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# Transmission Development Forum

Generation Interconnection Project (GIP) Upgrades  
and Transmission Planning Process (TPP)  
Upgrade Status

October 25, 2023



# Presentation Summary

- PG&E fully supports the Transmission Development Forum to share Generation Triggered Reliability and Deliverability project status to all stakeholders.
- PG&E workbooks capturing Generator Interconnection Projects (GIP) and Transmission Planning Process (TPP) project statuses. The Excel Workbook contains projects that have been triggered by Interconnection Agreements while it may not show upgrades not yet triggered by an interconnection agreement.
- This presentation provides updates and the opportunity for discussion on the status of GIP and TPP projects that are highest priority to immediate generation interconnection. This is a technical discussion on the projects.
- PG&E requests that stakeholders save questions until the completion of each slide. Projects have been grouped to enable efficient and productive discussion.



## 2022-2023 Transmission Plan Projects

- ❑ For projects approved in 2022-2023 CAISO Transmission Plan, PG&E updated milestone dates from what was provided in 2022-2023 CAISO Transmission Plan to dates upon project inclusion in PG&E's Investment Plan.
- ❑ Tulucay-Napa #2 60 kV Line Capacity Increase: this project would upgrade line terminals in Tulucay and Basalt subs. PG&E discovered that with records update, it was found the substation equipment already met ampacity requirement. So, this project is no longer needed. Tulucay-Napa #2 60 kV line Reconductoring project still in-flight



# PG&E Projects Status Summary

## TPP Projects with improvements due to reprioritization

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
TPP	Borden 230/70 kV Transformer Bank #1 Capacity Increase	Initiating	10/1/2025	12/1/2027	4/1/2026	Q4-2023: Improved ISD
TPP	Midway – Kern PP #2 230 kV Line (Bakersfield-Kern Reconductor)	In Flight	11/1/2024	8/21/2028	10/28/2027	Q4-2023: Improved ISD
TPP	North Tower 115 kV Looping Project	Initiating	1/1/2027	1/31/2030	2/1/2028	Q4-2023: Improved ISD
TPP	Ravenswood 230/115 kV transformer #1 Limiting Facility Upgrade	Initiating	3/1/2025	12/1/2025	6/1/2025	Q4-2023: Improved ISD
TPP	Reconductor Rio Oso–SPI Jct–Lincoln 115kV line	Initiating	1/1/2027	12/1/2029	12/1/2028	Q4-2023: Improved ISD
TPP	Wheeler Ridge Junction Substation	In Flight	7/10/2025	3/28/2034	5/4/2029	Q4-2023: Improved ISD

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# PG&E Projects Status Summary

