2) description/severity of compliance/commitment

Capacity and reliability are based on # of critical customers/locations impacted in the scope

True North Strategy is based on level of impact to meeting/improving performance on associate Key Performance Indicators

### **Key takeaways:**

RBPPF is a useful tool/methodology to indicate high priority work and drive discussions. Attempts at using RBPPF for a 1-N ranking have revealed some of the limitations of this enterprise-wide framework.

PG&E is continuously evaluating the definitions of the value categories to drive better decision-making information



## Within-Funding Tier Prioritization

	Funding Tier	# of VCs with a score of 5	# of VCs with a score of 4	# of VCs with a score of 3	# of VCs with a score of 2	# of VCs with a score of 1	Final Score
Example Project	5	6	0	0	0	0	5.60000
	5	5	1	0	0	0	5.51000
	5	4	2	0	0	0	5.42000
	5	3	3	0	0	0	5.33000
	5	2	4	0	0	0	5.24000
	5	1	4	1	0	0	5.14100
	5	1	2	3	0	0	5.12300
	4	0	5	0	0	0	4.05000
	4	0	4	1	0	0	4.04100
	4	0	3	2	0	0	4.03200
	4	0	2	3	0	0	4.02300

Digit to left of decimal point is highest score across all Value Categories (VCs)

**From Left to Right after decimal point**

- First digit is # of VCs with a score of 5
  - Second digit is # of VCs with a score of 4
  - Third digit is # of VCs with score of 3
  - Fourth digit is # of VCs with a score of 2
  - Fifth digit is # of VCs with a score of 1
- The proposed scoring rubric gives higher score to proposed investments that have higher value across multiple value categories.
  - The proposed rubric results in approximately 120 different scores (based on the 2024 BPD scoring). The highest scoring group (5.40010) includes 18 investments. Average number of investments per scoring group is approximately 10.
  - The proposed scoring rubric does not produce a unique score for each proposed investment, but it does provide significantly more granular scoring than the current scoring rubric allowing for some intra-Funding Tier prioritization.
  - The proposed scoring rubric produces an “ordinal” score which can be used for ranking and is easy to implement with existing value category scoring information.



## Field 25 “Utility Prioritization Ranking - Integrated Grid Planning”

- NA: Field is not applicable to the line item either because it is complete or completing in 2025, or because the work type is in a supporting functional area (e.g. real estate, information technology).
- Non-IGP: this work type is not currently considered as part of the scope for the IGP plan.
- Future IGP Scope: this work type is in development to be part of the IGP scope
- In-Flight Future Scope: this line item is a specifically identified project that is in a work type that is in development to be part of the IGP scope

These statuses are updated annually during our Investment Planning process in collaboration with the IGP team and are reassessed as the IGP methodology continues to advance.



## Integrated Grid Planning (IGP)

**PG&E's collective electric system faces accelerating, multi-dimensional needs that we must address to deliver for our customers and communities**



### **Wildfire Risk**

Our system is in areas with high wildfire risk, which is exacerbated by our changing climate



### **Capacity**

California is electrifying at a rapid pace, putting unique stress on our grid infrastructure



### **Asset Health**

Our system is aging, which could create safety issues and worsen reliability



### **Reliability**

Our sprawling system has reliability issues that must be addressed for our customers



**We must evolve our approach to grid planning to efficiently address our complex needs**

## Data Inputs



- General Asset Data
- Asset Health
- Capacity Loading
- Reliability Risk
- Projects
- Community Data
- Weather Data

## Needs Analysis



### Step 1

Identify baseline needs across the system

**Palantir Foundry**

#### SYSTEM NEEDS ASSESSMENT

-  System Need Aggregation
-  Asset Risk Baseline

## Asset Planning



### Step 2

Identify Solutions

### Step 3

Solution Assignment

**IFS Copperleaf Asset**

#### INVESTMENT CREATION

-  Investment Creation
-  Asset – Investment Links
-  Intervention Eligibility

## Investment Planning





### Step 4a

IGP Prioritization

**Step 4b** Optimize & Build Multi-Year Plan

**IFS Copperleaf Portfolio**

#### PORTFOLIO SCENARIO ANALYSIS

-  Unconstrained Portfolio Need
-  Constrained Portfolio Outcomes
-  'What-if' Analysis



**Work Execution**



## Slide 96

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**MNO**

[@Wong, Joscelyn] a) Please provide a brief overview of PG&E's RBPPF and IGP framework. Please explain key inputs and considerations used to develop project rankings.

b) Please provide an update on PG&E's progress in implementing and using these frameworks, along with any other modifications to PG&E's project planning strategy.

