

Company: San Diego Gas & Electric Company (U 902 M)
Proceeding: 2028 General Rate Case
Application: A.26-06-____
Exhibit: SDGE-07

PREPARED DIRECT TESTIMONY OF JONATHAN T. WOLDEMARIAM

**(WILDFIRE MITIGATION AND VEGETATION MANAGEMENT:
CHAPTER 1)**

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**



June 2026

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SUMMARY

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)			
O&M¹	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
Total Non-Shared Services	157,681	173,510	15,829
Total Shared Services (Incurred)	0	0	0
Total O&M	157,681	173,510	15,829

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)							
Capital²	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
Total CAPITAL	298,288	174,813	144,477	314,024	367,131	494,762	410,846

Summary of Requests

¹ The figures in this table may not match the associated workpapers because the table includes corrections related to historical Aviation Program and Emergency Preparedness and Recovery Plan O&M costs and the Aviation Program O&M forecast. The associated workpapers (Exhibit (Ex.) SDGE-07-WP – Wildfire Mitigation and Vegetation Management) could not be corrected prior to this filing but will be corrected and provided to the parties at the first available opportunity. In the meantime, to ensure this testimony provides the most accurate requested figures, these table have been adjusted to incorporate those corrections.

² The figures in this table may not match the associated workpapers because the table includes a correction related to the Aviation Program capital forecast. The associated workpapers (Ex. SDGE-07-CWP- Wildfire Mitigation and Vegetation Management) could not be corrected prior to this filing but will be corrected and provided to the parties at the first available opportunity. In the meantime, to ensure this testimony provides the most accurate requested figures, these table have been adjusted to incorporate those corrections.

Safety-driven wildfire risk reduction

Wildfire mitigation directly supports SDG&E's core values of safety, reliability, and affordability. For TY 2028, SDG&E requests adoption of approximately \$314.0 million in capital and \$173.5 million in O&M (expressed in 2025 dollars) to reduce catastrophic wildfire risk and customer impacts. These investments support permanent, engineered, risk reduction solutions, promote increased reliability through reduced Public Safety Power Shutoffs (PSPS), and include the following:

Risk-informed planning focused on highest-risk areas

SDG&E applies a data-driven, risk-based prioritization framework to target investments that maximize wildfire risk reduction. Wildfire mitigations are concentrated in the High Fire Threat District (HFTD), where environmental exposure and infrastructure risk are highest. This approach is aligned with cost-effective risk mitigation while maintaining system reliability.

Balanced portfolio of mitigation strategies

The proposed forecast reflects a balanced portfolio of capital and O&M mitigation strategies, transitioning from reliance on recurring operational activities to durable infrastructure solutions while maintaining necessary inspection and compliance programs. This approach is consistent with RAMP-driven risk mitigation planning, ensuring forecasts are reasonable, data-supported, and aligned with long-term risk reduction objectives.

Grid hardening to reduce ignition risk and PSPS resilience

SDG&E proposes to harden approximately 600 miles of distribution infrastructure over the course of the 2028 GRC cycle, including 400 miles of strategic undergrounding and 200 miles of covered conductor installation. These investments focus on high-risk circuits and are expected to substantially reduce ignition probability and long-term reliance on PSPS, improving customer reliability and resiliency outcomes. The portfolio is selected through risk-based analysis to maximize safety benefits per dollar invested (see Ex. SDGE-07, Chapter 2 Section I.G: Risk-Informed Strategy and Prioritization).

Vegetation management and inspections

Vegetation management programs include enhanced inspections, tree trimming and removal, fuels management, and pole clearing. In the HFTD, SDG&E applies enhanced clearance and inspection standards to address elevated wildfire risk. These programs directly reduce

vegetation-related ignitions, improve system reliability, and mitigate the need for PSPS de-energizations.

Cost recovery mechanisms to support timely execution

SDG&E requests continuation of the Wildfire Mitigation Plan Memorandum Account (WMPMA), Vegetation Management Balancing Account (VMBA), and Vegetation Management Memorandum Account (VMMA) as a balanced approach to addressing unpredictable wildfire risk and vegetation risk subject to variable conditions outside of SDG&E's control and exacerbated by climate change. These mechanisms address timely tracking of costs, regulatory transparency, and continued execution of critical safety investments with a reasonable mechanism to address cost recovery through the GRC process, consistent with Public Utilities Code Section 8386.4.

Post-Test Year Strategic Undergrounding Revenue Requirement

SDG&E proposes a targeted PTY revenue adder for wildfire mitigation capital to align revenues with its scale and timing, support continued wildfire risk mitigation, and enhance rate stability without reliance on balancing accounts.

1 **PREPARED DIRECT TESTIMONY OF JONATHAN T. WOLDEMARIAM**
2 **(WILDFIRE MITIGATION AND VEGETATION MANAGEMENT)**

3 **I. INTRODUCTION**

4 **A. Summary of Wildfire Mitigation and Vegetation Management Costs and**
5 **Activities**

6 In accordance with California Public Utilities Commission (Commission or CPUC) Code
7 (Pub. Util. Code) Section (§) 8386(a), San Diego Gas & Electric (SDG&E) constructs,
8 maintains, and operates its electric system to minimize the risk of catastrophic wildfire
9 associated with its electric facilities. SDG&E’s wildfire mitigation and vegetation management
10 activities are designed to meet the challenge of wildfire risk mitigation in the face of ongoing
11 climate evolution and are consistent with statutory requirements enacted through Senate Bill
12 (SB) 901³ and Assembly Bill (AB) 1054,⁴ as well as SDG&E’s approved Wildfire Mitigation
13 Plans (WMPs).

14 This Wildfire Mitigation and Vegetation Management General Rate Case (GRC) chapter
15 includes activities and costs associated with the following:

- 16 • Minimizing the risk of a catastrophic wildfire related to the operation of SDG&E
17 electric facilities;
- 18 • Inspecting, maintaining, and repairing infrastructure to reduce ignition risk,
19 promote safe and reliable operations, and maintain compliance with applicable
20 General Orders;
- 21 • Reducing the impacts of Public Safety Power Shutoff (PSPS) de-energizations on
22 customers and communities;
- 23 • Vegetation management to reduce impacts on reliability and safety and maintain
24 compliance with regulatory requirements;
- 25 • Adhering to requirements established by regulatory bodies, including the CPUC
26 and the Office of Energy Infrastructure Safety (Energy Safety or OEIS), and
27 compliance with SDG&E’s approved WMPs.⁵

³ SB 901 (Dodd, 2018), *available at*:
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB901.

⁴ AB 1054 (Holden, 2019), *available at*:
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201920200AB1054

⁵ SB 254 (Becker, 2025), *available at*:
https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202520260SB254 (“This bill
instead would require each electrical corporation to submit a wildfire mitigation plan to the office for

1 The forecasts discussed in this chapter facilitate a transition in SDG&E’s wildfire
2 mitigation strategy from operational, reactive interventions, such as situational awareness and
3 PSPS de-energizations, toward sustained, infrastructure-based wildfire resilience and reliability.
4 This transition is necessary in the face of increasing “tail risk” fire events, such as the Los
5 Angeles fires of 2025. While SDG&E has achieved meaningful progress in reducing the scale,
6 scope and frequency of proactive and reactive de-energizations, operational mitigations remain
7 inherently limited tools highly dependent on conditions outside of SDG&E’s control, such as
8 wind speeds and vegetation conditions. Further, when protracted and repeated PSPS de-
9 energizations are unavoidable, as was the case in January 2025, these measures can impose
10 significant customer and community impacts and do not fully address underlying system
11 exposure.

12 Similarly, although SDG&E has expanded and improved its asset inspection program and
13 operational controls, reducing ignition risk requires near-perfect execution and does not
14 eliminate the possibility of catastrophic failure events. Accordingly, SDG&E’s strategy proposes
15 capital system-hardening investments that reduce wildfire risk on a long-term, structural basis
16 and lessen long-term dependence on operational mitigations that carry corresponding negative
17 impacts. While this shift requires significant up-front capital deployment, affordability remains
18 central to SDG&E’s approach. To that end, the lifecycle costs of these investments lead to fewer
19 operational costs long-term.

20 In Decision (D.)17-12-024, the Commission established the High Fire Threat District
21 (HFTD), identifying areas with elevated or extreme risk for destructive utility-associated
22 wildfires. As described in this chapter, the majority of wildfire mitigation initiatives are focused
23 on reducing risk within the HFTD, which makes up approximately 64% of the service territory.
24 However, certain mitigations are implemented across the broader service territory, including
25 those related to reduction of PSPS impacts, which are tied to circuit design rather than
26 geographic location. Risk-informed mitigations are also applied in non-HFTD areas such as the
27 Wildland-Urban Interface (WUI), areas where electric infrastructure, dense vegetation, and

review at least once every 4 years. The bill would require each electrical corporation, beginning January 1, 2027, to submit a preliminary wildfire mitigation plan to the office at the earliest date of one year before the filing of its general rate case application or concurrent with the filing of its Risk Assessment Mitigation Phase application with the Public Utilities Commission (PUC).”). *See also* Pub. Util. Code § 8386(c)(1).

1 communities intersect. Due to the proximity to larger populations, ignitions in or near the WUI
2 have the potential for catastrophic damage in an urban conflagration setting.

3 SDG&E’s service territory is frequently impacted by Santa Ana wind conditions, which
4 combine strong offshore winds with extreme low humidity and elevated temperatures, resulting
5 in critically dry vegetation fuels and highly flammable conditions. During these conditions, the
6 likelihood of catastrophic wildfires increases significantly, and last-resort measures such as PSPS
7 de-energizations are of increased necessity to reduce the potential for utility-related ignitions.
8 High winds and Santa Ana conditions also increase wildfire risk in coastal canyon areas of the
9 WUI. For example, the May 2014 San Diego County wildfires⁶ occurred during severe Santa
10 Ana wind conditions combined with historic drought and a heat wave, with temperatures
11 approaching 100°F and humidity below 10 percent, creating extreme fire weather conditions.
12 These conditions contributed to a series of approximately 20 wildfires (unrelated to SDG&E
13 infrastructure) in various areas, including the WUI that burned over 26,000 acres, destroyed
14 dozens of structures, and resulted in multiple injuries and one fatality. As a result, SDG&E
15 prioritizes additional mitigation efforts, such as enhanced inspections, in high-risk areas of the
16 WUI, including coastal canyon environments where the risk wind-driven fire spread is
17 exacerbated.

18 More recent extreme weather events underscore the persistence of wildfire risk in the
19 service territory. In January 2025, Southern California experienced an unprecedented 3-week
20 wildfire weather event characterized by prolonged Santa Ana winds, including hurricane force
21 wind gusts, critically low humidity, and record-setting drought conditions, with San Diego
22 County recording its driest start to the rainy season in 174 years. In response, SDG&E activated
23 its Emergency Operations Center (EOC) and leveraged its advanced network of weather stations
24 to assess real-time conditions and implement targeted, risk-informed operational decisions,
25 including PSPS de-energizations, during periods of extreme fire danger.

26 SDG&E has avoided utility-related catastrophic wildfires in its service territory for over
27 18 years, despite operating in one of the nation’s highest wildfire risk regions. This strong safety
28 record reflects a data-driven, risk-informed approach that applies mitigation strategies tailored to

⁶ Wikipedia, *May 2014 San Diego County wildfires (as of June 7, 2026), available at: https://en.wikipedia.org/wiki/May_2014_San_Diego_County_wildfires*. None of the wildfire events referenced above were associated with SDG&E-owned or operated electric system equipment.

1 local conditions and vulnerabilities. However, recent events such as the January 2025 Eaton and
2 Palisades Fires demonstrate that low-probability, high-consequence “tail risk” events can still
3 occur despite advanced forecasting and mitigation efforts. As a result, SDG&E continues to
4 invest in wildfire mitigation to reduce both the likelihood and impact of wildfires, with a focus
5 on long-term risk reduction, safety, reliability, and operational efficiency.

6 SDG&E’s long-term wildfire risk reduction strategy evaluates both the expected
7 reduction in risk from mitigation measures and the residual risk that remains after those
8 mitigations are applied. This approach considers lifecycle costs and savings associated with
9 reducing the probability and consequences of wildfire events, as well as the impacts of PSPS de-
10 energizations. By analyzing ongoing operations and maintenance (O&M) activities, operational
11 efficiency, and avoided risk savings, SDG&E prioritizes grid hardening investments that deliver
12 the greatest long-term benefits at a reasonable cost. The overarching objective is to reduce
13 wildfire risk, enhance system resilience, lower total system costs, and minimize customer
14 disruptions.

15 Primary system-hardening mitigations include strategic undergrounding of electric lines
16 and the installation of covered conductors. Strategic undergrounding converts overhead electric
17 facilities to underground infrastructure, significantly reducing utility-related wildfire risk and the
18 need for PSPS de-energizations. Covered conductor installation consists of installing conductors
19 equipped with multiple protective layers including a semiconducting sheath, insulating
20 polyethylene, and abrasion-resistant XLPE covering to reduce the risk of electrical faults and
21 incidental contact.

22 Selection of hardening methods are based on site-specific risk, feasibility, and cost
23 effectiveness. Although the construction costs of undergrounding exceeds that of covered
24 conductor, SDG&E’s analysis of total lifecycle costs demonstrates that throughout the life of
25 each asset, undergrounding is more cost effective for most feeder segments within the HFTD.⁷
26 Undergrounding substantially reduces routine maintenance costs in future years, such as
27 vegetation management and costs associated with PSPS de-energizations. As a result, it provides
28 superior long-term safety, reliability, and financial value compared to covered conductor in
29 appropriate applications.

⁷ Refer to Section I.F Lifecycle Cost Assessment in Chapter 2.

In addition to Risk-Based Decision-Making Framework (RDF) requirements, certain wildfire mitigations and programs discussed in this chapter are subject to a broader set of compliance obligations, including General Orders (GOs) 95 and 165, Federal Energy Regulatory Commission (FERC) Reliability Standards (FAC501 and FAC0034), Pub. Util. Code § 451, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. Moreover, several mitigation programs provide benefits that are not fully captured in RDF monetized risk calculations, including enhanced operational resilience, strengthened community partnerships, and improved preparedness for future system demands driven by electrification and climate change.

This testimony supports Test Year (TY) 2028 forecasts for O&M costs for non-shared services and capital costs associated with Wildfire Mitigation and Vegetation Management. Table JW-1 summarizes my sponsored costs.

Certain forecasted activities and estimated costs were presented previously in SoCalGas/SDG&E’s 2025 RAMP Application (A.) 25-05-010/013 (consolidated), filed on May 15, 2025. Those activities and any changes that have occurred since the RAMP filing are detailed in Section VI.

**TABLE JW - 1
Test Year 2028 Summary of Total Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)			
Categories of Management	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
Total Non-Shared Services	157,681	173,510	15,829
Total Shared Services (Incurred)	0	0	0
Total O&M⁸	157,681	173,510	15,829

WILDFIRE MITIGATION & VEGETATION MANAGEMENT

⁸ The figures in this table may not match the associated workpapers because the table includes corrections related to historical Aviation Program and Emergency Preparedness and Recovery Plan O&M costs and the Aviation Program O&M forecast. The associated workpapers (Ex. SDGE-07-WP) could not be corrected prior to this filing but will be corrected and provided to the parties at the first available opportunity. In the meantime, to ensure this testimony provides the most accurate requested figures, these table have been adjusted to incorporate those corrections.

(In 2025 \$)							
Categories of Management	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
Total CAPITAL⁹	298,288	174,813	144,477	314,024	367,131	494,762	410,846

B. Organization of Testimony

My testimony is organized as follows:

- Chapter 1
 - Section I – Introduction
 - Section II – Affordability & Efficiency describes SDG&E’s wildfire mitigation strategy, including lifecycle cost considerations, limitations of operational mitigations, and the long-term value of grid hardening investments.
 - Section III – Non-Shared O&M Costs presents forecasted O&M costs, including program activities, cost drivers, and methodologies across wildfire mitigation and vegetation management.
 - Section IV – Capital describes forecasted capital investments supporting wildfire risk reduction and system hardening, including undergrounding, covered conductor, and operational programs.
 - Section V – RAMP Integration explains how the testimony aligns with the RAMP framework, including mitigation mapping and supporting risk justification.
 - Section VI – Deferred Work identifies previously authorized work not yet completed and explains updated scope and timing.
 - Section VII – Post-Test Year presents the proposed post-test-year ratemaking approach supporting continued wildfire mitigation investment.
 - Section VIII – Conclusion summarizes the testimony and requested investments.

⁹ The figures in this table may not match the associated workpapers because the table includes a correction related to the Aviation Program capital forecast. The associated workpapers (Ex. SDGE-07-CWP) could not be corrected prior to this filing but will be corrected and provided to the parties at the first available opportunity. In the meantime, to ensure this testimony provides the most accurate requested figures, these table have been adjusted to incorporate those corrections.

- Section IX – Witness Qualifications provides my professional qualifications.
- Chapter 2
 - Section I.A – Overview provides an introduction to wildfire risk in the service territory and an overview of the risk modeling framework
 - Section I.B – Enterprise Risk Framework explains the enterprise-wide risk framework and presents the wildfire, PSPS, and Protective Equipment Device Settings (PEDS) risk bow tie.
 - Section I.C. – Risk Modeling Framework explains the wildfire, PSPS, and PEDS risk modeling framework.
 - Section I.D. – Wildfire, PSPS, and PEDS Risk Assessment describes the calculations for baseline wildfire, PSPS, and PEDS risk and how risk reductions are quantified.
 - Section I.E. – Mitigation Lifecycle Cost Assessment estimates total installation, operation, and maintenance costs over a 55-year period and calculates savings and incremental Net Operations and Maintenance (Net O&M) costs between existing overhead assets and alternative mitigation options.
 - Section I.F. – Benefit-Cost Ratio Framework outlines the BCR framework used to evaluate wildfire risk mitigation investments.
 - Section. I.G – Risk-Informed Strategy and Prioritization describes how risk model outputs inform grid-hardening mitigation selection.
 - Section I.H – Sensitivity Analysis describes the results of sensitivity analyses evaluating the key input parameters that influence BCRs.
 - Section I.I – Segment Profile Cards presents a standardized summary of wildfire, PSPS, and PEDS risk and mitigation options for high-risk distribution segments.

C. Support To and From Other Chapters

My testimony also references the testimony and workpapers of other chapters, either in support of their testimony or as support for mine.

- Risk Management (Ex. SCG-02/SDGE-02)
- Electric Distribution Capital (Ex. SDGE-08)
- Electric Distribution O&M (Ex. SDGE-09)
- Information Technology (Ex. SCG-10/SDGE-14)
- Regulatory Accounts (Ex. SDGE-26)

- Summary of Earnings (Ex. SDGE-32)
- Post-Test Year Ratemaking (Ex. SDGE-33)

D. 2024 GRC Decision

On December 23, 2024, the Commission issued D.24-12-074, the final decision in SDG&E’s TY 2024 GRC with an effective date of January 1, 2024. The Commission adopted funding determinations that materially reduced SDG&E’s requested wildfire mitigation costs.

The Commission’s decision:

- Authorized modified capital and O&M expenditure forecasts for wildfire mitigation initiatives for TY 2024
- Authorized a flat escalation of approximately 3% of approved test year revenue requirement, including all forecasted wildfire mitigation activities for 2025-2027, with an explicit capital exception for each post-test year for covered conductor and strategic undergrounding activities
- Continued the Wildfire Mitigation Plan Memorandum Account (WMPMA)
- Converted the Tree Trimming Balancing Account (TTBA) to a one-way Vegetation Management Balancing Account (VMBA) and authorized a memorandum account to record vegetation management costs that exceed authorized levels

The Commission’s TY 2024 GRC decision and the necessary revisions to SDG&E’s 2023-2025 WMP,¹⁰ highlight the importance of ensuring that wildfire mitigation scope, targets, and implementation schedules are consistent with the revenue requirement authorized by the Commission, as well as the importance of adopting appropriate regulatory mechanisms.

E. Regulatory Accounts

Wildfire Mitigation Plan Memorandum Account

SDG&E requests authorization to continue the WMPMA¹¹ as a reasonable regulatory mechanism to track costs related to implementation of approved wildfire mitigation initiatives

¹⁰ Letter from OEIS to SDG&E re: Decision for SDG&E’s 2025 Petition to Amend its 2023-2025 Base WMP (July 11, 1025), *available at*: <https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=58911&shareable=true>

¹¹ The WMPMA was established pursuant to Pub. Util. Code § 8386.4(a) (as modified by AB 1054) to record costs incurred to implement the Commission-approved WMP, and the recorded balance reflects those costs net of the revenue requirement authorized in the GRC or other proceedings deemed appropriate by the Commission.

1 and, if necessary, seek recovery of eligible incremental costs associated with implementation of
2 Commission-approved WMPs, net of amounts otherwise authorized for recovery in base rates.

3 Continuation of the WMPMA is necessary due to continuing wildfire mitigation
4 obligations and evolving WMP implementation requirements (e.g., WMP filings and related
5 regulatory actions). Wildfire risk conditions are also subject to significant variability outside
6 SDG&E's control, including the emergence of extreme weather such as the events of January
7 2025. The WMPMA provides an appropriate mechanism to track costs necessary to maintain
8 compliance and promote safety that are incremental to base revenue requirements, preserve
9 transparency, and allow for compliance with statutory requirements that restrict reprioritization
10 of funds approved for wildfire mitigation to other activities. SDG&E therefore requests that the
11 Commission affirm continued use of the WMPMA for the TY 2028 GRC cycle.

12 The current balance of the WMPMA is discussed in the SDG&E Regulatory Accounts
13 testimony (Ex. SDGE-26).

14 **Vegetation Management Balancing Account**

15 SDG&E requests Commission authorization in the TY 2028 GRC to continue the VMBA
16 as the ratemaking mechanism to record and reconcile authorized vegetation management revenue
17 requirements with actual recorded vegetation management costs, consistent with Commission
18 direction adopted in the TY 2024 GRC decision.

19 Currently, vegetation management costs and activities are recorded in the VMBA up to
20 the authorized level. To the extent vegetation management costs are incurred in excess of the
21 Commission-authorized amount, those incremental amounts are recorded in a vegetation
22 management memorandum account (VMMA) that is subject to a reasonableness review.

23 Continuation of the VMBA in the TY 2028 GRC will preserve the Commission-adopted
24 structure for vegetation management cost oversight by aligning authorized revenue requirements
25 with recorded costs up to the cap and by separately tracking any incremental costs for later
26 reasonableness review. SDG&E therefore requests that the Commission continue the VMBA and
27 VMMA for the TY 2028 GRC cycle consistent with the TY 2024 GRC decision and SDG&E's
28 existing vegetation management cost recovery framework.

29 **II. AFFORDABILITY & EFFICIENCY**

30 Affordability is a central consideration in evaluating SDG&E's wildfire mitigation
31 strategy. SDG&E recognizes that the capital investments requested in this GRC are significant

1 and that the CPUC, intervenors, and customers appropriately expect a clear explanation of how
2 these investments balance near-term rate impacts with long-term value.

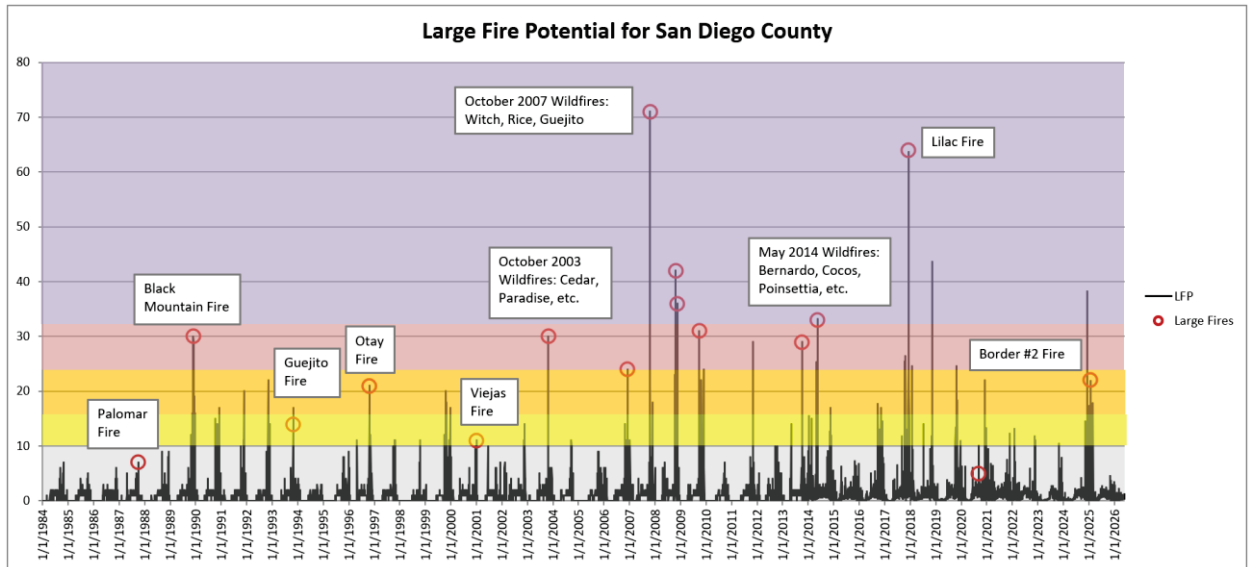
3 However, when balancing risk and cost, it would be unreasonable to overly prioritize
4 near-term affordability given increasing climate-related risk, California’s clear prioritization of
5 utility risk reduction, and the destruction of communities, lives and economies that follows a
6 catastrophic wildfire. A narrow focus on near-term bill increases does not fully capture the
7 financial consequences customers ultimately bear when wildfire risk is insufficiently mitigated,
8 including the ratepayer risks associated with inverse condemnation in California. Affordability
9 must also be balanced with risk avoidance, lifecycle costs, and the long-term financial exposure
10 borne by ratepayers if catastrophic wildfire risk is not adequately addressed. This discussion
11 explains why SDG&E’s proposed grid hardening strategy, particularly undergrounding and
12 covered conductor deployment, represents a more affordable path over time than continued
13 reliance on operational mitigations.

14 SDG&E’s equipment has not been the cause of a catastrophic wildfire within the service
15 territory since 2007. While this outcome reflects substantial progress and sustained investment
16 in wildfire mitigation, it does not indicate that wildfire risk has been fully eliminated. Wildfire
17 risk is driven not by frequent events, but by rare, high consequence outcomes. A single ignition
18 occurring under extreme conditions, regardless of cause, can result in catastrophic impacts to
19 communities, the environment, and the broader economy. Thus, although reducing the frequency
20 of ignitions lowers overall risk, it does not eliminate “tail risk,” the risk associated with low-
21 probability, high-impact events. Wildfires in California demonstrate that catastrophic outcomes
22 can occur even in highly mitigated systems and can spread rapidly from high fire threat areas
23 into densely populated regions, including coastal communities. In these areas, the concentration
24 of homes and critical infrastructure increases the potential for damage and magnifies the
25 consequences of a single ignition, even if the overall ignition likelihood is low.

26 Past performance alone is therefore not a reliable indicator of future risk, as it is not
27 possible to anticipate every system vulnerability, especially under rare and extreme conditions
28 and as climate conditions continue to evolve. As illustrated below in figure #, there has been an
29 increasing trend in extreme wildfire risk days across San Diego County in the last several
30 decades, which will continue to increase the potential for “tail risk” events moving forward.

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FIGURE JW-1
Large Fire Potential (LFP) for San Diego County: 1984-2026¹²



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A. Catastrophic Wildfires Create Unaffordable Societal Losses

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Undergrounding is often the most cost-effective and societally responsible wildfire mitigation approach, not because it is inexpensive upfront, but because it most effectively mitigates the vastly larger cost of failure in infrastructure destroyed, environmental damage, and lives lost. Recent disasters in California and Hawaii demonstrate that one ignition under extreme conditions can generate billions in losses, overwhelming any avoided ignition metrics associated with traditional mitigation strategies. Assuming prudent operations, those costs are passed on to ratepayers consistent with California’s inverse condemnation framework for utilities.

12

Estimated actual or published economic impacts of major fires, highlighting the scale of societal risk, include:

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- **Camp Fire (2018, CA)** – Insured losses alone reached **\$12.5 billion**, according to comparative insured-loss data referenced in reporting on the 2025 Palisades and Eaton fires.¹³

¹² American Meteorological Society, *The Santa Ana Wildfire Threat Index: Methodology and Operational Implementation*, Journal of Weather and Forecasting. Vol. 31, Issue 6 (December 1, 2016), available at: https://journals.ametsoc.org/view/journals/wefo/31/6/waf-d-15-0141_1.xml.

¹³ California Globe, *New Report Finds Total Damage, Economic Losses from the L.A. Wildfires approximately \$275 Billion* (January 14, 2025), available at: <https://californiaglobe.com/fr/new-report-finds-total-damage-economic-losses-from-the-l-a-wildfires-approximately-275-billion/>.

- 1 • **Dixie Fire (2021, CA)** – Suppression costs alone reached \$637 million, making it
2 the most expensive fire-suppression effort in U.S. history; property and
3 community losses exceeded \$1.15 billion (minimum estimate).^{14,15}
- 4 • **Lahaina / Maui Wildfires (2023, HI)** – Economic losses estimated between \$4
5 and 6 billion, with the cost to rebuild exceeding \$5.5 billion, and long-term
6 community recovery projected above \$12 billion.^{16,17,18}
- 7 • **Eaton Fire & Palisades Fire (2025, CA)** – Property damage from the Eaton and
8 Palisades zones estimated between \$28 and 54 billion, with broader economic
9 losses potentially reaching up to \$95 and 164 billion.^{Error! Bookmark not defined.}

10 These examples illustrate a consistent truth: the cost of a single catastrophic wildfire
11 poses the potential to dwarf the cost of preventative infrastructure investments.

12 Absent capital investment in permanent grid hardening, wildfire mitigation relies heavily
13 on operational measures such as situational awareness, inspections, vegetation management, and
14 PSPS de-energizations. While these tools reduce risk, they require near perfect execution and do
15 not eliminate the possibility of catastrophic failure.

16 From an affordability and lifecycle cost perspective, permanent hardening investments
17 must be evaluated on two complementary dimensions. First, undergrounding materially reduces
18 long-term operations and maintenance (O&M) costs relative to overhead facilities by avoiding
19 recurring vegetation management, frequent inspections, equipment replacement, and other
20 wildfire-driven O&M activities associated with exposed lines. When evaluated on an apples-to-
21 apples basis, including both capital and ongoing O&M, these avoided costs often bring

¹⁴ Penn State University, *California's Dixie Fire shows impact of legacy effects, prescribed burns* (June 27, 2022), *available at*: <https://www.psu.edu/news/earth-and-mineral-sciences/story/californias-dixie-fire-shows-impact-legacy-effects-prescribed>.

¹⁵ Wikipedia. *Dixie Fire* (as of June 7, 2026), *available at*: https://en.wikipedia.org/wiki/Dixie_Fire.

¹⁶ Moody's, *Moody's RMS estimates USD 4 to 6 billion in economic losses from Hawaii wildfires* (August 22, 2023), *available at*: <https://www.moody's.com/web/en/us/insights/announcements/moodys-rms-estimates-usd-4-to-6-billion-in-economic-losses-from-hawaii-wildfires.html>.

¹⁷ TruLaw, LLC, *FAQ: How Much of Lahaina Has Burned?* (Updated March 16, 2026), *available at*: <https://trulaw.com/maui-wildfires-lawsuit/how-much-of-lahaina-has-burned/>.

¹⁸ Firehouse, *Cost of Lahaina, HI, Wildfires Reaches \$12 Billion* (August 12, 2024), *available at*: <https://www.firehouse.com/operations-training/wildland/news/55132266/cost-of-lahaina-hi-wildfires-reaches-12-billion>

1 undergrounding materially closer to, and in some cases competitive with, covered conductor
2 solutions over the asset lifecycle, particularly in high-risk locations.

3 Second, these comparisons alone do not fully capture the value of undergrounding in
4 areas subject to high-risk, low-frequency events. In such areas, additional hardening is
5 warranted precisely because the consequences of failure are so severe. The avoided cost of even
6 a single catastrophic wildfire can exceed decades of incremental capital investment, making
7 permanent risk reduction not only a safety imperative but also a prudent long-term financial
8 strategy for ratepayers.

9 In combination, these factors demonstrate that in the highest-risk portions of the system,
10 undergrounding can both reduce long-term costs relative to continued reliance on overhead
11 infrastructure and materially lower the risk of catastrophic outcomes. This balanced view
12 preserves the integrity of SDG&E's lifecycle cost analyses while appropriately recognizing that
13 permanent risk reduction delivers benefits that operational mitigations alone cannot fully
14 achieve.

15 **B. Operational Measures (Including PSPS) Cannot Eliminate Human or System**
16 **Error**

17 PSPS de-energizations, enhanced inspections, situational awareness tools, vegetation
18 management, EPSS (or Sensitive Profile Settings), and grid hardening all reduce risk, but they
19 are fundamentally operations-dependent mitigations dependent on humans to implement. Despite
20 best efforts, human error, timing misalignment, missed alarms, miscommunication, equipment
21 inspection lapses, and the physical limitations of overhead infrastructure create failure
22 probability. For instance, PSPS de-energizations are susceptible to:

- 23 • Misjudging the correct line segment to de-energize
- 24 • Errors in timing
- 25 • Rapidly changing and unpredictable fire-weather conditions

26 As a result, PSPS de-energizations alone cannot provide the level of certainty required to
27 avoid catastrophic wildfire outcomes. Even when PSPS de-energizations are employed, residual
28 wildfire risk remains due to the imperfect, time-sensitive, and human-influenced nature of the
29 process.

30 Absent sufficient investment in permanent risk-reduction measures such as
31 undergrounding, utilities must increasingly rely on PSPS de-energizations as the last available

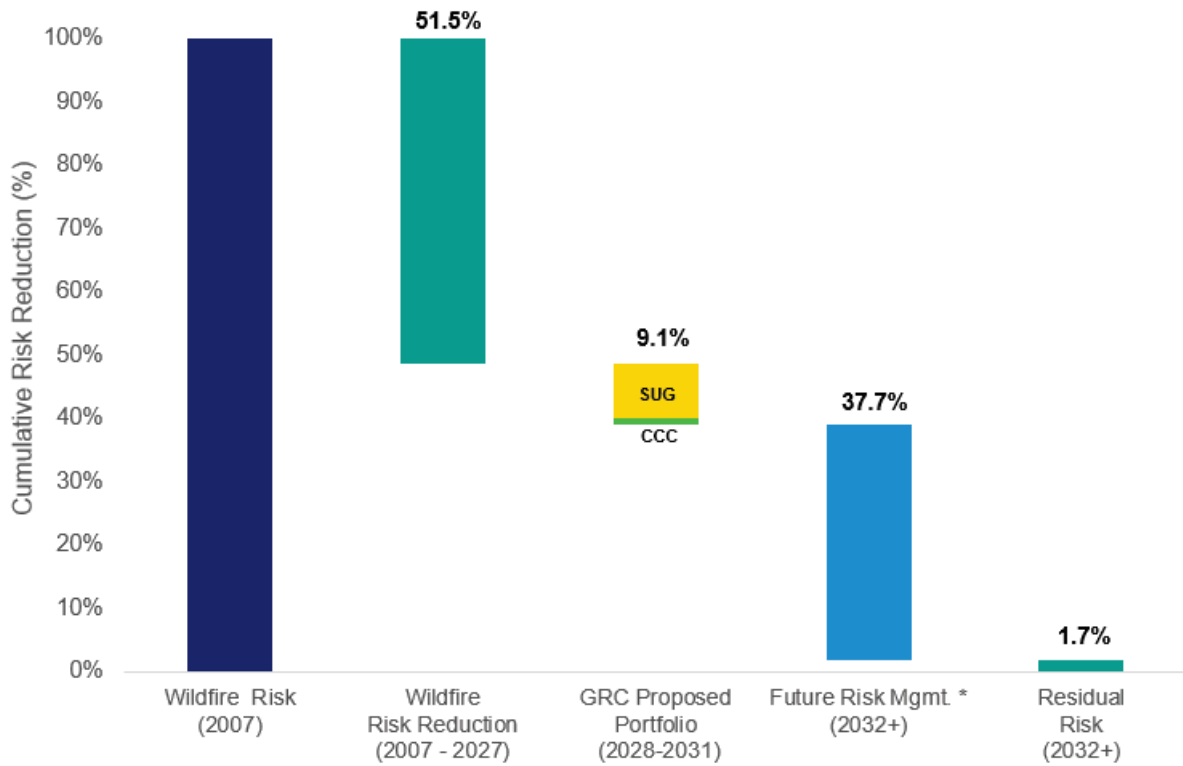
1 risk-mitigation tool for overhead infrastructure during elevated fire-weather conditions. To
2 compensate for the inherent imperfections of PSPS execution, SDG&E may need to apply this
3 tool more conservatively by deploying it earlier, over broader geographies, and for longer
4 durations in order to reduce the probability that a missed trigger or delayed action could result in
5 catastrophic loss. While conservative application of PSPS de-energizations may reduce ignition
6 risk, it comes at the cost of increased frequency, scale, and customer impact, underscoring the
7 structural limitations of PSPS de-energizations as a primary wildfire-risk mitigation strategy
8 rather than a substitute for long-term system hardening.

9 SDG&E understands that the requested grid hardening investments are significant and
10 that lifecycle savings can only be realized in customer bills if hardening investments reach a state
11 of completion. Under SDG&E's current risk modeling and mitigation framework, largescale
12 deployment of undergrounding and covered conductor leads to a finite endpoint, after which
13 wildfire risk associated with overhead distribution infrastructure is substantially reduced. Based
14 on current assumptions, including a reasonable timeframe for hardening infrastructure that
15 balances feasibility, cost, and risk reduction, that endpoint is expected to occur within a defined
16 planning horizon of 2037-2040. By the end of that timeframe, risk mitigation will be
17 increasingly weighted toward sustainable long-term infrastructure tools rather than short-term
18 operational strategies.