## TPP Projects with delays due to reprioritization

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
TPP	Atlantic 230/60 kV transformer voltage regulator	Initiating	3/1/2026	5/1/2026	12/1/2027	Q4-2023: Reprioritization delay
TPP	Clear Lake 60 kV System Reinforcement	Initiating	1/1/2027	12/1/2028	7/1/2029	Q4-2023: Reprioritization delay
TPP	Cottonwood 115 kV Bus Sectionalizing Breaker	In-Flight	2/19/2025	11/12/2025	10/5/2026	Q4-2023: Reprioritization delay
TPP	Cottonwood 230/115 kV Transformers 1 and 4 Replacement Project	In-Flight	2/19/2025	11/19/2025	10/20/2026	Q4-2023: Reprioritization delay
TPP	Glenn 230/60 kV Transformer No. 1 Replacement	In-Flight	4/30/2020	10/16/2023	5/30/2024	Q4-2023: Reprioritization delay
TPP	Kern PP 115 kV Area Reinforcement	In Flight	1/8/2027	8/9/2027	8/10/2029	Q4-2023: Reprioritization delay
TPP	Manteca-Ripon-Riverbank-Melones Area 115 kV Line Reconductoring Project	Initiating	1/1/2026	5/1/2026	5/31/2028	Q4-2023: Reprioritization delay
TPP	Martin 230 kV Bus Extension	In-Flight	2/7/2024	4/23/2026	2/12/2027	Q4-2023: Reprioritization delay
TPP	Midway-Temblor 115 kV Line Reconductor and Voltage Support	In Flight	7/22/2026	4/6/2029	8/1/2029	Q4-2023: Reprioritization delay
TPP	Morgan Hill Area Reinforcement (formerly Spring 230/115 kV substation)	In Flight	7/29/2025	9/29/2027	1/30/2029	Q4-2023: Reprioritization delay
TPP	Moss Landing – Las Aguilas 230 kV Series Reactor Project	Initiating	10/1/2026	12/1/2026	4/1/2028	Q4-2023: Reprioritization delay
TPP	Newark-Milpitas #1 115 kV Line Limiting Facility Upgrade	Initiating	3/1/2025	12/1/2024	6/1/2025	Q4-2023: Reprioritization delay
TPP	Salinas-Firestone #1 and #2 60 kV Lines	Initiating	12/1/2025	12/1/2026	12/1/2027	Q4-2023: Reprioritization delay
TPP	South of San Mateo Capacity Increase	Initiating	1/1/2027	6/22/2027	12/1/2028	Q4-2023: Reprioritization delay
TPP	Table Mountain Second 500/230 kV Transformer	Initiating	7/1/2027	12/1/2027	6/1/2028	Q4-2023: Reprioritization delay
TPP	Tie line Phasor Measurement Units	In-Flight	2/15/2024	8/16/2027	2/9/2028	Q4-2023: Reprioritization delay
TPP	Tyler 60 kV Shunt Capacitor	Initiating	3/1/2026	5/1/2026	3/1/2027	Q4-2023: Reprioritization delay
TPP	Weber-Mormon Jct 60 kV Line Section Reconductoring Project	Initiating	4/1/2025	5/1/2026	5/31/2027	Q4-2023: Reprioritization delay

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# PG&E Projects Status Summary

## TPP Projects with Improvements (3+ months)

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
TPP	Coppermine 70 kV Reinforcement Project	Initiating	10/1/2026	12/1/2027	5/1/2027	Q4-2023: Improved ISD due to schedule/construction sequencing date adjustments.
TPP	New Collinsville 500 kV substation	In-Flight	4/7/2026	12/1/2028	12/31/2027	Q4-2023: Improved ISD due to forecast schedule/construction sequencing date adjustments.
TPP	New Manning 500 kV substation	In-Flight	6/1/2026	12/1/2028	12/1/2027	Q4-2023: Improved ISD due to forecast schedule/construction sequencing date adjustments.
TPP	Red Bluff-Coleman 60 kV Reinforcement	In-Flight	8/15/2025	11/7/2028	5/30/2028	Q4-2023: Improved ISD due to schedule/construction sequencing date adjustments.
TPP	Equipment Upgrade at CCSF Owned Warnerville 230 kV Substation	In-Flight	2/16/2023	2024	4/28/2023	Q4-2023: Scope extensions to the previously approved project Bellota-Warrenville 230kV Reinforcement (T.0000043). Approved in 2022-2023 CAISO Transmission Plan. In-Service

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# PG&E Projects Status Summary

## TPP Projects with delays (3+ months)

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
TPP	Lockeford-Lodi Area 230 kV Development	In-Flight	4/5/2028	1/11/2029	6/8/2029	Q4-2023: Project Delayed due to Schedule adjustment/CPCN permitting process
TPP	San Jose Area HVDC 230 kV Line (Newark - NRS)	In-Flight	7/14/2026	11/30/2027	4/1/2028	Q4-2023: Project Delayed due to Schedule/construction sequencing date adjustments.
TPP	Estrella Substation Project	In-Flight	11/27/2024	7/16/2029	11/1/2029	Q4-2023: Project Delayed due to Permitting (PTC) & acquiring Easements.