Medina, Nick, 2025-07-21T22:05:53.298

- PG&E deployed version 1 of IGP technology solution in 2024
  - Transmission value models are being developed (reliability and capacity)
  - PG&E will utilize the value framework in Copperleaf for project prioritization when the models reach appropriate maturity
- Transition from current planning processes to holistic IGP approach
  - Minimize impacts to in-flight projects
  - Requires processes and functionality to enable



## **AFUDC and Placing Projects on Hold Stakeholder Requested Item #15**

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*Andre Williams – Project Manager*

*Nikki-Rose Apura – Manager, Capital Accounting*

*Nick Medina – Senior Standards & Strategy Engineer, TPR Team*

- Starting 7/1/2024, PG&E implemented the automated pausing of Allowance for Funds Used During Construction (AFUDC) within its fixed asset financial system, PowerPlan, using the following criteria:
  1. AFUDC will automatically pause for capital orders with  $\geq 30$  days construction period that do not have any direct charges (e.g., labor, materials, contracts) or accounting adjustments (e.g., refunds, billing credits) for 6 consecutive months;
  2. Automation does not apply to capital orders with a construction period less than 30 days;
  3. For orders with paused AFUDC, SAP order status does not change;
  4. AFUDC will begin accruing again when any direct charge or accounting adjustment is recorded to the order;
- As of June 2025, AFUDC on 400 ET PM orders had AFUDC accruals automatically paused in PowerPlan.
- There is no threshold for AFUDC to pause for orders that have been idle, with no charge, for at least 6 consecutive months