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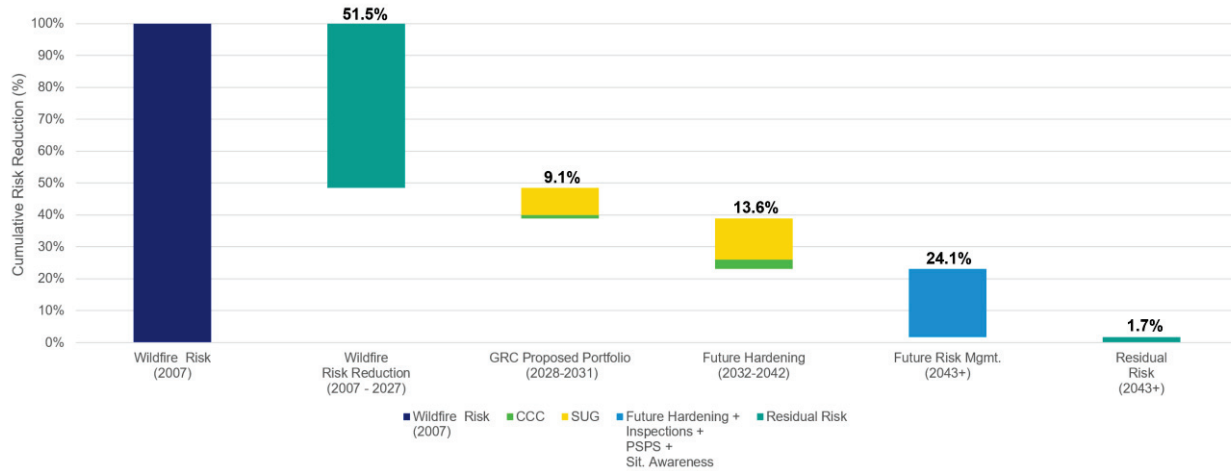
FIGURE JW - 2
Estimated Wildfire Risk Reduction 2028-2031
GRC: 400 miles Underground & 200 miles of Covered Conductor



*Future Grid Hardening, Inspections, PSPS, and Situational Awareness

As illustrated in Figure JW-2, the proposed 2028 GRC mitigation portfolio includes approximately 400 miles of undergrounding and 200 miles of combined covered conductor as sustained grid-hardening investments, complemented by operational mitigations such as situational awareness, inspections, and PSPS. During the 2028-2031 GRC cycle, sustained and operational mitigations are expected to reduce risk by 9.1% and 37.7% respectively. This combination reflects SDG&E's near-term strategy to achieve meaningful risk reduction through operational measures while continuing to advance infrastructure investments that support long-term wildfire risk reduction objectives.

FIGURE JW - 3
Estimated Wildfire Risk Reduction (2007–2042):
2028 GRC (400 mi UG and 200 mi CC) +
Future Investment Scenario (2032–2042) 800 mi UG and 400 mi CC



As shown in Figure JW–3, SDG&E’s long-term mitigation strategy balances affordability and risk reduction by pacing mitigation investments to achieve the majority of hardening-based wildfire risk reduction by 2042, resulting in reduced reliance on PSPS de-energizations. During the 2028–2031 GRC period, sustained and operational mitigations are expected to achieve a combined 9.6% reduction in wildfire risk, with future sustained mitigations contributing an additional 15.8%. Remaining risk reductions are addressed through operational mitigations, consistent with SDG&E’s long-term strategy of prioritizing durable infrastructure investments to enhance safety while managing costs and minimizing PSPS de-energizations.

Upon completion of this strategy, operational complexity would be reduced and long-term maintenance costs would stabilize because underground facilities are no longer exposed to the primary wildfire ignition drivers affecting overhead lines. From a lifecycle perspective, these characteristics distinguish undergrounding investments from mitigation strategies that require perpetual spending on overhead maintenance with no defined conclusion, such as inspections, advance protection settings, vegetation management, and PSPS de-energizations, all of which must continue indefinitely as long as overhead infrastructure remains in service. Strategically deployed undergrounding therefore represents not only a risk reduction strategy but, when appropriately sited, a pathway to long-term cost containment on the riskiest circuit segments.

1 Even with strategic deployment, the cost of undergrounding is highly sensitive to scale,
2 continuity, and long-term planning certainty. Inconsistent and interrupted deployment of
3 undergrounding has significant cost, schedule, operational, and stakeholder consequences.
4 Undergrounding projects typically require two years or more for design, permitting, and land
5 acquisition; therefore, suspending projects midstream can result in shelved designs, potential
6 write-offs of sunk costs, and the need for re-work when funding resumes. Partially completed
7 projects undermine intended wildfire and PSPS risk-reduction benefits, as remaining overhead
8 segments continue to drive risk for affected communities.

9 From a construction perspective, inconsistent work pipelines discourage contractors from
10 investing in specialized heavy equipment (e.g., trenchers, rock wheels), reducing market capacity
11 and increasing future costs. Short-term mobilization further inflates unit costs, as construction
12 yard setup and demobilization are amortized over shorter timeframes.

13 Finally, repeated pauses erode trust with customers and key stakeholders, including
14 Native American tribes, public agencies, community planning groups, and school districts, who
15 rely on completion of undergrounding to mitigate safety, reliability, and community impacts.
16 Delays also create reputational and credibility risks for the utility and complicate future
17 engagement and approvals.

18 Conversely, sustained multiyear deployment optimizes project sequencing, achieves
19 economies of scale in procurement and construction, reduces remobilization and change order
20 costs, and improves coordination with local jurisdictions and communities. As a result,
21 undergrounding implemented at scale and over time is materially more affordable on a per unit
22 basis than limited annual authorizations. Recognizing this dynamic, SDG&E therefore requests
23 that the Commission and stakeholders view grid hardening with longer term benefits
24 acknowledging how deployment continuity drives cost efficiency, risk reduction and customer
25 value. This request does not seek to alter the Commission's General Rate Case framework or
26 bind future Commissions. Rather, SDG&E requests that the Commission recognize that
27 authorization decisions in the current GRC cycle influence the cost, efficiency, and feasibility of
28 ongoing capital projects.

29 While the proposed wildfire mitigation investments require significant near-term capital
30 outlays, they represent a more affordable long-term strategy than continued reliance on
31 operational mitigations alone. Permanent grid hardening reduces exposure to catastrophic

wildfire risk, reduces the impact of PSPS de-energizations, establishes a defined endpoint for investment, and avoids costs that would otherwise be borne by ratepayers in the event of a catastrophic event. From a lifecycle perspective, the proposed approach balances safety, reliability, and affordability while providing customers with greater certainty regarding long-term outcomes and costs.

III. NON-SHARED O&M COSTS

“Non-Shared Services” are activities that are performed by a utility solely for its own benefit. Corporate Center provides certain services to the utilities and to other subsidiaries. For purposes of this GRC, SDG&E treats costs for services received from Corporate Center as Non-Shared Services costs, consistent with any other outside vendor costs incurred by the utility. Table JW-2 summarizes the total non-shared O&M forecasts for the listed cost categories.¹⁹

**TABLE JW - 2
Non-Shared O&M Summary of Costs²⁰**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)			
Categories of Management	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
A. Grid Design, Operations, and Maintenance	49,282	34,863	-14,419
B. Vegetation Management and Inspections	52,181	76,767	24,586
C. Situational Awareness and Forecasting	3,652	4,186	534
D. Emergency Preparedness, Collaboration and Community Outreach	43,903	43,924	21
E. Enterprise Systems	0	2,564	2,564

¹⁹ See D.26-01-021 at 150-159. SDG&E did not remove historical O&M costs associated with 2024 GRC Track 2 disallowances because none of the disallowances were related to O&M workpapers that utilize a forecast methodology based on 2019-2022 historical costs.

²⁰ The figures in this table may not match the associated workpapers because the table includes corrections related to historical Aviation Program and Emergency Preparedness and Recovery Plan O&M costs and the Aviation Program O&M forecast. The associated workpapers (Ex. SDGE-07-WP) could not be corrected prior to this filing but will be corrected and provided to the parties at the first available opportunity. In the meantime, to ensure this testimony provides the most accurate requested figures, these table have been adjusted to incorporate those corrections.

F. Wildfire Mitigation Strategy	3,930	3,821	-109
G. Risk Methodology and Assessment	4,733	7,385	2,652
Total Non-Shared Services	157,681	173,510	15,829

A. Grid Design, Operations, and Maintenance

**TABLE JW - 3
Grid Design, Operations, and Maintenance O&M Costs²¹**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)				
ID	A. Grid Design, Operations, and Maintenance	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
502	Capacitor Maintenance and Replacement Program (SCADA)	23	-	-23
504	Standby Power Program (Fixed Backup Power Commercial)	436	1,040	604
506	Microgrids	1,454	1,456	2
507	CMP Repairs & Replacements	19,181	1,506	-17,675
508	Advanced Protection	124	3,778	3,654
510	Hotline Clamps	248	-	-248
512	Customized Resiliency Assessments	3,758	4,095	337
516	Generator Assistance Programs	691	698	7
518	Strategic Undergrounding	894	1,978	1,084
520	Distribution Overhead System Hardening	4,175	-	-4,175
522	Transmission Overhead Hardening (Distribution Underbuild)	-1	-	1

²¹ The figures in this table may not match the associated workpapers because the table includes corrections related to historical Aviation Program costs and the Aviation Program O&M forecast. The associated workpapers (Ex. SDGE-07-WP) could not be corrected prior to this filing but will be corrected and provided to the parties at the first available opportunity. In the meantime, to ensure this testimony provides the most accurate requested figures, these table have been adjusted to incorporate those corrections.

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)

ID	A. Grid Design, Operations, and Maintenance	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
524	Lightning Arrestor Removal/ Replace Program	107	-	-107
526	Distribution Overhead Detailed Inspections	146	517	371
528	Distribution Infrared Inspections	8	-	-8
530	Distribution Wood Pole Intrusive Inspections	54	1,491 ²²	1,437
534	Risk-Informed Drone Inspections	1,511	1,331	-180
536	Distribution Overhead Patrol Inspections	349	363	14
546	Aviation Program	3,718	5,259	1,541
548	Wildfire Infrastructure Protection Teams	4,665	4,665	-
550	Combined Covered Conductor	4,169	3,750	-419
552	PSPS Sectionalizing Enhancements	-	21	21
559	LiDAR Flights	-	-	-
564	Distribution Communications Reliability Improvements	2,353	2,874	521
565	Distribution Underbuild Repairs on Transmission Structures	1	-	-1
568	Strategic Pole Replacement	884	-	-884
569	Cleveland National Forest Fire Hardening	83	-	-83
570	Expulsion Fuse Replacements	91	-	-91

²² Distribution Wood Pole Intrusive Inspections are on a 10-year routine cycle and rotate around SDG&E's service territory in order to promote efficiency of the crews performing the inspections and grouping of repair work to minimize outages, so depending on the timing of the 4-year GRC period, the majority of inspections will either fall in the non-HFTD, the HFTD or a mix. Starting in 2023, the routine inspections were almost entirely performed within the City of San Diego and along the coast outside of the HFTD. However, starting in 2027 inspections will rotate back into the eastern part of our service territory in the Tier 2 and Tier 3 HFTD areas.

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)

ID	A. Grid Design, Operations, and Maintenance	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
573	Early Fault Detection	84	41	-43
576	Avian Protection	76	-	-76
Total Non-Shared Services		49,282	34,863	-14,419

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These costs support the design, inspection, operation, and maintenance of electric grid assets to reduce wildfire risk associated with utility equipment while maintaining system safety, reliability, and resilience. Grid Design, Operations, and Maintenance activities include grid hardening initiatives, equipment inspections, protection settings, and maintenance practices that collectively address wildfire ignition risk and minimize customer impacts from mitigations such as PSPS de-energizations.

Grid hardening initiatives, such as the Combined Covered Conductor program and the Strategic Undergrounding program, reduce the likelihood of wildfire risk events by addressing key ignition drivers, including foreign object contacts and pole and conductor related failures. Protection based programs, such as the Advanced Protection Program (APP), reduce the likelihood that a failure will result in an ignition by applying targeted protection settings or equipment designed to mitigate specific failure modes known to lead to wildfire ignitions. Additional initiatives, including the PSPS Sectionalizing program and customer resiliency programs, are intended to reduce the scope and duration of PSPS impacts. Strategic undergrounding further reduces the need for PSPS de-energizations by eliminating overhead exposure in high-risk areas.

Grid Design, Operations, and Maintenance activities also support the identification and remediation of equipment conditions prior to failure. Mandatory inspection programs governed by GO 95 and GO 165 focus on identifying safety and reliability conditions and are supplemented by risk informed drone inspections intended to detect wildfire related hazards. Maintenance activities prioritize corrective actions based on risk level and location, with accelerated remediation timeframes applied in Tier 3 of the HFTD to further reduce wildfire risk.

SDG&E proposes to record these costs in its WMPMA.

1 **1. Standby Power Program (Fixed Backup Power Commercial) (C504)**

2 **a. Description of Costs and Underlying Activities**

3 The Standby Power Program (Fixed Backup Power Commercial) targets non-residential
4 customer sites that provide essential community services within the HFTD and are served by
5 circuits with a history of frequent PSPS de-energizations. The program’s purpose is to enhance
6 community resiliency during PSPS de-energizations by providing and installing permanent
7 backup power solutions for participating customers. During Town Hall meetings conducted after
8 historical PSPS de-energizations, community members shared that this would be a helpful
9 program to mitigate the impacts of PSPS.

10 Eligible sites are identified using meter, circuit, and PSPS de-energization data, with a
11 focus on locations that have been highly impacted historically and do not have planned
12 traditional hardening solutions in the near term. Risk analysis using Wildfire Next Generation
13 System (WiNGS)-Planning is used to determine which customers would experience the greatest
14 impacts during PSPS de-energizations and therefore would most benefit from fixed backup
15 power.

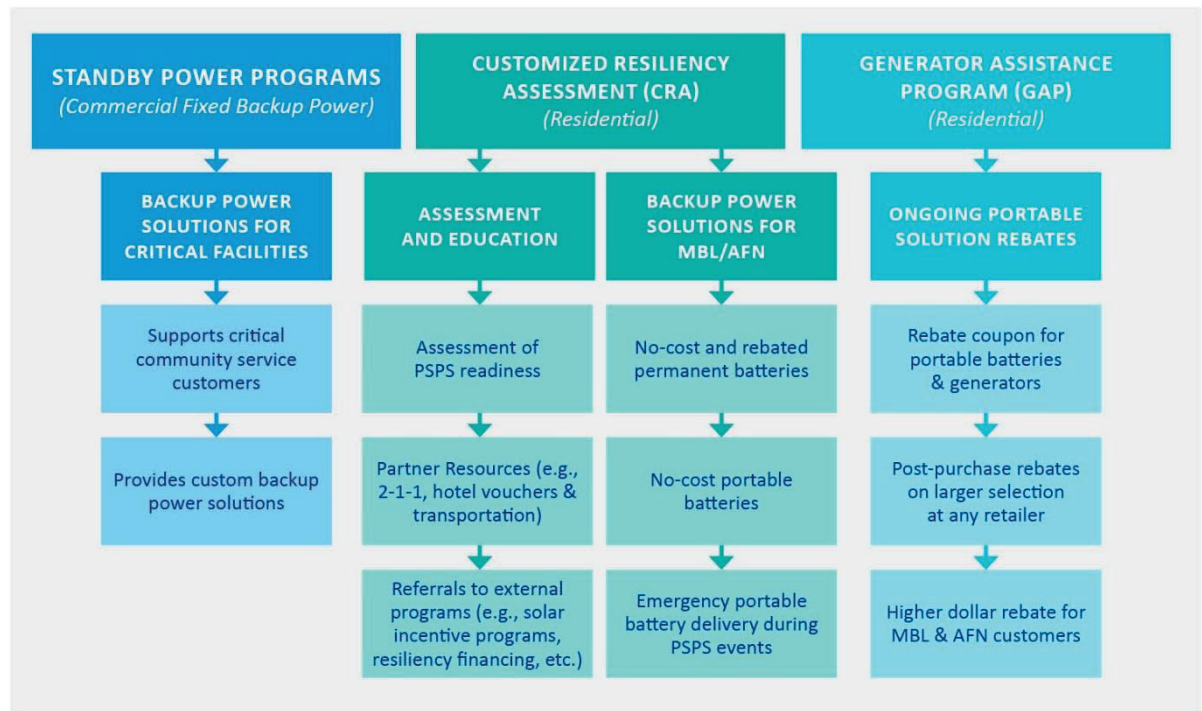
16 Once a site is selected, certified installers evaluate site size, usage, feasibility, and cost to
17 determine the optimal backup power solution, which may include permanent standby generators
18 or permanent backup battery systems powered by solar arrays and related equipment. These
19 installations help critical community services such as Community Resource Centers (CRCs)
20 remain operational during PSPS de-energizations.

21 The program is specifically designed to reduce the customer and community impacts of
22 PSPS de-energizations and does not impact wildfire risk or outage program risk. Both labor and
23 non-labor costs are requested for this program. Labor costs include internal management of
24 program operations. Non-labor costs include the equipment provided to customers as well as the
25 cost of planning, permitting, and installation.

26 The program is part of an overall structure that reduces the impacts of PSPS de-
27 energizations. Two other programs, Customized Resiliency Assessments (C512) and the
28 Generator Assistance Program (GAP) (C516), work in conjunction with the program to provide
29 multiple resources commercial and residential customers can use to reduce PSPS impacts.
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**FIGURE JW-4
Resiliency Program Offerings**



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i. Description of Selection and Prioritization of RAMP Risk Mitigations

7 The initiative selection process for the Standby Power Program (Fixed Backup Power
8 Commercial) was driven by the need to reduce customer impact from PSPS de-energizations.

9 A no-action alternative was considered, which would result in ongoing exposure to
10 extended outages for commercial customers, including those that have experienced a high
11 frequency of PSPS de-energizations, would face substantial operational and community
12 disruption during PSPS de-energizations, and/or are not currently scheduled for near-term grid
13 hardening or other resiliency investments. In addition, the absence of standby power resources
14 would limit SDG&E’s ability to support CRCs, which the Commission requires utilities to open,
15 operate, and maintain during PSPS de-energizations to provide essential services to impacted
16 communities. Therefore, this alternative was not selected.

1 Temporary microgrids are deployed to support customer meters and require significant
2 manual effort during emergency activations. These systems are evaluated and sized prior to
3 deployment to provide adequate load support and are deployed during PSPS de-energizations.

4 O&M costs requested for this program are to support activities such as:

- 5 • Pre-deployment evaluation and sizing of mobile energy storage and generator
6 resources
- 7 • Deployment, setup, commissioning, and decommissioning of temporary
8 microgrids
- 9 • Operation and monitoring during events, including 24/7 staffing
- 10 • Maintenance of balance-of-plant (BOP) equipment and execution of long-term
11 service agreements (LTSAs) for existing operational microgrids (e.g., Cameron
12 Corners, Ramona Air Attack Base), and two proposed permanent microgrids and
13 the one remote grid projects described in the Microgrid capital section
- 14 • Generator fleet reservation and deployment to critical facilities and resilience
15 sites, including but not limited to Shelter Valley, Mountain Top Market & Gas,
16 Live Oaks Market, Butterfield Ranch, and Community Resilience Centers
- 17 • Support for future permanent microgrids and remote grid projects

18 Requested costs also support increased integration of battery energy storage systems to
19 reduce reliance on fuel-based generation, as appropriate, and to improve sustainability.

20 Established vendor partnerships, trained crews, and standardized protocols enable rapid
21 deployment and safe operations during emergency conditions.

22 Given continued demand from critical customers, government agencies, and community
23 stakeholders, a reduction in generator deployments as permanent renewable solutions are
24 implemented is not anticipated; rather, generation assets will be reallocated to further reduce
25 customer impacts during PSPS de-energizations.

26 **i. Description of Selection and Prioritization of RAMP**
27 **Risk Mitigations**

28 See Section IV.A.1: Selection and Prioritization of RAMP Risk Mitigations for this
29 RAMP Control.

30 **b. Forecast Method**

31 A 5-year historical average of labor spending from 2020 through 2025 was used to
32 forecast O&M costs. This methodology provides a transparent basis for forecasting, smooths
33 year-to-year variability driven by the unpredictable frequency of PSPS de-energizations and

1 associated generator deployments and appropriately reflects the relatively steady labor
2 requirements of microgrid operations.

3 **c. Cost Drivers**

4 Costs are driven by the resources and coordination required to maintain operational
5 readiness and respond effectively during de-energization events, with generator deployments
6 representing the primary driver of O&M costs. Labor costs are significant and include
7 round-the-clock availability of qualified electrical workers, electricians, line crews for manual
8 system integration, and specialized personnel for commissioning and oversight, largely
9 associated with deploying portable fossil-fuel generators to create temporary microgrids to
10 support back-up power needs. Equipment-related costs include the rental, mobilization, and
11 reservation of portable fossil-fuel generators and mobile battery energy storage systems to
12 support availability when needed.

13 Additional costs stem from logistics and operational support, such as transportation of
14 equipment, traffic control, and ongoing fuel delivery and management, all of which are integral
15 components of portable fossil-fuel generator deployment activities. While ongoing maintenance
16 and service obligations such as balance-of-plant (BOP) upkeep and long-term service agreements
17 (LTSAs) for energy storage systems are required, these costs are relatively small in magnitude
18 compared to generator rentals and deployment activities. Current operational microgrids
19 maintain LTSAs for battery energy storage systems and warranties with O&M repair coverage
20 for solar assets.

21 Deployment complexity further increases costs due to time-intensive setup processes,
22 often up to 12 hours, and the need for coordinated field operations and manual integration with
23 distribution infrastructure, particularly for temporary microgrid configurations utilizing installed
24 sectionalizing devices. Program-level investments, including vendor partnerships, trained crews,
25 and standardized processes, are also required to sustain rapid, compliant deployment, and
26 primarily serve as enabling infrastructure to support frequent portable fossil-fuel generator
27 deployments. Finally, sustained demand from customers, agencies, and community stakeholders
28 drives continued portable fossil-fuel generator deployment activity, with assets typically
29 reallocated rather than reduced as permanent solutions are introduced, even as certain operational
30 microgrids participate in the California Independent System Operator (CAISO) market as
31 dual-use assets when not providing resiliency services.

1 **3. CMP Repairs and Replacements (C507)**

2 **a. Description of Costs and Underlying Activities**

3 The Corrective Maintenance Program (CMP) Repairs and Replacements mitigation is a
4 reactive program that remediates conditions on overhead electric distribution structures that do
5 not meet CPUC requirements or internal standards.²³ All CMP work occurs within the HFTD.
6 CMP Repairs and Replacements reduces wildfire risk by correcting conditions identified through
7 GO 165 inspections before they result in ignitions, outages, or equipment failures. These
8 mitigations also help reduce PSPS impacts by clearing high-risk conditions on overhead lines in
9 high-wind areas.

10 Work is driven by conditions identified through mandated asset inspection programs,
11 which are performed for overhead structures pursuant to GO 95, GO 165, and SDG&E
12 standards. Conditions must be corrected within prescribed compliance timeframes as defined in
13 GO 95, Rule 18 and SDG&E standards.

14 Conditions remediated through CMP Repairs and Replacements originate from the
15 following inspection programs:

- 16 • C526 – Distribution Overhead Detailed Inspections
- 17 • C530 – Distribution Wood Pole Intrusive Inspections
- 18 • C534 – Risk-Informed Drone Inspections
- 19 • C536 – Distribution Overhead Patrol Inspections

20 CMP Repairs and Replacements also address distribution-related conditions identified
21 during Transmission Overhead Detailed Inspections when transmission structures include
22 underbuilt distribution equipment.

23 Across these inspection programs, inspectors document non-conforming, damaged, or
24 deteriorated conditions. CMP Repairs and Replacements then captures the performance of the
25 required corrective repairs or replacements to restore assets to compliance with CPUC
26 regulations and internal standards, supporting system safety, reliability, and regulatory
27 adherence.

²³ See, e.g. SDG&E’s Electric Distribution Corrective Program Manual and associated internal procedures.

1 Conditions are recorded and managed through the initiation, review, prioritization, and
2 completion of corrective work orders. All corrective maintenance is completed within required
3 GO timeframes based on the severity of the condition, risk posed, and location (e.g., HFTD
4 tiers). The program also incorporates Quality Assurance/Quality Control (QA/QC) audits to
5 validate repair quality and conformance with GO 95 and internal construction standards.

6 In alignment with D.26-01-021, Ordering Paragraph (OP) 8, which requires SDG&E to
7 specify the O&M costs for all asset management and inspection programs separately from the
8 capital costs for repair or replacement of poles and other equipment, CMP Repairs and
9 Replacements is requesting O&M costs for repairs related to routine, non-capitalizable work
10 needed to maintain existing infrastructure. The type of repair work, cost, and scope vary
11 annually based on inspection volume, environmental conditions, asset health, and compliance
12 deadlines (i.e., severity and risk posed by the condition). Both labor and non-labor costs are
13 requested for this program. Supporting costs, such as engineering, environmental, land rights,
14 and permitting requirements, are also requested for this program. Repair and support work may
15 be performed by internal or external construction crews depending on resource availability and
16 prioritization.

17 **i. Description of Selection and Prioritization of RAMP**
18 **Risk Mitigations**

19 The initiative selection process for the CMP Repairs and Replacements program was
20 guided by regulatory requirements under GO 95 and 165, which mandate inspections with
21 conditions to be corrected within the prescribed compliance timeframes outlined in GO 95, Rule
22 18 and SDG&E standards.

23 A “no action” alternative was considered, which would not only result in non-compliance
24 with GO 95 and GO 165 but also would not correct conditions, increasing the potential for
25 ignitions, outages, and equipment failures. Therefore, this alternative was not selected.

26 **b. Forecast Method**

27 A zero-based methodology was used to forecast labor and non-labor O&M costs.
28 Forecasted costs are based on a review of the number of inspections planned during the GRC
29 period, the anticipated “find rate” for these inspections, the anticipated types of repairs to be
30 performed during the GRC period, and the unit costs for each type of repair resulting from the
31 following inspection programs:

- 1 • C526 – Distribution Overhead Detailed Inspections
- 2 • C530 – Distribution Wood Pole Intrusive Inspections
- 3 • C534 – Risk-Informed Drone Inspections
- 4 • C536 – Distribution Overhead Patrol Inspections
- 5 • Distribution equipment related conditions identified during Transmission
- 6 Overhead Detailed Inspections when transmission structures include underbuilt
- 7 distribution equipment.

8 **c. Cost Drivers**

9 Costs are driven by performance of repairs needed to meet compliance requirements of
 10 GO 95, Rule 18 and internal standards and to resolve conditions identified during GO 95 and GO
 11 165 mandated inspections. The O&M forecast reflects the estimated labor and material costs
 12 required to complete repairs and includes additional support costs (e.g., environmental or
 13 permitting).

14 **4. Advanced Protection (C508)**

15 **a. Description of Costs and Underlying Activities**

16 The Advanced Protection program (APP) develops and implements advanced protection
 17 technologies within electric substations and on the electric distribution system. It aims to
 18 prevent or mitigate the risks of fire incidents, improve transmission and distribution
 19 sectionalization, create higher visibility and situational awareness in fire-prone areas, and
 20 support the implementation of new relay and automation standards in locations where protection
 21 coordination is difficult due to lower fault currents attributed to high impedance faults.

22 Advanced technologies such as microprocessor-based relays with synchrophasor/phasor
 23 measurement unit capabilities, real-time automation controllers, auto-sectionalizing equipment,
 24 line monitors, direct fiber lines, private LTE, and wireless communication radios comprise the
 25 portfolio of devices that are installed in substations and on distribution circuits to allow for a
 26 more comprehensive protection system and greater situational awareness in HFTD. Advanced
 27 protection technologies implemented by this program include:

- 28 • Falling Conductor Protection (FCP) designed to trip distribution and transmission
- 29 overhead circuits to de-energize broken conductors before they can reach the
- 30 ground.
- 31 • Sensitive Ground Fault (SGF) protection for detecting high impedance faults
- 32 resulting from downed overhead conductors that result in very low fault currents.

- 1 • Sensitive Relay Profile (SRP) settings enabled remotely on distribution equipment
2 to reduce fault energy and fire risk.
- 3 • High accuracy fault location for improved response time to any incident on the
4 system.
- 5 • Remote relay event retrieval and reporting for real-time and post-event analysis of
6 system disturbances or outages.
- 7 • SCADA communication to all field devices for added situational awareness.
- 8 • Increased sensitivity and speed of transmission protection systems to reduce fault
9 energies and provide swifter isolation of transmission system faults.
- 10 • Protection integration with emerging telecommunications technologies such as
11 direct fiber, Private Long Term Evolution (LTE), and wireless radios as a means
12 of facilitating the communication infrastructure needs of APP.

13 Both labor and non-labor costs are requested to operate, maintain, and support advanced
14 protection, automation, monitoring, and communications technologies deployed on substations
15 and distribution circuits within the HFTD. O&M activities include routine maintenance of
16 microprocessor-based relays, circuit breakers, Remote Terminal Units (RTUs), Supervisory
17 Control and Data Acquisition (SCADA)-enabled field devices, line monitors, communications
18 equipment, and associated telecommunications infrastructure. In addition, O&M costs are
19 requested for ongoing maintenance and support for advanced sensor camera systems, including
20 camera hardware, edge computing platforms, advanced analytics agents, and video learning
21 modules, as well as costs associated with system tuning, performance monitoring, and data
22 management. These O&M costs are necessary for continued reliability, availability, and
23 effectiveness of APP assets in supporting wildfire risk mitigation, situational awareness, and
24 operational decision-making during high-risk conditions.

25 **i. Description of Selection and Prioritization of RAMP**
26 **Risk Mitigations**

27 The initiative selection process for the APP emphasized the need to modernize aging and
28 obsolete substation protection infrastructure and to adopt more cost-effective, risk-reducing
29 technologies that improve system performance in fire-prone areas.

30 From a customer-benefit standpoint, APP delivers meaningful safety and reliability
31 improvements by enabling faster detection and mitigation of fire-related electrical incidents,
32 enhancing sectionalization capability, and improving situational awareness during high-wind and
33 fire-weather events.

1 Several alternatives were evaluated, including accepting higher ignition risk by relying
2 solely on traditional protection that cannot detect or de-energize a broken conductor before it
3 contacts the ground; accepting greater customer impacts and larger PSPS footprints by
4 depending only on operational mitigations without improving protection speed or selectivity; and
5 relying exclusively on grid-hardening measures such as covered conductor and undergrounding,
6 which still leave ignition risk on remaining overhead segments. The APP was selected because it
7 replaces outdated electro-mechanical, solid-state, and legacy microprocessor relays and RTUs
8 with modern protection and control systems capable of supporting today’s wildfire mitigation
9 requirements.

10 **b. Forecast Method**

11 A zero-based methodology was used to forecast O&M costs. This forecast method is the
12 most appropriate because it reflects the expected support requirements for APP technologies
13 from 2028 through 2031. Historical performance is not representative of future operations and
14 maintenance needs, due to the increased number of newly deployed devices requiring routine
15 maintenance and aging devices potentially increased maintenance. The forecast was developed
16 using cost estimates based on the scope of work for specific planned projects. Cost estimates are
17 developed based on construction labor rates, material costs, overhead rates, contract
18 pricing/quotes, and other project specific details. When projects are completed, actual costs are
19 compared to the estimate to verify the estimates are accurate. Any significant variances between
20 the estimated and actual costs for a project are analyzed to determine whether cost estimate
21 inputs need to be adjusted for future projects.

22 **c. Cost Drivers**

23 Cost drivers are associated with sustaining the performance, reliability, and availability of
24 advanced protection, monitoring, and communications assets deployed within the HFTD. Labor
25 costs are driven by routine and corrective maintenance, testing, calibration, and troubleshooting
26 of microprocessor-based relays, circuit breakers, RTUs, SCADA enabled field devices, line
27 monitors, and supporting communications equipment. In addition, the deployment of advanced
28 sensor camera systems introduces ongoing costs related to camera and edge computing
29 maintenance (upkeep of field based computing devices that process data locally), advanced
30 analytics agents, software tuning, performance monitoring, and data management.

1 **5. Customized Resiliency Assessments (C512)**

2 **a. Description of Costs and Underlying Activities**

3 The Customized Resiliency Assessments (CRA) program is intended to mitigate the
4 impacts of PSPS de-energizations on vulnerable customers by improving individual preparedness
5 and resilience. Beginning in 2026, it will replace the Generator Grant program (GGP) and the
6 Fixed Backup Power Residential program. The CRA program provides eligible residential
7 customers who have experienced PSPS de-energizations with individualized resiliency
8 assessments conducted by phone. The program does not reduce wildfire ignition risk; rather it
9 focuses on reducing the consequences of PSPS de-energizations by enhancing customer
10 awareness of available resources and identifying appropriate resiliency solutions. The CRA
11 program supports compliance with D.21-06-034, which requires investor-owned utilities (IOUs)
12 to administer programs that enhance customer resiliency with an emphasis on vulnerable
13 populations.²⁴

14 Customers receive targeted education regarding PSPS preparedness and available
15 services, including 211 San Diego, CRCs, and support provided by Community-Based
16 Organizations (CBOs). Based on customer-specific needs and existing levels of resiliency,
17 potential backup power options are also evaluated, including permanent and portable solutions,
18 and customers may be referred to the Generator Assistance Program (GAP) or other appropriate
19 programs.

20 The CRA Program is targeted to customers with heightened vulnerability to prolonged
21 outages, including customers with access and functional needs or critical electricity-dependent
22 requirements, where site-specific evaluations are necessary to identify appropriate resiliency
23 solutions. Customer participation is determined based on individual circumstances rather than
24 prescriptive eligibility thresholds. Eligibility and program scope are informed by customer
25 account data, including service address, medical baseline enrollment, life support designation,
26 low-income status, and PSPS de-energization history, as well as information gathered during the
27 resiliency assessment.

28 Program targeting is further refined through analysis using WiNGS-Planning to focus
29 outreach on customers most likely to experience future PSPS de-energizations. By consolidating

²⁴ See D.21-06-034 at 150, and Conclusions of Law (COL) 50 at 169.

1 and modernizing prior customer resiliency offerings, the CRA program provides a more targeted,
2 data-driven approach to mitigating PSPS impacts.

3 Both labor and non-labor expenses are requested for this program. Labor costs include
4 internal management of program operations. Non-labor costs include the costs of contracted
5 program implementation such as marketing, outreach, customer assessments, customer service,
6 equipment, planning, permitting, and installation services.

7 **i. Description of Selection and Prioritization of RAMP**
8 **Risk Mitigations**

9 The initiative selection process for the CRA program focuses on meeting regulatory
10 requirements to support vulnerable populations and lessen the impacts of PSPS de-energizations.
11 The program is prioritized because proactively assessing customer needs and providing
12 education and solutions for alternative power sources, such as portable batteries and other
13 resiliency measures, directly improves customer safety and preparedness.

14 Several alternatives were evaluated based on feasibility, cost, scalability, and consistency
15 with Commission guidance.

16 Under a no action alternative, existing PSPS communication and support efforts would
17 continue without providing individualized resiliency assessments or targeted referrals to backup
18 power solutions. This alternative would be inconsistent with the Commission’s Phase 3 PSPS
19 guidelines adopted in D.21-06-034, which emphasize the need for proactive customer support,
20 particularly for customers vulnerable to PSPS impacts.

21 A second alternative would rely solely on a rebate intended to fully subsidize the cost of
22 customer-owned backup battery systems. This alternative would be logistically challenging to
23 administer due to variability in customer load requirements, fluctuations in product pricing, and
24 ongoing constraints related to inventory availability. In addition, a total cost rebate structure
25 would require a level of standardization that may not align with individual customer needs.

26 Another alternative focused exclusively on permanent backup power solutions.
27 However, this option would be more costly on a per customer basis and would not be viable for
28 all customers who would otherwise qualify for support under prior programs such as the
29 Generator Grant Program. As a result, this alternative would limit program accessibility and
30 reduce the ability to serve a broader population of PSPS impacted customers.

1 A final alternative considered was providing only temporary or loaned backup power
2 equipment during PSPS activations. However, this option would be difficult to scale due to the
3 varying geographic scope, duration, and frequency of PSPS de-energizations, as well as
4 operational constraints associated with deploying and retrieving loaner equipment during
5 emergency response conditions.

6 Based on this evaluation, it was determined that the CRA program represents the most
7 appropriate solution to address customer resiliency needs related to PSPS de-energizations. The
8 CRA Program provides a flexible, customer centric approach that aligns with Commission
9 guidance by proactively engaging PSPS impacted customers, improving awareness of available
10 services and resources, and identifying appropriate resiliency solutions based on individual
11 customer circumstances. Unlike the alternatives considered, the CRA program balances cost
12 effectiveness, scalability, and regulatory consistency while reducing the impacts of PSPS de-
13 energizations.

14 **b. Forecast Method**

15 A base-year methodology was used to forecast O&M costs for the CRA program. The
16 2025 recorded base year was selected because it reflects the most current and representative level
17 of program activity following the transition from the residential component of the Fixed Backup
18 Power program and the Generator Grant Program (GGP) into a more standardized assessment-
19 based model. The 2025 base year is considered representative of forecast-year needs because the
20 primary cost drivers (volume of customer assessments, labor required to conduct site evaluations
21 and develop resiliency recommendations, contractor/vendor support, and program
22 administration) are expected to remain relatively stable over the forecast period. As such, the
23 2025 historical costs derived from the residential Fixed Backup Power component and GGP-
24 informed activities provide a reasonable representation for the expected level of effort and
25 expenditures required to support the Customized Resiliency Assessments program going
26 forward.

27 Consistent with the approach used for the Standby Power Program, alternative
28 forecasting methodologies were evaluated but determined to be less appropriate. A multi-year
29 historical average was not relied upon due to the limited duration of consistent program data and
30 the inclusion of earlier years characterized by program evolution and ramp-up under predecessor
31 efforts, which would skew results by incorporating non-recurring implementation costs and

1 periods of lower activity. As with the Standby Power Program, a zero-based forecasting
2 approach was also not pursued, as costs are primarily driven by recurring, well-defined
3 assessment activities with predictable resource requirements; rebuilding these costs would
4 introduce additional complexity without improving forecast accuracy.

5 **c. Cost Drivers**

6 The forecast for the CRA program is driven by compliance with D.21-06-034, which
7 requires IOUs to mitigate PSPS impacts and administer resiliency measures with a particular
8 focus on vulnerable populations.²⁵ Additional cost drivers include the number of customers that
9 experience PSPS de-energizations as those are the customers that are targeted to receive
10 resiliency assessments, and the SDG&E-identified need to replace the GGP and residential
11 component of the Fixed Backup Power program with a more targeted, assessment-based
12 approach.

13 To comply with the Commission directives,²⁶ conventional standby generation was
14 evaluated alongside renewable-based, grid-connected, and off-grid solutions for customers
15 experiencing frequent PSPS de-energizations, particularly in remote areas of the HFTD.

16 The off-grid solution evaluation was informed by a June 2023 assessment prepared by
17 SDG&E's contractor for the Fixed Backup Power Program. The analysis examined the
18 feasibility and cost of off-grid solar-paired storage systems sized to meet residential electric
19 demand during extended PSPS de-energizations. The assessment found that off-grid systems
20 capable of sustaining service during extended periods of elevated wildfire risk would require
21 large solar installations and multiple battery units to meet peak demand, nighttime usage, and
22 degraded solar output during high-risk conditions. As shown in Table JW-4, off-grid renewable
23 systems were therefore significantly more expensive than conventional standby generation when
24 sized for extended outages.

25 The assessment estimated that solar-battery systems alone would cost approximately
26 \$50,000-\$60,000 per residence, with costs exceeding \$100,000 when fully sized to provide

²⁵ See *id.* at 2, and Appendix A.

²⁶ D.26-01-021, OP 7 at 188 (“In San Diego Gas & Electric Company’s (SDG&E’s) next General Rate Case application, SDG&E shall provide evidence of the unit cost of generator and standby sources of power, including renewable options, and the distance at which grid hardening remote customers is unreasonable and standby power is recommended”).

1 continuous off-grid service during prolonged PSPS de-energizations. These findings
2 demonstrate that, under current technology and cost conditions, off-grid renewable solutions
3 were not cost-effective for broad deployment relative to permanent standby generation.