# PG&E Projects Status Summary

## TPP Projects with Delays (6+ months)

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
TPP	Cascade 115/60 kV No.2 Transformer Project	In-Flight	7/9/2019	12/13/2024	7/11/2025	Q4-2023: Project Delayed due to Clearances. Anticipated clearance on Mtn Gate Tap/Mountain Gate Jct-Cascade (Cal Portland) September 2023. Cal Portland would not clearance until September 2024.
TPP	Dinuba Energy Storage (Rescoped from Reedley 70 kV Area Reinforcement Projects)	In Flight	9/29/2025	10/13/2025	9/29/2026	Q4-2023: The Reedley 70 kV Area Reinforcement Project (Dinuba Energy Storage) is not officially on hold from CAISO. However, with evolved needs, CAISO is considering a potential re-scope in the current 2023-2024 cycle of TPP. PG&E submitted a proposal pending approval.
TPP	Series Compensation on Los Esteros-Nortech 115 kV Line	In-Flight	7/9/2025	12/1/2024	12/23/2025	Q4-2023: Project Delayed due to Scoping & Vendor Selection
TPP	Vaca Dixon-Lakeville 230 kV Corridor Series Compensation	In Flight	12/25/2025	10/20/2025	7/17/2026	Q4-2023: Project Delayed due to Scoping
TPP C11P2-GP01	Moraga-Castro Valley 230 kV Line Capacity Increase Project	In-Flight	1/14/2026	10/16/2024	3/25/2026	Q4-2023: Project delayed due to scoping. Long lead materials scheduled to arrive in Q2 2024.

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# PG&E Projects Status Summary

## Reliability Network Upgrades

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
GIP 21rsmt-5	Palo Alto 115 kV circuit breakers 412 and 442 overstress Replace Palo Alto 115 kV circuit breakers 412 and 442 with 63 kA interrupting capability	In-Flight	9/28/2026	11/8/2027	3/29/2029	Q4-2023: Reprioritization. This project is in engineering with issue for construction coming in Q1 2024. In-service date is subject to long lead material and construction/sequence dependencies.
GIP C11P2-NR01	Cottonwood Substation 230 kV circuit breakers 222, 232, 242 overstress Replace Cottonwood Substation 230 kV circuit breakers 222, 232, 242 and associated switches/relays	In-Flight	3/5/2026	5/22/2025	11/9/2026	Q4-2023: Reprioritization. This project had been reprioritized but will be realigned with other Cottonwood breaker replacement work. It is understood that the project to replace the CBs will utilize the existing 230kV relays until the 230kV MPAC project is complete. In-service subject to change as long lead material receipt date is determined. Long lead materials have not yet been ordered.
GIP C12P1-GPT01	Ames Distribution 115 kV circuit breaker 132 overstress Replace Ames Distribution 115 kV circuit breaker 132	In-Flight	2/11/2026	3/10/2026	3/24/2028	Q4-2023: Reprioritization. Project is set to resume in 2024. In the January TDF the earliest achievable In-service date will be published. Current estimated ISD is March 2028. The In-service date is subject to change as the project sequencing take place after the issue for construction documents are made available and long lead material arrival date is determined.
GIP C12P1-NPT03	Rio Oso Substation 115 kV circuit breakers 412, 422, 482, 522 and 542 overstress Replace Rio Oso Substation 115 kV circuit breakers 412, 422, 482, 522 and 542 and associated switches/relays	In-Flight	6/1/2021	9/30/2024	12/31/2024	Q4-2023: Project was listed as reprioritized however, this project is underway in construction with a planned In-service in Q4 2024 for the new MPAC and 230kV GIS. Each breaker is installed in sequence. In-service is subject to changes due to weather, construction resources, and operational constraints.