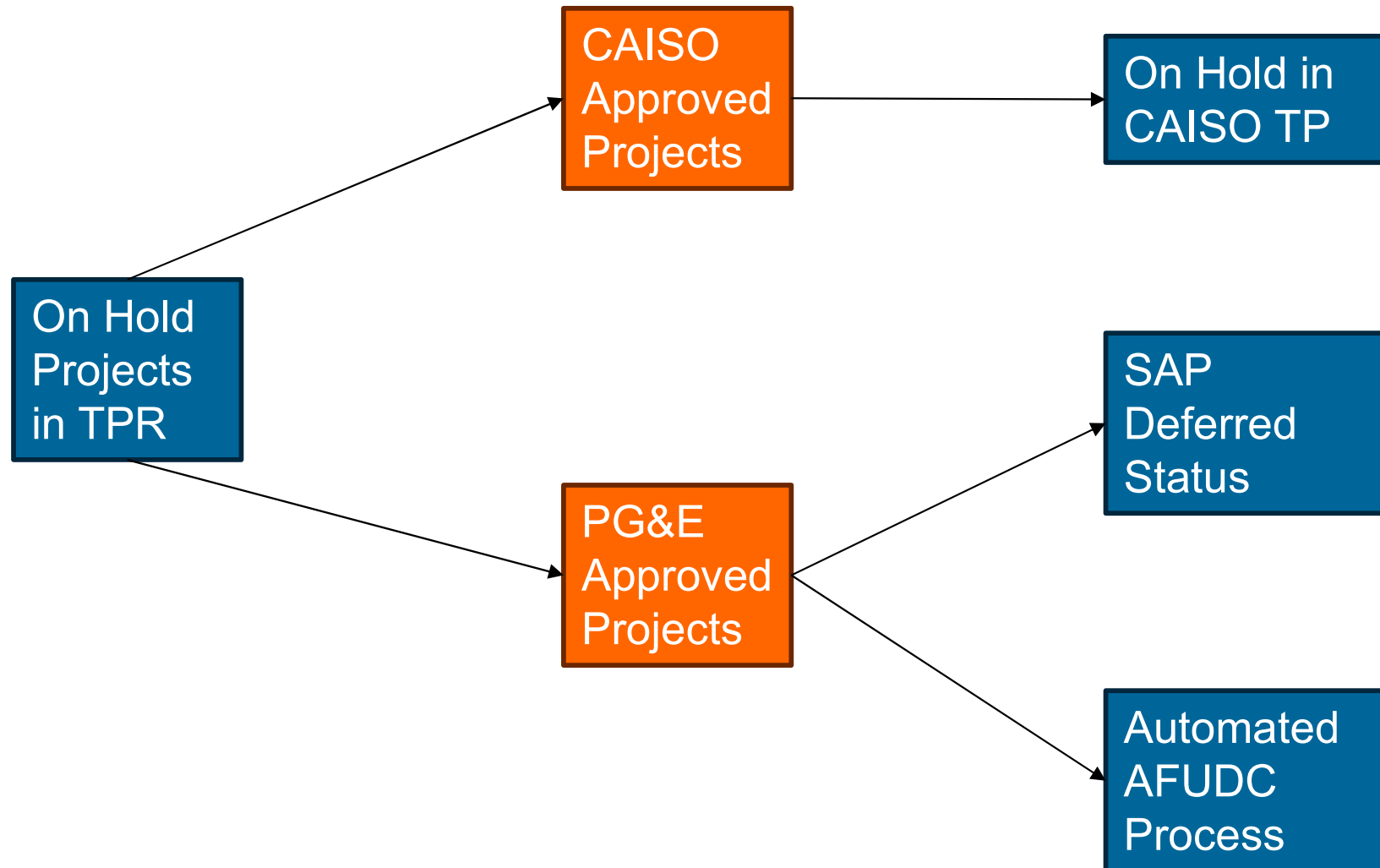


Automated  
IDC Pause - June 2

- PG&E's Capital Management Standard Deferral Criteria
  - Authorization from Director level or higher
  - Interrupted construction or postponement for at least 6 months
  - No additional direct cost will be expended in deferral period
  - Management intends to complete project and funds remain authorized
  - Amount recorded to the order to date is greater than \$15M
  - Capital orders with construction delay beyond PG&E control may not be placed in deferred state
- Projects can be placed in deferred status multiple times if the above criteria is met
- Once a project is placed into deferred status, AFUDC stops accruing on the project
- Current Deferred Projects (no changes since March 2025)
  - PO 5794779 Brighton-Grand Island: PH2 I-5 W Piling
  - PO 5767217 REROUTE JEFFERSON\_MARTIN 230KV



## On Hold Projects in May 2025 TPR PS





## T.0000159 Egbert 230kV Switching Station

- Project Status:
  - TPR/TDF/AB970/CPUC Permitting: Externally In-flight and not On Hold (as this project is not On Hold in the 2024 CAISO TPP)
  - Internally On Hold due to prioritization with forecasted capital expenditures for 2025
  - This project was deprioritized versus other higher risk impacting work such as wildfire mitigations and other transmission capacity projects that address nearer-term needs and is being rescheduled to later years where the higher dollar value can be accommodated in the portfolio (CPUC ED 3 Q13)
- Engineering Completion Date: February 2028 (tentative)
- Construction Start Date: May 2027 (tentative)
- Forecasted In-Service Date: November 2029 (tentative)
- POs in Deferred (i.e. On Hold) Status:
  - PO 5767217 REROUTE JEFFERSON\_MARTIN 230KV LINE is deferred due to prioritization
  - The remaining POs still have open commitments for material storage and engineering support therefore cannot be placed on hold.