4 Table JW-4 compares the average cost of CRA-supported permanent installations with
5 the costs identified in the off-grid renewable study:

6 **TABLE JW-4**
7 **Comparison of Average Installation Costs for Resiliency Options**

Resiliency Option	Average Cost per Installation
Permanent Propane Generator	\$26,654
Permanent Battery Installation	\$21,612
Partial Off-Grid Solar + Battery System	\$50,000-\$60,000
Fully Sized Off-Grid Renewable System	>\$100,000

8
9 Through the CRA program, evaluations to determine the most appropriate resiliency
10 solution are offered to customers facing repeated exposure to PSPS de-energizations where
11 traditional grid hardening is ineffective or economically unreasonable. CRA evaluations
12 consider site conditions, customer load profiles, PSPS de-energization frequency and duration,
13 fuel availability, emissions, constructability, and lifecycle cost.

14 Recommendations may include permanent propane standby generators, permanent
15 battery energy storage systems (with or without solar pairing), hybrid configurations, or other
16 site-specific solutions. CRA also serves as a gateway for customers into related resiliency
17 programs, such as the GAP, supporting both installation and ongoing reliability for approved
18 solutions.

19 Solar plus storage has historically been offered only under the Fixed Backup Power
20 Commercial program, whereas residential investments currently focus on battery storage for
21 residential backup solutions. In the early years of the resiliency programs (beginning in
22 approximately 2019 and 2020), permanent propane generator installations were significantly less
23 expensive than permanent battery installations, making generators the most cost-effective option
24 for mitigating extended PSPS impacts for remote residential customers. As residential resiliency
25 program market conditions shifted, generator installation costs have increased, while battery
26 technology costs have declined. As a result, the installation of battery energy storage systems is
27 now prioritized over generators where technically feasible and reasonably cost-effective,

1 consistent with CRA program evaluations and customer-specific circumstances. This reflects an
2 on-grid resiliency strategy focused on backup power, rather than off-grid solutions evaluated in
3 prior studies.

4 The CRA and related resiliency programs continue to evolve alongside advancements in
5 energy storage and renewable technologies. While standby generation remains an important
6 option for some customers, declining battery costs and improved performance have expanded the
7 applicability of battery-based solutions within residential programs.

8 **6. Generator Assistance Programs (GAP) (C516)**

9 **a. Description of Costs and Underlying Activities**

10 The GAP is designed to mitigate the impacts of PSPS de-energizations by improving
11 customer access to backup power options. The program enhances customer preparedness and
12 resiliency by incentivizing the acquisition of portable backup power solutions that allow
13 customers to maintain limited electricity during PSPS de-energizations. The GAP does not
14 reduce wildfire ignition risk; rather, it focuses on reducing the impacts associated with PSPS de-
15 energizations in accordance with Commission requirements and goals.²⁷

16 The GAP provides rebates for portable fuel generators and portable power stations to
17 eligible residential customers. The program targets customers who reside in the HFTD and have
18 experienced at least one PSPS de-energization since 2019. Eligible customers are notified
19 through mail and email outreach and are directed to an online portal to verify account
20 information and access program details.

21 Upon verification of eligibility, customers may receive rebates for one portable fuel
22 generator and one portable power station. Allowing rebates for both technologies provides
23 flexibility to address customer backup power needs, such as medical equipment, refrigeration,
24 communications, or limited household power.

25 The GAP was established to expand access to backup power to a broad population of
26 customers who may be vulnerable to PSPS de-energizations due to their location and prior
27 outage experience. Customers residing in the HFTD face a higher likelihood of PSPS de-

²⁷ D.21-06-034 at COL 21 at 165 (requiring utilities to mitigate PSPS impacts on customers, including support for vulnerable populations and access to backup power resources).

1 energizations, and providing financial support for backup power solutions improves their ability
2 to maintain essential services during outages.

3 Both labor and non-labor expenses are requested for this program. Labor costs include
4 internal management of program operations by SDG&E. Non-labor costs include expenses that
5 support program implementation and management, marketing, customer engagement, PSPS and
6 wildfire resiliency education, and incentives.

7 **i. Description of Selection and Prioritization of RAMP**
8 **Risk Mitigations**

9 The initiative selection process for the GAP focused on minimizing PSPS impacts for
10 customers in the HFTD. This initiative is prioritized because providing proactive outreach,
11 education, and access to portable fuel generators and portable power stations directly enhances
12 customer safety and preparedness during PSPS de-energizations. By offering alternative power
13 solutions to those most affected, the program helps maintain essential services, reduces hardship
14 during de-energizations, and strengthens community resiliency in high-risk areas.

15 A no-action alternative was considered, which would result in customers, particularly
16 those newly relocated into high-fire threat areas, having reduced awareness of options to provide
17 temporary power during PSPS de-energizations. As a result, customer preparedness and safety
18 during PSPS de-energizations would be diminished, and customers would remain reliant on
19 general outreach efforts that may not adequately address individual resiliency needs.

20 Additionally, a no-action approach would risk misalignment with the Commission's de-
21 energization framework, which requires utilities to support reduction of PSPS impacts and
22 support customer resiliency, as well as SDG&E's Wildfire Mitigation Plan commitments.

23 Another approach considered would involve direct installation of backup power solutions
24 for a broader target audience. However, it was determined that permanent backup power
25 installations may not be feasible or efficient for all customers in the HFTD due to a variety of
26 factors, including building characteristics, installation and maintenance costs, time required to
27 acquire equipment, permitting and jurisdictional constraints, and customer specific needs. These
28 limitations would restrict program scalability and reduce accessibility for customers who could
29 otherwise benefit from backup power support.

30 Based on this evaluation, it was determined that the GAP represents the most appropriate
31 solution to address broader customer resiliency needs during PSPS de-energizations. By offering

1 customers reduced cost backup power options through rebates and providing a range of solutions
2 with varying sizes and capabilities, GAP allows customers to select equipment that best aligns
3 with their individual load requirements, site conditions, and operational needs. This approach
4 enables SDG&E to serve a broader and more diverse customer population in a cost effective and
5 scalable manner, while enhancing customer preparedness and safety during PSPS de-
6 energizations.

7 **b. Forecast Method**

8 A base-year methodology was used to forecast O&M costs. The 2025 recorded base year
9 was selected because it reflects the most current and representative level of program activity
10 following initial scale-up and operational stabilization. By 2025, the program had transitioned
11 from early implementation to a more consistent operating model, with established processes for
12 customer identification, eligibility verification, rebate distribution, portal maintenance, and
13 vendor management. As a result, 2025 costs reflect normalized, ongoing program activities
14 rather than the variability associated with early deployment or one-time implementation efforts.

15 **c. Cost Drivers**

16 Cost drivers are primarily associated with continued customer participation in the GAP,
17 including rebate expenditures for portable fuel generators and portable power stations, as well as
18 the labor required to administer the program. Key drivers include customer outreach through
19 mail and email campaigns, eligibility verification through an online portal, rebate processing,
20 and overall program management. These drivers are supported by the company-identified need
21 to expand resiliency assistance beyond Medical Baseline customers to a broader population of
22 potentially vulnerable customers impacted by PSPS de-energizations.

23 **7. Strategic Undergrounding (C518)**

24 **a. Description of Costs and Underlying Activities**

25 Strategic Undergrounding contributes to risk reduction by eliminating overhead line
26 exposure, which is the primary contributor to wildfire ignitions and PSPS de-energizations in the
27 HFTD. By placing electric facilities underground, the program permanently reduces the
28 likelihood of wildfire ignitions caused by high winds, vegetation contact, flying debris, and
29 equipment failures, and minimizes the need for PSPS de-energizations when overhead exposure
30 on a circuit is eliminated. Both labor and non-labor costs are requested for this program and are
31 focused on maintaining system reliability, infrastructure integrity, and long-term risk reduction

1 benefits associated with undergrounded facilities. While underground infrastructure significantly
2 reduces exposure to wildfire risk drivers associated with overhead facilities, ongoing O&M
3 activities are necessary to preserve asset condition and reliability over the asset lifecycle.

4 **i. Description of Selection and Prioritization of RAMP**
5 **Risk Mitigations**

6 The initiative selection process for the Strategic Undergrounding program focused on
7 identifying the most cost-effective long-term wildfire-mitigation strategy (see Ex. SDGE-07
8 Volume 2, Section I.G.1 for details on mitigation selection). Although undergrounding requires
9 higher upfront capital investment, the lifecycle cost model shows it is more cost-effective for
10 most HFTD feeder segments due to substantial reductions in long-term O&M activities,
11 including vegetation management, pole inspections, overhead patrols, and PSPS-related
12 operational costs (see Ex. SDGE-07 Volume 2, Section I.E.4.b, Figure JW-44). From a
13 customer-benefit perspective, undergrounding removes ignition-prone overhead equipment,
14 significantly enhances system resilience in fire-prone areas, and delivers sustained improvements
15 in reliability and safety.

16 Multiple alternatives for Strategic Undergrounding were considered, such as covered
17 conductor, targeted pole replacement, and enhanced vegetation management. While these
18 options can reduce ignition risk, they retain exposure to weather, vegetation, third party
19 interference, and long-term asset degradation, limiting their effectiveness under severe
20 conditions. In contrast, undergrounding eliminates key ignition drivers by removing equipment
21 from environmental exposure and offers a permanent, cost-effective solution.

22 **b. Forecast Method**

23 A zero-based methodology was used to forecast O&M costs. The forecast is based on
24 cost estimates that were developed on strategic undergrounding projects. Cost estimates are
25 based on current construction labor rates, material costs, contract pricing, and other project
26 specific details. The forecast is based on a consistent number of miles of strategic
27 undergrounding being designed and constructed each year.

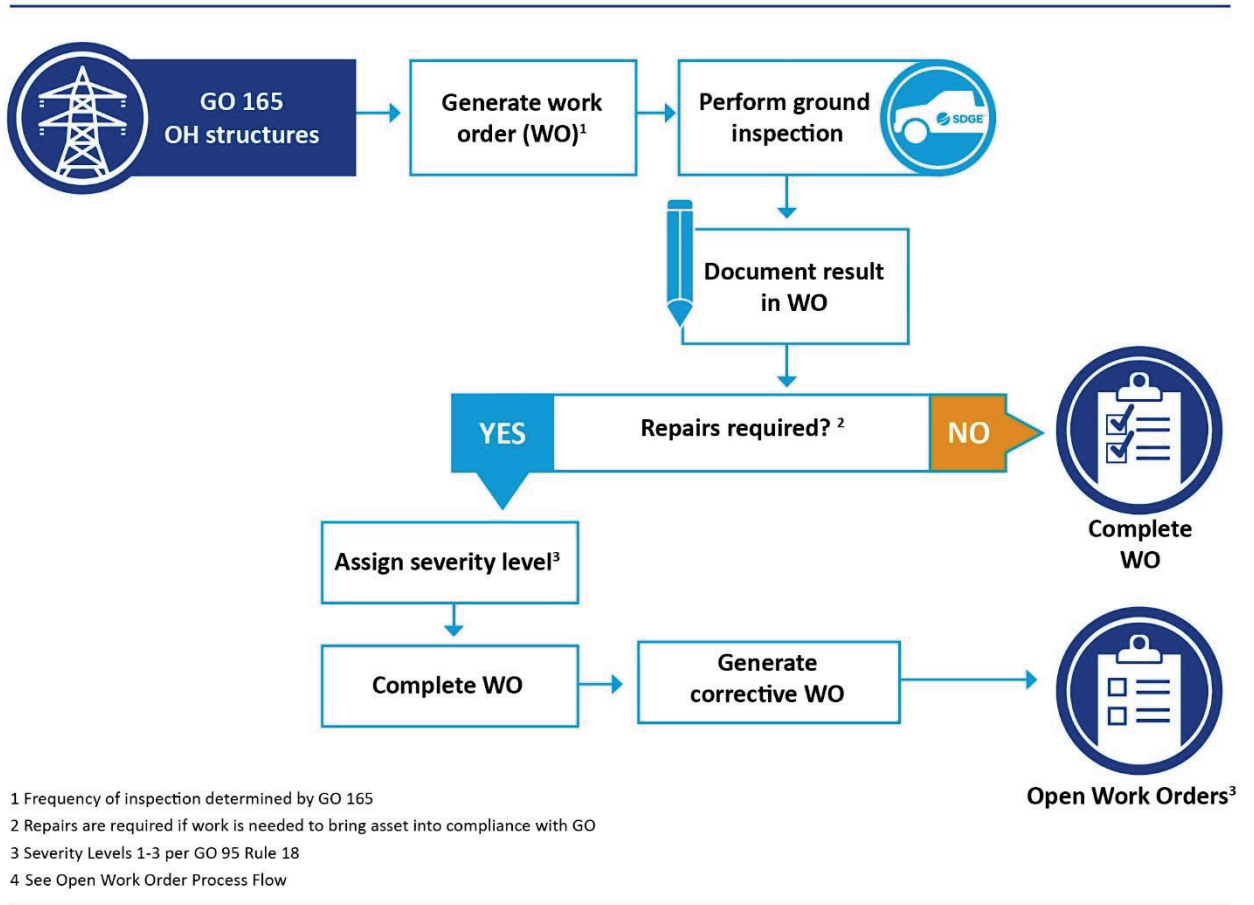
28 **c. Cost Drivers**

29 Cost drivers include labor and non-labor resources required to maintain underground
30 electric infrastructure over its lifecycle. These costs include materials, equipment, and services
31 needed to support infrastructure integrity and reliability. Ongoing O&M activities are necessary

1 to sustain asset condition, reliability, and long-term risk reduction benefits over the assumed 55-
2 year asset life.

3 8. Distribution Overhead Detailed Inspections (C526)

4 **Figure JW-5**
5 **Distribution Detailed Overhead Inspections Process Flow**



6 a. Description of Costs and Underlying Activities

7 Distribution overhead detailed inspections are mandated by GO 165 and internal SDG&E
8 standards and are intended to identify conditions on overhead distribution structures that do not
9 meet GO 95 requirements or internal standards and specifications. By identifying conditions,
10 corrective repairs can be made to resolve compliance conditions and reduce the likelihood of a
11 fire, safety, or reliability event from happening.

12 Inspections are performed on a 5-year routine schedule as mandated by GO 165.
13 Structures are grouped into functional locations to support efficiency of inspections, and
14

1 compliance deadlines are tracked. Accordingly, the number of inspections fluctuates from year
2 to year based on the number of overhead structures due within that inspection interval.

3 Inspections are performed by qualified inspectors and include a thorough visual
4 assessment of the pole, attachments, and conductor and cables. Where appropriate, individual
5 pieces of equipment may be further tested and assessed (e.g., capacitors and switches may be
6 operated). In addition, if warranted, the use of infrared or other tools (e.g., drones, binoculars,
7 measurement devices) may be utilized. Inspection records are maintained that include the
8 circuit, area, facility or equipment inspected, the inspector's name, the date of the inspection, and
9 any conditions identified during each inspection, as well as the scheduled date of corrective
10 action. Conditions that require corrective maintenance are prioritized to meet or exceed the
11 timeframes required in GO 95, Rule 18.

12 Detailed inspections are primarily performed by qualified internal inspectors with
13 support, as needed, by drone pilots, traffic control, safety, security, and customer support
14 personnel that may be internal or external employees.

15 This mitigation also includes the QA/QC of distribution overhead detailed inspections,
16 which documents whether any additional fire or safety issues were identified or whether any fire
17 or safety issues were misidentified (i.e., modification or cancellation of the finding). Randomly
18 selected audits are also conducted to document whether any potential fire or safety issues were
19 observed that were not identified during the inspection.

20 Both labor and non-labor costs are requested for routine inspections, periodic non-routine
21 inspections, and associated QA/QC activities. O&M and capital costs for follow-up repairs
22 identified during these inspections are included in CMP Repairs and Replacements.

23 **i. Description of Selection and Prioritization of RAMP**
24 **Risk Mitigations**

25 Distribution Overhead Detailed Inspections are driven by compliance with GO 165, and
26 GO 95 Rule 31, which requires routine, 5-year detailed inspections of overhead distribution
27 structures to identify conditions that do not meet GO 95 or internal standards. Even though these
28 inspections are required, structures are grouped into functional locations and overlap between
29 inspections is reduced where possible to efficiently operationalize the program. This initiative
30 identifies conditions prior to failure, enabling timely corrective repairs that reduce the likelihood
31 of fire, safety, or reliability events, directly supporting system safety and customer protection.

b. Forecast Method

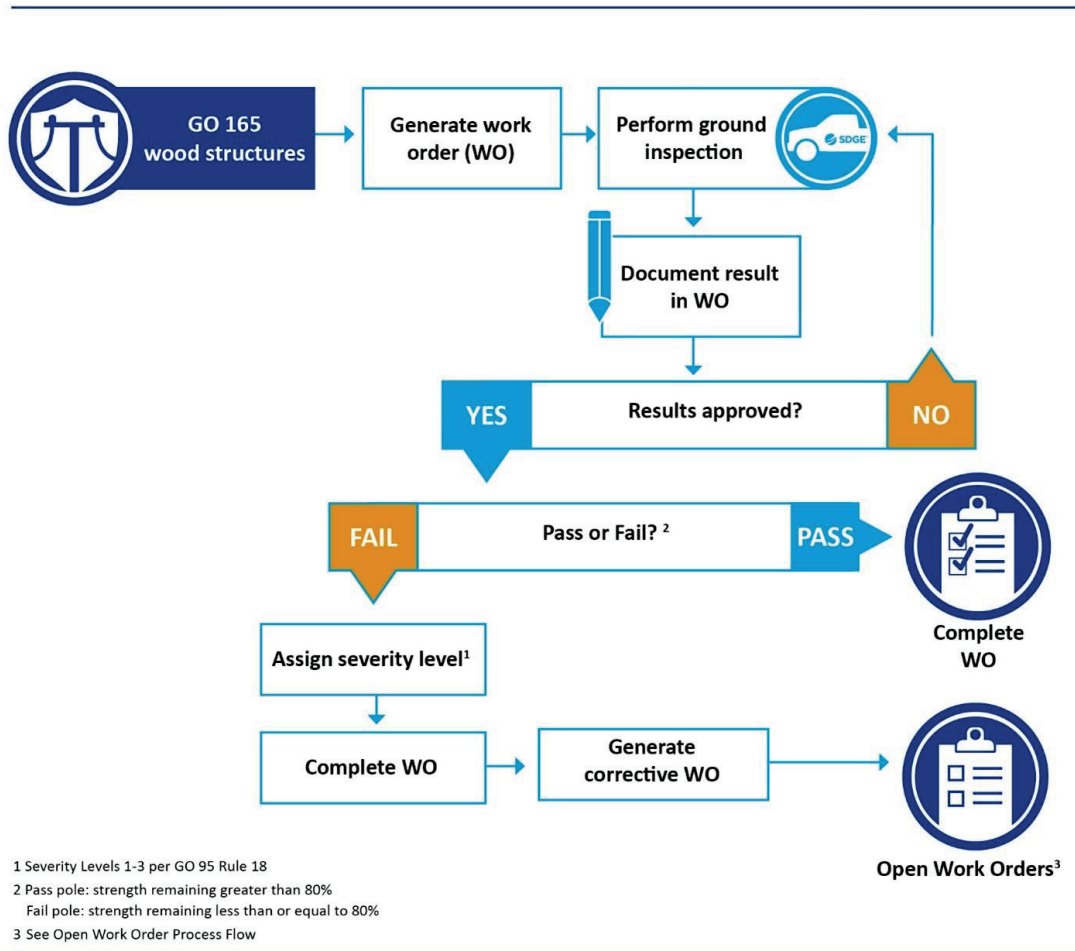
A 5-year average methodology was used to forecast O&M costs. While the number of distribution overhead detailed inspections fluctuate from year to year, overhead distribution facility inspections are performed on a 5-year cycle. Accordingly, a 5-year average methodology most accurately represents year-over-year cost increases. O&M expenditures that are related to follow-up repairs identified during inspections are included in CMP Repairs and Replacements.

c. Cost Drivers

Costs are driven primarily by the labor required to perform field inspections by qualified inspectors and the non-labor costs necessary to support inspection activities, such as environmental, permitting, land rights, and customer notifications.

9. Distribution Wood Pole Intrusive Inspections (C530)

**Figure JW-6
Wood Pole Intrusive Inspections Process Flow (Distribution)**



1 place, pole data and identification tags are installed, severe damage is identified, trusses on
2 reinforced poles are in good condition, and pole data consistency is maintained.

3 Both labor and non-labor costs are requested for routine inspections, periodic non-routine
4 inspections, and associated QA/QC activities. O&M and capital costs for follow-up repairs
5 identified during these inspections are included in CMP Repairs and Replacements.

6 **i. Description of Selection and Prioritization of RAMP**
7 **Risk Mitigations**

8 Distribution Wood Pole Intrusive Inspections are driven by compliance with GO 165,
9 which mandates intrusive inspections to identify deterioration within the interior of wood poles
10 near or below ground surface before such degradation leads to equipment failure, outages, or
11 wildfire risk. This initiative was prioritized because intrusive inspections determine whether a
12 pole should be reinforced or replaced based on its remaining structural strength. From the
13 customer safety perspective, this initiative plays a critical role in identifying potentially
14 hazardous structural conditions that could pose immediate risks to the public, employees, or the
15 electrical system, thereby helping prevent ignitions, outages, and other safety hazards.

16 **b. Forecast Method**

17 A zero-based methodology was used to forecast unit costs because the number of
18 inspections fluctuates from year to year based on the 10-year inspection interval causing the base
19 year to be significantly different from the forecast. Historical costs from the last five years are
20 not representative of inspections that will be due from 2028-2031 due to the rotation of the work
21 geographically around SDG&E's service territory. Since 2023, the majority of inspections were
22 performed outside of the HFTD within the City of San Diego and coastal areas. Starting in 2027,
23 routine intrusive inspections will rotate back into the north and eastern part of the service
24 territory where the majority of the Tier 2 and Tier 3 HFTD areas are located. Accordingly, from
25 2028-2031 required inspection work will be concentrated in HTFD areas resulting in an increase
26 in costs within the C530 mitigation. In addition, follow-up O&M and capital repair costs
27 identified during inspections are included in CMP Repairs and Replacements.

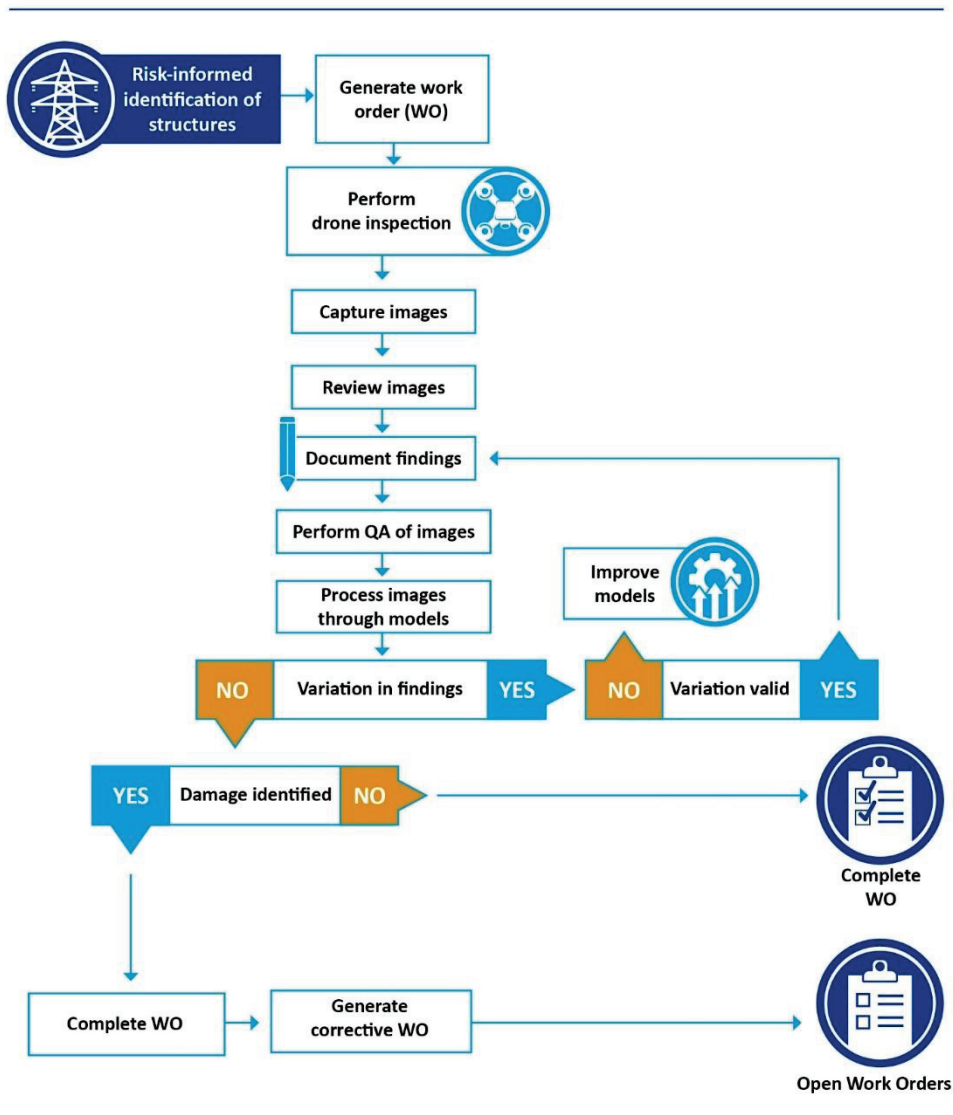
28 **c. Cost Drivers**

29 Costs are driven by ongoing compliance with GO 165 and SDG&E standards,
30 specifically the performance of intrusive inspection work that involves excavation, sounding,
31 boring, biocide treatment, and documentation, as well as support costs associated with

environmental, permitting, land rights, and customer notifications. Inspection and treatment of wood poles associated with these inspections is primarily performed by external contractors with support from internal and external resources.

10. Risk-Informed Drone Inspections (C534)

**Figure JW-7
RIDI Process Flow**



a. Description of Costs and Underlying Activities

The purpose of the Risk-Informed Drone Inspections (RIDI) program is to reduce wildfire risk by using drones inspections and images, predictive analytics, and risk modeling to identify, prioritize, and inspect the highest-risk overhead electric assets. The use of drones to

1 collect imagery enhances an inspector’s ability to identify non-obvious potential fire hazards on
2 overhead electric facilities or where conditions such as terrain and vegetation density make full
3 detailed inspections using traditional methods challenging.

4 Issues that are more frequently observed by RIDI compared to other types of inspections
5 include damaged arrestors, damaged insulators, issues with pole top work, issues with armor
6 rods, crossarm or pole top damage, exposed connections, loose hardware, improper splices, and
7 damaged conductors. By identifying these conditions prior to failure, RIDI reduces both the
8 likelihood and consequence of an ignition. Below are examples of non-obvious conditions
9 identified during drone inspections that were not visible from the ground.

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Figure JW-8
Hollow pole top only visible from above



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Figure JW-9
Crossarm damage only visible from above



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Figure JW-10
Missing transformer cover not visible from the ground



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Figure JW-11
Cracked crossarm not visible from the ground

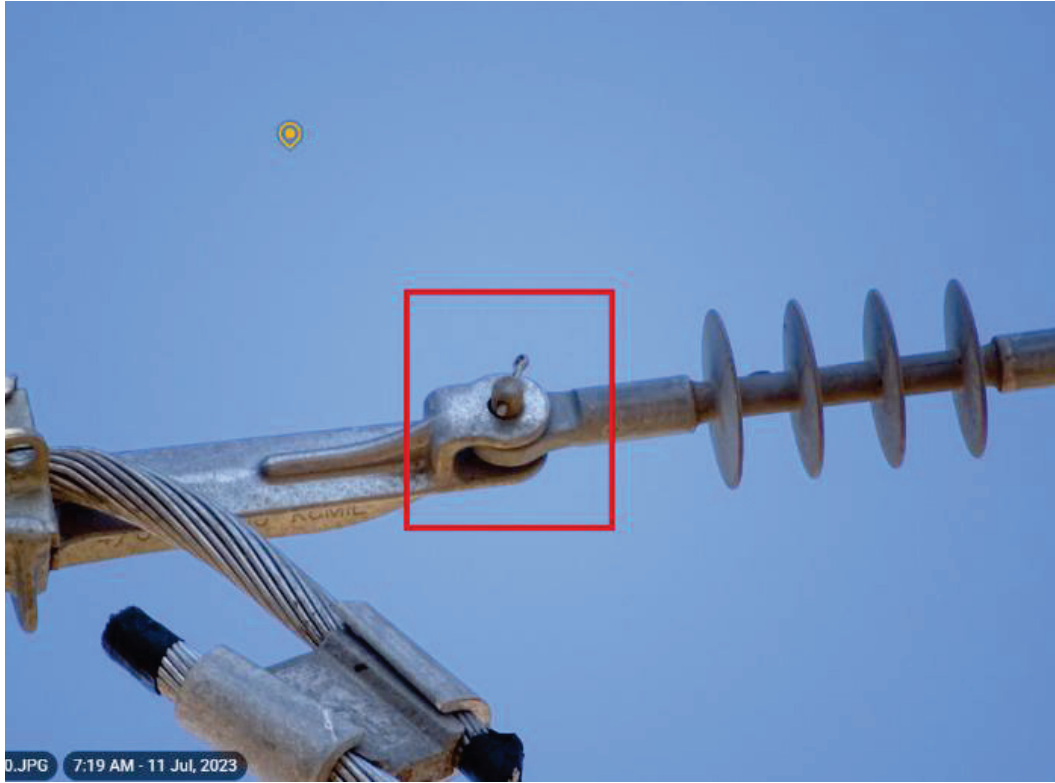


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Figure JW-12

Loose cotter key not easily visible without high resolution aerial imagery



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Figure JW-13
Crossarm damage only visible from above



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An analysis of RIDI findings from 2025 revealed that identification of emergency damages was expedited by approximately 29 months compared to Distribution Overhead Detailed inspections and approximately 6 months compared to Detailed Overhead Patrol inspections. This is in part because RIDI inspections are performed using a risk prioritization model to identify the scope each year versus only a time-based approach.

RIDI also reduces potential outage impacts to customers through identification and remediation of emergency damages and helps identify damages on overhead distribution poles located on potential PSPS circuits, allowing for wind speed adjustments and avoiding potential failures that could have resulted in an ignition event.

As illustrated in Figure JW-15 below, RIDI inspections begin with annual flight-scoping using the Inspection Prioritization Model, which selects the highest-risk distribution structures based on probability-of-failure and consequence-of-failure inputs (see Figure JW-15). The Inspection Prioritization Model is used to develop a risk score for each structure based on the interaction of (1) the estimated likelihood of an ignition event occurring (including probability-of-failure inputs and operating/environmental factors), and (2) the modeled consequences and

1 associated ignition cost if an ignition occurs (including consequence-of-failure inputs). The
2 annual inspection scope is then selected from the top of this ranked list, subject to practical
3 constraints and coordination requirements described below.

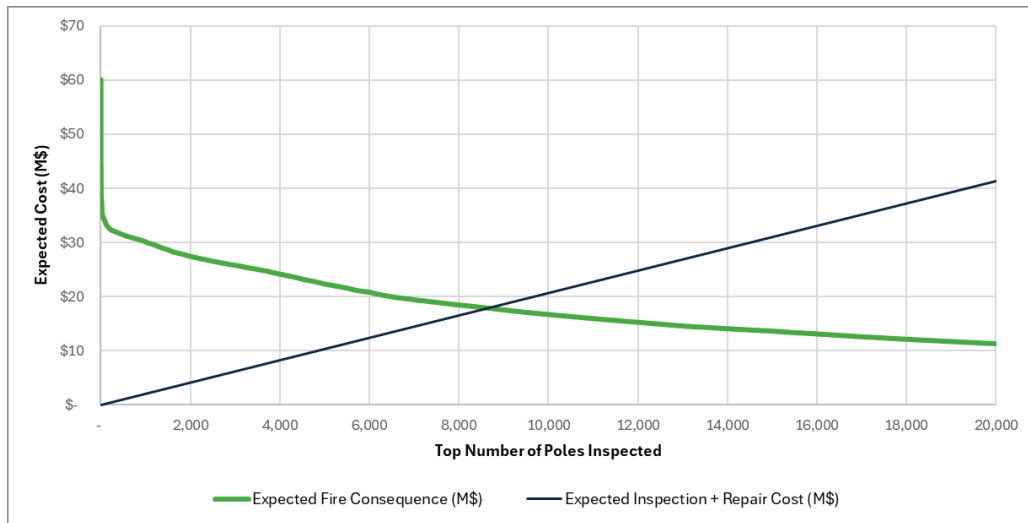
4 After risk ranking, the scope is refined to support efficient field execution. Specifically,
5 selected structures are grouped into logical flight areas and flight routes to improve navigation
6 efficiency (e.g., minimizing travel time between targets, staging and access constraints, and
7 optimizing contiguous coverage where feasible) while retaining focus on the highest-risk
8 locations. In addition and to eliminate redundancy, the scope is screened to avoid overlap with
9 structures scheduled for Distribution Overhead Detailed Inspections (C526) or other inspection
10 activities that provide comparable inspection value within the inspection timeframe. This
11 coordination is intended to reasonably prevent duplicative inspections and align inspection
12 timing across programs so that RIDI supplements (rather than replicates) other inspection
13 requirements, while still preserving the ability to inspect high-risk assets more frequently and
14 utilizing high-quality aerial imagery to identify damages that may not be obvious from the
15 ground²⁸. Finally, any structures already identified for repair or replacement or within scope of
16 another construction project or program are removed from the scope of inspections.

17 The annual RIDI inspection target for the 2026-2028 Base WMP (approximately 9,000
18 structures) was selected based on the intersection of total estimated program repair costs and
19 modeled risk reduction. The marginal cost of inspecting additional structures (including flight,
20 data processing, and desktop inspection costs), along with the costs to repair damages identified
21 from those inspections, was evaluated against the “expected benefit.” For this purpose,
22 “expected benefit” is represented by the modeled ignition cost (consequence) multiplied by the
23 modeled likelihood that an ignition event would occur for the incremental structures added to the
24 scope. As the inspection scope expands beyond the highest-risk structures and overall program
25 costs increase with the estimated repairs, incremental modeled risk (and therefore the expected
26 avoided ignition cost) declines. Based on an analysis performed in 2025, an annual scope of

²⁸ D.26-01-021,OP 8 at 189 (“In its next General Rate Case application, San Diego Gas & Electric Company (SDG&E) shall specify the Operations & Maintenance costs for all Asset Management and Inspection programs separately from the capital costs for repair or replacement of poles and other equipment and the number of poles being replaced. SDG&E shall also coordinate and optimize pole inspection and replacement programs and demonstrate the lack of redundancy between such programs.”)

1 approximately 9,000 structures was selected where the incremental expected value of inspecting
2 additional structures begins to converge with the incremental program cost, while still
3 maintaining a meaningful focus on the highest-risk assets and an executable annual workload.

4 **Figure JW-14**
5 **RIDI Inspection Target Selection**



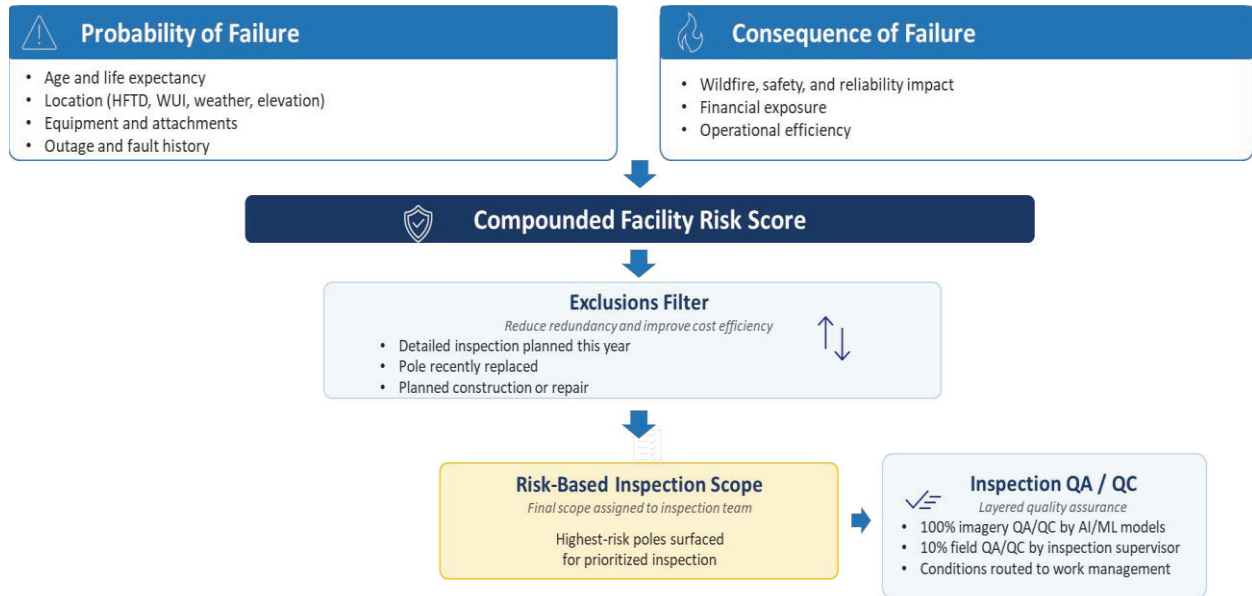
6
7 Once the inspection scope is finalized, trained drone pilots with appropriate support
8 personnel perform flight planning, image capture, and upload imagery into the inspection
9 system. Qualified Inspectors then conduct desktop assessments to identify asset defects such as
10 damaged insulators, pole-top deterioration, and conductor issues. Flight planning is supported
11 by environmental, permitting, land, safety, security, aviation, and customer support personnel.

12 All images are also processed through Intelligent Image Processing (IIP) models to
13 enhance hazard detection, validate inspector observations, and feed continuous improvements
14 back into the prioritization engine. QA/QC is embedded through both human review and
15 machine-learning validation to verify accurate condition coding, complete image capture, and
16 comply with inspection requirements. Any confirmed discrepancies identified during the
17 desktop review or as a result of the machine learning model are added to the final inspection
18 results sent to the work management system.

19 Both labor and non-labor costs are requested for this program for drone flights,
20 inspections, inspection support, QA/QC, and technology costs. O&M and Capital costs for
21 follow-up repairs identified during these inspections are included in CMP Repairs and
22 Replacements.

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2

**Figure JW-15
RIDI Inspection Workflow**



3
4

i. Description of Selection and Prioritization of RAMP Risk Mitigations

7 The initiative selection process for the RIDI program was driven by its demonstrated
8 ability to identify potential fire hazards that may not be obvious from a ground inspection. From
9 a customer-benefit perspective, the program reduces the likelihood of fire and safety-related
10 events and avoids potential outages by enabling timely repairs on high-risk poles, supporting
11 safer operations and improved reliability. For example, Figure JW-16 depicts a damaged
12 crossarm that was identified during 2023 RIDI inspections and Figure JW-17 shows the potential
13 wildfire impact from the Technosylva 24-consequence model that could have resulted under
14 severe weather conditions, such as the wind speeds observed from 1/23/2025-1/24/2025.