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# PG&E Projects Status Summary

## Reliability Network Upgrades

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
GIP 20rsmt-4	Metcalf 115kV breakers Overstress (almost all breakers), install bus reactors on 230kV banks due to existing space constraints on the 115kV Bus	In-Flight	3/13/2026	7/10/2026	12/17/2026	Q4-2023: Workbook held a duplicate comment to the Metcalf 230kV project. This 115kV project is advancing work in 2024 to procure reactors and the in-service date is planned in the workbook showed May 2027 in error. The planned in-service date is Dec 2026
GIP C13P1-GPN04	Metcalf Substation 230 kV capacitor circuit breakers 654, 664, 674 and 684 overstress Replace Metcalf Substation 230 kV capacitor circuit breakers 654, 664, 674 and 684	In-Flight	8/4/2025	9/23/2025	5/1/2027	Q4-2023: Delivery date has been changed for 4 CBs that we have on order for Metcalf. Original material received date planned: Nov 2024, now March 2025. Delays the ISD of Dec 2026 to May 2027
GIP 20rsmt-5	Tesla 500 kV circuit breaker 612 overstress Replace Tesla Substation 500 kV CB 612 and associated switches/relays	In-Flight	10/1/2024	6/30/2025	2/17/2025	Q4-2023: Portions of this work cannot complete until work on CB542 and CB642 due to operational constrains. Requires a significant 500kV clearance at the same time. A shoofly is being considered to mitigate clearing the bank. In-Service subject to change as clearances are finalized.
GIP 20rsmt-7b	Tesla 500 kV circuit breakers 542 and 642 overstress Replace Tesla 500 kV circuit breakers 542 and 642 with 63 kA interrupting capability	In-Flight	1/5/2024	11/20/2024	5/7/2024	Q4-2023: Construction sequencing complete. Release to construction Oct 2023 subject to change pending receipt of long lead materials. In-Service subject to change as clearances are finalized.

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# PG&E Projects Status Summary

## Reliability Network Upgrades

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
GIP C12P2-GRNU2	Gates Substation 230 kV Bus Overstress Install series bus reactors between Gates Substation 230 kV bus sections E and F	In-Flight	10/1/2024	5/31/2024	4/30/2026	Q4-2023: In-Service delayed to April 2026 due to 42-week lead time on bushing capacitors. Starting foundation work in 2023. Construction resumes October of 2024 on BUS 1 scope until April of 2025. In October of 2025 work continues on BUS 2 until April of 2026.
GIP 20rsmt-6	20RSMTRAS-02 (Reliability) to open Bitterwater Sw Sta-Wheeler Ridge #2 230 kV Line for loss of Midway-Bitterwater 230 kV line and overload on the Midway-Wheeler Ridge #1 230 kV line. 20RSMTRAS-02 RAS to open Bitterwater Sw Sta-Wheeler Ridge #2 230 kV Line for loss of Midway-Bitterwater 230 kV line and overload on the Midway-Wheeler Ridge #1 230 kV line.	In-Flight	10/11/2024	11/14/2024	4/8/2025	Q4-2023: Planned materials due to be received October 2023. This project has a planned release to construction in August 2024. This project deferred work due to Long Lead Material Constraints and an Interim solution by the triggering project.
GIP C13P1-KPN02	Convert Midway Substation 230 kV to BAAH Convert Midway Substation 230 kV to BAAH in order to install bus reactors & RAS	In-Flight	7/2/2024	5/8/2025	12/27/2027	Q4-2023: Reprioritization. Project due to resume activities in 2024 with an anticipated in-service date in Q4 2027
GIP C12P1-NPT04	Vaca Dixon Substation 230 kV circuit breakers 442, 452 and 462 overstress	Initiating	11/5/2025	10/16/2025	2/28/2027	Q4-2023: Reprioritization - previous note was inaccurate as funding was not available to perform scoping in 2023. Funding resumes in Jan 2024. Long lead material times drive the in-service date, as will construction sequencing for clearing each breaker one at a time. The in-service date is planned for Feb 2027 subject material lead times.