## PO 5767214 - MARTIN SUB\_230KV BUS EXT

- Inception to Date: \$46.6M
  - Material - \$20.7M
  - Labor - \$1.4M
  - Contract - \$10.2
  - Other Order Cost - \$14.3M
    - AFUDC \$9.5M





## **PO 5560199 -- EGMP Cap Stakeholder Requested Item #6**

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Alexander Haralambous, *Sr Director, Electric Program Management*

Torin Lacher, *Project Manager*



# Electric Grid Modernization Program ("EGMP") Overview

- The EGMP program seeks to modernize PG&E's transmission monitoring and control system and improve Electric Operations (EO) infrastructure to allow for the retirement of Real-Time Supervisory Control and Data Acquisition (RT SCADA), the legacy SCADA system for all EO. This modernization will:
  - Improve Transmission Operations (TO) reliability and efficiency
  - Improve cybersecurity of Electric Operations key business systems
  - Enhance TO monitoring, analysis, and control capabilities to enable the grid of the future



## Primary Drivers for EGMP

- Drivers of the initiative:
  - PG&E's current RT SCADA system is outdated and no longer suitable for the needs of Electric Operations. RT SCADA relies on antiquated communication paths and substation infrastructure that are not equipped to support modern, digital SCADA monitoring and control. EGMP will complete the full transition from RT SCADA to EMS, enabling one system to monitor/control the transmission grid.
  - Currently 2 of 6 Areas of Responsibility were cutover from the legacy RT SCADA platform to EMS. Requiring operators to use two systems (EMS & RT SCADA) simultaneously to control grid operations
  - Upgrade projects were originally managed as hundreds of individual projects, so this initiative was launched to run this effort more cohesively as a program to help control costs and pull in the completion timeline



# Substation Device Upgrades

- Upgrades involved:
  - Replacing HMI and RTU devices at substations, where required, prior to conducting point-to-point testing. Anticipate around 175 substations requiring these replacements



## High-Speed Rail Project Update Stakeholder Requested Item #7

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Mike Colborn – *South Bay PMO*



## High Speed Rail Update

*Please provide an update on any activities on this project, including any revised scope and engineering assessments. Please confirm that no costs for any California High-Speed Rail work has been allocated to ratepayers, pursuant to CPUC Resolution E-4886, Ordering Paragraph #6:*

*PG&E shall not recover costs for the Projects in Commission-established rates until the Commission has issued a final order regarding the cost allocation issues in response to the PG&E application ordered herein. Similarly, PG&E should not recover costs for the Projects in FERC-established rates until the Commission has issued a final order regarding the cost allocation issues from FERC.*

- The technical studies delivered in 2024, based upon the scope of work received in 2023, have expired. New technical studies will have to be performed before California High Speed Rail project can move forward. Given that the California High Speed Rail project is still at the study stage, cost allocation has not been determined, thus PG&E has not sought cost recovery. PG&E plans to submit an application for CPUC and/or FERC approval for any agreements regarding cost allocation when appropriate.



## **MPAC Installation Update Stakeholder Requested Item #8**

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Frankie Au-Yeung – *Automation Engineer*



## Alternatives to MPAC/Studies

- The alternative solutions to MPAC deployment has always been considered for all projects, which “involved” replacing individual protective relaying terminals (i.e.: transmission lines, transformer, bus differential, special protection schemes, digital fault recorder, etc.), along with upgrading the automation, telecom infrastructures, battery system, control room condition improvement, etc.
- MPAC is the preferred solution to modernize the affected bus section’s Operational Assets altogether rather than lifecycle replacing each terminal separately, when account for: Reliability Improvement, Efficiency, Cost Savings, Safety, Environment, and Compliance.
- There are no recent studies have been conducted, as MPAC enclosures have been deployed throughout PG&E territory since 2005 at over 100 substations.