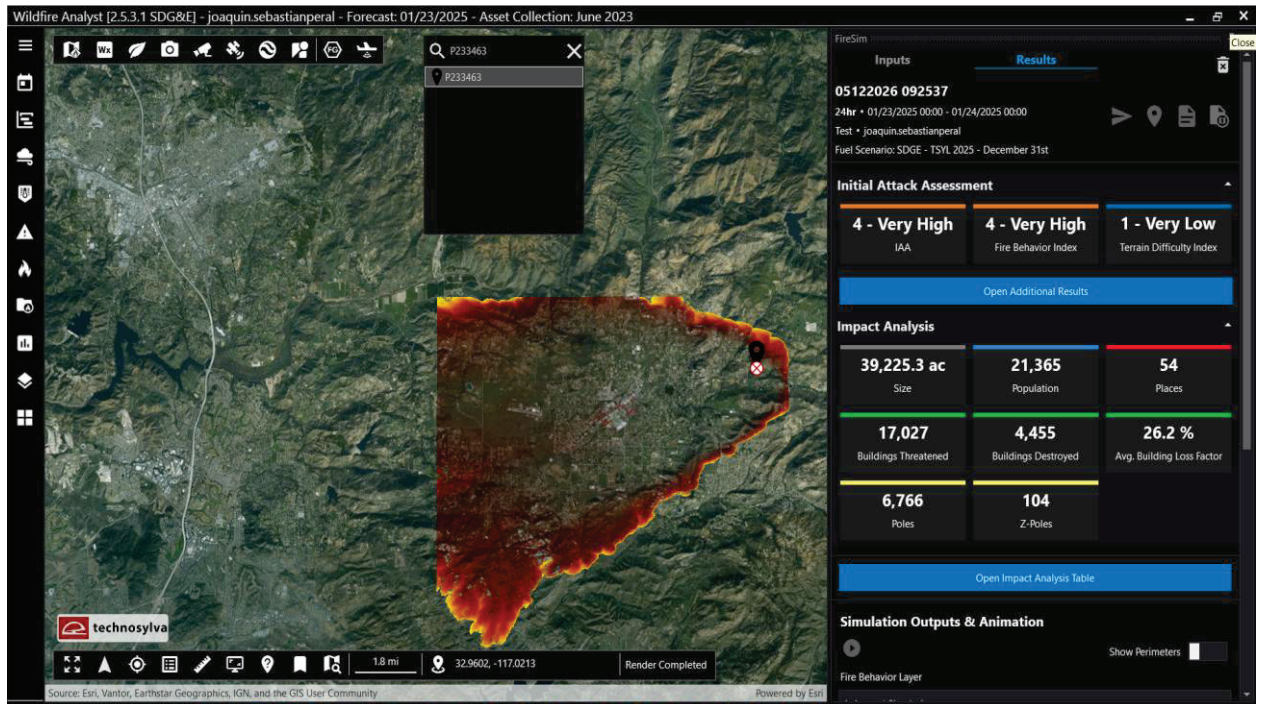
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Figure JW-16
Damaged Crossarm Identified during Drone Inspection



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Figure JW-17
Potential Wildfire Impact



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3 Combining a drone inspection with the existing 5-year Overhead Detailed Inspection
4 program was similarly rejected, as it would:

- 5 1) Increase costs (fewer structures could be captured each day and desktop review by
6 a Qualified Inspector is still necessary)
- 7 2) Complicate scheduling and staffing requirements because either the inspector
8 would need to be paired with a Qualified Pilot certified under FAA Part 107 or
9 would need to be trained and qualified to operated a drone
- 10 3) Would restrict the ability to implement a flexible, risk informed inspection
11 strategy that can be performed at a more frequent cadence for the highest risk
12 assets versus traditional inspections performed in a time-based manner.

13 **b. Forecast Method**

14 A zero-based methodology was used to forecast O&M costs. The forecast is based on
15 cost estimates that were derived from the number of inspections anticipated for each year, along
16 with current labor rates, material costs, and other program specific details.

17 RIDI relies on specialized software to perform flight planning, image capture, and data
18 upload. Therefore, O&M forecasts also include software licensing and cloud data storage.
19 Hardware costs, including items such as mobile tablets, are addressed in the Information
20 Technology (IT) workpapers (Ex. SCG-10/SDGE-14, WP 00909H) and enable compliant
21 inspection recordkeeping and reporting requirements.

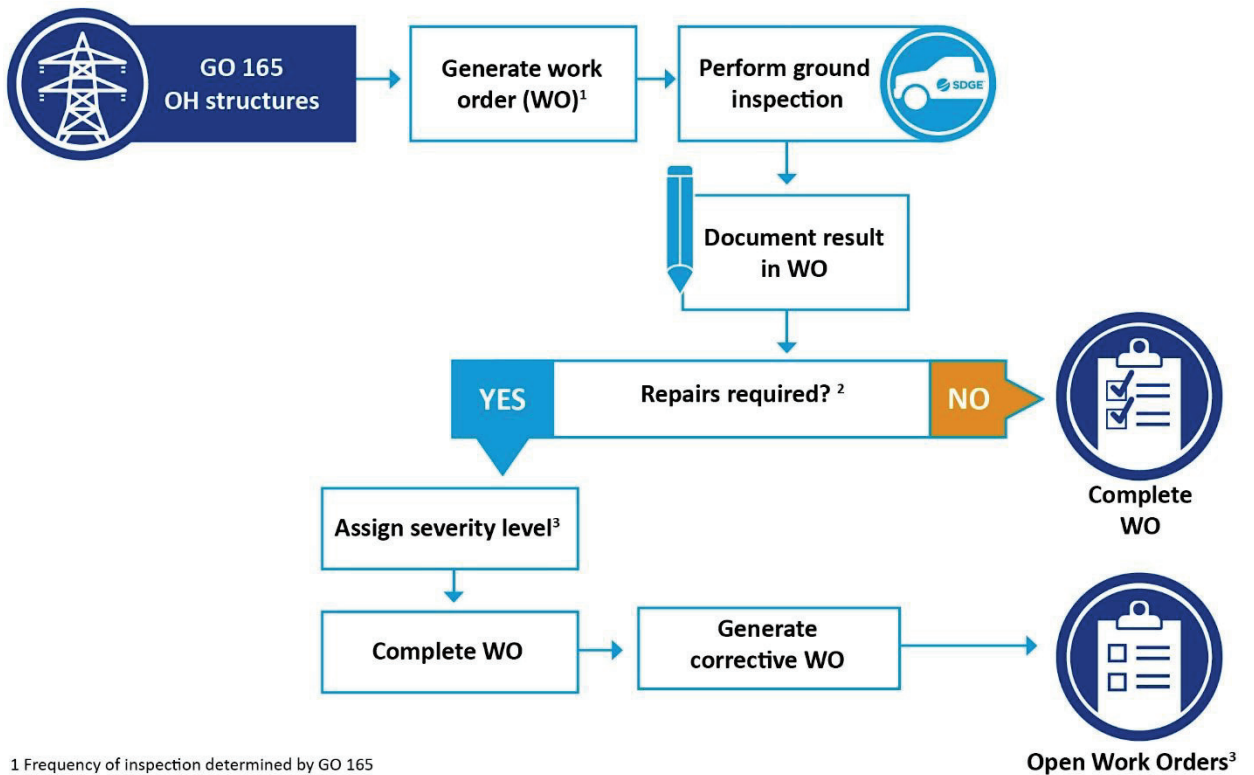
22 O&M and capital expenditures that are related to follow-up repairs identified during these
23 inspections are included in CMP Repairs and Replacements.

c. Cost Drivers

Costs are primarily driven by the annual, risk-based inspection scope and the specialized labor, technology, and coordination required to execute drone inspections. Key cost drivers include flight scoping using the Inspection Prioritization Model, flight planning, image capture, data management; and desktop inspections. Additional drivers include cross functional support for permitting, environmental, land, safety, aviation, and customer coordination; operation and continuous improvement of Intelligent Image Processing and predictive analytics models; embedded QA/QC to verify inspection accuracy and compliance. Foundational IT costs, such as cloud storage, data processing infrastructure, application support, cybersecurity; and ongoing system maintenance needed to manage and scale the inspection technology ecosystem, are also included.

11. Distribution Overhead Patrol Inspections (C536)

Figure JW-19
Distribution Overhead Patrol Inspections Process Flow



1 Frequency of inspection determined by GO 165
2 Repairs are required if work is needed to bring asset into compliance with GO
3 Severity Levels 1-3 per GO 95 Rule 18
4 See Open Work Order Process Flow

1 **a. Description of Costs and Underlying Activities**

2 Distribution Overhead Patrol inspections are mandated by GO 95 and GO 165 and are
3 intended to identify and resolve obvious structural problems and hazards on the grid before
4 failures occur. They are performed annually throughout the service territory.

5 In compliance with GO 165, the work management system tracks the inspection cycle for
6 each overhead asset requiring inspection and issues work orders by intervals to verify that the
7 inspection occurs each year, defined as 12 consecutive calendar months starting the first full
8 calendar month after an inspection is performed plus three full calendar months, not to exceed
9 the end of the calendar year in which the next inspection is due.

10 Inspections are intended to identify conditions that may pose immediate danger to the
11 public, employees, or the electrical system. They consist of a visual inspection of applicable
12 utility equipment and structures. As conditions are identified, condition codes are assigned and
13 prioritized based on the risk posed and severity. Inspections are primarily performed by
14 qualified inspectors with support, as needed, by drone pilots, traffic control, safety, security,
15 environmental, land, permitting, and customer support personnel that may be internal or external
16 employees.

17 Distribution Overhead Patrol inspections may be satisfied by other inspections, such as
18 Overhead Detailed inspections or risk-informed drone inspections, when performed within the
19 required compliance interval as required by GO 165.²⁹

20 Both internal and contractor labor costs are requested for this program for routine
21 inspections, periodic non-routine inspections, and associated QA/QC activities. Non-labor costs
22 are also requested to support field activities. O&M and capital costs for follow-up repairs
23 identified during these inspections are included in CMP Repairs and Replacements.
24

²⁹ *Id.*

1 **i. Description of Selection and Prioritization of RAMP**
2 **Risk Mitigations**

3 The initiative selection process for Distribution Overhead Patrol Inspections is driven by
4 mandatory compliance with GO 95 and GO 165, which require annual inspections to identify
5 and correct obvious structural hazards before equipment failures occur. The program is
6 operationalized efficiently by prioritizing patrols based on compliance deadlines, asset condition,
7 and operational risk, and by allowing other compliant inspections, such as Detailed Inspections
8 or RIDI, to satisfy patrol requirements when performed within the mandated cycle. The
9 justification for this mitigation is its critical role in identifying conditions that pose immediate
10 risks to public and worker safety or threaten electrical system reliability. By enabling prompt
11 correction of hazardous conditions, patrol inspections help prevent ignitions, outages, and other
12 safety events, providing direct and essential customer-protection benefits.

13 **b. Forecast Method**

14 A base-year methodology was used to forecast O&M costs. This methodology is most
15 indicative of future work since patrols are performed on all overhead distribution assets every
16 year. The costs for this mitigation include inspection costs, including costs related to inspection
17 support.

18 O&M and capital expenditures related to follow-up repairs that were identified during
19 these inspections are included in CMP Repairs and Replacements.

20 **c. Cost Drivers**

21 Costs are driven by ongoing compliance with GO 95 and GO 165, specifically the labor
22 required to perform visual inspections by qualified inspectors and the non-labor costs necessary
23 to support field activities. Costs reflect the work management processes required to track annual
24 inspection cycles, document and prioritize conditions based on risk and severity, and provide
25 support from internal and external resources such as drone pilots, traffic control, safety, security,
26 environmental, land, permitting, and customer support personnel to safely complete patrols and
27 maintain compliance across the service territory.

28 **12. Aviation Program (C546)**

29 **a. Description of Costs and Underlying Activities**

30 The Aviation program is a foundational program that provides aerial resources that
31 support system safety, wildfire risk mitigation, and operational reliability across the service

1 territory. Aviation capabilities enable timely access to remote or high-risk areas, reduce worker
2 exposure to hazardous conditions, and support rapid response during emergency events, thereby
3 reducing operational, wildfire, and safety risk. Both internal labor costs and non-labor costs are
4 requested for helicopter and Unmanned Aircraft Systems (UAS) utilization and materials.

5 The program includes two primary functional areas: Helicopter Operations (routine and
6 emergency) and UAS, also referred to as drones.

7 Aviation Services uses both leased and owned helicopters for routine work across the
8 service territory, including pole setting, line installation or replacement, routine patrols, and
9 inspections to identify potential system faults. Helicopters also support access to remote
10 structures for required inspection and vegetation management. Additional uses include wildfire
11 mitigation efforts such as wood to steel pole replacements, patrols following electric faults in the
12 HFTD during elevated fire conditions, and post PSPS patrols. Flights are reviewed by Flight
13 Operations to confirm helicopter use is necessary, assess FAA restrictions, and select the
14 appropriate aircraft. The Flight Operations Base monitors flights, supports planning and
15 debriefs. Field Operations facilitates coordination between ground crews and pilots through on
16 site observation and crew integration.

17 Emergency helicopter operations currently utilize a Sikorsky UH-60 Blackhawk
18 helitanker capable of dropping 1,100 gallons. Through cooperative agreements with the County
19 of San Diego, CAL FIRE, and the Orange County Fire Authority, this resource, along with a
20 night flying capable Firehawk Helicopter operated by the County of San Diego and CAL FIRE is
21 made available for 24-hour aerial firefighting within the service territory. Dispatch is performed
22 through CAL FIRE to support an initial attack strategy of wildfire containment to less than 10
23 acres. Fires that are kept to less than 10 acres impact less infrastructure, reducing recovery costs
24 after the fire and increasing reliability for our communities. Flight Operations staff assist in
25 dispatching aerial assets 365 days per year, throughout the service territory, allowing for rapid
26 launch once dispatched by CAL FIRE. Flight Operations personnel also determine proper use of
27 helicopters and UAS for post-fire patrol and construction.

28 UAS, also referred to as drones, are tools used across business units to conduct over forty
29 different types of missions that support decisions about the infrastructure to support wildfire
30 mitigation and utility operations. These systems do not support the RIDI program, which utilizes
31 outsourced drones inspections to identify repairs. Primary missions conducted by UAS are line

1 stringing, circuit and individual structure assessments for repair and replacement, light detection
2 and ranging (LiDAR) surveys for engineering work, vegetation management assessments, gas
3 operations annual assessments and emergency leak detection, as-built assessments and
4 verification, and environmental/biological data captures.

5 The use of UAS promotes worker safety by reducing exposure of workers to difficult
6 terrain, hostile wildlife, structure climbing, and various other hazards. The data collected by
7 UAS supports decisions on structure repair and replacement. Additionally, data can be archived
8 for historical reference, warranty needs, legal concerns or change assessment. Some UAS can
9 also carry heavier payloads to support specialized construction and environmental services
10 activities.

11 **i. Description of Selection and Prioritization of RAMP**
12 **Risk Mitigations**

13 The Aviation Program was selected to expand aviation capabilities with drones to
14 improve access, safety, and response effectiveness in remote and high-risk areas.

15 Several options for meeting ongoing UAS needs were considered. The option of not
16 utilizing UAS would result in reduced safety and efficiency during field operations, as well as a
17 lack of high-quality data for decision-making.

18 Unlike a structured drone program, where multiple poles/structures can be inspected
19 using standardized shot plans (pre-defined photo capture protocols), ad hoc UAS operations
20 require flexible scheduling and support various missions. As a result, therefore, a contractor-
21 only program would be significantly more expensive and operationally inefficient due to the
22 ‘call-when-needed’ model required to meet demand. This approach could also increase the risk
23 of cyber incidents, as data would need to be transferred from the contractor to SDG&E and could
24 result in a decreased flexibility to respond to requests by business units. Continuation of the
25 program and the purchase of additional UAS would provide new, updated systems. Systems
26 naturally reach end of life with heavy use and the rapidly advancing technology, therefore, this
27 option is necessary to maintain the program’s effectiveness.

28 **b. Forecast Method**

29 A base-year methodology was used to forecast O&M costs. This methodology
30 incorporates contractually obligated services and material costs required to support planned
31 Aviation Program activities. The forecast includes contract renegotiation rates.

1 **c. Cost Drivers**

2 Costs are driven by operational helicopter requirements for patrol needs (routine, PSPS or
3 fault), construction needs, and access to various parts of Company infrastructure. O&M costs
4 include helicopter lease, aviation training infrastructure, helicopter and UAS maintenance,
5 vendor support, and collaborative fire suppression agreements between SDG&E, CAL FIRE, and
6 the San Diego County Fire Authority. For UASs, costs are driven by demand and capabilities of
7 the systems. Technological advances have created multiple pathways for the employment of
8 drones to increase efficiency and safety during many types of missions, including maintenance,
9 construction, wildfire mitigation, and other operational needs.

10 **13. Wildfire Infrastructure Protection Teams (C548)**

11 **a. Description of Costs and Underlying Activities**

12 This initiative consists exclusively of non-labor costs and focuses on the deployment of
13 contracted fire resources (CFRs) to support field crews during at-risk work activities. All
14 staffing associated with this initiative is performed by contracted personnel and therefore does
15 not include internal resources. CFRs provide continuous real-time fire watch and hazard
16 identification to mitigate potential wildland fire ignitions that reduce the likelihood of work-site
17 ignitions becoming a fire of consequence. Each CFR unit is staffed by contractor personnel
18 trained and equipped with water, firefighting tools, and necessary equipment to meet the needs of
19 the supported work site activity to prevent potential ignition events.

20 Costs are requested for CFR staffing, which range from 12 to 17 contractor-provided
21 resources per day and are typically deployed from June through November, corresponding with
22 periods of elevated to extreme fire weather conditions. While CFRs are staffed by trained
23 personnel, these costs are treated as non-labor because they are incurred through external
24 contracts. Deployment is determined by the Fire Potential Index (FPI) rating and the nature of
25 work being performed, consistent with SDG&E's Wildland Fire Prevention Plan (ESP 113.1).
26 While CFRs are primarily assigned to work activities adjacent to wildland fuels, their use is not
27 limited to the HFTD.

28 Additionally, CFRs are deployed during PSPS de-energizations to support emergency
29 work and are paired with electric crews to provide fire mitigation support during electric
30 switching and circuit restoration activities, helping to manage wildfire risk during re energization
31 under elevated fire conditions.

1 **i. Description of Selection and Prioritization of RAMP**
2 **Risk Mitigations**

3 The initiative selection process for the CFR program was driven by the need to reduce
4 wildfire risk by providing onsite fire prevention support during elevated fire weather conditions
5 and other at-risk work activities. The initiative was prioritized because CFRs reduce both the
6 likelihood and consequences of work-related ignitions by monitoring field crews and quickly
7 responding to emerging hazards. From the customer benefit perspective, CFRs also play a vital
8 role during emergency events by supporting electric crews during switching, restoration, and
9 reenergization activities under elevated fire weather conditions, helping prevent ignitions and
10 improving safety for customers and communities.

11 Another alternative considered was relying on internal utility staff to serve as dedicated
12 fire patrols. This would have required purchasing specialized fire patrol vehicles and equipment,
13 providing advanced qualified firefighting training, and significantly increasing seasonal hiring to
14 maintain adequate staffing during major events such as PSPS de-energizations. This option was
15 deemed too costly and operationally ineffective compared to contracted resources.

16 **b. Forecast Method**

17 A base-year methodology was used for non-labor costs as it is indicative of the future
18 work required to maintain the current level of fire prevention readiness. The forecast reflects the
19 ongoing cost of contracting these specialized resources to meet safety standards during the fire
20 season.

21 **c. Cost Drivers**

22 Cost drivers include the operational requirements associated with maintaining qualified
23 CFRs to protect worksites from ignition risk. These costs are driven by the need to contract and
24 deploy between 12 and 17 CFR units per day during periods of elevated to extreme fire weather
25 conditions, each staffed with trained personnel and equipped with fire suppression equipment.

26 Costs are driven by the requirement to comply with SDG&E's Wildland Fire Prevention
27 Plan (Electric Standard Practice 113.1), which prescribes specific wildfire prevention measures
28 based on prevailing environmental conditions.³⁰

³⁰ SDG&E Electric Standard Practice 113.1 (February 25, 2022), *available at*:
https://www.sdge.com/sites/default/files/regulatory/Electric%20Standard%20Practice%20No.%20113.1_4_0.pdf.

1 **14. Combined Covered Conductor (C550)**

2 **a. Description of Costs and Underlying Activities**

3 The Combined Covered Conductor program is designed to reduce wildfire risk and
4 minimize the frequency and impact of PSPS de-energizations through targeted upgrades to
5 overhead distribution infrastructure in the HFTD. The CCC program reduces wildfire ignition
6 risk by maintaining hardened overhead distribution facilities that are more resilient to extreme
7 weather conditions, vegetation contact, and animal interactions, thereby lowering the likelihood
8 of ignition during Santa Ana wind events and supporting higher PSPS windspeed thresholds on
9 fully hardened line segments.

10 Both labor and non-labor costs are requested and focus on maintaining system reliability,
11 infrastructure integrity, and long-term risk reduction benefits associated with CCC.

12 **i. Description of Selection and Prioritization of RAMP**
13 **Risk Mitigations**

14 The initiative selection process for the CCC program was driven by the proven
15 effectiveness of covered conductor in reducing wildfire ignition risk and as the cost-effective
16 long-term wildfire-mitigation strategy (see Ex. SDGE-07, Volume 2, Section I.G.1 for details on
17 mitigation selection). From a customer-benefit perspective, these upgrades reduce ignition
18 likelihood, support higher PSPS wind-speed thresholds on hardened segments, and help limit the
19 number and duration of PSPS de-energizations.

20 Alternatives that were considered included Strategic Undergrounding (SUG),
21 Distribution Overhead System Hardening, and no hardening. While SUG provides the greatest
22 long-term risk-reduction and PSPS-mitigation benefits, this mitigation type may not be feasible
23 due to permitting, land rights, environmental constraints, or the terrain. In these cases, and
24 where SDG&E has determined that the wind and vegetation risks are manageable, the
25 installation of CCC may serve as a suitable alternative. Although Distribution Overhead System
26 Hardening is less expensive than CCC and provides wildfire risk reduction because wood poles
27 are replaced with steel and new bare conductor is installed, it does not reduce the frequency or
28 impact of PSPS de-energizations. The “do nothing” option is considered when WINGS-Planning
29 model results do not warrant SUG or CCC, however, this option does not directly reduce ignition
30 or PSPS risks without other operational mitgaitons.

1 **b. Forecast Method**

2 A 3-year average methodology was used to forecast O&M costs. The average of
3 historical per-mile labor costs observed over the 2023–2025 period is applied to the annual target
4 of 50 miles. This approach was selected because it relies on the most recent actual cost
5 experience for the program, reflecting current construction practices, labor conditions, and
6 program execution. Using these recent historical data points provides a more reliable basis for
7 forecasting than including older data or relying solely on forward-looking assumptions, as it
8 captures stabilized cost trends following program ramp-up and incorporates lessons learned from
9 recent project delivery.

10 Alternative approaches, such as base-year or zero-based forecasts, were considered less
11 representative of ongoing program costs due to year-to-year variability and the complexity of
12 allocating multi-year project expenses. The program is expected to continue past 2031, therefore
13 costs in 2031 include construction of sites in that year and engineering and design for future
14 construction. This results in a forecast that reflects the full lifecycle nature of the program,
15 where planning and construction activities overlap across years.

16 **c. Cost Drivers**

17 Cost drivers include labor and non-labor costs required to preserve the performance and
18 risk-reduction benefits of hardened overhead distribution facilities in Tier 2 and 3 of the HFTD.
19 Cost drivers include non-construction costs such as engineering and design, project and program
20 management, survey, land management, GIS services, environmental services, permitting, and
21 communications. Cost drivers for construction include civil and electrical crews and equipment,
22 helicopters or cranes when needed for setting poles and stringing wire/equipment, traffic control
23 where needed, vegetation management, material, staging yards, and dedicated fire watch crews.

24 **15. PSPS Sectionalizing Enhancements (C552)**

25 **a. Description of Costs and Underlying Activities**

26 The PSPS Sectionalizing Enhancements program supports the installation and operational
27 readiness of distribution sectionalizing devices within the HFTD to minimize customer impacts
28 during PSPS de-energizations. Annual scope and locations are determined at the beginning of
29 each WMP cycle based on electric grid reliability needs, PSPS de-energization information, and
30 changes to the distribution system. Both labor and non-labor costs are requested to support
31 activities associated with installing switches in strategic locations and coordinating sectionalizing

1 devices with weather stations, which enables the system to isolate high-risk areas for potential
2 de-energization. By increasing the number of sectionalizing devices on higher PPS risk
3 circuits, including circuits with significant underground sections, PPS de-energizations can be
4 better targeted to areas experiencing extreme wind conditions, reducing the number of customers
5 impacted and potentially reducing the duration of de-energizations.

6 **i. Description of Selection and Prioritization of RAMP**
7 **Risk Mitigations**

8 The initiative selection process for the PPS Sectionalizing Enhancement Program was
9 driven by the need to more precisely isolate high-risk areas during PPS de-energizations in
10 order to reduce the number of customers affected by de-energizations. The program was
11 prioritized because installing sectionalizing switches at strategic points, coordinated with
12 localized weather-station data, allows more targeted de-energizations for only those circuit
13 segments experiencing dangerous fire-weather conditions. Circuits with elevated PPS
14 exposure, including those with extensive overhead sections or underground segments where
15 segmentation provides customer relief, are targeted for additional devices. From a
16 customer-benefit perspective, this mitigation significantly reduces PPS impacts by keeping
17 unaffected areas energized. As part of annual WMP planning, device placement is updated based
18 on grid reliability needs, historical and forecasted PPS activity, and system changes, effectively
19 supporting wildfire-mitigation operations while minimizing customer disruption.

20 A no-action alternative was considered but dismissed because it would reduce SCADA
21 visibility and control by requiring manual sectionizing devices (fuses), increase the number of
22 customers impacted during PPS de-energizations due to fewer sectionalizing options, and force
23 reliance on the primary substation breaker to de-energize an entire circuit when faults occur—
24 expanding outage impacts and operational risk.

25 **b. Forecast Method**

26 A zero-based methodology was used to forecast O&M costs due to the inconsistency of
27 annual switch installation locations, as locations are determined based on electric grid reliability
28 needs to improve the reliability of high-risk areas for potential de energization. The forecast is
29 developed based on planned work at specific locations.

1 **i. Description of Selection and Prioritization of RAMP**
2 **Risk Mitigations**

3 The initiative selection process for the DCRI program was driven by the need to address
4 communication limitations in the HFTD. The initiative was prioritized to provide dependable,
5 high-capacity communication infrastructure that supports field personnel during Red Flag
6 Warning crew deployments, EOC activations, and other high-risk operating conditions. From the
7 customer-benefit perspective, improving communication reliability is essential for safe and
8 timely decision-making during both routine operations and wildfire events, enhancing
9 community protection and supporting overall system resilience.

10 Alternatives considered, included satellite, leased connectivity, and fiber. DCRI was
11 chosen as it allows for greater cybersecurity for network communications, continued operation
12 during times of emergency and other outages, high reliability and redundancy for critical
13 infrastructure, and is more cost-effective than fiber, especially in the HFTD.

14 **b. Forecast Method**

15 A zero-based methodology was used to forecast O&M costs because prior year O&M
16 expenditures are not representative of future operational needs. As new tower construction slows
17 and capital funding has shifted to other programs, operational costs were considered using zero-
18 based methodology to ensure costs that will continue within the HFTD will be covered and
19 appropriate.

20 **c. Cost Drivers**

21 Cost drivers include core network support costs such as ongoing services required to
22 operate, monitor, and maintain the communications network and recurring site fees to keep
23 communication sites operational. Cost drivers also include the scale of the deployed network, as
24 the number of active sites and components directly affects support needs, service demands, and
25 reliability and availability requirements. These factors determine the support needed to maintain
26 continuous communications during both normal operations and high-risk events.

27 **17. Early Fault Detection (C573)**

28 **a. Description of Costs and Underlying Activities**

29 The Early Fault Detection (EFD) program aims to detect incipient faults on the electric
30 system with sufficient time to locate and potentially repair or replace equipment before
31 permanent failure occurs. These incipient faults develop on degrading equipment well in

1 advance of violent failures that can damage surrounding infrastructure. Three primary
2 technologies, Advanced Radio Frequency Sensors (ARFS), Power Quality (PQ) meters, and pole
3 mounted multi sensor devices, are deployed across circuits located in the HFTD.

4 The program reduces wildfire and outage program risk by identifying failures before they
5 occur through radio frequency analysis, power quality monitoring, and advanced multi sensor
6 edge analytics technologies. It detects electrical, physical, and environmental anomalies that
7 traditional systems often miss, including high impedance faults, vegetation contact, and
8 structural degradation. By leveraging real-time alerts and precise fault localization, the program
9 improves situational awareness and response times, reducing ignition risk and outage duration.

10 Both labor and non-labor costs are requested to support the continued operation of this
11 sensor network through routine maintenance required to keep field deployed devices operational,
12 including the replacement of batteries for field equipment.

13 **i. Description of Selection and Prioritization of RAMP**
14 **Risk Mitigations**

15 The initiative selection process for the EFD program was driven by the need to identify
16 incipient faults on the electric system early enough to locate, repair, or replace degrading
17 equipment before permanent failure occurs. The program was selected because EFD
18 technologies detect electrical, physical, and environmental anomalies that traditional protection
19 systems frequently miss, including high-impedance faults, vegetation contact, and structural
20 degradation. From a customer-benefit perspective, real-time alerts and precise fault-location
21 capabilities improve situational awareness and shorten response times, thereby reducing ignition
22 risk, minimizing outage duration, and strengthening overall system reliability and public safety.

23 Several detection technologies were evaluated based on sensitivity, false positive rates,
24 integration needs, communication reliability, and long-term vendor support. Many manufacturer
25 products lacked proven, field validated performance for large scale deployment. A no-action
26 alternative was also dismissed because it would increase the risk of equipment failures
27 progressing to ignition events and drive higher long-term replacement costs compared to
28 addressing issues at early (incipient) failure stages.

29 **b. Forecast Method**

30 A zero-based methodology was used for labor and non-labor costs. This methodology is
31 most appropriate because the forecast is derived from cost estimates developed based on the

specific scope of work for the project rather than historical spending levels. The zero-based approach incorporates current construction labor rates, material costs, overhead rates, and contract pricing to reflect anticipated work activities.

This methodology is superior to base year or historical average approaches because prior spending may not accurately represent future work scope or cost drivers. Significant variances between estimated and actual costs from prior projects are reviewed and used to refine forecast assumptions, therefore the zero-based estimate reflects the most accurate and relevant data available for the forecast period.

c. Cost Drivers

Cost drivers include the operational requirements to maintain the deployed EFD device network, including labor and non-labor costs associated with intermittent but essential maintenance activities such as battery replacement for field installed devices.

Costs are driven by a company identified need to proactively identify and locate equipment at risk of failure within the HFTD before an ignition or outage occurs. Maintaining ARFS, PQ meters, and multi sensor devices provides continuous real-time data to detect anomalies such as vegetation contact and equipment degradation, directly supporting the wildfire mitigation strategy and overall system reliability.

B Vegetation Management and Inspections

**TABLE JW - 5
Vegetation Management and Inspections O&M Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)				
ID	B. Vegetation Management and Inspections	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
537	Off-Cycle Patrol	1,363	1,452	89
540	Fuels Management Program	3,165	3,168	3
544	Pole Clearing	4,646	5,130	484
551	Prune and Removal (Clearance)	27,767	49,880	22,113
554	Detailed Inspections	7,548	7,946	398
555	Vegetation Restoration Initiative	16	-	-16
578	QA/QC of Vegetation Management	6,212	6,586	374
582	Application Support and Risk Analytics	1,464	2,101	637

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)

ID	B. Vegetation Management and Inspections	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
584	Integrated Work Management & Risk Assessment Platform	-	504	504
Total Non-Shared Services		52,181	76,767	24,586

These costs support the assessment, intervention, and management of vegetation, including pruning and removal of trees and other vegetation around electrical infrastructure for safety, reliability, and risk reduction. They also support the O&M costs associated with application support, risk analytics, and risk assessment platforms.

The Vegetation Management program process consists of Inspections (Detailed Inspections and Off-Cycle Patrols), Tree Pruning and Removal, Pole Clearing, and Auditing (QA/QC of Vegetation Management activities). These activities also generate vegetative debris, which is managed through wood and slash management practices as part of routine operations. Fuels Management focuses on reducing the consequence of fires that may occur near the utility right of way (ROW). These activities involve include tracking and maintaining a database of inventory trees and poles, replacing unsafe trees with utility compatible species, and managing wood and debris created through vegetation management activities.

1. Detailed Inspections (C554)

a. Description of Costs and Underlying Activities

Detailed Inspections occur on an annual cycle (12-14 months) throughout the service territory to support compliance with state and federal law (*see* GO 95, Rule 35, and Public Resources Code (PRC) § 4293) pertaining to minimum clearance distances between vegetation and electrical infrastructure. They determine whether vegetation will encroach the required minimum clearance distance through growth or otherwise impact lines within the cycle. Both internal labor and contracted labor costs are requested for this program.

During Detailed Inspections, inventory trees are assessed by a trained inspector at the site, pruning requirements are identified, and electronic tree records are updated to record attributes including tree species, height, diameter, health, work status, location, and customer information. This mitigation reduces the likelihood of a risk event by identifying vegetation that

1 requires action to maintain GO 95 standards within the following cycle. Inspectors also add or
2 remove trees from the tree inventory as necessary (e.g., trees removed, new vegetation growth,
3 or infrastructure changes).

4 **i. Description of Selection and Prioritization of RAMP**
5 **Risk Mitigations**

6 The initiative selection process for Detailed Inspections was guided by the need to
7 support compliance with state and federal requirements, including GO 95, Rule 35, and PRC §
8 4293, which establish minimum vegetation clearance distances around electric infrastructure.
9 This initiative was prioritized because it plays a critical role in reducing the likelihood of risk
10 events by identifying vegetation that could come into contact with equipment and potentially
11 cause outages or ignition. From the customer perspective, Detailed Inspections directly
12 contribute to community safety by reducing wildfire risk and supporting the reliability of
13 essential electric service.

14 **b. Forecast Method**

15 A base-year methodology was used to forecast labor and non-labor O&M costs. The
16 number of Detailed Inspections is relatively consistent year to year; therefore, base-year
17 forecasting is the most indicative of future work.

18 A Non-standard Escalation (NSE) method was used to forecast costs for services
19 performed by contracted personnel performing tree inspections, with the forecast reflecting
20 expected rate structures.

21 **c. Cost Drivers**

22 Cost drivers include annual inspections in the service territory and the associated field
23 and data management activities required to maintain compliance with state and federal
24 vegetation clearance requirements. These drivers are supported by regulatory obligations
25 under GO 95, Rule 35, and PRC § 4293, which mandate minimum clearance distances between
26 vegetation and electrical infrastructure and necessitate recurring inspections to assess anticipated
27 vegetation growth within each annual cycle. Costs are driven by field-based assessments of
28 inventory trees, updates to electronic tree records capturing detailed tree and customer attributes,
29 and the identification of vegetation requiring pruning.

1 **2. Off-Cycle Patrols (C537)**

2 **a. Description of Costs and Underlying Activities**

3 Off-Cycle Patrols are separate from Detailed Inspections and are performed annually in
4 the HFTD, serving as an additional check for compliance with vegetation clearance standards
5 outlined in GO 95, Rule 35, and PRC § 4293 and reducing the potential for vegetation contact by
6 increasing the inspection frequency of trees within the HFTD. Off-Cycle Patrols can result in the
7 observation of a hazardous tree condition (e.g., mortality, decline, structural deficiency,
8 encroachment, etc.), that may not have been present during Detailed Inspections.

9 Off-Cycle Patrols are performed by International Society of Arboriculture (ISA)-Certified
10 Arborists, who perform an assessment of the utility strike zone. Inspections determine if work is
11 required prior to the next on cycle scheduled tree inspection/pruning. Only inventory tree
12 records that require work are updated during the Off-Cycle Patrol.

13 Section IV.F.1 discusses how remote sensing data will be evaluated and potentially
14 utilized to enhanced Off-Cycle Patrols. Off-Cycle Patrol costs include both internal labor,
15 contracted non-labor, and cloud computing costs to support processing of remote sensing (e.g.,
16 LiDAR) data.

17 **i. Description of Selection and Prioritization of RAMP**
18 **Risk Mitigations**

19 Off-Cycle Patrols are driven by compliance with state and federal requirements,
20 including GO 95, Rule 35, and PRC § 4293, which specify minimum vegetation clearance
21 distances around electric infrastructure. From the customer perspective, conducting Off-Cycle
22 Patrols annually in the 106 VMAs that overlap the HFTD enhances community safety by
23 reducing wildfire risk and supporting the reliability of essential electric service.

24 Alternatives considered included eliminating Off-Cycle Patrols or adjusting the overall
25 schedule. As the growth cycles of trees can be greatly impacted by the weather and other
26 environmental factors such as customer irrigation, elimination of Off-Cycle Patrols would create
27 an increased risk of non-compliant trees in the HFTD. Therefore, this alternative was rejected.
28 Adjustments to the patrol schedule are discussed and occur on a recurring basis as part of the
29 Vegetation Management program. Risk modeling, operational efficiencies, and annual
30 environmental conditions are used to inform the patrol schedule as it leverages risk analytics as
31 well as real world experience to maximize effectiveness of the patrols. This program continues

1 to evolve through enhancements to risk modeling and the incorporation of experience-based
2 practices, which remain integral to the ongoing program execution.

3 **b. Forecast Method**

4 A base-year methodology was used to forecast labor and non-labor O&M costs as
5 staffing levels and overall strategy for implementation are expected to remain consistent with
6 base year levels. An NSE method was used to forecast costs for services performed by
7 contracted personnel performing patrols, with the forecast reflecting expected rate structures. A
8 base-year methodology was used to forecast costs for all other activities as a risk-based approach
9 to scheduling is in development and therefore a historical-based method is not appropriate for
10 forecasting future costs.

11 **c. Cost Drivers**

12 Cost drivers include inspection frequency, cost of certified/trained inspectors, and number
13 of units (trees) existing within the HFTD. Cost drivers can increase or decrease expected costs
14 as units targeted in Off-Cycle Patrols have the potential to change with tree planting/removal or
15 with a change to the location of overhead equipment (e.g., the elimination of the need for Off-
16 cycle Patrols due to undergrounding of a circuit); increased inspection frequency in the HFTD;
17 and the rates associated with use of ISA Certified Arborists. These drivers are supported by
18 compliance obligations under GO 95, Rule 35, and PRC § 4293, which require proactive
19 identification and mitigation of vegetation hazards within the utility strike zone, as well as
20 company identified wildfire risk reduction needs.