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# PG&E Projects Status Summary

## Reliability Network Upgrades

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
	Morro Bay MPAC New 230kV MPAC building relocates 230kV equipment from existing Control Building	In-Flight	10/29/2027	5/30/2028	5/25/2029	Q4-2023: Reprioritization. There are no current dependent Generation projects triggering this work. In-service date is estimated subject to being triggered by a new generation project.
GIP 21rsmt-3	Kern PP Substation 115 kV CBs 182, 262 and 282 overstress (BAAH Conversion Phase 1 - incl CB282) Kern PP Sub: Existing PG&E 115 kV BAAH conversion project will cover this replacement.	In-Flight	7/9/2021	12/5/2025	3/1/2025	Q4-2023: Reprioritization. Project has been removed as a dependency on active generation projects. Project is resuming activities in Jan 2024.
GIP 21rsmt-3	Kern PP Substation 115 kV CBs 182, 262 and 282 overstress (BAAH Conversion Phase 3 - incl CB262) Kern PP Sub: Existing PG&E 115 kV BAAH conversion project will cover this replacement.	In-Flight	1/1/2026	12/7/2026	12/1/2026	Q4-2023: Reprioritization. Project has been removed as a dependency on active generation projects. Project is resuming activities in Jan 2024.
GIP 21rsmt-3	Kern PP Substation 115 kV CBs 182, 262 and 282 overstress (BAAH Conversion Phase 4 - incl CB182) Kern PP Sub: Existing PG&E 115 kV BAAH conversion project will cover this replacement.	In-Flight	11/1/2027	11/12/2024	2/1/2028	Q4-2023: Reprioritization. Project has been removed as a dependency on active generation projects. Project is resuming activities in Jan 2024.
GIP 21rsmt-SCD-23	El Cerrito G 115kV CB 112, 142, 132 Overstress Replace Overstressed Circuit Breakers	In-Flight	1/12/2024	12/26/2025	5/1/2025	Q4-2023: 2024 Reprioritization. There are no current dependent Generation projects triggering this work

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# PG&E Projects Status Summary

## Deliverability Reconductor Upgrades

Project No.	Scope	Status	Planned * Const. Start	Previous TDF Report Dated	Planned ** In-Service	Comments
GIP C12P2-LDNU2	Stanislaus-Melones Sw Sta-Manteca #1 115 kV Line Reconductor Reconductor Stanislaus-Melones Sw Sta-Manteca #1 115 kV line 25.23 miles section of various conductors from 018/115-043/277	In-Flight	7/21/2026	2/29/2028	9/5/2028	Q4-2023: No date changes at this time. Dates subject to change until permitting and land acquisitions are completed.
GIP C12P2-LDNU3	Bellota-Riverbank-Melones Sw Sta 115 kV Line Reconductor Reconductor a total of 17 miles of Bellota-Riverbank-Melones SW STA 115 kV Line with 477 ACSS	In-Flight	9/10/2027	4/12/2028	8/18/2028	Q4-2023: No date changes at this time. Dates subject to change until permitting and land acquisitions are completed.
GIP C12P2-LDNU4	Stanislaus-Melones SW STA-Riverbank Jct Sw Sta 115 kV Line Reconductor Reconductor Stanislaus-Melones Sw Sta-Riverbank Jct Sw Sta 115 kV Line 7.53 miles section of various conductors from 000/001-007/043 - scope taken over by the more comprehensive STAN-MELONES TAP LINES: REPL CU COND P3 project.	In-Flight	3/24/2028	5/29/2028	9/7/2028	Q4-2023: Schedule adjustments due to land acquisitions, permitting, and construction sequencing. Dates subject to change until permitting and land acquisitions are completed.
GIP C8P1-34	Re-conductor Padre Flat SS-Panoche #1 230 kV Line Re-conductor 32.59 mi Q779/Padre Flat SS-Panoche #1 230 kV Line with 795 ACSS	In-Flight	9/21/2023	5/10/2024	5/13/2025	Q4-2023: Construction start fall 2023. Partial work delayed until late 2024 due to land acquisitions.
GIP C9P1-F11	Re-conductor Dos Amigos PP-Panoche #3 230 kV Line Re-conductor 23.63 mi Dos Amigos PP-Panoche #3 230 kV Line with 795 ACSS	In-Flight	3/18/2025	5/1/2025	10/23/2025	Q4-2023: Construction starting fall 2023. Portions of this project delayed to fall 2024 due to land acquisitions. In-service subject to change due to land acquisition outcomes.

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