Back at 2:55

**BREAK**

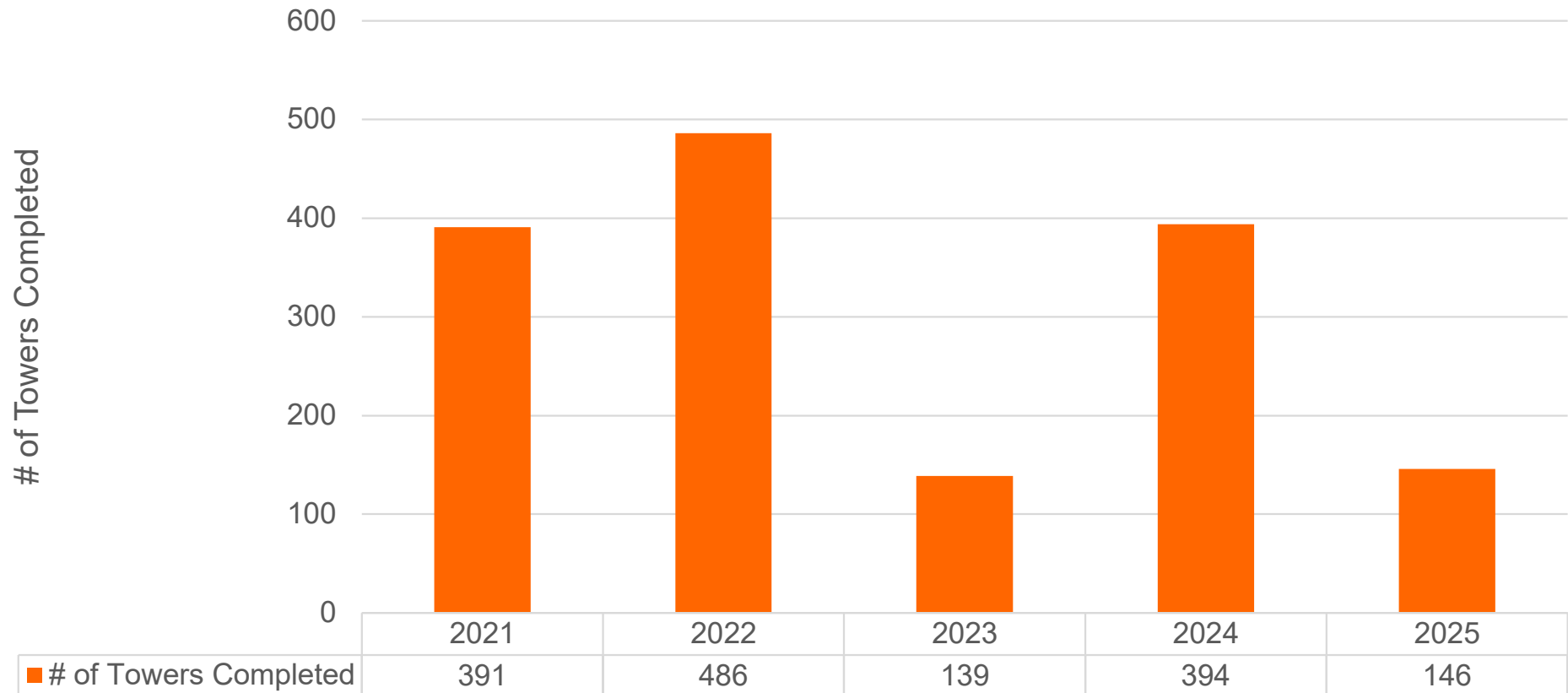


## **Tower Coating Stakeholder Requested Item #11**

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Shivani Nigam (*Program Manager*), Sean Clesen, and Chris Nguyen  
*Transmission Line Tower Insulation and Coating*

## Tower Coatings Progress



1. In 2021, PG&E initiated a Tower Coating Program which applies a comprehensive coating system that provides a cost-effective corrosion protection barrier to the steel components in transmission towers.
2. Accounting Treatment: Consistent with FERC's approval in February 2022, PG&E is capitalizing the first-time coating application costs associated with this Tower Coating Program as this coating should extend useful life by an estimated 20-25 years and therefore constitutes a substantial addition.
3. Program received limited funding from investment plan thus reducing the execution scope for 2023.
4. 2025 YTD unit cost approx. \$64.7K
5. Graph shows 2025 June YTD data.

# Tower Coatings Work Plan (2025 – 2027)

	2025	2026	2027
# of Towers*	497	450	425

\*Units may vary based on approved funding for 2025-2027 and based on draft investment plan

## Program Challenges

- Prioritization of work
- Inclement weather in Q1 and Q4 historically impact execution of tower coatings.
- Environmental constraints and Permit lead times
- Execution of tower coating in rice fields –timing constraints
- Water towers show execution challenges such as:
  - Small window for work due to biological and environmental constraints
  - Access to towers using pontoons, helicopters, boats, barges, etc.