21 **3. Pole Clearing (C544)**

22 **a. Description of Costs and Underlying Activities**

23 Pole clearing is required within the State Responsibility Area (SRA) to comply with PRC
24 § 4292 and PRC § 4293 for poles that carry specific, attached, “non-exempt” equipment. Non-
25 exempt equipment is identified by the state as having the potential to spark, arc, and/or fail,
26 causing hot particles to fall to the base of the pole and potentially cause an ignition. PRC § 4292
27 requires clearing of flammable fuels for a minimum 10-foot radius from the outer circumference
28 of non-exempt poles and towers. While the majority of the poles governed by PRC § 4292 and
29 PRC § 4293 are within the HFTD, some subject poles within the SRA boundary are outside of
30 the HFTD. Outside of the SRA, select poles are also identified for pole clearing in Local
31 Responsibility Area (LRA), the Wildland urban Interface (WUI), and areas with the potential for

1 immediate impact from an ignition growing into a fire. The criteria for the selection of these
2 poles mirrors the methodology used for inside the SRA that is listed in PRC § 4292 with non-
3 exempt equipment, continuous wildland vegetation, and the potential for negative consequence
4 from ignition playing key factors in their selection.

5 Wood and slash management is a component of Pole Clearing. Costs are requested for
6 performing pole clearing activities.

7 **i. Description of Selection and Prioritization of RAMP**
8 **Risk Mitigations**

9 The initiative selection process for Pole Clearing was guided by the need to maintain
10 compliance with PRC § 4292, which requires vegetation clearance in the SRA around poles that
11 carry specific “non-exempt” equipment. Additional pole clearing is also conducted in the LRA,
12 the WUI, and other areas that could support significant wildland fire spread and internally on
13 poles with non-exempt equipment in the LRA, considering factors such as acreage, fuel type,
14 slope, values at risk, proximity to the SRA, and access. This initiative was prioritized because
15 maintaining a fuel break around power poles by removing vegetation reduces the likelihood of
16 ignition or fire propagation resulting from equipment failure. From the customer perspective, the
17 benefits include a lower probability of vegetation-caused outages or contacts, which in turn
18 reduces the likelihood of utility-related ignitions and enhances overall community safety.

19 **b. Forecast Method**

20 A 5-year historical average methodology was used to forecast labor and non-labor O&M
21 costs. Because vegetation growth is variable, one year may require increased work activity while
22 the following year may require less. Therefore a 5-year historical average most accurately
23 represents year-over-year costs. Actual targets are a direct result of findings from inspections to
24 maintain compliance with applicable codes and regulations.

25 An NSE method was used to forecast costs for services performed by contracted
26 personnel performing pole clearing, with the forecast reflecting expected rate structures.

27 **c. Cost Drivers**

28 Cost drivers include the number of poles with non-exempt equipment requiring clearance,
29 frequency of repeat inspections and re-clearing necessary to maintain continuous compliance,
30 variability in environmental requirements, and site-specific conditions such as fuel type, slope,
31 and access. These drivers are the same for poles governed by PRC § 4292 and PRC § 4293 in

1 and outside the SRA. Pole clearing also requires contractor labor, environmental compliance,
2 and associated wood and slash management to fully remove flammable material and sustain
3 wildfire risk reduction.

4 **4. Prune and Removal (Clearance) (C551)**

5 **a. Description of Costs and Underlying Activities**

6 Pruning and Removal is the activity of cutting vegetative material (branches, limbs,
7 trunk) for the purpose of maintaining safe, reliable, and compliant clearance between trees and
8 overhead equipment and serves as the basis for compliance with vegetation clearance standards
9 outlined in GO 95, Rule 35, and PRC § 4293. It reduces the likelihood of a risk event by
10 preventing encroachment and/or contact from vegetation with overhead conductors and
11 equipment. When removals are performed, utility-friendly replacement tree species can be
12 offered to incentivize removal of a tree, provided that it will not become an inventory tree in the
13 future.

14 The activity also follows American National Standards Institute (ANSI) A300 and
15 International Society of Arboricultural (ISA) best management practices. Clearances established
16 at the time of pruning are determined by multiple factors including species, growth rate,
17 minimum required clearance, wind sway, line sag, proper pruning practices, and tree health.

18 Ratepayer benefits include enhanced system reliability and reduced likelihood of a
19 vegetation-caused outage/contact, which reduces the likelihood of a utility-related ignition.
20 Wood and slash management, which promotes safe and proper management of vegetative debris,
21 is a component of pruning and removal. O&M costs are requested for labor and non-labor
22 activities associated with tree pruning and removal, including contractor and utility arborist
23 services, equipment and materials and wood and slash management.

24 **i. Description of Selection and Prioritization of RAMP** 25 **Risk Mitigations**

26 The initiative selection process for Prune and Removal was guided by the need to
27 maintain compliance with state and federal requirements, including GO 95, Rule 35, and PRC §
28 4293, which specify minimum vegetation clearance distances around electric infrastructure. This
29 initiative was prioritized because pruning and removing trees that could encroach on overhead
30 conductors directly reduces the likelihood of vegetation-related risk events. Trees identified for
31 maintenance are pruned to maintain safe and reliable clearances between Pre-Inspection cycles,

1 further mitigating the potential for contact with energized equipment. From the customer
2 perspective, this work lowers the risk of vegetation-caused outages or contacts, which in turn
3 maintains system reliability, reduces the likelihood of utility-related ignitions, and enhances
4 overall community safety.

5 **b. Forecast Method**

6 A 5-year historical average methodology was used to forecast labor and non-labor O&M
7 costs. Because vegetation growth is variable, one year may require increased work activity while
8 the following year may require less. Therefore a 5-year historical average most accurately
9 represents year-over-year costs. Actual targets are a direct result of findings from inspections to
10 maintain compliance with applicable codes and regulations.

11 An NSE method was used to forecast costs for services performed by contracted
12 personnel performing tree trimming, with the forecast reflecting expected rate structures.

13 **c. Cost Drivers**

14 Cost drivers include potential changes in vegetation growth rates driven by climate
15 conditions, which may increase the number of trees requiring pruning or removal, changes to
16 state and federal vegetation clearance requirements, variable environmental and municipal
17 permit expenses, and higher unit costs associated with skilled arborist labor, contractor
18 availability, and wood and slash management. In 2025, unit volumes were reduced based on
19 strategy changes and the elevated number of units completed in 2024, with 2026 and beyond
20 expected to normalize and align with the five-year average level of activity. These drivers are
21 supported by regulatory obligations under state and federal safety standards, Commission and
22 WMP requirements, and the company identified need to maintain compliant clearances between
23 inspection cycles to reduce ignition and reliability risk, which necessitates sustained field
24 resources and specialized pruning and removal activities consistent with ANSI A300 and ISA
25 best management practices.

26 **5. QA/QC of Vegetation Management (C578)**

27 **a. Description of Costs and Underlying Activities**

28 The QA/QC activity is performed on Detailed Inspections, Prune and Removal, and Pole
29 Clearing activities to measure work quality, contractual adherence, compliance with regulations
30 and standards, and data accuracy. This mitigation reduces the likelihood of a risk event by

1 confirming documented clearances are consistent with the real-world environment and compliant
2 with applicable codes and regulations.

3 QA/QC of Vegetation Management is a required, quantifiable WMP target, assessed
4 against a 15% audit rate and a 90% pass-rate goal. Continuing to fund this program supports
5 compliance, ongoing risk mitigation, and alignment with industry best practices.

6 Labor and non-labor costs are requested to support QA/QC of Vegetation Management
7 activities, including Detailed Inspections, Pruning and Removal, and Pole Clearing. These costs
8 include contracted services as well as internal personnel to manage the QA/QC program.

9 **i. Description of Selection and Prioritization of RAMP**
10 **Risk Mitigations**

11 The initiative selection process for QA/QC of Vegetation Management was guided by the
12 need to maintain regulatory compliance and accurate documentation of vegetation management
13 activities. This initiative was prioritized because QA/QC activities provide critical oversight of
14 contractor work, helping to identify deficiencies, confirm adherence to standards, and support
15 continuous process improvements. By validating the accuracy of inspections, pruning, and
16 pole-clearing activities, QA/QC reduces the likelihood of errors that could lead to
17 vegetation-caused outages or equipment contacts. From the customer safety perspective, these
18 efforts help prevent potential ignition risks and strengthen the overall reliability and safety of the
19 electric system.

20 The alternative of not conducting QA/QC was considered but rejected because QA/QC
21 provides assurance that the vegetation management program is implemented in compliance with
22 applicable regulatory requirements.

23 **b. Forecast Method**

24 A 5-year historical average methodology was used for labor and non-labor O&M costs.
25 Because vegetation growth is variable, work activity fluctuates from year to year. Therefore a 5-
26 year historical average most accurately represents year-over-year costs. Actual targets are a
27 direct result of Pre-Inspection, Pruning and Removal, and Pole Clearing activities to maintain
28 compliance with applicable codes and regulations.

29 An NSE method was used to forecast costs for services performed by contracted
30 personnel performing QA/QC activities, with the forecast reflecting expected rate structures.
31

1 **c. Cost Drivers**

2 Costs are primarily driven by the volume of completed vegetation management work
3 subject to audit, as QA/QC activities are performed on approximately 15% of completed detailed
4 inspection, pruning and removal, and pole clearing work, as well as 100% of pruning and
5 removal associated with Off Cycle Patrols. Costs scale directly with underlying vegetation
6 management activity levels, which vary year over year based on vegetation growth, weather
7 conditions, and resulting work volumes. Additionally, cloud computing costs to support
8 processing remote sensing data (e.g., LiDAR) related to QA/QC activities are also included.

9 **6. Fuels Management Program (C540)**

10 **a. Description of Costs and Underlying Activities**

11 The Fuels Management program consists of fuels reduction around distribution assets,
12 fuels management grants, and defensible space vegetation abatement on SDG&E managed
13 properties. These activities serve to mitigate the negative consequences of fires within the
14 service territory and support local, state, and federal goals, such as those stated in the Statewide
15 Fuels Reduction Environmental Protection Plan.³¹ Both labor and non-labor O&M costs are
16 requested for this program, with labor costs defined as FTEs and non-labor costs including
17 contractors, grants and fees.

18 **Fuels Reduction Around Distribution Assets**

19 Fuels reduction around distribution assets involves the reduction of wildland fuels in
20 areas immediately surrounding distribution equipment. It includes thinning and reducing ground
21 level vegetation around SDG&E distribution equipment to limit fuel continuity and fire spread,
22 while selectively retaining native and sensitive species where feasible. The primary purpose is to
23 reduce the potential consequence of wildfires originating from utility- and non-utility-related
24 ignition sources, with the secondary benefit of reducing the likelihood that utility equipment is
25 impacted by fires burning into the ROW. Consistent with the state’s methodology for identifying
26 potential sources of ignition, fuels reduction activities are primarily focused on a subset of
27 distribution poles that meet the criteria listed in PRC § 4292. These poles are typically

³¹ California Natural Resources Agency, *Statewide Fuels Reduction Environmental Protection Plan* (May 2025), available at: <https://wildfiretaskforce.org/wp-content/uploads/2025/05/Statewide-Fuels-Reduction-Environmental-Protection-Plan.pdf>.

1 associated with non-exempt equipment listed in the Powerline Equipment Identification Pocket
2 Guide³² as having a higher likelihood of generating heat events that could lead to an ignition.

3 Fuels reduction is distinct from pole clearing requirements. While poles identified under
4 PRC § 4292 are already subject to statutory clearance standards, such as clearing to mineral soil
5 within a 10-foot radius, fuels reduction reduces fuel loading over a broader surrounding area,
6 which enhances wildfire consequence reduction but does not duplicate pole clearing activities.
7 Fuels reduction is conducted in higher fire threat areas where additional fuel modification
8 provides incremental risk reduction. Accordingly, program scope, unit counts, and costs reflect
9 only the incremental work performed beyond required pole clearing standards.

10 **Fuels Management Grants**

11 Fuels management grants are awarded to external partners to reduce vegetation and fuel
12 loads in communities with elevated wildfire risk. By reducing fuels within and adjacent to utility
13 ROWs, these grants help lower the consequences of fires originating both inside and outside the
14 ROW. This work also aligns with local, state, and federal fuels management objectives,
15 including the National Park Service’s goal to mitigate wildfire impacts and maintain healthy
16 landscapes.³³ Additional community benefits include local employment and support for the
17 Wildfire and Forest Resilience Task Force’s Utility Fuels Management objectives. Grants are
18 awarded in coordination with public safety partners. Projects are submitted through the Greater
19 Fire Safe Council of San Diego or directly to the Fire Science & Coordination team, with
20 funding provided through memoranda of understanding (MOUs) with Tribal nations or
21 community organizations. Internal forestry and fire science experts review proposals for scope,
22 feasibility, and utility/ratepayer benefit. Projects must demonstrate positive impact and are
23 evaluated against one another to optimize use of available funds, following a scoring approach
24 similar to the CPUC regulated Sunrise Powerlink Grant Program³⁴. Grant recipients include

³² CAL FIRE, *Powerline Equipment Identification Pocket Guide*, available at:
<https://www.fire.ca.gov/osfm/what-we-do/community-wildfire-preparedness-and-mitigation/prevention-field-guides>.

³³ National Park Service, *Reference Manual #18: Wildland Fire Management, Chapter 7 - Fuels Management* (update release October 2023), available at:
<https://www.nps.gov/subjects/fire/upload/RM18-Chapter-7.pdf>.

³⁴ Sunrise Powerlink Fire Mitigation Grants Program, available at:
<https://www.sunrisepowerlinkgrants.com/2026>

1 Tribal governments, Fire Safe Councils, and other community-based organizations. Funded
2 activities include roadside vegetation treatments, defensible space clearing around utility
3 equipment on customer properties, and creation of community firebreaks. Work is typically
4 carried out by Tribal personnel, community groups, nonprofits, or contractors.

5 **Defensible Space Vegetation Abatement**

6 Defensible space vegetation abatement includes activities required of property owners
7 across California and within the service territory. These requirements are applied on fee owned
8 properties and in areas surrounding utility facilities. Work includes targeted fuel reduction and
9 abatement within electric system corridors and utility owned ROWs. These activities maintain
10 defensible space, reduce hazardous vegetation, and enhance wildfire prevention readiness around
11 critical infrastructure, supporting system reliability, public safety, and compliance with wildfire
12 mitigation requirements.

13 **Environmental Compliance**

14 As wildfire mitigation activity increases, there is a corresponding potential for impacts to
15 streams and wetlands. To address this need, the State Water Resources Control Board (SWRCB)
16 is developing the Utility Wildfire General Order,³⁵ which will provide statewide environmental
17 permitting coverage for utility wildfire-prevention, response, and routine maintenance activities
18 that may affect water quality. Although the Utility Wildfire General Order is not yet final, the
19 SWRCB currently assesses annual fees on electric utilities to support development and
20 administration of the General Order. Costs are requested for these fees, which are based on the
21 miles of overhead electrical lines identified as high-risk or high-threat in each utility's WMP.

22 **i. Description of Selection and Prioritization of RAMP** 23 **Risk Mitigations**

24 The initiative selection process for the Fuels Management program, which consists of
25 fuels reduction around distribution assets, fuels management grants, and defensible space
26 vegetation abatement on SDG&E managed properties, was guided by the overarching need to
27 reduce vegetation-related fire risk around utility infrastructure and within communities facing
28 elevated wildfire hazards. Initiatives were prioritized for their role in lowering

³⁵ SWRCB, *Utility Wildfire General Order*, available at:
https://www.waterboards.ca.gov/water_issues/programs/cwa401/statewide-utility-wildfire-mitigation-general-order.html.

1 vegetation-caused outages or contacts, reducing the likelihood of both utility- and
2 non-utility-related ignitions, and enhancing overall community wildfire resilience, public safety,
3 and system reliability

4 A no-action alternative was considered but would not support California’s goals to reduce
5 wildfire risks or mitigate potential impacts to communities, infrastructure, and natural resources.
6 Proactive fuels reduction is widely recognized as an industry best practice for organizations
7 operating in wildland areas, and its importance is reinforced through coordinated efforts by the
8 OEIS-led Utility Fuels Management Working Group, which collaborates with agencies such as
9 CAL FIRE, the U.S. Forest Service, and Caltrans.

10 **Fuels Reduction Around Distribution Assets**

11 The process for Fuels reduction around distribution assets is continually evaluated and
12 updated. The distance of clearance, areas where fuels management would be most effective, cost
13 of treatment, and the real-world conditions of the service territory are used to adjust
14 implementation of the program and are regularly revisited through discussion, field experience
15 and evolving risk considerations. In most cases, fuels management implementation mirrors the
16 standards and implementation strategies of fire agencies as well as other subject matter expert
17 groups, such as Caltrans or the Bureau of Land Management. The science behind these decisions
18 is also regularly evolving and as best practices continue to be re-established, fuels reduction will
19 continue to be evaluated, refined, and enhanced.

20 A no-action alternative for fuels reduction around distribution assets was also considered.
21 Under a no-action scenario, vegetation would continue to accumulate in the utility right of way.
22 This would elevate wildfire risk and potential impacts to public safety, system reliability, and
23 surrounding communities. In contrast, proactive fuels reduction reduces fuel loading near assets,
24 aligns with established fire agency practices, making it a more effective approach to mitigating
25 wildfire risk.

26 **Fuels Management Grants**

27 For fuels management grants, multiple methodologies were evaluated to determine how
28 best to allocate funding to fuels reduction projects. The approach that provided the most value
29 incorporated subject matter experts from the Greater Fire Safe Council and fire science
30 professionals. Inclusion of this expertise supported a more accurate assessment of project

1 effectiveness, community benefit, and operational feasibility, leading to more strategic and
2 impactful funding decisions.

3 A no-action alternative was likewise evaluated for fuels management grants. Without
4 grant funding, many community-based fuels reduction projects would not be implemented due to
5 resource constraints, limiting opportunities to reduce hazardous vegetation across broader
6 landscapes. This would result in less mitigation of wildland fire risk in areas adjacent to utility
7 ROWs and reduced overall system and community resilience. Providing targeted funding
8 enables projects informed by local need and expertise to move forward, improving the
9 consequence mitigations from all fire ignition sources and supporting coordination with regional
10 wildfire mitigation efforts.

11 **b. Forecast Method**

12 A base-year methodology was used to forecast O&M costs. As of 2025, the number of
13 assets has stabilized compared to prior years, therefore the 2025 level of work and costs is most
14 indicative of future work and costs. Variability in work volume may occur, however the cost per
15 unit is likely to stabilize and reflect 2025 levels.

16 **c. Cost Drivers**

17 Cost drivers for fuels treatment around distribution assets, fuels management grants, and
18 defensible space vegetation abatement are primarily driven by labor, treatment scope, site
19 conditions, and environmental or cultural regulations governing project areas.

20 **Fuels Reduction Around Distribution Assets**

21 For fuels treatment around distribution assets, key cost drivers include the number of
22 poles treated, amount of material removed (maintaining previously treated areas typically costs
23 less than new treatment areas), and labor costs, including required skill levels, crew availability,
24 and safety requirements. Projects with limited access, steep terrain, dense vegetation, or no prior
25 treatment history generally result in higher unit costs.

26 **Fuels Management Grants**

27 For fuels management grant projects, costs are largely driven by the targeted metrics of
28 the projects proposed by local stakeholders. These metrics include acres treated, vegetation type
29 and density, and general objectives of the project. Costs, as well as connection to utility
30 consequence mitigation, are compared to overall value based on the methodology and metrics
31 developed by first responder agencies.

1 **Defensible Space Vegetation Abatement**

2 For defensible space vegetation abatement, labor cost is the primary cost driver,
3 reflecting crew size, time required per parcel, and prevailing wage rates. Regulatory
4 requirements, including changes to defensible space standards or vegetation clearance codes,
5 directly affect treatment scope and associated costs.

6 **7. Application Support and Risk Analytics (M582)**

7 **a. Description of Costs and Underlying Activities**

8 Application Support and Risk Analytics includes supporting the continuous, reliable
9 operation of current vegetation management applications and future software platforms that are
10 foundational to wildfire risk mitigation and regulatory compliance. The Technology Lifecycle
11 Management team supports and maintains field operations (Pre Inspection, Pruning and
12 Removal, Pole Clearing, Auditing) and reporting while delivering minor system improvements,
13 operational support, and audit-ready, reliable system performance. These efforts reduce
14 operational risk and maintain compliance with GO 165 and D.24-06-003 by enabling accurate
15 recording and reporting of vegetation management activities and supporting uninterrupted
16 operations critical to public safety.

17 Application Support and Risk Analytics activities also enable the collection of data not
18 readily available through standard foot patrols. These capabilities support a transition to a
19 condition-based inspection model, where inspection and maintenance activities are prioritized
20 based on the modeled condition, performance, and risk profile of assets rather than fixed
21 schedules, by maintaining data quality, transforming large datasets into actionable insights, and
22 reporting that support risk-based prioritization, regulatory compliance, and auditable vegetation
23 management activities. By combining spatial risk layers, historical performance, and asset data,
24 these capabilities inform and enable risk-based prioritization of inspections and field work,
25 directing resources to locations with the greatest likelihood and consequence of failure. This
26 capability identifies where remote-sensing technologies deliver the most value and supports
27 scaling condition-based vegetation programs. Without this analytical foundation, utilities cannot
28 efficiently convert remote-sensing data into operational decisions or achieve the cost, safety, and
29 reliability benefits needed to justify continued investment in advanced inspection technologies.

30 Costs are requested for labor and non-labor resources required to support production
31 system stability and application availability, cyber security updates, incident management, audit

1 ready inspection records, data quality assurance, regulatory and financial reporting, and ongoing
2 analytics model maintenance.

3 **i. Description of Selection and Prioritization of RAMP**
4 **Risk Mitigations**

5 The initiative selection process for Application Support and Risk Analytics was guided by
6 the need to sustain the reliable operation of vegetation management applications and analytics
7 that are essential to wildfire risk mitigation, regulatory compliance, and public safety. It reduces
8 operational risk and enables accurate, auditable reporting and risk-based prioritization of
9 inspections and field work, ensuring uninterrupted operations and efficient use of resources.

10 If no action is taken to sustain vegetation management application support, data
11 foundations and risk analytics, then operational, compliance, and wildfire risk exposure will
12 increase. Degradation of systems supporting Pre Inspection, Pruning and Removal, Pole
13 Clearing, and Auditing would increase the likelihood of system instability, disrupted field
14 operations, delayed incident response, and incomplete or inaccurate records, weakening
15 compliance with GO 165 and D.24-06-003 and reducing audit readiness. Failure to maintain
16 analytics and data integration capabilities would further limit the ability to operationalize remote
17 sensing data (e.g., LiDAR) and high-resolution imagery, slowing progress toward a condition-
18 based inspection model and diminishing risk-based prioritization. Collectively, these impacts
19 would compromise the strategic execution of mandated vegetation management programs,
20 increase wildfire ignition risk, threaten public safety, and adversely affect regulatory mandates
21 and long-term cost effectiveness.

22 **b. Forecast Method**

23 A base-year methodology was used to forecast labor and non-labor O&M costs because
24 historical spending fluctuates due to organizational changes, shifting responsibilities, and
25 movement of IT cost drivers. These variations make trend-based forecasting unreliable. Base
26 year expenditures are the most accurate representation of the expected future state, providing
27 consistency with current organizational structure, spending patterns, and anticipated resource
28 requirements.

29 **c. Cost Drivers**

30 Cost drivers relate to sustaining reliable, compliant operation of vegetation management
31 applications, data products, and risk analytics capabilities and are supported by state regulatory

1 requirements including GO 95 and 165 and D.24-06-003, which require accurate, timely, and
2 auditable documentation of all vegetation management activities.

3 Costs are also driven by the need to integrate and process large remote-sensing datasets
4 into actionable vegetation-risk insights. This capability supports targeted inspection and
5 mitigation prioritization, influencing the scope and cost of field activities. It also supports
6 efficient operation of condition-based vegetation management activities and enhances the ability
7 to scale advanced inspection technologies.

8 **8. Integrated Work Management & Risk Assessment Platform (M584)**

9 **a. Description of Costs and Underlying Activities**

10 The Integrated Work Management & Risk Assessment Platform will replace the existing
11 vegetation management system, which will reach end of life in 2027 and requires increasing
12 effort and cost to sustain operations.

13 Costs requested include targeted investment in change management and training, which
14 was identified as essential to prepare employees for new processes, support user readiness, and
15 enable rapid adoption of enhanced system capabilities while minimizing operational disruption.
16 In parallel, the continued maintenance of legacy system licenses during the transition period is
17 necessary to preserve business continuity and maintain regulatory compliance until the new
18 platform is fully operational. Together, these costs support a deliberate and stable
19 implementation approach that reduces operational risk, protects ongoing work execution, and
20 maximizes the value of the future system. O&M activities will support continued system
21 functionality, regulatory compliance, and secure operations during the transition period and after
22 implementation.

23 **i. Description of Selection and Prioritization of RAMP** 24 **Risk Mitigations**

25 The initiative selection process for the Integrated Work Management & Risk Assessment
26 Platform was guided by the need to have a controlled and low-risk transition from an end-of-life
27 vegetation management system to a modern Integrated Work Management and Risk Assessment
28 Platform.

29 Allowing the existing vegetation management system to remain on an outdated, on
30 premises platform will result in escalating operational, cybersecurity, and regulatory compliance
31 risks. Continued reliance on legacy infrastructure would limit the support of integrated work

1 management, dynamic regulatory reporting, and accurate documentation of vegetation
 2 management activities, reducing audit readiness and increasing exposure to compliance
 3 violations and penalties. Over time, these limitations undermine wildfire risk mitigation efforts,
 4 data accuracy and transparency, and the ability to safely and reliably execute mandated
 5 vegetation management programs, potentially resulting in increased risk to public safety and
 6 adverse impacts to customer rates.

7 **b. Forecast Method**

8 A zero-based forecasting approach was used to forecast non-labor O&M costs. This
 9 method develops cost estimates from current needs rather than relying on historical averages,
 10 which may not represent today’s technological requirements or the expected scope of work.
 11 Non-labor cost estimates were developed using current market information and input from
 12 internal and external delivery teams, where applicable. Experience from similar utility system
 13 replacements and vegetation management platform implementations informed estimates for
 14 system configuration, data migration, integration, software licensing, cloud infrastructure, and
 15 implementation services. These estimates reflect comparable activities required to enable field
 16 operations, support risk-based workflows, maintain regulatory compliance, and ensure continuity
 17 during transition from legacy to replacement systems.

18 **c. Cost Drivers**

19 Cost drivers include labor and non-labor expenses for change management and training
 20 services to support employee readiness for the new vegetation management system, promote
 21 smooth adoption, minimize operational disruptions, and help users quickly leverage the
 22 platform’s improved capabilities. Costs also include license renewal fees for the legacy system
 23 while transitioning to the future platform.

24 **C. Situational Awareness and Forecasting**

25 **TABLE JW - 6**
 26 **Situational Awareness and Forecasting O&M Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)				
ID	C. Situational Awareness and Forecasting	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
561	Fire Potential Index	772	1,080	308

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)

ID	C. Situational Awareness and Forecasting	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
562	Weather Network & Technology Programs	189	378	189
572	Situational Awareness and Forecasting	2,691	2,728	37
Total Non-Shared Services		3,652	4,186	534

1
2 These costs support wildfire preparedness and operational decision-making by providing
3 real-time weather monitoring, data collection, and predictive insights across the service territory,
4 which are foundational to the wildfire mitigation strategy. Weather forecasting, environmental
5 sensing, and fire detection capabilities enhance awareness of conditions that may increase
6 wildfire risk. Weather stations, satellite-based ignition detection, camera networks, and
7 forecasting models provide foundational data used to monitor weather conditions, detect
8 potential ignitions, and assess daily wildfire potential. These capabilities also support advanced
9 forecasting and modeling tools, including the FPI and Santa Ana Wildfire Threat Index
10 (SAWTI), which classify daily fire potential and inform operational decisions such as PSPS de-
11 energizations and work restrictions in high-risk areas. Together, these situational awareness and
12 forecasting activities enable timely, informed actions and support broader wildfire mitigation and
13 grid hardening efforts.

14 **1. Fire Potential Index (C561)**

15 **a. Description of Costs and Underlying Activities**

16 The FPI is a 7-day forecast model produced daily that communicates the wildfire
17 potential for any given day, promoting safe and reliable operations. It consists of three
18 components, green-up (the state of native grasses), fuels (ratio of dead fuel moisture to live fuel
19 moisture), and weather (sustained wind speed and dew point depression), which are assigned
20 daily numeric values. These values are then combined to generate an FPI value of 0 to 17. The
21 FPI is used to classify fire potential into operating conditions of “Normal,” “Elevated,” and
22 “Extreme”, which inform operational practices.

1 While the FPI does not directly reduce wildfire or outage risk, it is foundational to
2 support wildfire mitigation efforts. Proactive and reactive operational practices are tied to FPI
3 values through standard operating procedures, reducing the likelihood of facilities causing
4 ignitions during elevated or extreme risk conditions. FPI classifications also inform critical
5 operational decisions, such as recloser settings, restrictions on the type of work performed in
6 high-risk locations, the use of CFRs, and PSPS decision-making. Additionally, the FPI is shared
7 with local fire agencies, emergency responders, and the National Weather Service, and provides
8 ratepayers with real-time updates on wildfire risk.

9 SDG&E maintains three academic partnerships that advance fire potential indices,
10 environmental modeling, and operational forecasting: the San Diego Supercomputer Center
11 (SDSC), San Jose State University (SJSU), and the Center for Western Weather and Water
12 Extremes (CW3E). These partnerships support the FPI by providing information critical to
13 understanding fire weather. The partnership with SDSC advances modeling science,
14 computational efficiency, and data management through advanced analytics, physics-based
15 weather modeling, and enhanced data accessibility tools. SJSU is developing an automated,
16 near-real-time live fuel moisture product using remote sensing and meteorological data, while the
17 collaboration with CW3E leverages high-performance computing to operate the West WRF
18 ensemble, which includes the industry's first ensemble-based SAWTI, improving predictability
19 of extreme weather drivers of wildfire risk.

20 This activity also encompasses the "FireSafe 5.0" project, a collaboration between
21 SDG&E, academia, and private industry that aims to enhance fire science capabilities and
22 develop new tools and technologies to modernize the FPI and create the next generation of fire
23 weather tools. This project supports the efficient processing and analysis of large volumes of
24 data to generate precise wildfire risk forecasts.

25 Due to a change in cost classification, the FPI is treated differently in the 2028 GRC than
26 in the 2025 RAMP. While RAMP reflected all costs as capital, the 2028 GRC reclassifies a
27 portion of those costs to O&M to better align cost recovery with the program's ongoing
28 operational nature.

29 O&M costs are requested to support ongoing operation and enhancement of the FPI,
30 including non-labor costs associated with FireSafe 5.0 initiatives and academic partnerships that
31 provide advanced fire weather modeling, fuel moisture analytics, and forecasting capabilities.

1 **i. Description of Selection and Prioritization of RAMP**
2 **Risk Mitigations**

3 The initiative selection process for the FPI was guided by its role in communicating daily
4 wildfire potential and supporting safe, reliable system operations.

5 Alternatives considered included maintaining the SAWTI without additional
6 enhancement, relying solely on publicly available ensemble weather data, continuing to estimate
7 live fuel moisture using a limited set of point-based observations, increasing the number of
8 physical sampling sites, and restricting dissemination of the FPI to internal users. These
9 alternatives were dismissed for various reasons.

10 Maintaining the existing SAWTI would limit the ability to distinguish between weak and
11 moderate wind events, reducing forecast resolution and PSPS decision accuracy. Exclusive
12 reliance on publicly available ensemble data would not fully capture wind-forecast uncertainty at
13 the spatial and temporal scales required for operations. Estimating fuel moisture without a live,
14 spatially resolved model would leave the FPI dependent on a small number of point-based
15 observations, reducing accuracy and increasing ignition risk. Expanding physical sampling sites
16 would entail substantial cost, resource demands, and logistical complexity. Finally, restricting
17 access to FPI data would reduce transparency and limit integration with internal and external
18 datasets used to support high-impact operational decisions.

19 **b. Forecast Method**

20 A base-year methodology was used to forecast O&M costs because 2025 expenses most
21 accurately reflect expected future work. Historical costs do not capture the current reliance on
22 expanded data sources and modernized methodologies and therefore are not representative of
23 future requirements.

24 **c. Cost Drivers**

25 Cost drivers include the need to accurately assess wildfire risk and the ongoing
26 requirement to modernize fire science capabilities to support safe and reliable daily operations.

27 **2. Weather Network & Technology Programs (C562)**

28 **a. Description of Costs and Underlying Activities**

29 Weather Network & Technology programs support the ongoing operation and
30 maintenance of the Weather Station Network, which consists of 225 strategically located weather
31 stations deployed across the service territory. These stations continuously collect and transmit

1 wind speed, wind gusts, wind direction, temperature, and humidity data at 10-minute intervals
2 using cellular and spread spectrum communications. During critical fire weather conditions, 219
3 stations can be remotely configured to report wind gust data at 30-second intervals. Selected
4 weather data are also made publicly available through SDG&E's Weather Awareness System
5 website.

6 Weather stations are considered foundational to supporting wildfire mitigation efforts and
7 therefore do not directly reduce wildfire or outage program risk. Instead, this initiative enhances
8 situational awareness by providing timely and accurate weather information that supports
9 broader wildfire preparedness and operational decision-making.

10 Non-labor O&M costs are requested for the annual inspection, testing, and calibration of
11 all weather station sensors and supporting systems to maintain data accuracy and reliability.
12 Activities include verification of wind sensor alignment, inspection and cleaning of temperature
13 and humidity sensors, battery load testing, and calibration.

14 Costs are also requested for the transition to a centralized, real-time monitoring platform
15 that enables continuous visibility into station health, proactive failure prediction, and automated
16 maintenance workflows for field technicians. A cloud-based dashboard will provide real-time
17 insight into network up time, communications performance, configuration status, and active
18 alerts, while the monitoring platform will issue notifications for outages, calibration issues,
19 power disruptions, and environmental risks. All processed weather data will flow directly into
20 SDG&E's operational systems, including EOC dashboards, SCADA, outage management tools,
21 and engineering APIs. Together, these capabilities will deliver a fully managed, high availability
22 weather network that reduces operational burden while maintaining safety, readiness, and
23 wildfire mitigation effectiveness.

24 While this initiative does not directly reduce wildfire risk, it supports informed
25 operational decisions, wildfire mitigation activities, and PSPS decision-making.

26 **i. Description of Selection and Prioritization of RAMP**
27 **Risk Mitigations**

28 The initiative selection process for the Weather Network & Technology Programs was
29 driven by the need to enhance situational awareness during weather-driven and wildfire-risk
30 conditions in order to improve operational readiness, support wildfire-response decision-making,
31 and reduce public safety and reliability risks for customers.

1 The alternative of relying solely on preexisting weather stations operated by agencies
2 such as the U.S. Forest Service, the Federal Aviation Administration, and the National Weather
3 Service was considered. These stations are typically concentrated near urban areas or airports or
4 located in inaccessible mountainous regions and do not gather data across a large part of the
5 HFTD. Additionally, most government operated stations within the HFTD report only once per
6 hour. As a result, the localized microclimates created by complex terrain that are critical for fire
7 weather situational awareness would remain largely undetected and data would not be provided
8 with the frequency needed to support utility wildfire mitigation operations. Therefore, relying
9 solely on preexisting stations is not a viable alternative.

10 To support the computational needs of the Weather Station Network, use of public cloud
11 alternatives was considered. These public cloud alternatives would have higher and more
12 variable costs and would not deliver the high-performance computing capacity, storage, and
13 operational support required to run large, continuous, and mission critical forecasting workload
14 capabilities. Therefore, continuing with a private cloud environment was the alternative chosen.

15 **b. Forecast Method**

16 A zero-based methodology was used to forecast O&M costs because the new vendor
17 supported operational model represents a fundamental change from prior years. Since the vendor
18 is providing full support including monitoring, predictive analytics, and automated maintenance,
19 historical spending no longer reflects future needs. Using a zero-based methodology allows for
20 an accurate, transparent estimate aligned with the enhanced service level and expanded scope of
21 work.

22 **c. Cost Drivers**

23 Cost drivers are supported by regulatory and Commission expectations to maintain high-
24 resolution, utility specific environmental data to inform wildfire mitigation activities and PSPS
25 decision-making and include the ongoing maintenance, calibration, and technological support
26 required to operate the Weather Station Network. These drivers include the labor and non-labor
27 resources necessary to perform annual field inspections, sensor calibration, equipment upkeep,
28 and the integration of weather data into centralized computing platforms for analysis and
29 operational use, which support Company identified operational requirements for reliable, real-
30 time weather data to support emergency response and safe grid operations.

1 Additional cost drivers include the procurement of weather sensing and communications
2 equipment and associated field work necessary to sustain and selectively expand the weather
3 station network to address coverage gaps and improve forecast accuracy in high-risk areas.
4 These drivers are supported by the Company identified need to facilitate a reliable flow of fire
5 weather information that informs emergency decision-making, including PSPS actions.

6 **3. Situational Awareness and Forecasting (C572)**

7 **a. Description of Costs and Underlying Activities**

8 Situational Awareness and Forecasting support the wildfire mitigation strategy by
9 monitoring weather and fuel conditions, developing fire and weather forecasts, and delivering
10 actionable intelligence to support system planning, emergency operations, and PSPS decision-
11 making. It is comprised of the Fire Science and Climate Adaptation (FSCA) department, which
12 includes meteorologists, climate adaptation advisors, and fire coordinators, and is dedicated to
13 responding to and strategizing for wildfire preparedness activities and climate resilience-related
14 deliverables.

15 Labor costs are requested for staff specialized functions and non-labor costs are requested
16 for the operation, maintenance, and enhancement of advanced tools and technologies required to
17 support wildfire mitigation activities, including the Weather Station Network; fire and weather
18 forecasting products such as the FPI, SAWTI, and Vegetation Risk Index (VRI); satellite-based
19 monitoring systems; and high-performance computing infrastructure that generates localized,
20 high-resolution weather and fire modeling data. These tools are used by the FSCA to support
21 real-time operations and emergency response, improving coordination between internal staff fire
22 coordinators and local, state, and federal fire agencies during incidents that involve or impact
23 SDG&E facilities.

24 Situational Awareness and Forecasting does not directly reduce wildfire ignition or
25 outage risk; rather, it is foundational to wildfire mitigation actions across the enterprise. It
26 supports the wildfire mitigation strategy by:

- 27 • Enhancing the understanding of environmental conditions across the service
28 territory to support more sensitive grid operations that reduce the likelihood of
29 utility related ignitions.
- 30 • Improving the understanding of potential fire behavior and impacts following an
31 ignition through wildfire behavior modeling, fuels and weather modeling, high-
32 definition camera networks, and satellite-based hotspot detection.

- Detecting potential wildland fire threats to utility infrastructure and electric grid reliability and identifying hazards in coordination with first responder agencies to support public safety.
- Supporting the use of advanced modeling tools, including the Weather Research and Forecasting (WRF) model, to define PSPS de-energization scopes with the highest feasible accuracy, reducing the number of customers impacted while maintaining public safety.

Key activities and tools include:

- SAWTI: Calculates the potential for large wildfire activity based on the strength, extent, and duration of the wind, dryness of the air, dryness of the vegetation, and greenness of the grasses. Similar to the hurricane-rating system, the SAWTI uses four threat levels that range from “marginal” to “extreme.”
- VRI: Categorizes circuits and transmission lines based on tree species, tree height, tree count, and historical vegetation related outages and is an input to PSPS decision-making
- Air Quality Management Program: Collects data collected through alternative channels and will continue under the management of the Safety & Culture chapter.
- Smoke Detection: Utilizes a network of mountain top cameras coupled with a smoke detection algorithm to continuously monitor the service territory.
- Satellite-Based Remote Sensing Hot Spot Detection: In collaboration with the Space Science and Engineering Center research and development center at the University of Wisconsin-Madison, hot spot detection from the Geostationary Operational Environmental Satellites (GOES)-17 and GOES-18³⁶ equipped with the Advanced Baseline Imager a has been operationalized for fire detection and characterization.
- High-Performance Computing Clusters: Generates high-quality weather data that is incorporated directly into operations and is visualized primarily by the San Diego SuperComputer Center on a publicly available website that showcases over a dozen high resolution models designed specifically for hazardous southern California weather. Collectively, nearly 2,000 compute core hours of high-performance computing are used per day to generate operational products, including the SAWTI, FPI, and inputs to the Wildfire Analyst Enterprise, wildfire behavior modeling software.

³⁶ National Environmental Satellite, Data, and Information Service (NOAA), *Geostationary Satellites, NOAA's GOES-R Series*, available at: <https://www.nesdis.noaa.gov/our-satellites/currently-flying/geostationary-satellites>.

1 **i. Description of Selection and Prioritization of RAMP**
2 **Risk Mitigations**

3 The initiative selection process for Situational Awareness and Forecasting is foundational
4 to the wildfire-mitigation strategy because it provides the real-time and forecasted environmental
5 intelligence needed for safe grid planning, emergency operations, and PSPS decision-making.
6 The initiative was prioritized because it enables more precise, risk-informed grid operations that
7 help reduce the likelihood of utility-related ignitions and improve the ability to anticipate fire
8 behavior. It also supports advanced forecasting models like WRF that define PSPS
9 de-energization scopes with greater accuracy, reducing customer impacts while maintaining
10 safety. From the customer-benefit perspective, this program strengthens operational readiness,
11 enhances decision-making during wildfire conditions, and enables more targeted PSPS actions,
12 improving both reliability and public safety across the service territory.

13 Another alternative considered was relying on government run high resolution weather
14 models. While these publicly available forecast models provide useful regional weather
15 information, they are not optimized for the complex terrain across Southern California nor are
16 they calibrated for Santa Ana wind conditions that drive wildfire risk in the service territory. In
17 addition, these models only provide forecasts up to 48 hours in advance, which does not meet
18 regulatory requirements for PSPS notifications. For these reasons, reliance on government-run
19 models was rejected.

20 **b. Forecast Method**

21 A base-year methodology was used to forecast O&M costs because 2025 expenses are
22 representative of ongoing operations and align with expected test-year activities.

23 **c. Cost Drivers**

24 Cost drivers include essential functions required to maintain the Situational Awareness
25 and Forecasting program, in compliance with regulatory requirements functions include the need
26 to monitor fire weather conditions; investments in high-resolution forecasting models, fire
27 behavior tools, and satellite-based detection systems; and the staffing to support expanded
28 climate resilience and wildfire modeling activities. These drivers are supported by increased
29 need for utility specific weather forecasting, ignition probability modeling, and accurate PSPS
30 decision-making; company identified operational needs arising from climate driven increases in
31 extreme weather (see Section V.E); and the growing scope of work performed by the FSCA.

Costs also reflect the integration of current science into core systems such as the Weather Station Network, FPI, SAWTI, GOES-18/19 satellite data feeds, the WRF modeling system, and high-performance computing infrastructure. Additionally, FSCA has vertically integrated best in class subject matter expertise in meteorology. Labor is a significant cost driver that is needed to reduce the possibility of a utility caused wildfire, the number one risk to the utility. Wildfire, weather and climate experts in-house support daily operations and emergency operations and ensure safe delivery of clean and reliable energy.

D. Emergency Preparedness, Collaboration, and Public Awareness

**TABLE JW - 7
Emergency Preparedness, Collaboration, and Public Awareness O&M Costs³⁷**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)				
ID	D. Emergency Preparedness, Collaboration and Community Outreach	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
556	Engagement with AFN Populations	1,698	1,830	132
557	Public Outreach and Education Awareness	3,005	3,575	570
567	Public Emergency Communication Strategy	7,139	6,185	-954
571	Emergency Preparedness and Recovery Plan	32,061	32,334	273
Total Non-Shared Services		43,903	43,924	21

These costs support activities necessary for emergency preparedness, collaboration, and public awareness efforts in compliance with Pub. Util. Code § 768.6(a). This includes implementation and maintenance of the Company Emergency and Disaster Preparedness Plan (CEADPP), which governs emergency response efforts, including wildfire and PSPS

³⁷ The figures in this table may not match the associated workpapers because the table includes corrections related to historical Emergency Preparedness and Recovery Plan O&M costs. The associated workpapers (Ex. SDGE-07-WP) could not be corrected prior to this filing but will be corrected and provided to the parties at the first available opportunity. In the meantime, to ensure this testimony provides the most accurate requested figures, these table have been adjusted to incorporate those corrections.

1 preparedness and is integrated into the Company’s broader emergency response framework.
2 Funded activities include labor and non-labor costs associated with planning, coordination,
3 training, and execution of emergency response readiness; development and delivery of public
4 education and outreach campaigns related to wildfire and PSPS risk awareness; and stakeholder
5 engagement efforts with customers, communities, Tribes, local governments, and emergency
6 response partners.

7 Costs also support the Wildfire Safety/PSPS Community Awareness campaign, including
8 online webinars, Wildfire Safety Fairs, and outreach advisors who work with CBOs to amplify
9 messaging. Tribal engagement activities, including culturally appropriate communications
10 informed by listening sessions, surveys, and focus groups, are also included.

11 During PSPS activations and wildfires, this category covers costs for customer
12 notifications, media communications, in-community signage, situational awareness postings, and
13 social media outreach, including the development and distribution of social media toolkits shared
14 with community partners. Assistance and resource access provided to customers directly
15 impacted by wildfire and PSPS de-energizations, as well as implementation of emergency
16 residential and nonresidential customer protections ordered by the CPUC, are also funded under
17 this category.

18 Additionally, this category includes costs associated with ongoing coordination and
19 collaboration with external stakeholders, including engagement with local governments, first
20 responders, emergency management agencies, and other California IOUs focused on improving
21 customer experience and operational efficiency. These efforts support alignment on wildfire and
22 PSPS mitigation strategies and enhance overall emergency preparedness.

23 SDG&E proposes to record these costs in its WMPMA.

24 **1. Engagement with AFN Populations (C556)**

25 **a. Description of Costs and Underlying Activities**

26 The Access and Functional Needs (AFN) program is a foundational program designed to
27 mitigate the impacts of wildfire-related outages and PSPS de-energizations on vulnerable
28 customers who rely on electricity to maintain health, safety, and independence. The program
29 focuses on customers with medical, mobility, communication, or other functional challenges and
30 provides equitable access to emergency preparedness resources and services during PSPS de-
31 energization. While the program does not reduce wildfire risk, it addresses the impacts of PSPS

1 de-energizations on vulnerable populations through targeted support and coordinated response
2 efforts.

3 The AFN program delivers a comprehensive set of services before, during, and after
4 PSPS de-energizations to address the needs of electricity-dependent and vulnerable customers.
5 Program support includes in-event access to portable backup batteries and generator rebates
6 through the Customized Resiliency Assessments program and the Generator Assistance Program,
7 as well as hotel accommodations, accessible transportation, food assistance, and resiliency items
8 when needed.

9 The EOC's dedicated AFN Liaison supports customer coordination and provides
10 information regarding available AFN resources and CRC locations, which are established during
11 PSPS de-energizations to provide resources such as charging stations, cooling areas, and
12 Americans with Disabilities Act (ADA)-compliant facilities. Customer communications are
13 prioritized through multilingual alerts, American Sign Language (ASL) interpretation, and
14 accessible notifications delivered via mobile applications, websites, and social media platforms.

15 The program also emphasizes proactive engagement and partnerships, including
16 coordination with state and local agencies, Tribal governments, healthcare providers, and more
17 than 200 CBOs to deliver culturally appropriate outreach and coordinated emergency response.

18 O&M costs are requested for labor and non-labor costs such as 211 San Diego and
19 Orange County United Way resource coordination, accessible transportation services,
20 accessibility services, Collaborative Council working group activities, Wildfire Safety Fair
21 support, and hotel accommodations. Labor costs are also requested for several full-time
22 equivalents (FTEs) responsible for program administration, coordination, outreach, and
23 emergency response activities. Additional costs are requested to secure a contract for hotel
24 accommodations to provide customers with AFN timely access to emergency lodging during
25 PSPS de-energizations, consistent with CPUC directives requiring utilities to support vulnerable
26 customer populations through accessible, safe, and reliable resiliency and emergency response
27 measures (e.g., D.19-05-042 and subsequent PSPS-related decisions and guidance).

28 **i. Description of Selection and Prioritization of RAMP**
29 **Risk Mitigations**

30 The initiative selection process for Engagement with AFN Population was driven by the
31 need to reduce the impacts of wildfire-related outages and PSPS de-energizations on vulnerable

1 customers, including those with medical, mobility, or communication challenges. This initiative
2 was prioritized because targeted outreach and the provision of tailored support resources directly
3 enhances the safety of customers with AFN. These measures help vulnerable individuals
4 maintain independence during emergencies, lessen the hardship of extended outages, and provide
5 essential community-focused resilience benefits.

6 A range of alternatives were considered, including a do-nothing approach relying on
7 baseline outage notifications or more limited, reactive communications focused only on
8 customers directly impacted by PSPS de-energizations. Virtual webinars, standalone digital and
9 direct mail outreach, smaller community meetings, and reliance on local governments, Tribes,
10 community-based organizations, or fire agencies to deliver education were also evaluated. These
11 alternatives were rejected because they would not sufficiently meet outreach and engagement
12 compliance requirements, support customer preparedness and situational awareness, or provide
13 the consistent, proactive communication expected by the CPUC before, during, and after PSPS
14 activations. While some lower cost options exist, customer feedback has shown that in person
15 Wildfire Safety Fairs are among the most effective tools for engaging and educating
16 communities impacted by PSPS de-energizations. Accordingly, a comprehensive public outreach
17 and education approach was selected that combines in person engagement with digital and direct
18 mail outreach.

19 **b. Forecast Method**

20 A base-year methodology was used to forecast labor and non-labor O&M costs for
21 Engagement with AFN Populations. The 2025 recorded base year was selected because it
22 reflects the most current and representative level of program activity, including demonstrated
23 PSPS-driven demand. In 2025, PSPS de-energizations required targeted outreach, coordination
24 with community-based organizations, and enhanced customer support for AFN populations,
25 resulting in observable and repeatable workload levels.

26 The 2025 base year is considered representative of forecast-year needs because the
27 primary cost drivers (AFN customer engagement, partner coordination, targeted
28 communications, and PSPS-related support activities) are expected to remain consistent over the
29 forecast period. While PSPS timing and frequency vary, 2025 activity provides a reasonable
30 proxy for expected workload under similar conditions.

1 **c. Cost Drivers**

2 Costs are driven by the requirement to provide accessible, equitable support to customers
3 with AFN; the frequency, scope, and duration of PSPS de-energizations; and wildfire risk within
4 the HFTD. Costs are also driven by direct customer assistance and emergency resources,
5 including accessible transportation, food, and lodging support coordinated through partners such
6 as 211 San Diego and Orange County United Way, and the deployment and operation of CRCs
7 with ADA compliant services. Additional cost drivers include proactive outreach and accessible
8 communications (multilingual alerts, ASL interpretation, and screen reader compatible
9 notifications); coordination with CBOs, Tribal governments, and healthcare providers; and
10 program governance activities such as EOC activation, AFN liaison support, and post event
11 reviews and surveys. These drivers are supported by Commission direction in D.19-05-042,³⁸
12 D.20-05-051,³⁹ and D.21-06-034,⁴⁰ which require identification of AFN populations, accessible
13 education and communications, structured stakeholder engagement, collaboration with
14 healthcare providers, and evaluation of customer awareness and utilization of PSPS resources.

15 **2. Public Outreach and Education Awareness (C557)**

16 **a. Description of Costs and Underlying Activities**

17 The Public Outreach and Education Awareness program is a foundational program
18 designed to mitigate the impacts of wildfires and PSPS de-energizations by improving public
19 awareness, preparedness, and access to information and resources. The program supports
20 customers, communities, and local partners by delivering accurate, timely, and accessible
21 education on wildfire risk, PSPS, emergency preparedness, and available resources. While the
22 program does not directly reduce wildfire risk, it reduces the consequence of wildfire and PSPS
23 de-energizations by strengthening community readiness, transparency, and coordination.

³⁸ D.19-05-042, OP 3 at 130-131, and Appendix A). De-Energization (PSPS) Guidelines require utilities to conduct public outreach, coordinate with stakeholders, and consider vulnerable and AFN populations in PSPS planning.

³⁹ D.20-05-051, COL 36 at 97, and OP 1 at 99 require utilities to develop AFN Plans, enhance customer communications, engage stakeholders through working groups, and implement targeted outreach to medical baseline and AFN populations.

⁴⁰ D.21-06-034, OP 3 at 170, and Appendix A. Phase 3 PSPS Guidelines requires utilities to enhance outreach and accessible communications, support AFN populations, provide access to resources, and evaluate customer awareness and utilization through surveys and reporting.

1 The program delivers year-round, multi-channel outreach and education across the
2 service territory, with a focus on communities and populations that may be disproportionately
3 impacted by wildfires and PSPS de-energizations, including HFTD areas, Disadvantaged
4 Communities (DACs), Disadvantaged Vulnerable Communities (DVCs), Environmental and
5 Social Justice (ESJ) communities, individuals with AFN, hard-to-reach populations, and Tribal
6 communities. Outreach methods include in-person engagement, digital communications,
7 community events, and partnerships with trusted local organizations. Beginning in 2025,
8 outreach was expanded beyond the HFTD to include coastal regions in recognition of the broader
9 impacts of wildfire and PSPS activity.

10 A central component of the program is the Wildfire and Climate Resilience Center
11 (WCRC), which operates as the EOC during incidents and serves as a public education and
12 collaboration space during non-emergency periods. The WCRC provides guided tours,
13 workshops, interactive exhibits, and access to subject matter experts, providing education on
14 wildfire mitigation, PSPS preparedness, emergency operations, and the science-based decision-
15 making. It also facilitates collaboration among CBOs, utilities, emergency services, local
16 governments, and Tribal partners to share best practices, strengthen regional preparedness, and
17 gather feedback from community leaders and stakeholders. The WCRC also features an
18 interactive Resilience Zone, offering visitors insight into emerging technologies and scientific
19 approaches that support the transition to clean energy and improve preparedness for climate-
20 related emergencies. Beginning in 2028, student engagements will transition into formal
21 interactive sessions focused on wildfire safety, PSPS preparedness, and community resiliency.
22 These sessions will combine guided tours with expert-lead discussions to deepen understanding
23 of public safety and emergency readiness.

24 Another component of the Public Outreach and Education Awareness program are
25 Wildfire Safety Fairs and Mini Wildfire Safety Fairs, which provide education on wildfire risk,
26 PSPS, emergency preparedness, and available resources. Wildfire Safety Fairs provide localized,
27 in-community education and resources, including preparedness guidance, resiliency tools, and
28 information on available customer assistance programs. Mini Wildfire Safety Fairs extend
29 outreach to smaller or hard-to-reach communities. Feedback collected at these events is used to
30 refine messaging and improve future outreach efforts.

1 The Public Outreach and Education Awareness program also leverages a comprehensive
2 communication strategy that includes websites, social media, webinars, in-community signage,
3 and direct customer notifications during PSPS de-energizations. A key element is the Energy
4 Solutions Partner (ESP) network, which includes nearly 200 CBOs that help amplify wildfire
5 safety and PSPS preparedness messaging to multilingual and multicultural audiences and provide
6 critical feedback from their communities.

7 During PSPS de-energizations, the Public Outreach and Education Awareness program
8 supports the activation of CRCs, which provide real-time support such as bottled water, snacks,
9 charging for phones and medical devices, accessible restrooms, outage information, referrals to
10 assistance programs, sensory kits to support individuals with customers with AFN, and other
11 critical resources. Mobile CRCs are also deployed to support impacted Tribal communities.

12 Beginning in 2028, grant-based funding will support Tribal Energy Liaison (TEL)
13 positions that will serve eight remote and under resourced Tribal Nations to deliver culturally
14 appropriate wildfire safety and emergency preparedness outreach and facilitate enrollment in
15 customer assistance programs, acting as trusted voices within Tribal communities.

16 Both labor and non-labor costs are requested. Non-labor costs encompass a broad range
17 of expenditures essential for effective operation of CRCs, Wildfire Safety Fairs and Mini
18 Wildfire Safety Fairs, outreach, and public engagement. This may include third-party program
19 management support, venue and equipment rentals, vendor fees, educational materials, supplies,
20 event logistics, community partnership fees, safety/resiliency giveaways, food and beverage,
21 technology and audiovisual needs, and other programmatic expenses that support effective,
22 community-focused preparedness initiatives. Labor costs are requested for FTEs responsible for
23 program administration, coordination, outreach, and emergency response activities.

24 The WCRC requires ongoing funding to maintain and update educational offerings. Costs
25 are requested for vendor contracts that support refreshing exhibits and activities to reflect the
26 latest science, performing software updates and equipment repairs, and replacing hardware as
27 needed. Costs are also requested to support an educational consultant to expand equitable
28 community engagement, align materials with educational standards, provide multilingual
29 accessibility, and implement long-term evaluation practices. Additionally, maintaining a safe
30 environment requires continued funding for onsite security staffing.

1 **i. Description of Selection and Prioritization of RAMP**
2 **Risk Mitigations**

3 The initiative selection process for Public Outreach and Education Awareness focused on
4 minimizing customer impact and providing clear information about available resources during
5 wildfires or PSPS de-energizations. This initiative was prioritized because effective outreach
6 and timely communication significantly improve preparedness and contribute to customer safety.

7 Alternatives considered are the same as the Engagement with AFN Populations program.
8 See Section III.D.1.a.i for details.

9 **b. Forecast Method**

10 The base-year forecasting approach was selected because it provides the most reliable
11 and supportable representation of expected future program activity based on recent, observed
12 conditions. The 2025 base year captures a mature program in which outreach strategies,
13 communication channels, and coordination with community partners have been established and
14 are functioning at scale. Importantly, the level and type of outreach reflected in 2025 were
15 directly informed by PSPS activity experienced in late 2024 and early 2025, which informed
16 preparedness efforts to educate and inform customers ahead of potential PSPS conditions in the
17 latter half of 2025 and early 2026. As a result, 2025 expenditures reflect a normalized level of
18 program effort that incorporates both reactive and proactive outreach activities, providing a
19 reasonable representation for ongoing workload requirements.

20 **c. Cost Drivers**

21 Cost drivers include public outreach and education activities such as Wildfire Safety Fairs
22 and Mini Wildfire Safety Fairs, public workshops and webinars, listening sessions, surveys, co-
23 designed initiatives with Tribal communities, partnerships with 211 San Diego, Orange County
24 United Way, Fire Safe Councils, and CBOs, and WCRC tours. Labor and non-labor costs
25 include communication consultants, training vendors, security contract labor, facility operation
26 expenses, travel expenses, software, materials for repairs, and event supplies. These cost drivers
27 are supported by regulatory expectations, state and Commission policy objectives, and SDG&E-
28 identified operational and community needs related to wildfire mitigation, public safety,
29 emergency preparedness, and stakeholder engagement.

30 The increasing complexity and frequency of wildfire and PSPS de-energizations require
31 sustained and expanded public education to support customer understanding of safety

1 precautions, outage notifications, and available support services, which directly drives the need
2 for expanded outreach activities, community partnerships, and operational resources.

3 **3. Public Emergency Communication Strategy (C567)**

4 **a. Description of Costs and Underlying Activities**

5 The Public Emergency Communication Strategy is a foundational program that delivers
6 timely, accessible communication to customers, communities, and public safety partners during
7 emergencies, including PSPS activations and wildfire-related outages. It provides actionable
8 information before, during, and after events and is accessible to individuals with AFN and
9 limited English proficiency (LEP). The approach aligns with CPUC requirements to enhance
10 notification, coordination, and mitigation of customer impacts during PSPS de-energizations. In
11 compliance with Resolution (Res.) ESRB-8,⁴¹ D.19-05-042,⁴² D.20-05-051,⁴³ and D.21-06-034,⁴⁴
12 this program establishes multilingual, accessible, and multi-channel communications that are
13 core components of PSPS implementation and wildfire mitigation.

14 The strategy integrates direct customer notifications, public information channels, partner
15 coordination, and technology to provide real-time situational awareness. During wildfire-related
16 outages or PSPS de-energizations, information is shared through multiple channels, including
17 direct notifications, website updates, media coordination, community signage, and social media.
18 Messaging covers system conditions, impacted areas, available resources, and restoration status,
19 and is available in 22 languages plus ASL, following accessibility standards.

20 Notifications are issued at set intervals before, during, and after de-energizations,
21 including advance warnings, activation updates, CRC information, and restoration notices. After
22 each event, communications are evaluated to support continuous improvement.

23 The Customer Notification System (CNS) delivers voice, email, and text alerts, while the
24 Alerts by SDG&E mobile application provides address level alerts and real-time updates. These
25 tools enable mass communication and maintain situational awareness throughout an event.

⁴¹ Res. ESRB-8 (July 12, 2018) at 6-7.

⁴² D.19-05-042 at 97-99, and Appendix A.

⁴³ D.20-05-051 at 22-24, and Appendix A.

⁴⁴ D.21-06-034 at 132-135, and Appendix A.

1 Coordination with public entities and CBOs helps amplify emergency messaging. A
2 network of roughly 50 CBO partners distributes PSPS and wildfire safety information through
3 trusted local channels. Public safety partners are engaged through an online portal and post
4 event feedback is used to refine future communication efforts.

5 Post-event reviews, partner surveys, and annual customer research are used to evaluate
6 the effectiveness of communications and inform future enhancements. This approach aligns with
7 CPUC expectations for accountability and continuous improvement following PSPS activations
8 and de-energizations.

9 Both labor and non-labor costs are requested. Non-labor costs support items such as the
10 paid public-education campaign that prepares customers for PSPS de-energizations, notification
11 translations and voice-recordings, mobile signage in affected communities, and pre- and post-
12 season customer research. Labor costs support FTEs responsible for program administration,
13 coordination, outreach, and emergency response activities.

14 **i. Description of Selection and Prioritization of RAMP**
15 **Risk Mitigations**

16 The initiative selection process for the Public Emergency Communication Strategy
17 focused on meeting regulatory requirements while balancing cost, operational resilience, and the
18 need for secure communications. These factors guided the choice of an approach that
19 strengthens the organization’s ability to communicate quickly and effectively during
20 emergencies. A strong public emergency communication strategy enhances customer safety by
21 providing timely, accurate situational awareness and decision support, especially during an
22 emergency event when conditions can rapidly evolve.

23 Another alternative considered was developing and executing a regional marketing
24 campaign in-house rather than using the agencies of record. However, this approach was
25 determined to be infeasible due to the lack of internal expertise, staffing capacity, or specialized
26 skills needed to design, manage, and implement a comprehensive marketing effort at the scale
27 required to meet CPUC requirements. Additionally, SDG&E lacked the technical capabilities
28 necessary to perform largescale media buying effectively. Bringing these functions in-house
29 would have resulted in higher overall costs, particularly for media purchases, because SDG&E
30 would not have secured the same competitive rates achieved through its media agency of record,

1 which leverages aggregated buying power across multiple clients. For these reasons, this
2 alternative was rejected.

3 **b. Forecast Method**

4 A base-year methodology was used to forecast labor and non-labor O&M costs. Because
5 2025 reflects program execution under current CPUC requirements during an active year,
6 recorded costs provide a sound basis for forecasting future-year expenditures associated with this
7 program. The 2025 recorded base year reflects a mature communications framework, including
8 established protocols for emergency messaging, coordination with public agencies, media
9 engagement, multilingual communications, and deployment of multiple communication channels
10 (e.g., digital, broadcast, and direct customer notifications). Notably, PSPS activity occurring in
11 late 2024 and early 2025 drove elevated communication and preparedness efforts, requiring
12 timely, scalable, and coordinated messaging to inform customers and stakeholders of evolving
13 conditions. These activities are reflected in recorded costs, capturing a normalized level of effort
14 needed to both respond to PSPS activity and proactively prepare customers for potential PSPS
15 de-energizations.

16 **c. Cost Drivers**

17 Costs are driven by the need to meet CPUC requirements to communicate with customers
18 before, during, and after PSPS de-energizations or wildfires that threaten SDG&E infrastructure.

19 Cost drivers include the development and execution of paid public education campaigns
20 that prepare customers for potential PSPS de-energizations, as well as customer notifications
21 during and following emergency events. Additional cost drivers include notifications,
22 translations, and voice recordings to support customers with diverse language needs; deployment
23 of mobile signage in impacted communities; and customer research to assess message
24 effectiveness, retention, and customer preparedness.

25 Labor costs support full-time employees responsible for planning, managing, and
26 overseeing public education campaigns and emergency communications, as well as staff who
27 engage with the media and manage customer research efforts. Collectively, these activities
28 provide consistent, effective communication that is responsive to customer needs while
29 satisfying CPUC requirements related to public safety outreach and customer engagement.

1 **4. Emergency Preparedness and Recovery Plan (C571)**

2 **a. Description of Costs and Underlying Activities**

3 The Emergency Preparedness and Recovery Plan is a foundational plan for mitigating,
4 responding to, and recovering from emergency events, including wildfires, PSPS de-
5 energizations, and climate-related emergencies, that may impact electrical or gas infrastructure,
6 public safety, or system reliability. The plan establishes an integrated, enterprise-wide
7 emergency management framework that supports operational resilience, regulatory compliance,
8 business continuity, and coordinated response with public safety partners, consistent with the
9 emergency preparedness requirements set forth in Pub. Util. Code §§ 768.6(a)⁴⁵ and 8386(c).⁴⁶

10 The plan is implemented through a series of strategic initiatives designed to enhance
11 readiness, situational awareness, response coordination, and recovery capabilities across the
12 organization. It supports all-hazards emergency management by integrating strategic planning,
13 training and exercise, quality assurance, regulatory compliance, business continuity planning,
14 and Incident Command System (ICS) operations.

15 Key elements include:

- 16 • Emergency planning, training, exercises, and continuous improvement to prepare
17 personnel for effective response to emergency conditions and coordinated
18 response and recovery actions in accordance with ICS principles.
- 19 • Enterprise-wide modernization of emergency management infrastructure and
20 technology, including supporting the transition of EOC applications to cloud-
21 based environments to improve availability, disaster recovery, flexibility, and data
22 management standards.
- 23 • Development of a governed enterprise data strategy and expansion of situational
24 awareness platforms, dashboards, and analytics capabilities to support real-time
25 decision-making during emergency events and recovery operations.

⁴⁵ Pub. Util. Code § 768.6(a) requires the Commission to “establish standards for utility disaster and emergency preparedness plans, including provisions for advance planning, improved communications between utilities, governmental agencies, and the public, and methods to control and mitigate emergencies and their aftereffects.”

⁴⁶ Pub. Util. Code § 8386(c) requires each electrical corporation to prepare and submit a wildfire mitigation plan aligned with the general rate case cycle and including, among other elements, defined objectives, preventive strategies and programs, performance metrics, evaluation of prior plan effectiveness, and protocols to mitigate public safety impacts, including impacts on critical infrastructure, health and communications systems, and medical baseline customers.

- 1 • Ongoing maintenance and enhancement of the EOC, emergency preparedness
2 training facilities, backup EOC facilities, redundant communications, and
3 deployment assets.
- 4 • Testing and piloting new technologies, including alternative communications
5 solutions and advanced analytics, strengthening the Common Operating Picture
6 and providing reliability across all activation types.
- 7 • Responder lifecycle management, including onboarding, training, and retention
8 strategies to address workforce attrition and maintain a qualified and ready
9 emergency response workforce.
- 10 • Coordination, collaboration, and training with first responders and Public Safety
11 Partners.

12 Activities are coordinated with other GRC mitigations, such as Engagement with AFN
13 Populations, Public Outreach and Education Awareness, and Public Emergency Communication
14 Strategy, to support a comprehensive and integrated emergency preparedness and recovery
15 approach.

16 Four distinct but complementary initiatives (EOC App Hub, Responder Lifecycle
17 Dashboard, Aviation Services Dashboard, and Emergency Preparedness and Recovery Plan)
18 address critical needs in system resilience, emergency workforce management, and operational
19 visibility during emergency conditions. Collectively, these initiatives enhance readiness for
20 PSPS de-energizations, severe weather, and wildfire response, while improving the reliability of
21 information used for decision-making and reporting.

22 The EOC App Hub (formerly “Digital Fortress” in the 2025 RAMP) is designed to
23 improve the resilience, scalability, and availability of PSPS and outage dashboards by enabling
24 cloud-based infrastructure. These dashboards are critical tools used by emergency operations,
25 leadership, and other internal stakeholders during high-impact events. EOC App Hub reduces
26 the risk of service degradation or system failure during periods of peak usage by modernizing
27 underlying infrastructure and improving redundancy. This investment supports timely access to
28 accurate, real-time information during emergencies, which is essential for effective coordination,
29 situational awareness, and response execution.

30 The Responder Lifecycle and Aviation Services Dashboard initiatives enhance the
31 Company’s operational management and oversight during emergency response and recovery.
32 Responder Lifecycle establishes a centralized, easy-to-use, and scalable solution to manage EOC
33 responder credentials, qualifications, availability, and hours worked on a per-event basis,

1 improving traceability, compliance, and post-event reporting. The Aviation Services Dashboard
2 provides consolidated visibility into utility aviation operations, supporting safer, more efficient
3 deployment and oversight of aerial resources during emergency conditions. Together, these
4 initiatives improve workforce readiness, operational transparency, and the Company’s ability to
5 support both real-time response and after-action review requirements.

6 The Emergency Preparedness and Recovery Plan is justified by Pub. Util. Code §§
7 768.6(a) and 8386(c), regulatory expectations, and the increasing risk and complexity of
8 emergency events affecting the service territory. California law, such as AB 1054 and SB 901,
9 requires electric utilities to proactively plan for emergencies associated with wildfire risk and
10 PSPS de-energizations and to maintain emergency preparedness plans that support safe
11 operations and effective response and recovery. Additionally, CPUC decisions addressing
12 wildfire mitigation, PSPS implementation, and emergency response emphasize the importance of
13 preparedness, coordination, situational awareness, and recovery planning to mitigate risks to
14 customers and communities during emergency events.⁴⁷

15 Both labor and non-labor costs are requested. Non-labor costs support response vehicles
16 and communications equipment to facilitate effective incident command and coordination,
17 maintenance and operation of the EOC, and emergency management training and exercise
18 development. Labor costs support FTEs responsible for program administration, coordination,
19 outreach, training, and emergency response activities.

20 **i. Description of Selection and Prioritization of RAMP**
21 **Risk Mitigations**

22 The initiative selection process for the Emergency Preparedness and Recovery Plan was
23 driven by the need to protect customer and employee safety and support cost-effective,
24 coordinated restoration during emergency events. Establishing clear procedures and improving
25 visibility into evolving conditions reduces operational risk, supports customer safety, and enables
26 coordinated response and recovery.

27 Another alternative was not considered because emergency preparedness was not treated
28 as a discretionary initiative with interchangeable solution options. Instead, the scope and
29 direction of the work were determined by identified risks under the RAMP framework, findings

⁴⁷ See D.19-05-042, D. 20-05-051, and D.21-06-034.

1 from internal and external assessments, and corrective actions resulting from EOC activations,
2 tabletop and functional exercises, and After-Action Reports. These findings revealed specific
3 deficiencies and capability gaps that required targeted enhancements to Emergency Management
4 oversight, planning, training, and coordination. As a result, SDG&E focused on implementing
5 required corrective actions and risk mitigations rather than evaluating alternatives.

6 **b. Forecast Method**

7 A base-year methodology was selected to forecast labor and non-labor O&M costs for the
8 Emergency Preparedness and Recovery Plan because it provides the most reliable and
9 supportable representation of expected future program needs based on recent operational
10 experience. The 2025 recorded base year captures a mature preparedness and recovery
11 framework, including established emergency planning, training and exercises, resource
12 readiness, internal and external coordination, and post-event recovery activities. Importantly,
13 PSPS activity and emergency response conditions experienced in late 2024 and early 2025
14 necessitated elevated and coordinated response efforts, which are reflected in 2025 expenditures.
15 These activities demonstrate a stabilized level of effort required to maintain readiness, support
16 event response, and execute recovery functions, resulting in a normalized cost baseline that is
17 representative of ongoing program requirements.

18 **c. Cost Drivers**

19 Key cost drivers for the Emergency Preparedness and Recovery Plan are driven by the
20 need to maintain a constant state of readiness to respond to and recover from PSPS activity and
21 other emergency conditions. Primary labor cost drivers include emergency planning and
22 program management, training and exercises, incident command staffing, and coordination with
23 internal operations teams, government agencies, and external partners. In addition, labor
24 resources are required for the ongoing support, administration, and maintenance of critical
25 emergency management systems, including the EOC App Hub, Responder Lifecycle tools,
26 Aviation Services Dashboard, and other operational platforms that enable situational awareness,
27 resource tracking, and decision-making during emergency events. These activities are necessary
28 to ensure compliance with regulatory requirements and to sustain operational readiness during
29 both event and non-event periods.

30 Non-labor cost drivers include contracts for emergency support services, logistics and
31 staging resources, communication and coordination tools, and costs associated with recovery

activities such as post-event evaluations. Non-labor costs also include licensing, hosting, maintenance, and vendor support for emergency management systems such as EOC App Hub, Responder Lifecycle, Aviation Services Dashboard, and other general systems that support emergency operations and coordination. PSPS activity experienced in late 2024 and early 2025 is a key indicator of these cost drivers, as it required elevated preparedness, system utilization, resource mobilization, and coordinated response efforts that are expected to continue in future years. Additionally, investments in training, equipment readiness, system functionality, and interagency coordination are recurring and necessary to maintain operational capability and meet evolving regulatory expectations, resulting in a stable and repeatable cost structure supporting both proactive preparedness and responsive recovery efforts.

E. Enterprise Systems

**TABLE JW - 9
Enterprise Systems O&M Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)				
ID	E. Enterprise Systems	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
566	Enterprise Data Foundation	-	2,564	2,564
Total Non-Shared Services		-	2,564	2,564

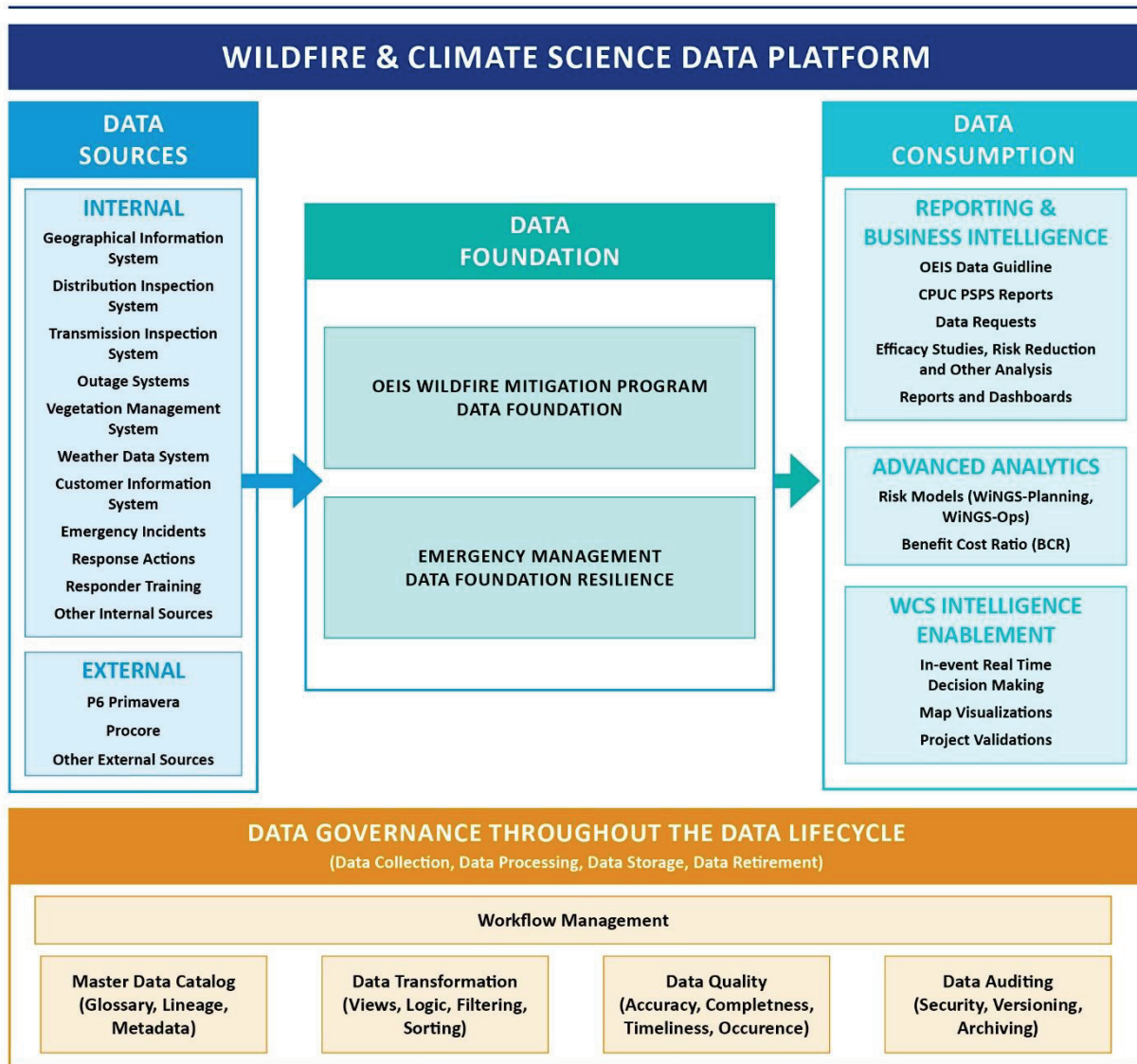
1. Enterprise Data Foundation (C566)

a. Description of Costs and Underlying Activities

The purpose of the Enterprise Data Foundation is to define how data will be managed as a strategic enterprise asset. Clean, trusted, and ready-to-use data improves the performance of risk models, enhances situational awareness, and drives more effective planning and mitigation activities. It reduces the operational friction caused by inconsistent or siloed datasets and provides one source of truth for teams across engineering, asset management operations, vegetation management, emergency management, climate adaptation, and regulatory compliance. Common data standards and a unified data architecture improve agility and readiness for hazards and evolving regulatory expectations.