## **Cathodic Protection Stakeholder Requested Item #12**

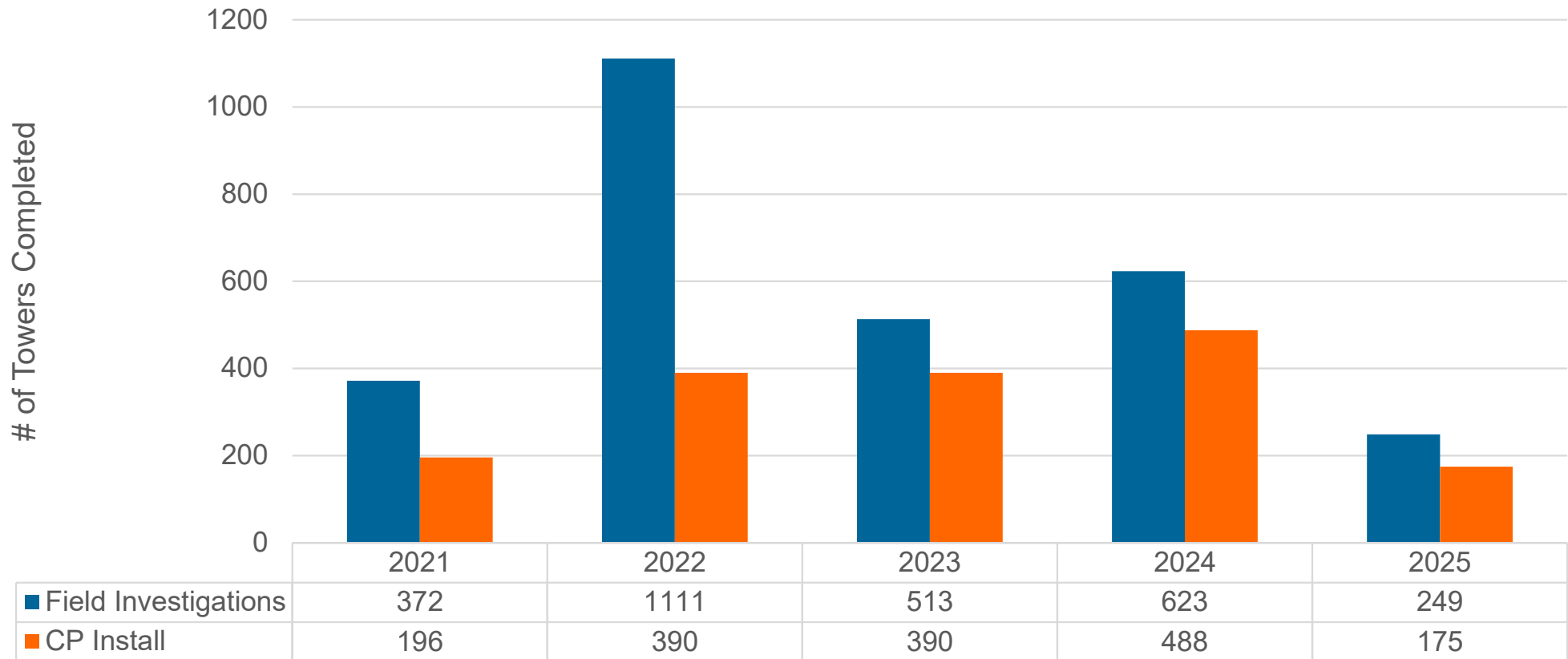
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Shivani Nigam (*Program Manager*), Sean Clesen, and Chris Nguyen  
*Transmission Line Tower Insulation and Coating*



# Cathodic Protection (CP) Progress

## Field Investigations vs CP Install



1. In 2021, PG&E conducted a pilot program for Cathodic Protection across eight geographic regions.
2. A diverse population of towers are prioritized based on varying soil characteristics, land usage, weather, etc. using PG&E's risk model with a focus on towers with direct buried foundations
  - There are estimated to be over 5,000 existing towers with direct buried grillage within the PG&E transmission tower network to be completed within this program.
3. 2025 YTD unit cost approx. \$13K
4. Graph shows 2025 June YTD data.

## CP Work Plan (2025 – 2027)

Year	Field Investigations	CP Installs
2025	658	504*
2026	677	483*
2027	525	500*

### Program Challenges

- Prioritization of work
- The Cathodic Protection Program anticipates completion of its investigation of directly buried foundations on lattice steel towers between 2029-2030
- Towers with remote access provide execution challenges for mobilization of personnel and equipment
- Execution in rice fields –timing constraints
- Environmental constraints and Permit lead times

\* CP Install scope subject to change based on engineering analysis of sites requiring CP



## Feedback and Discussion of Next Steps

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Lorenzo Thompson, Nick Medina & Nicholas Hsiao

- *TPR Team*





## Wrap Up

Lorenzo Thompson, Nick Medina & Nicholas Hsiao

- *TPR Team*



## Closing Message

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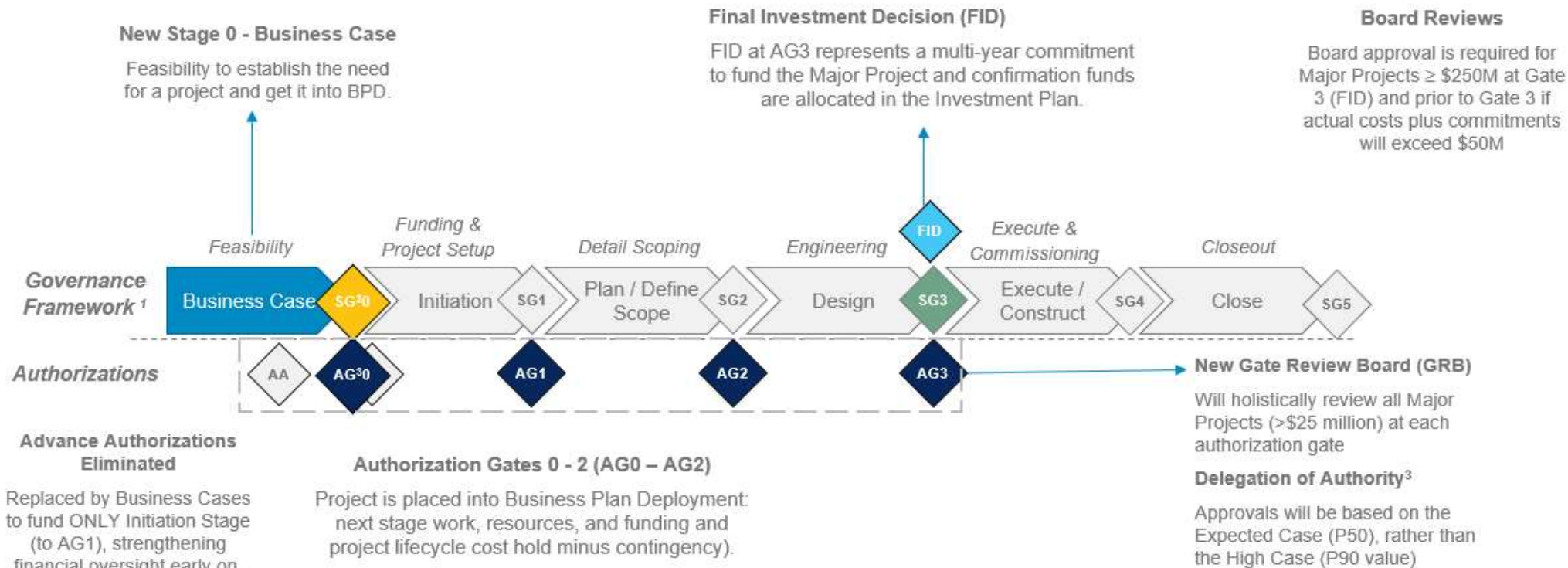
Renardo Wilson – *Chief, Regulatory Relations*



## Appendix

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# Project Lifecycle Authorization Gates



## Legend:

Existing Process - Grayscale

New or Updated from Existing Process - Color

## Footnotes:

1. Project DOA Standard applies to all projects with a total expected case cost estimate exceeding \$1 million.
2. SG = Stage Gate; PG&E will align to industry Standard nomenclature "Stage" Gate (SG#) vs Phase Gate (PG#).
3. AG = Authorization Gate
4. See Appendix for Delegation of Authority (DoA) details.