1 The Enterprise Data Foundation also expands the capacity to adopt advanced
 2 technologies such as predictive analytics, automated reporting and data analytic tools, and
 3 remote sensing technologies. Collectively, these capabilities enable transparent, defensible, and
 4 evidence-based decisions that meet operational, regulatory, and customer expectations while
 5 enhancing safety, reliability, and long-term resilience. Figure JW-8 outlines the components of
 6 the Data Foundation.

7 **FIGURE JW - 20**
 8 **Wildfire & Climate Science Data Platform**



9
 10 There are four initiatives within the Enterprise Data Foundation:

- 1 • Data Strategy and Data Governance
- 2 • OEIS WMP Data Foundation
- 3 • Emergency Management Data Foundation Resilience
- 4 • WCS Intelligence Enablement

5 Data Strategy and Data Governance establishes the guiding principles, standards, and
6 oversight for Wildfire and Climate Science (WCS) enterprise data. It defines the long-term data
7 strategy and governance model required to provide consistent, trusted, interoperable, and ready-
8 to-use data for operations, risk modeling, mitigation planning, regulatory reporting, and
9 emergency management.

10 OEIS WMP Data Foundation manages automated data pipelines and processing
11 capabilities to support a wide range of use cases, including OEIS regulatory reporting.

12 Emergency Management Data Foundation Resilience oversees the collection,
13 management, and use of data before, during, and after emergency events. Emergency operations
14 require dedicated data foundations that are purpose built and operate independently from
15 standard operational systems to provide reliability under high stress conditions.

16 WCS Intelligence Enablement is designed to automate and streamline complex
17 operational and regulatory workflows. It provides capabilities to monitor workflow execution,
18 identify and resolve delays or bottlenecks, and deliver actionable insights that enable earlier
19 intervention and more effective operational response.

20 Costs are requested for internal and external labor and technology licensing to define and
21 govern enterprise data strategy, implement standardized and an automated data foundation,
22 maintain high-quality and compliant data products, and enable scalable analytics and workflow
23 automation to support operational, regulatory, and emergency management requirements.

24 **i. Description of Selection and Prioritization of RAMP**
25 **Risk Mitigations**

26 The initiative selection process for the Enterprise Data Foundation was driven by cost
27 and regulatory compliance needs for responsible, sustainable system improvements. The
28 initiative was prioritized because inaccurate or outdated data can impair mitigation planning,
29 hinder in-event decision support, and lead to inefficient reporting and operational delays. By
30 improving data quality, consistency, and reliability, the Enterprise Data Foundation strengthens

1 the ability to make timely, informed decisions and directly enhances customer safety through
2 better situational awareness and more effective mitigation strategies.

3 An alternative considered was to remain partially split across SAP HANA and Amazon
4 Web Services (AWS), but this approach requires two distinct skill sets and duplicated effort to
5 enhance and maintain each platform. This would increase long-term operating costs, slow
6 delivery, and add architectural complexity without delivering proportional business value.
7 Therefore, this alternative was rejected.

8 **b. Forecast Method**

9 A zero-based methodology was used to forecast O&M costs. This approach was selected
10 because the previous scope and scale of the Enterprise Data Foundation does not reflect the size,
11 complexity, or the technology planned for future years. Historical spending is therefore not a
12 reliable predictor of future O&M requirements.

13 **c. Cost Drivers**

14 Cost drivers for Data Strategy and Data Governance include internal and external labor
15 to:

- 16 • Create the WCS data analytic strategy and long-term vision
- 17 • Mature the data governance framework which defines roles, accountability,
18 stewardship responsibilities, and data quality processes
- 19 • Establish enterprise data architecture standards that include naming conventions,
20 authoritative datasets, metadata structures, and use of modern industry practices
21 such as medallion architecture and data Lakehouse patterns.
- 22 • Establish data quality management that includes rules, lineage tracking, validation
23 routines, and documentation
- 24 • Create policies for data lifecycle management
- 25 • Enhance data program efficiency and collaboration that identifies common data
26 sources across use cases to eliminate redundancies
- 27 • Managing data product lifecycles, to maintain up-to-date products remain
28 up-to-date and aligned with evolving regulatory requirements and operational
29 needs.

30 Costs drivers for the OEIS Data Foundation initiative include external labor and cloud
31 licensing for system administration and support for:

- 32 • Enhancing OEIS Quarterly Data Report (QDR) data structures, validation logic,
33 and automated processing pipelines

- Maturing data products that support mitigation effectiveness
- Enhancing asset and inspection datasets to increase reusability across all use cases
- Maintaining data governance policies
- Managing data product lifecycles, to maintain up-to-date products remain up-to-date and aligned with evolving regulatory requirements and operational needs.

Cost drivers for Emergency Management Data Foundation Resilience included external labor and Software-as-a service (SaaS) licensing for:

- Providing system administration
- Support for managing data products that support operational needs, including alignment with source operational systems
- Support for data governance policies
- Maintaining a data foundation with enabling cloud-based analytics
- Providing the flexibility and scalability to support evolving regulatory requirements

Cost drivers for WCS Intelligence Enablement include external labor costs for system administration and support for maintaining operational and regulatory workflows and dynamic decision support capabilities; resolving bottlenecks; managing resource allocations and compliance related obligations.

F. Wildfire Mitigation Strategy

**TABLE JW - 10
Wildfire Mitigation Strategy Development O&M Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)				
ID	F. Wildfire Mitigation Strategy	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
563	Wildfire Mitigation Strategy Development	3,930	3,821	-109
Total Non-Shared Services		3,930	3,821	-109

1 **1. Wildfire Mitigation Strategy Development (C563)**

2 **a. Description of Costs and Underlying Activities**

3 The Wildfire Mitigation department manages the WMP, which is designed to reduce
4 wildfire risk and minimize impacts associated with PSPS de-energizations. It provides
5 centralized leadership, governance, and technical expertise to support the effective development,
6 prioritization, and implementation of wildfire mitigation strategies across the organization.

7 The Wildfire Mitigation department supports a broad portfolio of initiatives, including
8 regulatory and legislative engagement related to wildfire risk, collaboration with utilities and
9 external stakeholders, and the advancement of innovative approaches to strengthen fire safety
10 and risk management capabilities. The department is overseen by the Director of Wildfire
11 Mitigation and includes the following functional groups:

- 12 • The Wildfire Mitigation Programs group supports regulatory proceedings and
13 requirements related to wildfire mitigation and de-energization activities and
14 responds to legislative and media inquiries.
- 15 • The Wildfire Mitigation Strategy group develops performance metrics, leads
16 strategic initiatives, promotes innovative approaches to enhance wildfire safety,
17 and provides project management oversight of risk modeling advancements and
18 other strategic capabilities to align with regulatory requirements and
19 organizational objectives.
- 20 • The Wildfire Mitigation Risk Analytics group performs the design, operation,
21 maintenance, and enhancement of advanced risk assessment tools in accordance
22 with evolving regulatory requirements. The labor and non-labor costs associated
23 with this group are captured in Risk Methodology and Assessment (C558).

24 Internal and external labor costs are requested to support foundational activities of the
25 wildfire mitigation framework. While these activities do not directly reduce wildfire or outage
26 risk, they are foundational to effective wildfire mitigation outcomes and support the wildfire
27 mitigation strategy by:

- 28 • Providing analytical insights and strategic information to support risk-informed
29 wildfire mitigation decisions
- 30 • Supplying information and coordination necessary to support the efficient
31 execution of wildfire mitigation initiatives across the enterprise

32 Costs are requested to support a centralized business unit responsible for leadership,
33 governance, regulatory alignment, and technical strategy development required to execute the

1 WMP and meet regulatory obligations. These activities are foundational in nature and support
2 consistent development, prioritization, and implementation of wildfire risk reduction strategies.

3 **i. Description of Selection and Prioritization of RAMP**
4 **Risk Mitigations**

5 The initiative selection process for the Wildfire Mitigation Strategy Development
6 program was driven by the need for centralized leadership, governance, and technical expertise
7 to guide the effective development and prioritization of wildfire mitigation strategies. The
8 initiative was prioritized because it supports a broad range of critical functions, including
9 regulatory and legislative engagement, collaboration with peer utilities and stakeholders, and
10 advancing innovative approaches to improve fire-safety and risk-management capabilities. By
11 strengthening organizational alignment and improving the effectiveness of all wildfire mitigation
12 efforts, the program enhances public safety, system reliability, and long-term community
13 resilience.

14 **b. Forecast Method**

15 A base-year methodology was used to forecast O&M costs. The base year methodology
16 is most indicative of future work because activities funded under this category represent
17 established, ongoing program functions that do not anticipate changes to current day-to-day
18 operations.

19 **c. Cost Drivers**

20 Cost drivers include labor and non-labor resources required to support ongoing wildfire
21 mitigation strategy, governance, and oversight functions. These include continuous regulatory
22 and legislative engagement; coordination with external stakeholders, peer utilities, and industry
23 partners; the enablement and facilitation of performance metrics; strategic initiatives; and
24 advanced risk-modeling capabilities.

25 Specialized external support is utilized to strengthen regulatory, analytical, and
26 operational capabilities, including the development and refinement of the WMP. These resources
27 enhance data governance, business intelligence, and reporting by advancing data platforms,
28 improving data transparency, and delivering high-quality analytics. They also help standardize
29 processes, documentation, and audit frameworks to support compliance, informed decision-
30 making, and consistent execution of wildfire mitigation initiatives across the enterprise.

1 Additionally, memberships in utility research consortiums support collaborative, science-based
 2 research that provides member utilities with unbiased, industry-wide knowledge and insights.

3 In addition, the forecast reflects the operational requirements associated with maintaining
 4 a centralized Wildfire Mitigation Department that provides critical leadership, coordination, and
 5 technical oversight across the organization. The need for these resources is driven by regulatory
 6 proceedings related to wildfire mitigation and PSPS de-energization; Commission and state
 7 requirements^{48,49,50} for wildfire risk modeling, performance measurement, and strategic planning;
 8 and SDG&E-identified needs to strengthen analytical rigor and maintain effective external
 9 engagement.

10 **G. Risk Methodology and Assessment**

11 **TABLE JW - 11**
 12 **Risk Methodology and Assessment O&M Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)				
ID	G. Risk Methodology and Assessment	2025 Adjusted-Recorded (000s)	TY2028 Est. (000s)	Change (000s)
558	Risk Methodology and Assessment	4,733	7,385	2,652
Total Non-Shared Services		4,733	7,385	2,652

13
 48 OEIS, *2026-28 Wildfire Mitigation Plan Guidelines*, available at: <https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2026-28-wildfire-mitigation-plan-guidelines/>.

49 OEIS, *Final Electrical Corporation Wildfire Mitigation Maturity Model and Survey Guidelines and Electrical Corporation Mitigation Maturity Survey* (March 20, 2025), available at: https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=58118&shareable=true&_gl=1*127tar0*_ga*NjQ2NTI1OTc1LjE3MTY0ODY1NTc.*_ga_69TD0KNT0F*cze3ODAzNTA1NjgkbzlkZzEkdDE3ODAzNTA2MTEkajE3JGwwJGgw*_ga_340RFMFNWY*cze3ODAzNTA1NjgkbzlkZzEkdDE3ODAzNTA2MTEkajE3JGwwJGgw*_ga_DCP197HRSL*cze3ODAzNTA1NjgkbzlkZzEkdDE3ODAzNTA2MTEkajE3JGwwJGgw.

50 A.25-05-010/013 (cons.), ALJ’s Ruling Entering Safety Policy Division’s 2025 Sempra RAMP Evaluation Report into the Evidentiary Record (October 10, 2025), at Attachment A.

1 **1. Risk Methodology and Assessment (C558)**

2 **a. Description of Costs and Underlying Activities**

3 The Risk Methodology and Assessment program funds the ongoing operational activities
4 required to meet evolving wildfire and PSPS risk modeling requirements established by the
5 CPUC, OEIS, and statute, including Pub. Util Code § 8386. The program supports a significant
6 regulatory-driven evolution in how SDG&E evaluates both capital and operational wildfire
7 mitigation strategies—transitioning from qualitative and deterministic approaches to a rigorous,
8 transparent, and quantitative cost-benefit framework that evaluates mitigation investments in
9 terms of cost per unit of wildfire and outage risk reduction. The program evaluates long-term
10 grid hardening strategies and operational activities by assessing overall wildfire risk and
11 incorporating the impacts of PSPS and Protective Equipment Device Settings (PEDS), which are
12 protective fast trip settings that reduce ignition risk but may increase outage-related risk, across
13 the service territory. These analyses support compliance with CPUC decisions while enabling
14 more defensible, data-driven prioritization of mitigation activities.

15 Program activities include both labor and non-labor costs associated with the design,
16 operation, maintenance, and enhancement of advanced risk assessment tools. These activities
17 support the ability to:

- 18 • Understand and monitor the overall wildfire risk profile
- 19 • Quantify likelihood and consequence associated with wildfire, PSPS, and PEDS
20 risk events
- 21 • Inform the wildfire mitigation strategy, which is aimed at preventing catastrophic
22 wildfires while minimizing customer impacts

23 The program supports the operation and continuous improvement of advanced data
24 driven models, including cloud-based computing environments, machine learning and
25 standardized analytics and automation workflows, probabilistic risk models, and interactive
26 visualization tools. These capabilities provide insights into the drivers of wildfire and outage
27 risk and support the prioritization of mitigation strategies that maximize risk reduction and cost
28 efficiency while maintaining compliance with CPUC and legislative requirements.

29 The program enhances SDG&E’s ability to quantify both the likelihood of ignition and
30 the potential consequences of wildfire under extreme fire weather conditions. Site specific
31 predictive modeling and scenario analysis are used to identify where capital grid hardening

1 investments such as combined covered conductor or strategic undergrounding provide the
2 greatest benefit, as well as where operational mitigations such as drone inspections, vegetation
3 management, or PSPS de-energizations are most effective.

4 In addition, the program evaluates outage risk associated with PSPS and PEDS events.
5 By developing precise, location specific models to inform when and where de-energizations are
6 necessary, the program helps reduce unnecessary outages and customer impacts without
7 compromising public safety.

8 The physical scope of the program primarily covers the HFTD as well as WUI areas
9 where ignition risk and customer impacts are significant. Certain models, data pipelines, and
10 risk informed applications extend beyond HFTD boundaries to support PSPS decision-making
11 across the broader service territory.

12 The technical scope of the program focuses on conductor-span-level probabilistic
13 modeling of wildfire, PSPS, and PEDS risks. These models form the foundation of the WiNGS-
14 Planning and WiNGS-Operations (WiNGS-Ops) model suites, which are critical for informing
15 long-term planning decisions and real-time operations during extreme fire weather conditions.
16 O&M costs are requested for labor and contractor support related to ongoing risk modeling and
17 analysis, as well as non-labor costs for consequence modeling vendors, cloud infrastructure, and
18 software-as-a-service (SaaS) expenses, including LiDAR data storage and analytics platforms
19 hosted in cloud environments.

20 Costs are also requested to support funding for external specialized labor to conduct
21 exploratory analytics, technical evaluations, and early-stage model development. This external
22 support is used to assess emerging technologies, perform rapid prototyping, and supplement
23 internal capacity for short-duration investigations that inform long-term wildfire mitigation
24 strategies and operational improvements.

25 SDG&E proposes to record these costs in its WMPMA.

26 **i. Description of Selection and Prioritization of RAMP**
27 **Risk Mitigations**

28 The initiative selection process for the Risk Methodology and Assessment program was
29 driven by the need to meet evolving wildfire- and PSPS-risk modeling requirements established
30 by the CPUC and OEIS. The initiative was prioritized because it enables the continued operation
31 and improvement of advanced, data-driven tools that provide actionable insights into the drivers

1 of wildfire and outage risk and support the prioritization of mitigation strategies that maximize
2 risk reduction and cost efficiency.

3 Alternatives considered included “do nothing” or implement “off-the-shelf” models. The
4 do nothing alternative, relying on legacy systems, manual processes, and distributed data
5 management, was rejected because it could not meet WMP requirements for data quality,
6 transparency, repeatability, auditability, or scalable tabular and geospatial reporting. Off-the-
7 shelf models were dismissed due to insufficient transparency, customization, and traceability to
8 accurately reflect SDG&E’s specific asset configurations and operational history.

9 **b. Forecast Method**

10 A base-year methodology was used to forecast O&M costs with targeted adjustments
11 where appropriate. This methodology is appropriate because the majority of O&M activities
12 reflect established, ongoing operational functions supported by existing personnel and processes.
13 These activities are expected to remain relatively stable over the forecast period, making the base
14 year approach the most representative indicator of future costs.

15 **c. Cost Drivers**

16 Cost drivers include the increasing complexity of wildfire risk modeling and the
17 continued need to advance analytical capabilities across span, segment, and system level
18 analyses. Key drivers include labor and support costs associated with independent model
19 reviews and validations; development and maintenance of a comprehensive cost benefit
20 framework, including operational lifecycle cost modeling and sensitivity analyses; execution of
21 efficacy studies evaluating alternative mitigation strategies; and the acquisition and maintenance
22 of advanced software and data visualization tools required to support model development and
23 lifecycle engineering. The expansion of vendor-supported risk modeling activities, including
24 contractor-based model development and advanced data science support, as well as increased
25 cloud computing requirements associated with processing larger volumes of LiDAR data,
26 represent the largest share of costs relative to other program elements.

27 Additional cost drivers include the need for external technical specialists to support
28 exploratory analytical work and early-stage evaluation of emerging modeling techniques. This
29 work provides short-term, targeted expertise to assess new data sources, prototype novel
30 methodologies, and inform future system enhancements.

H. RAMP to GRC – O&M

The O&M activities described above were also presented in the 2025 RAMP Report and are listed in Table JW-12. Activities that are compliance-related or mandated by CPUC or other agencies are listed in bold; and Appendix A attached to this testimony provides the details regarding these mandates for each control or mitigation. Controls/mitigations that were not included in the 2025 RAMP report but which would otherwise be classified as RAMP activities, are identified below and assigned a corresponding RAMP ID. Controls/mitigations with names that have changed since the 2025 RAMP are listed in italics in Table JW-12 and are further identified in Table JW-24.

**TABLE JW - 12
RAMP and GRC Risk Control/Mitigation Activities - O&M**

ID	Control/Mitigation Name	2025 RAMP 2028-2031 In 2024\$ (000s)	2028 GRC 2028-2031 In 2025\$ (000s)	Change (\$000s)
C504	Standby Power Program (Fixed Backup Power Commercial)	4,000	4,160	160
C506	Microgrids	5,092	6,014	922
C507	<i>CMP Repairs and Replacements</i>	1,000	6,024	5,024
C508	Advanced Protection	752	15,112	14,360
C512	Customized Resiliency Assessment	15,812	16,380	568
C516	Generator Assistance Programs	1,956	2,792	836
C518	Strategic Undergrounding	6,119	11,327	5,208
C520	Distribution Overhead System Hardening	840	-	(840)
C522	Transmission Overhead Hardening	3	-	(3)
C526	Distribution Overhead Detailed Inspections	3,204	2,068	(1,136)
C530	Distribution Wood Pole Intrusive Inspections	6,529	5,786	(743)
C534	Risk-Informed Drone Inspections	46,348	5,324	(41,024)
C536	Distribution Overhead Patrol Inspections	1,136	1,452	316
C546	Aviation Program	18,012	21,102	3,090
C548	Wildfire Infrastructure Protections Teams	19,280	18,660	(620)

ID	Control/Mitigation Name	2025 RAMP 2028-2031 In 2024\$ (000s)	2028 GRC 2028-2031 In 2025\$ (000s)	Change (\$000s)
C550	Combined Covered Conductor	5,726	15,000	9,274
C552	PSPS Sectionalizing Enhancements	-	84	84
C559	LiDAR Flights	2,500	-	(2,500)
C564	Distribution Communications Reliability Improvements	3,778	11,496	7,718
C565	Distribution Underbuild Repairs on Transmission Structures	60	-	(60)
C568	Strategic Pole Replacement	373	-	(373)
C569	Cleveland National Forest Fire Hardening	4	-	(4)
C573	Early Fault Detection	12	216	204
C537	Off-Cycle Patrol	6,155	5,963	(192)
C540	Fuels Management Program	21,780	12,672	(9,108)
C544	Pole Clearing	37,918	21,544	(16,374)
C551	Prune and Removal (Clearance)	132,703	209,627	76,924
C554	Detailed Inspections	20,601	33,573	12,972
C575	Vegetation Management Enterprise Systems	1,308	-	(1,308)
C578	QA/QC of Vegetation Management	14,202	27,469	13,267
M582	Application Support and Risk Analytics	-	8,704	8,704
M584	Integrated Work Management & Risk Assessment Platform	-	1,066	1,066
C561	Fire Potential Index	-	4,320	4,320
C562	Weather Network & Technology Platforms	-	1,512	1,512
C572	Situational Awareness and Forecasting	17,984	10,912	(7,072)
C556	Engagement with AFN Populations	6,876	7,320	444
C557	Public Outreach and Education Awareness	2,420	13,907	11,487
C567	Public Emergency Communication Strategy	38,112	24,740	(13,372)
C571	Emergency Preparedness and Recovery Plan	85,532	129,336	43,804

ID	Control/Mitigation Name	2025 RAMP 2028-2031 In 2024\$ (000s)	2028 GRC 2028-2031 In 2025\$ (000s)	Change (\$000s)
C566	Enterprise Data Foundation	9,924	10,256	332
C563	Wildfire Mitigation Strategy Development	21,224	15,284	(5,940)
C558	Risk Methodology and Assessment	23,892	29,607	5,715
Total Non-Shared Services		583,167	710,809	127,642

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2 **IV. CAPITAL**

3 Table JW-13 summarizes capital forecasts for 2026-2031. The particular in-service date
4 for the capital expenditures that underly these forecasts is provided in the workpapers. Appendix
5 C to this testimony provides a table that illustrates the capital expenditures that are estimated to
6 have in-service dates between 2026 and Test Year 2028. Capital expenditures that are in-service
7 between 2026 and 2028 will contribute to the Test Year 2028 revenue requirement request
8 presented in the Summary of Earnings testimony (Ex. SDGE-32). Capital expenditures with in-
9 service dates in the post-test years (i.e. 2029-2031) are also included in Appendix C. The post-
10 test year revenue requirement request is included in the Post-Test Year Ratemaking Testimony
11 (Ex. SDGE-33).

12 **TABLE JW - 13**
13 **Capital Expenditures Summary of Costs⁵¹**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)							
Categories of Management	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
A. Grid Design	277,325	146,779	121,887	276,378	332,335	454,463	379,444

⁵¹ The figures in this table may not match the associated workpapers because the table includes a correction related to the Aviation Program capital forecast. The associated workpapers (Ex. SDGE-

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)							
Categories of Management	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
Operations and Maintenance							
B. Vegetation Management and Inspections	2,179	2,598	2,601	11,620	8,168	4,674	4,300
C. Situational Awareness and Forecasting	-1,144	0	0	0	0	7,000	0
D. Emergency Prep Collab & Community Outreach	11,775	15,051	9,983	6,607	10,797	11,996	6,606
E. Enterprise Systems	4,340	4,349	4,352	11,365	9,052	9,851	13,862
F. Wildfire Mitigation Strategy	20	0	0	0	0	0	0
G. Risk Methodology and Assessment	3,793	6,036	5,654	8,054	6,779	6,778	6,634
Total	298,288	174,813	144,477	314,024	367,131	494,762	410,846

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A. Grid Design, Operations, and Maintenance

The capital costs presented in this section support grid design, operations, and maintenance initiatives that are intended to reduce the risk of utility-caused wildfires and mitigate PSPS impacts on customers. Capital investments include grid-hardening programs such as Combined Covered Conductor and Strategic Undergrounding that are designed to prevent

07-CWP) could not be corrected prior to this filing but will be corrected and provided to the parties at the first available opportunity. In the meantime, to ensure this testimony provides the most accurate requested figures, these table have been adjusted to incorporate those corrections.

wildfire risk events associated with key risk drivers, including energized conductor failures and foreign object contact. Strategic undergrounding further reduces reliance on operational mitigations such as PSPS de-energizations.

Capital investments also include advanced protection technologies and risk-informed drone inspections. Advanced protection technologies are intended to reduce the probability that a risk event results in an ignition by addressing known failure modes through targeted protection settings and equipment enhancements, while risk-informed drone inspections support the early identification of safety- and wildfire-related conditions on the grid. Additional capital programs focus on minimizing PSPS impacts and enhancing customer resiliency, including sectionalizing enhancements and backup generation. Together, these capital investments strengthen system resilience and support SDG&E’s overall wildfire mitigation strategy.

TABLE JW - 14
Capital Expenditures Summary of Costs⁵²

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)								
ID	A. Grid Design Operations and Maintenance	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
C501	Wireless Fault Indicators	-2	0	0	0	0	0	0
C502	Capacitor Maintenance and Replacement Program	-34	0	0	0	0	0	0
C506	Microgrids	888	0	0	0	4,863	36,297	7,508
C507	CMP Repairs and Replacements	58,636	45,064	35,937	29,402	34,488	35,488	39,919
C508	Advanced Protection	8,537	4,178	2,025	6,540	6,556	6,555	6,555
C510	Hotline Clamps	219	0	0	0	0	0	0
C518	Strategic Undergrounding	84,708	0	0	162,683	212,024	302,025	252,547

⁵² The figures in this table may not match the associated workpapers because the table includes a correction related to the Aviation Program capital forecast. The associated workpapers (Ex. SDGE-07-CWP) could not be corrected prior to this filing but will be corrected and provided to the parties at the first available opportunity. In the meantime, to ensure this testimony provides the most accurate requested figures, these table have been adjusted to incorporate those corrections.

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)								
C520	Distribution Overhead System Hardening	2,896	12,849	4,040	0	0	0	0
C522	Transmission Overhead Hardening (Distribution Underbuild)	2,642	7,141	7,366	3,820	820	12	0
C524	Lightning Arrestor Replace Program	501	0	0	0	0	0	0
C534	Risk-Informed Drone Inspections	32	0	1,000	800	800	600	600
C546	Aviation Program	1,602	435	435	435	435	435	435
C550	Combined Covered Conductor	88,249	65,351	65,382	65,661	65,651	65,643	65,644
C552	PSPS Sectionalizing Enhancements	994	1,563	1,563	2,159	2,226	2,049	2,101
C564	Distribution Communications Reliability Improvements	11,205	450	0	0	0	0	0
C565	Distribution Underbuild Repairs on Transmission Structures	565	760	673	623	638	654	670
C568	Strategic Pole Replacement Program	8,193	4,157	0	0	0	0	0
C569	Cleveland National Forest Fire Hardening	452	437	299	187	154	25	0
C570	Expulsion Fuse Replacements	962	0	0	0	0	0	0
C573	Early Fault Detection	5,805	4,394	3,167	4,068	3,680	4,680	3,465
C576	Avian Protection	275	0	0	0	0	0	0

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)								
	Total	277,325	146,779	121,887	276,378	332,335	454,463	379,444

1. Microgrids (C506)

SDG&E plans to build and place in service Microgrids by 2030. The specific details regarding Microgrids are found in my capital workpapers. See Ex. SDGE-07-CWP, WP 212730.

The Microgrid program designs and builds microgrids that can be electrically isolated during a PSPS de-energization, reducing the consequence of de-energizations by providing electricity to customers during an outage.

The majority of microgrids are deployed to serve communities impacted by conditions in the HFTD, however, physical microgrid facilities could be located outside of the HFTD.

Currently, there are two microgrids located outside the HFTD that are strategically sited to serve customers whose transmission and distribution lines traverse the HFTD, making them subject to PSPS de-energizations.

Costs are requested for two permanent renewable microgrid projects and several off-grid solutions:

- Butterfield Ranch: A solar and battery energy storage⁵³ microgrid is planned that will include communications equipment to enhance network and line monitoring. The microgrid will be powered by 2,100 kW of solar generation and a 4,800 kWh Battery Energy Storage System and will support approximately 115 residential customer meters.
- Shelter Valley: A solar and battery energy storage⁵⁴ microgrid is planned that will include communications equipment for enhanced system monitoring and will be powered by 2,100 kW of solar generation and a 4,800 kWh Battery Energy Storage System and will support approximately 220 customer meters, including the San Diego County Fire Station and Community Center. Each permanent renewable microgrid will include solar photovoltaic generation and mobile or stationary energy storage to island end-of-line or branch distribution circuits.
- Off Grid (also referred to as “Remote Grid”) Microgrid: Three standalone, utility-owned systems are planned that will provide permanent electric service to small, remote customer groups. Off Grid Microgrids may allow for the removal or

⁵³ D.26-01-021, OP 5 at 188 (“If San Diego Gas & Electric Company requests cost recovery for any additional microgrid projects in a future application for cost recovery or General Rate Case, that request shall provide evidence of the energy source and cost-effectiveness of those microgrid projects as wildfire mitigations.”).

⁵⁴ *Id.*

1 permanent de-energization of long, high-risk distribution lines, reducing wildfire
2 risk and the need for ongoing line hardening and enhanced vegetation
3 management. Participating customers will be electrically disconnected from the
4 distribution system and served through on-site or nearby generation and control
5 systems. Pursuant to Advice Letter (AL) 4277-E-A and Res. E-5308,⁵⁵ SDG&E
6 continues to evaluate Remote Grids as a long-term resilience alternative for
7 customers served by long distribution lines in high wildfire risk areas. Typical
8 customer loads are approximately 25 kW, with a total portfolio cap of 1 MW.

9 The Butterfield Ranch and Shelter Valley sites currently operate as microgrids, under a
10 current configuration utilizing portable diesel generators, requiring significant manual effort
11 during emergency activations. During PSPS de-energizations, portable generators are mobilized
12 and manually connected to the distribution system. Deployment typically requires up to 12
13 hours, with line crews integrating generation into the overhead distribution infrastructure.

14 Through the TY 2028 GRC cycle, SDG&E proposes converting these sites into
15 permanent, remotely operated microgrids that will incorporate solar generation and battery
16 storage using land owned by SDG&E, reducing project costs. The sites will also leverage
17 existing utility infrastructure, including overhead distribution lines and SCADA controlled
18 reclosers. Located on the desert floor, these communities experience lower wind exposure than
19 surrounding mountain areas, and no additional hardening is anticipated.

20 The proposed permanent microgrids with fully renewable solutions (solar and battery
21 storage) will reduce reliance on fuel-based generation, lower fuel delivery costs, eliminate
22 California Air Resources Board permitting requirements, and reduce noise impacts. Once
23 integrated with a Local Area Distribution Controller (LADC), remote operation will be enabled,
24 minimizing on-site staffing and traffic control needs, freeing resources and improving overall
25 system resilience. Compared to continued reliance on the current microgrid configuration and
26 recurring PSPS deployment activities, permanent microgrids with fully renewable solutions
27 results in overall cost savings driven by avoided fuel, permitting, labor, and recurring operational
28 costs.

29 The Microgrid program is intended to support the scope, scale, and duration of PSPS de-
30 energizations. Customers served by the Butterfield Ranch and Shelter Valley sites are impacted
31 by nearly every PSPS de-energization due to distribution lines traversing major mountain ranges.

⁵⁵ Res. E-5308 (March 21, 2024).

1 The remote nature of these areas often requires extensive foot and helicopter patrols before
2 restoration can begin. Microgrids significantly reduce outage impacts for these customers while
3 providing systemwide benefits to ratepayers. Finally, not implementing the fully renewable
4 solutions would require in-the-field operations, such as on-site staffing during microgrid
5 operation, reduce operational flexibility, and it would eliminate economic benefits associated
6 with participation in the CAISO market, resulting in higher costs for ratepayers.

7 **a. Description of Selection and Prioritization of RAMP Risk**
8 **Mitigations**

9 The initiative selection process for the Microgrids program was driven by the need to
10 deploy off grid (also referred to as “Remote Grid”) temporary and permanent microgrid
11 configurations to support resiliency during PSPS de-energizations , and weather events. These
12 solutions are designed to temporarily island critical infrastructure, allowing essential facilities to
13 remain operational when the main grid is de-energized and reducing impacts to customers during
14 outages. For customers, microgrids reduce the consequences of PSPS de-energizations by
15 providing electricity during outages and improving overall community resilience.

16 Several alternatives were evaluated, including taking no action or undergrounding
17 distribution feeders. Taking no action would significantly reduce support for critical CAL FIRE
18 aerial operations and essential community facilities, including a CalFire Station, resulting in
19 increased community impacts during PSPS de-energizations. In addition, continued reliance on
20 rental fossil fuel generation would result in higher long-term operating costs, increased staffing
21 and logistical complexity, and longer outage durations due to deployment and refueling
22 constraints, making this option neither sustainable nor scalable.

23 Undergrounding distribution feeders to the microgrid and essential customers was also
24 evaluated but was determined to be prohibitively costly relative to the resiliency benefits, given
25 terrain, permitting, and construction challenges.

26 **b. Forecast Method**

27 A zero-based methodology was used to forecast capital costs. This approach was selected
28 because the scope and scale of previously installed microgrids do not reflect the size, complexity,
29 or configuration of the permanent solar and battery storage facilities planned for future years.
30 Historical spending is therefore not a reliable predictor of future capital requirements.

1 The forecast is based on project specific cost estimates developed for inflight and planned
2 projects and reflects the defined scope of work at each site. Estimates incorporate current
3 construction labor rates; material costs (and current tariffs) including solar arrays and battery
4 energy storage systems; and vendor pricing obtained through Equipment Supply Agreements,
5 Balance of Plant Contracts or a full Engineering, Procurement, and Construction (EPC)
6 contracts.

7 **c. Cost Drivers**

8 Cost drivers are primarily associated with EPC activities and the specialized materials
9 required to construct permanent, renewable microgrid facilities. Key cost drivers include EPC
10 expenditures related to the construction of the Shelter Valley and Butterfield Ranch microgrids,
11 specifically, civil work, electrical installation, and system integration.

12 Additional cost drivers include the procurement of solar generation, battery energy
13 storage systems, communications equipment, and security infrastructure necessary to support
14 safe, reliable, and fully operational microgrid facilities. Capital funding also supports the
15 engineering and installation of smaller, standalone Remote Grid solutions designed to serve
16 isolated loads in high wildfire risk areas, as described and approved in AL 4277-E-A and Res. E-
17 5308. Supporting documentation for these capital cost drivers is provided in the supplemental
18 capital workpapers (Ex. SDGE-07-CWP, Budget Codes 21273, 21245, and 21244).

19 **2. CMP Repairs and Replacements (C507)**

20 The specific details regarding CMP Repairs and Replacements are found in my capital
21 workpapers. See Ex. SDGE-07-CWP, WP 002390.

22 Conditions remediated through CMP Repairs and Replacements originate from the
23 following inspection programs:

24 C526 – Distribution Overhead Detailed Inspections

25 C530 – Distribution Wood Pole Intrusive Inspections

26 C534 – Risk-Informed Drone Inspections

27 C536 – Distribution Overhead Patrol Inspections

28 CMP Repairs and Replacements also addresses distribution-related conditions identified
29 during Transmission Overhead Detailed Inspections when transmission structures include
30 distribution underbuild.

1 In alignment with D.26-01-021, OP 8, which requires the specification of O&M costs for
2 all asset management and inspection programs separately from the capital costs for repair or
3 replacement of poles and other equipment, capital costs for this initiative are requested for
4 repairs involving replacement or installation of major units of property or improvements that
5 increase asset value, extend useful life, or represent an investment into a utility plant. These
6 involve items such as poles, transformers, switches, reconductoring, and crossarms. Non-labor
7 costs are requested for materials and equipment, and labor costs are requested for contract
8 construction crews that may be needed depending on resource availability and prioritization.
9 Costs to support the completion of repairs (e.g., environmental or permitting) are also requested.

10 **a. Description of Selection and Prioritization of RAMP Risk**
11 **Mitigations**

12 See Section III.A.3.a.i for a description of selection and prioritization of RAMP risk
13 mitigations for this RAMP control.

14 **b. Forecast Method**

15 A zero-based methodology was used to forecast labor requirements because the program
16 is taking on new workstreams that were not part of its historical baseline, including additional
17 scope associated with distribution underbuild and drones. These activities introduce new drivers,
18 resource needs, and workload patterns. Since these workstreams do not have established
19 historical labor trends within CMP Repairs and Replacements, a zero-based approach builds
20 labor estimates based on the expected work to be performed.

21 **c. Cost Drivers**

22 Cost drivers include the replacement or installation of major units of property or
23 improvements that increase asset value, extend useful life, or represent an investment into a
24 utility plant. These involve items such as poles, transformers, switches, reconductoring, and
25 crossarms. On average these repairs involve higher cost materials and equipment, increasing
26 non-labor costs. Contract construction crews may be needed for these types of repairs depending
27 on resource availability and prioritization. Costs to support the completion of repairs (e.g.,
28 environmental or permitting) are also included in the capital forecast.

29 Documentation of these cost drivers are included as supplemental capital workpapers.
30 See Ex. SDGE-07-CWP, WP 002390.

1 **3. Advanced Protection (C508)**

2 The specific details regarding Advanced Protection are found in my capital workpapers.
3 See Ex. SDGE-07-CWP, WP 152590.

4 The APP develops and deploys advanced protection and monitoring technologies across
5 electric substations and the electric distribution system within the HFTD. The program is
6 designed to reduce wildfire ignition risk by preventing or rapidly mitigating fire-related electrical
7 incidents, improving transmission and distribution sectionalization, increasing system visibility
8 and situational awareness in fire-prone areas, and enabling modern protection, relay, and
9 automation standards in locations where protection coordination is challenging due to low fault
10 currents and high impedance fault conditions.

11 The APP replaces aging and obsolete substation infrastructure including electro-
12 mechanical relays, solid-state relays, legacy microprocessor relays, and RTUs with modern,
13 microprocessor-based protection and control systems to enhance protection sensitivity, speed,
14 and reliability. These upgrades support faster fault isolation, reduced fault energy, and improved
15 operational awareness during both normal and abnormal system conditions.

16 On the electric distribution system, the APP coordinates with overhead system hardening
17 programs to strategically deploy sectionalizing devices, line monitoring equipment, and
18 communications infrastructure on prioritized circuits within HFTDs. Priority is given to circuits
19 in Tier 3 of the HFTD, followed by circuits in Tier 2, while circuits with significant planned
20 undergrounding are generally excluded. For selected circuits, feeder routes and laterals are
21 evaluated to identify FCP zones where deployment is technically feasible and accessible.
22 SCADA-enabled reclosers and switches are either integrated into advanced protection schemes
23 or replaced with compatible equipment as needed.

24 In addition to protection systems, the APP deploys advanced sensing, automation, and
25 communications technologies to enhance situational awareness and operational decision-making
26 during high-risk conditions. These technologies support real-time monitoring, remote control,
27 event analysis, and integration with emerging telecommunications platforms. Collectively, the
28 APP enables faster response to system disturbances, improved coordination of protective
29 devices, and enhanced monitoring during high wind and fire weather events.

30 The 2028 GRC forecast reflects the pursuit of new and cost-effective technologies,
31 resulting in lower unit costs compared to the 2025 RAMP. This shift improves affordability

1 while maintaining strong wildfire risk mitigation benefits, leveraging existing infrastructure, and
2 supporting scalability as the grid continues to modernize.

3 Costs requested for the APP support:

4 **Substation Protection and Control**

- 5 • Microprocessor-based protective relays (including relays with synchrophasor /
6 PMU capabilities)
- 7 • Replacement of obsolete electro-mechanical, solid-state, and legacy
8 microprocessor relays
- 9 • RTUs
- 10 • New circuit breakers with integrated microprocessor-based relays
- 11 • High-speed, packet-based substation communication equipment
- 12 • Increased sensitivity and speed upgrades to transmission protection systems

13 **Distribution System Protection and Automation**

- 14 • FCP-compatible protection devices (limited and targeted deployments)
- 15 • Sensitive Ground Fault (SGF) protection for high impedance fault detection
- 16 • SCADA-enabled reclosers and switches
- 17 • Auto-sectionalizing equipment
- 18 • Remotely enabled SRP settings to reduce fault energy and fire risk
- 19 • High-accuracy fault location systems

20 **Monitoring, Sensing, and Analytics**

- 21 • Line monitors installed on distribution circuits
- 22 • PMUs supporting protection algorithms and analytics
- 23 • Remote relay event retrieval and reporting systems for real-time and post-event
24 analysis

25 **Communications and Telecommunications**

- 26 • Direct fiber lines supporting protection and automation requirements
- 27 • Private LTE communications infrastructure
- 28 • Wireless communication radios enabling field device connectivity
- 29 • SCADA communications to all deployed field devices

1 **Advanced Monitoring and Visual Intelligence**

- 2 • Cameras installed for enhanced monitoring during high wind and fire weather
3 events
- 4 • Edge computing platforms supporting camera-based analytics
- 5 • Advanced video analytics to assess image quality, stability, and situational
6 conditions
- 7 • Video learning modules used to enhance monitoring and operational awareness

8 **a. Description of Selection and Prioritization of RAMP Risk**
9 **Mitigations**

10 See Section III.A.4.a.i for a description of selection and prioritization of RAMP risk
11 mitigations for this RAMP control.

12 **b. Forecast Method**

13 A zero-based methodology was used to forecast capital costs. The forecast is based on
14 cost estimates developed based on the scope of work for the project. Cost estimates are based on
15 construction labor rates, material costs, overhead rates, contract pricing/quotes, and other project
16 specific details. When projects are completed, actual costs are compared to the estimate to verify
17 the estimates are accurate. Any significant variances between the estimated cost for a project and
18 the actual costs are analyzed to determine whether cost estimate inputs need to be adjusted for
19 future projects.

20 **c. Cost Drivers**

21 Cost are primarily driven by the replacement and modernization of aging substation and
22 distribution protection infrastructure in the HFTD, including the installation of microprocessor-
23 based relays, new circuit breakers, RTUs, and high-speed communications equipment.
24 Additional costs are associated with deploying advanced protection schemes such as FCP, which
25 require relay upgrades, PMU enabled measurement capabilities, and integration with SCADA
26 and telecommunications networks. On the distribution system, capital costs are further
27 influenced by the installation or replacement of sectionalizing devices, line monitors, and
28 supporting communications infrastructure, including direct fiber, private LTE, and wireless
29 radios, to enable reliable data exchange and real-time control. The program also includes
30 investments in advanced sensor camera technologies, edge computing, and advanced video
31 analytics to provide continuous monitoring and enhanced situational awareness during high wind

1 and fire weather events. Overall costs reflect the extent of equipment replacement, the need for
2 communications integration in remote fire prone areas, and the installation of hardware for FCP
3 deployments.

4 **4. Strategic Undergrounding (C518)**

5 The specific details regarding Strategic Undergrounding are found in my capital
6 workpapers. See Ex. SDGE-07-CWP, WP 192460.

7 Strategic undergrounding converts overhead electric systems to underground
8 infrastructure to substantially reduce wildfire risk and PSPS impacts. The program is deployed
9 in the HFTD, prioritizing circuit segments where undergrounding delivers the greatest ignition
10 risk reduction and the most significant PSPS mitigation. Removing overhead exposure reduces
11 equipment-related ignitions from downed conductors, vegetation/foreign object contact, and
12 equipment failures, and can significantly decrease the need for PSPS when overhead exposure is
13 fully eliminated.

14 Analysis using historical ignition data, pre-mitigation risk event rates, and ignition rates
15 estimates that undergrounding reduces wildfire risk by 98.52%. Because undergrounding
16 segments eliminates overhead exposure, the primary driver of wind driven ignitions, additional
17 advanced protection technologies provide minimal incremental wildfire risk reduction for those
18 segments.

19 For the TY 2028 GRC cycle, costs are requested to underground approximately 400 miles
20 of infrastructure in the HFTD. This level of investment reflects the amount of progress that can
21 be reasonably and responsibly achieved within the four-year GRC cycle. The 400-mile target
22 represents a subset of a larger undergrounding portfolio of approximately 1,200 miles identified
23 as potential candidates based on wildfire and PSPS risk and focuses on high-risk locations,
24 including areas with frequent de-energizations and circuits serving facilities such as schools and
25 other critical facilities. The selected pace of 400 miles over the GRC cycle reflects operational
26 and affordability constraints, including construction capacity and coordination with communities
27 and permitting agencies, while representing the optimal rate for achieving sustained wildfire risk
28 reduction by prioritizing the highest risk segments. This approach balances risk mitigation
29 objectives with practical execution limits and customer affordability and is distinct from the
30 broader strategic evaluation of undergrounding versus other risk mitigation options.

1 Project execution emphasizes cost control, schedule predictability, and construction
2 quality. The program works with Supply Management to bundle and competitively bid projects,
3 often using fixed price contracts with contractors experienced in local conditions. Grouping
4 geographically related projects and bidding civil and electrical work separately help reduce costs
5 and shorten schedules. To address material related schedule risks, the program coordinates with
6 Logistics to forecast long lead and limited inventory items and procure materials ahead of
7 construction. Additional process improvements, such as eliminating unnecessary design data,
8 conducting field design reviews at 30% completion, and updating design standards, further
9 reduce costs and streamline delivery.

10 **a. Description of Selection and Prioritization of RAMP Risk**
11 **Mitigations**

12 See Section III.A.7.a.i for a description of selection and prioritization of RAMP risk
13 mitigations for this RAMP control.

14 **b. Forecast Method**

15 A zero-based methodology was used to forecast capital costs. Cost estimates are based
16 on the specific scope of work for each project and reflect current construction labor rates,
17 material costs, contract pricing and quotes, and other project specific assumptions. The forecast
18 is driven by the number of miles of strategic undergrounding planned for design and construction
19 in each year.

20 SDG&E's assumed average capital cost of \$2.32 million per mile for SUG reflects a
21 balanced, data-driven estimate grounded in both historical experience and forward-looking
22 program considerations. The per-mile cost is primarily derived from historical grid hardening
23 project data, which captures actual engineering, land rights acquisitions, environmental,
24 permitting and construction costs across a range of terrain, permitting environments, and system
25 configurations typical of SDG&E's service territory.

26 The estimate is further informed by subject matter expert judgment to account for
27 evolving program dynamics not fully captured in historical data. In particular, the GRC 2024
28 decision resulted in a pause in the SDG&E SUG portfolio, leading to a loss of workforce
29 continuity, demobilization of contractor crews, and execution efficiencies. As the program is
30 reinitiated, incremental ramp-up costs are expected, including re-mobilization of pre-
31 construction services (survey, engineering, design, project management, land management,

1 environmental, communications, GIS, etc.), crews, retraining, procurement re-establishment, and
2 potential supply chain constraints. These factors are explicitly considered in the cost assumption
3 and contribute to near-term upward pressure on unit costs.

4 At the same time, the estimate captures expected cost efficiencies associated with more
5 programmatic execution. Building upon the project bundling and optimized delivery approaches
6 developed during the SUG efforts from 2020-2025, SDG&E anticipates achieving economies of
7 scale, lowering mobilization costs, and improving permitting coordination. SDG&E expects to
8 see efficiency gains as the program ramps back-up again and increases the volume of work that
9 should partially offset the impacts of program ramp-up.

10 **c. Cost Drivers**

11 Cost drivers include the design, construction, and placement into service of underground
12 electric distribution facilities. Capital costs are primarily driven by the conversion of existing
13 overhead facilities to underground infrastructure. These costs including trenching and
14 excavation; installation of conduit, vaults, and underground cable; removal of overhead facilities;
15 traffic control; surface restoration; and compliance with environmental and permitting
16 requirements. The capital costs presented represent the full construction and installation costs
17 required to place underground facilities into service and do not reflect lifecycle cost savings or
18 offsets from reduced operations and maintenance.

19 Project costs are influenced by site specific conditions such as terrain, soil characteristics,
20 routing constraints, access limitations, and constructability considerations that affect construction
21 methods, labor requirements, and schedule. Costs also reflect material and labor requirements
22 associated with underground construction, including long lead time materials and specialized
23 underground construction crews.

24 Cost drivers are managed through project bundling, competitive bidding, fixed price
25 contracting with qualified contractors, and separate procurement of civil and electrical work to
26 reduce overall costs and improve schedule certainty. While lifecycle considerations such as
27 long-term wildfire and PSPS risk reduction and reduced maintenance and reliability-related risks
28 over a 55-year asset life inform the selection of feeder segments for Strategic Undergrounding,
29 the capital costs reported are not discounted or adjusted to reflect anticipated operations and
30 maintenance savings.

1 **5. Distribution Overhead System Hardening (C520)**

2 SDG&E plans to build and place in service Distribution Overhead System Hardening by
3 2027. The specific details regarding Distribution Overhead System Hardening are found in my
4 capital workpapers. See Ex. SDGE-07-CWP, WP 202840.

5 The Distribution Overhead System Hardening program is designed to enhance the
6 resilience of overhead distribution facilities in Tiers 2 and 3 of the HFTD and the WUI. The
7 program reduces wildfire ignition risk by implementing long-term infrastructure upgrades that
8 address known risk drivers associated with overhead facilities, particularly during Santa Ana
9 wind events and severe winter conditions at elevations above 3,000 feet.

10 Capital costs are requested for replacing wood poles with fire resistant steel poles,
11 upgrading bare conductors, crossarms, connectors, guys, and anchors, and installing CAL FIRE
12 approved fuses and lightning arrestors. Additional costs are requested for shortening long spans,
13 avian protection measures, and, in limited cases, the permanent removal of overhead facilities.
14 Facilities are designed to meet or exceed extreme weather criteria, including 85 or 111 mile-per-
15 hour wind loading and applicable ice loading requirements, depending on location.

16 These capital improvements directly reduce the likelihood of overhead facilities
17 becoming ignition sources by increasing structural integrity, reducing material failure risk, and
18 improving system performance under extreme weather conditions. The program plans to install
19 approximately 4 miles in 2026 and approximately 2 miles in 2027 and will be fully completed by
20 the end of 2027.

21 **a. Description of Selection and Prioritization of RAMP Risk**
22 **Mitigations**

23 The initiative selection process for the Distribution Overhead System Hardening program
24 was driven by the need to enhance the resilience of overhead distribution facilities in Tier 2 and 3
25 of the HFTD and the WUI. The program was selected because it targets long-term infrastructure
26 upgrades that address known risk drivers associated with overhead facilities. From a
27 customer-benefit perspective, this program reduces the likelihood of overhead equipment
28 becoming an ignition source, resulting in improved safety, increased system reliability, and
29 greater resilience during high-risk fire-weather events.

30 Alternatives considered included doing nothing, which would leave wildfire risk
31 unmitigated and conflict with the approved WMP; relying on PSPS de-energizations to

1 temporarily reduce risk, which would increase reliability, economic, and customer-impact
2 concerns; and depending solely on grid-hardening measures such as covered conductor or
3 undergrounding, which offer strong mitigation benefits but require long design and construction
4 timelines and are not feasible in all locations.

5 **b. Forecast Method**

6 A zero-based methodology was used to forecast capital costs. This approach is
7 appropriate because the program is in its final phase and is scheduled to conclude in 2027,
8 resulting in a significantly reduced and discrete scope of remaining work. Historical cost data
9 reflects prior periods characterized by higher levels of ongoing program activity and, therefore,
10 does not reasonably represent the limited, completion-focused nature of the remaining efforts.
11 Accordingly, reliance on historical trends would risk overstating forecasted costs and would not
12 provide a reasonable basis for estimation. The zero-based methodology develops the forecast
13 prospectively, based on the current scope of work, resource requirements, and execution
14 assumptions, thereby ensuring that projected capital costs are reasonable and aligned with the
15 expected end-of-program workload through project closeout.

16 **Cost Drivers**

17 Cost drivers include the scope and intensity of physical infrastructure replacements in
18 fire-prone areas, including replacing wood poles with steel poles, upgrading conductors,
19 crossarms, connectors, guys and anchors, and installing CAL FIRE-approved fuses and lightning
20 arrestors. Additional drivers include span shortening, avian protection measures, and, in limited
21 cases, the permanent removal of overhead facilities. Capital costs are also influenced by
22 engineering and design requirements to meet or exceed 85 or 111 mile-per-hour wind loading
23 and applicable ice loading criteria, the use of LiDAR survey data, and PLS-CADD engineering
24 software before and after construction, and post-construction QA/QC inspections and
25 remediation work.

26 **6. Transmission Overhead Hardening (Distribution Underbuild) (C522)**

27 The specific details regarding Transmission Overhead Hardening (Distribution
28 Underbuild) are found in my capital workpapers. See Ex. SDGE-07-CWP, WP101430.

29 The Transmission Overhead Hardening (Distribution Underbuild) program replaces
30 overhead distribution equipment attached to the same poles and along the same routes as

1 hardened overhead transmission facilities. Distribution Underbuild work is performed when
2 transmission poles are replaced as part of the Transmission Overhead Hardening program.

3 Hardening overhead transmission lines is prioritized in the HFTD and reduces the
4 likelihood of ignition caused by foreign object line contacts, wire slaps, and equipment failure
5 during high wind conditions. This is accomplished by replacing existing wood poles with steel
6 poles, replacing aging conductors, increasing conductor spacing, and designing structures to
7 known local wind conditions. While the scope of the transmission program is limited to
8 structures within the HFTD, associated distribution facilities on these shared structures must be
9 replaced or relocated to comply with existing distribution standards.

10 Costs are requested for replacing distribution conductors with new conductor and
11 associated design, permitting, materials, and construction activities. These upgrades improve
12 system reliability and performance during extreme weather events, including Santa Ana wind
13 conditions, and reduce the potential for ignition associated with this equipment.

14 **a. Description of Selection and Prioritization of RAMP Risk**
15 **Mitigations**

16 The Transmission Overhead Hardening (Distribution Underbuild) program is selected
17 and prioritized as a necessary companion to transmission upgrades (which are funded through
18 FERC-jurisdictional rates), occurring when transmission poles are replaced along shared routes.
19 The program was chosen to reduce ignition risks caused by foreign object contact, conductor
20 clashing, and equipment failure, particularly during high wind events. For customers, these
21 upgrades deliver improved system reliability and performance during extreme weather
22 conditions, such as Santa Ana winds, while also reducing the likelihood that electric
23 infrastructure becomes a wildfire ignition source, thereby enhancing overall safety and service
24 continuity.

25 Two alternatives were considered, taking no action and relying on PSPS de-energizations.
26 A no-action alternative would reduce ignition risk on the transmission system, however, existing
27 distribution infrastructure would be left in place, which would not mitigate risks due to smaller
28 conductor spacing, aging and thinner wires, and increased mechanical stress from new pole
29 configurations. Continued reliance on PSPS de-energizations would not improve underlying
30 infrastructure and would result in increased risk of customer outages. Therefore, these
31 alternatives were rejected.

1 **b. Forecast Method**

2 A zero-based methodology was used to forecast capital costs. The forecast is based on
3 cost estimates developed for the project-specific scope of work. These cost estimates are based
4 on current construction labor rates, material costs, contract pricing and quotes, and other project
5 specific details.

6 **c. Cost Drivers**

7 Cost drivers include material, design, permitting, and construction costs for distribution
8 conductor replacements, expanded conductor spacing and wind-based design requirements, and
9 the labor and engineering required to replace or relocate distribution facilities on shared
10 transmission structures. The costs are associated with the total distribution underbuild mileage.
11 The main driver of the year over year spend corresponds with the total mileage of transmission
12 hardening within the year and the percentage of that hardening work which had distribution
13 underbuild. Material, design, and construction work has been bundled with the transmission to
14 decrease the total cost from independent projects and work is competitively bid to qualified
15 Master Service Agreement (MSA) contractors and suppliers.

16 **7. Risk-Informed Drone Inspections (C534)**

17 SDG&E plans to continue the development and enhancement of its Risk-Informed
18 Inspection Prioritization Model described in Section II.D.10 in the Test Year. This model enables
19 the ability to generate a scope for the Risk Informed Drone Inspection (RIDI) program. The
20 specific details regarding RIDI are found in my workpapers. See Ex. SDGE-07-CWP, WP
21 222590.

22 The purpose of the RIDI program is to reduce wildfire risk by using drones, predictive
23 analytics, and risk modeling to identify, prioritize, and inspect the highest-risk overhead electric
24 assets, which improves hazard detection, inspection efficiency, worker safety, and overall system
25 reliability. The use of drones to collect imagery enhances an inspector’s ability to detect
26 potential fire hazards, particularly where conditions such as terrain and vegetation density make
27 detailed inspections challenging.

28 Capital costs are requested for the ongoing development and enhancement of the risk-
29 based inspection prioritization model only and capital costs to not include costs associated with
30 performing the inspections or use of machine learning models for QA/QC purposes.

1 **a. Description of Selection and Prioritization of RAMP Risk**
2 **Mitigations**

3 See Section III.A.10.a.i for a description of selection and prioritization of RAMP risk
4 mitigations for this RAMP control.

5 **b. Forecast Method**

6 A zero-based methodology was used to forecast capital costs, identifying only the capital
7 activities required to support future costs rather than relying on historical spending. While drone
8 flights, inspections, inspection support, and QA/QC are primarily O&M activities, capital
9 expenditures are required each year to prepare and process the inspection scope in collaboration
10 with the Information Technology team. Related capital costs that support updates to machine
11 learning models resulting from inspection findings are included in WP 00920D.

12 Inspection scheduling, tracking, and electronic record completion also rely on IT systems.
13 Capital costs associated with these IT dependencies (such as software licensing, maintenance,
14 and system enhancements) are addressed in the IT workpapers (Ex. SCG-10/SDGE-14) WP
15 00909L. Hardware costs, including items such as mobile tablets, are addressed in the IT
16 workpapers (Ex. SCG-10/SDGE-14, WP 00909H), as referenced in Section III.10. Together, WP
17 00909L and WP 00909H capture the IT software and hardware necessary to support the software
18 and work management systems that enable compliant inspection and associated repair work,
19 including recordkeeping and reporting requirements.

20 **c. Cost Drivers**

21 Key capital cost drivers include annual updates to the Inspection Prioritization Model
22 incorporating inspection results, asset attributes, environmental and wind risk data. Probability
23 and consequence of failure estimates drive costs associated with data management, model
24 refinement, and system integration to adapt inspection scope and improve navigation efficiency.

25 **8. Strategic Pole Replacement (C568)**

26 The specific details regarding Strategic Pole Replacement are found in my capital
27 workpapers. See Ex. SDGE-07-CWP, WP 222420.

28 The Strategic Pole Replacement program was anticipated to transition into the Strategic
29 Pole “Remediation” program during the 2026-2028 WMP cycle to support ongoing remediation
30 of cello-treated poles. However, the program’s scope and schedule have been further refined
31 since submission of the 2026-2028 Base WMP, and the cello-treated poles are now planned to

1 be repaired or replaced as needed through standard asset inspection and maintenance programs.
2 Therefore, no capital costs are included in 2028-2031 for this program.

3 **d. Description of Selection and Prioritization of RAMP Risk**
4 **Mitigations**

5 The program was consolidated to achieve cost savings and reduce redundancy across
6 initiatives. Through standard asset inspection and maintenance programs, cellon-treated poles in
7 the HFTD areas will undergo testing, treatment and repair as needed. This program transition
8 because it directly targets known risk drivers, efficiently improves safety and reliability, aligns
9 with current standards, and avoids duplication with other initiatives, while balancing cost, risk
10 reduction, and execution feasibility. Customers benefit through enhanced safety and improved
11 system reliability, with reduced likelihood of pole-related failures and wildfire ignitions.

12 **e. Forecast Method**

13 A zero-based methodology was used to forecast capital costs because the program
14 launched in 2023 and does not have a representative multi-year cost history. Early years reflect
15 ramp up activities rather than steady state operations, and the program is scheduled to conclude
16 prior to Test Year 2028. Accordingly, labor hours and costs were developed based on the specific
17 activities, staffing needs, and timing of work planned for the year and no capital costs are
18 included in the forecast for 2028-2031.

19 **f. Cost Drivers**

20 Cost drivers include the specific materials, contracts, labor, and equipment required to
21 complete the planned pole replacements in 2026, concluding the program. Costs were developed
22 based on the defined scope, staffing requirements, and timing of work, rather than historical
23 spending.

24 **9. Aviation Program (C546)**

25 The Aviation Program is a foundational program that provides aerial resources that
26 support system safety, wildfire risk mitigation, and operational reliability across the service
27 territory. Aviation capabilities enable timely access to remote or high-risk areas, reduce worker
28 exposure to hazardous conditions, and support rapid response during emergency events, thereby
29 reducing operational, wildfire, and safety risk.

1 Costs are requested for the purchase of additional drones, which will be used for heavy-
2 lift operations, ad hoc inspections of poles, towers, and other infrastructure, construction support,
3 and remote observation and surveillance of fixed sites.

4 **a. Description of Selection and Prioritization of RAMP Risk**
5 **Mitigations**

6 See Section III.A.12.a.i for a description of selection and prioritization of RAMP risk
7 mitigations for this RAMP control.

8 **b. Forecast Method**

9 A zero-based methodology was used to forecast capital costs. The addition of new drones
10 is not represented in historical costs. The forecast is therefore based on cost estimates that were
11 developed from technical specifications for drone acquisitions.

12 **c. Cost Drivers**

13 Capital costs for the purchase of additional drones reduces long-term operational costs by
14 decreasing reliance on contractors, improving mission efficiency, and extending equipment
15 service life with more reliable, modern technology. These investments also support compliance
16 with evolving national security requirements, which have identified certain foreign-manufactured
17 unmanned aircraft systems as security risks. As a result, some of the most widely used and
18 capable drones in the industry are no longer permissible for utility operations. Please note that
19 the workpaper associated with this program inadvertently includes forecasted capital costs that
20 SDG&E is no longer requesting in this 2028 Test-Year Application. The correction was not
21 identified in time for the dollars to be excluded from the 2028 Test-Year Application revenue
22 requirement calculation. This correction will be included in the revenue requirement at the next
23 available opportunity.

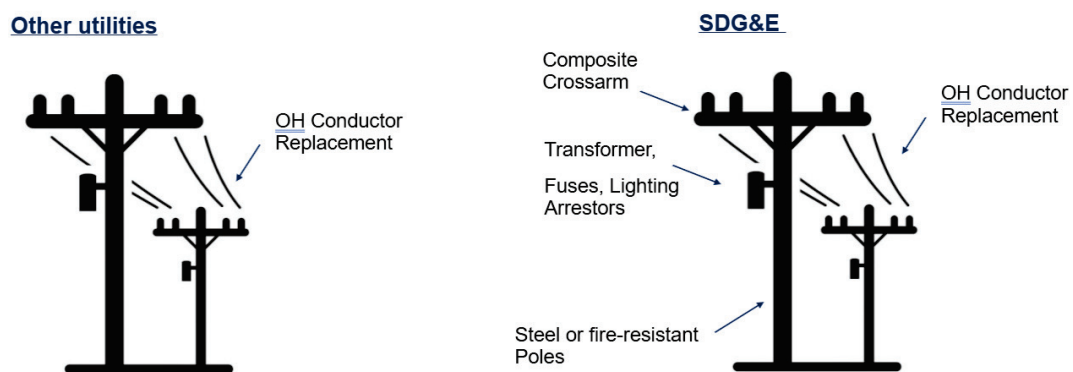
24 **10. Combined Covered Conductor (C550)**

25 The specific details regarding Combined Covered Conductor are found in my capital
26 workpapers. See Ex. SDGE-07-CWP, WP 202850.

27 The CCC program replaces bare conductors with covered conductors in the HFTD and as
28 needed, includes additional equipment replacements and installations such as poles, lighting
29 arrestors, fuses, connectors, and avian protection. The purpose of the program is to reduce
30 wildfire risk and minimize the frequency and impact of PSPS de-energizations. Covered
31 conductors are manufactured with an internal semiconducting layer and external insulating

1 ultraviolet-resistant layers to provide incidental contact protection. Connectors, jumpers, and
2 equipment bushings are also covered with insulated jumpers, tape, or covered materials to
3 prevent incidental contacts from vegetation or animals. Facilities are designed to meet or exceed
4 applicable weather loading criteria, including 85 or 111 miles per hour wind speeds and ice
5 loading requirements, depending on location. SDG&E plans to install approximately 50 miles of
6 covered conductor annually from 2026 through 2031.

7 **FIGURE JW-19**
8 **Covered Conductor Work Scope Comparison**



9
10
11 For the TY 2028 GRC cycle, costs are requested to install approximately 200 miles of
12 covered conductor within the HFTD. This level of investment reflects a reasonable and
13 achievable level of progress over the four-year GRC period, targeted at locations where covered
14 conductor can provide the greatest wildfire and PSPS risk reduction benefits. The selection of
15 200 miles is informed by the WiNGS-Planning model (see Ex. SDGE-07, Chapter 2 Section I.G:
16 Risk-Informed Strategy and Prioritization), which is used to prioritize covered conductor
17 installations based on a comprehensive assessment of wildfire risk and PSPS exposure. Through
18 this risk-based planning approach, covered conductor is deployed where it is most effective in
19 reducing ignition potential and improving system resiliency, while complementing other
20 mitigation strategies such as undergrounding and enhanced operational practices. The proposed
21 pace balances multiple considerations, including wildfire and PSPS risk reduction,
22 constructability, permitting and environmental requirements. Within these practical and
23 affordability constraints, 200 miles represents a reasonable scope that focuses on the highest-

1 priority segments, makes measurable risk reduction progress, and maintains consistent execution
2 throughout the GRC cycle.

3 Costs are requested for installation of covered conductor as well as the following
4 activities that are performed as needed to reduce the risk of wildfire as part of covered conductor
5 projects:

- 6 • Replacing wood poles with steel
- 7 • Replacing wood crossarms with fiberglass
- 8 • Replacing fuses and lightning arrestors with CAL FIRE approved replacements
- 9 • Replacing high-risk connectors with lower risk connectors (e.g., replacing hot-line
10 clamps directly to tensioned conductors with wedge-tap connectors)
- 11 • Preventing avian contact through cover-up material and/or meeting or exceeding
12 spacing requirements for non-covered energized conductors and equipment
- 13 • Replacing guys and anchors as necessary
- 14 • Shortening spans over 500 feet where feasible
- 15 • In some cases, permanently removing overhead facilities where customer load no
16 longer exists

17 Generally, steel poles are chosen due to their improved reliability, consistent
18 manufacturing quality, lower required safety factors, and strong fire resilience. For example,
19 during the Valley Fire on September 5, 2020, even though a steel pole circuit experienced fire
20 impacts, none of the structures required replacement. Had the structures been wood, substantial
21 emergency pole replacement would have been necessary to restore the distribution line. Steel
22 poles are also a cost-effective option, as shown by an internal study comparing costs of wood
23 versus steel installation. The study found that the incremental cost of steel poles represents less
24 than 5% of total project cost on a per-pole basis, making them a cost-effective option when
25 considering the increased resiliency and long-term reliability benefits they provide.⁵⁶

26 The WiNGS-Planning model is utilized to prioritize covered conductor installation within
27 the HFTD. As part of this process, existing assets are evaluated to determine whether pole
28 replacements are required in conjunction with covered conductor installation. The need for

⁵⁶ D.26-01-021, OP 4 at 188. For additional risk-related details, refer to Ex. SDGE-07, Chapter 2, Section I.E.4.b.iii.

1 additional electrical equipment, such as fuses, transformers, and lightning arrestors, is also
2 assessed, with new assets installed alongside covered conductors as necessary. Advanced
3 protection solutions, including EFD and FCP, are evaluated and deployed to address key risk
4 drivers. Sectionalizing devices are also added where appropriate to minimize the number of
5 customers affected by PSPS de-energizations.

6 Engineering analysis to support these activities requires detailed evaluation of loads,
7 deformations, and stresses acting on conductors and their supporting structures. This analysis is
8 complex, often involving nonlinear material and geometric behavior in sag-tension calculations.
9 To address this, PLS-CADD is used for 3D modeling and design of overhead transmission and
10 distribution systems. The software leverages LiDAR survey data to accurately model the terrain,
11 SDG&E assets, vegetation, and other obstructions in the right-of-way to simulate line
12 performance under a wide range of operating conditions.

13 A key capability of PLS-CADD is accurate modeling of conductor sag and tension over
14 time. Using conductor-specific material properties, it simulates conditions from initial
15 installation through the asset's service life, including the effects of creep and extreme loading
16 events, which can increase sag and reduce ground clearances if not properly managed.
17 Maintaining adequate clearances is critical for wildfire mitigation, particularly in high-fire risk
18 areas where vegetation contact or wind-driven arcing can lead to ignition.

19 PLS-CADD also supports detailed wind and ice load modeling. While GO 95 defines
20 minimum design requirements in California, SDG&E designs infrastructure to higher wind
21 thresholds—at least 85 mph and up to 111 mph in the HFTD. Because wind pressure increases
22 with the square of wind speed, these higher thresholds result in significantly greater loads on
23 conductors and structures. PLS-CADD captures how these loads are distributed across system
24 components, enabling engineers to evaluate performance under extreme wind conditions
25 associated with wildfire risk and other conditions that may be more stringent like ice loading
26 above 3,000ft elevation.

27 Another key capability is the use of high-resolution LiDAR survey data in the PLS-
28 CADD model so that the terrain and conductor can be accurately modeled, which enables precise
29 clearance analysis across complex landscapes where traditional methods are less accurate.
30 Improved terrain representation helps ensure minimum clearances are maintained, even in areas
31 with rapidly changing topography, reducing the likelihood of vegetation contact or clearance

1 violations. To verify accuracy and performance, LiDAR survey and PLS-CADD modeling and
2 analysis are conducted pre-construction and post-construction as part of our True-Up analysis to
3 ensure the as-built condition meets GO95 and requirements in terms of pole loading and
4 conductor sag, tension and clearances.

5 By enabling detailed modeling of conductor behavior, structural loading, and clearances
6 under high-wind conditions, PLS-CADD modeling that uses LiDAR survey data supports
7 wildfire mitigation by reducing the risk of conductor contact, equipment failure, and ignition.

8 Section IV.F.1 discusses how remote sensing data will be evaluated and utilized to
9 enhance the CCC program.

10 Overhead asset inspections and vegetation management activities are continued on lines
11 with covered conductor installed. Additionally, PSPS de-energizations and SRP may be utilized
12 during periods of extreme fire weather.

13 CCC mitigation effectiveness is estimated at 61.71% and includes consideration of Early
14 Fault Detection (EFD), Falling Conductor Protection (FCP), Sensitive Relay Profile (SRP) and
15 PSPS de-energizations.

16 Covered conductors are also effective at reducing risk events on utility equipment and
17 can raise the threshold for PSPS de-energizations to higher wind speeds compared to bare
18 conductor hardening. For example, during the PSPS activation that occurred from December 9
19 to December 11, 2024, the wind gust threshold was increased from 45 miles per hour to 50 miles
20 per hour for two feeder segments with covered conductor installed.

21 This program increases the resiliency of the overhead distribution system to extreme
22 weather events and reduces the risk of ignition during Santa Ana wind events. SDG&E's
23 overhead distribution system was originally constructed to meet GO 95 requirements, which
24 include a maximum design wind loading criterion of 56 mph, or approximately 8 pounds per
25 square feet (psf). However, long-term analysis of weather patterns within the HFTD has shown
26 that local wind conditions can reach significantly higher speeds of up to 85 mph in Tier 2 and, in
27 some Tier 3 locations, up to 111 mph.

28 **d. Description of Selection and Prioritization of RAMP Risk**
29 **Mitigations**

30 See Section III.A.14.a.i for a description of selection and prioritization of RAMP risk
31 mitigations for this RAMP control.

1 **e. Forecast Method**

2 A zero-based methodology was used to forecast capital costs. This methodology is built
3 from the specific scope of work planned each year. The forecast is directly tied to the anticipated
4 miles of covered conductor to be designed and constructed annually. The average cost per mile
5 is calculated using recent project performance data and current market conditions. The cost per
6 mile is then applied to the planned mileage, resulting in a reliable, scope-driven forecast
7 grounded in up-to-date cost inputs.

8 SDG&E’s assumed average capital cost of \$1.31 million per mile for CCC reflects a
9 balanced, data-driven estimate grounded in both historical experience and forward-looking
10 program considerations. The per-mile cost is primarily derived from historical grid hardening
11 project data, which captures actual engineering, land rights acquisitions, environmental,
12 permitting and construction costs across a range of terrain, permitting environments, and system
13 configurations typical of SDG&E’s service territory.

14 Importantly, the estimate also reflects key cost drivers observed in recent CCC and grid
15 hardening projects, including evolving environmental and permitting requirements, the continued
16 need for pole replacements and structural upgrades, and the complexities of construction in high
17 fire threat and hard-to-access areas. These factors can result in higher per-mile costs relative to
18 baseline reconductoring assumptions, particularly where projects require additional engineering
19 scope, permitting, land rights acquisitions, environmental mitigation, hard digging, helicopter, or
20 a combination of all factors. The \$1.31 million per mile assumption therefore reflects not only
21 historical averages but also a reasonable allowance for variability in project conditions and
22 overall program risk.

23 **f. Cost Drivers**

24 Capital costs are driven by the unit cost of covered conductor and associated materials, as
25 well as the frequent need for ancillary equipment replacements, including poles, crossarms,
26 connectors, fuses, lightning arrestors, avian protection, guys, and anchors, identified through
27 detailed engineering and pole loading analyses. Additional cost drivers include expanded
28 construction scope such as span shortening, pole replacements, and, in limited cases, permanent
29 removal of overhead facilities; labor-intensive installation by specialized crews; and upfront and
30 ongoing engineering supported by LiDAR surveys, PLS-CADD modeling, and WiNGS-Planning

1 prioritization. Post construction QA/QC inspections, remediation activities, and integration of
2 advanced protection technologies further contribute to program costs.

3 **11. PSPS Sectionalizing Enhancements (C552)**

4 The specific details regarding PSPS Sectionalizing Enhancements are found in my capital
5 workpapers. See Ex. SDGE-07-CWP, WP 192450.

6 The PSPS Sectionalizing Enhancement program supports the installation and operational
7 readiness of distribution sectionalizing devices within the HFTD to minimize customer impacts
8 during PSPS de-energizations. Annual scope and locations are determined at the beginning of
9 each WMP cycle based on electric grid reliability needs, PSPS de-energization information, and
10 changes to the distribution system. This approach allows coordination with other programs and
11 uses support from the WiNGS-Planning model to identify locations that improve reliability while
12 avoiding conflicts with future projects, such as Strategic Undergrounding. PSPS de-energization
13 information is also used to inform site selection. As the distribution system evolves due to load
14 cutovers or new developments, additional locations may be identified.

15 Costs are requested for labor and non-labor costs to support the installation of remotely
16 operated distribution sectionalizing devices within the HFTD.

17 **g. Description of Selection and Prioritization of RAMP Risk** 18 **Mitigations**

19 See Section III.A.15.a.i for a description of selection and prioritization of RAMP risk
20 mitigations for this RAMP control.

21 **h. Forecast Method**

22 A zero-based methodology was used to develop the forecast of capital costs for PSPS
23 Sectionalizing Enhancement switches. Under this approach, the forecast is based on the
24 identified scope of work and applicable unit cost assumptions, rather than reliance on historical
25 recorded costs.

26 This approach is appropriate because the scope, location, and configuration of
27 sectionalizing switch installations vary from year to year as grid conditions evolve. These
28 changes are driven by updated wildfire risk assessments, changes in circuit topology, and
29 ongoing system hardening activities. As such, historical recorded costs do not provide a
30 reasonable basis for forecasting future capital requirements for this program.

1 Accordingly, the forecast is developed based on current engineering assessments,
2 identified installation needs, and expected work activities, and therefore represents a reasonable
3 forecast of the capital costs required to enhance sectionalizing capabilities and mitigate customer
4 impacts during PSPS events.

5 Cost forecasts are developed using project specific cost estimates based on current
6 construction labor rates, material costs, contract pricing or quotes, and other relevant project
7 details. Costs are influenced by location specific engineering, construction labor, and materials
8 required to install switches on circuits at a higher risk of PSPS de-energizations, including
9 circuits with significant underground sections where upstream overhead facilities are isolated to
10 allow customers to remain energized during weather events.

11 **i. Cost Drivers**

12 Cost drivers include the quantity of remotely operated distribution sectionalizing devices
13 in the HFTD. Additional cost drivers include the coordination of sectionalizing devices with
14 weather stations to support localized de-energization based on extreme wind conditions, as well
15 as the need to increase the number of devices to reduce outage program risk by minimizing the
16 number of customers impacted and potentially reducing PSPS duration.

17 **12. Distribution Communications Reliability Improvements (C564)**

18 The Distribution Communications Reliability Improvements (DCRI) program plans to
19 complete the remaining base station within the HFTD in 2026. The specific details regarding the
20 DCRI program are found in my capital workpapers. See Ex. SDGE-07-CWP, WP 198720.

21 The DCRI program addressed limitations in the existing communication system within
22 the HFTD. To mitigate this risk, the DCRI program deployed a privately owned LTE
23 communication network using licensed radio frequency spectrum. This network enhances the
24 reliability of communications required for initiatives that depend on continuous connectivity,
25 particularly during red flag conditions and other adverse weather events. The private LTE
26 network improves bandwidth, reliability, and cybersecurity while supporting advanced protection
27 technologies such as falling conductor detection and early fault detection.

28 Costs are requested for the completion of the remaining base station.

1 **j. Description of Selection and Prioritization of RAMP Risk**
2 **Mitigations**

3 See Section III.A.16.a.i for a description of selection and prioritization of RAMP risk
4 mitigations for this RAMP control.

5 **k. Forecast Method**

6 A zero-based methodology was used to forecast capital costs because the planned scope
7 significantly tapers after 2026 and no additional capital funding is requested beyond that year.

8 **l. Cost Drivers**

9 Cost drivers are directly related to building out the remaining base station in 2026 and
10 include non-labor construction costs.

11 **13. Distribution Underbuild Repairs on Transmission Structures (C565)**

12 The specific details regarding Distribution Underbuild Repairs on Transmission
13 Structures are found in my capital workpapers. See Ex. SDGE-07-CWP, WP 201270.

14 This mitigation focuses on proactively reducing the risk of equipment failures by
15 addressing targeted reliability needs on transmission structures with distribution underbuild. It
16 supports improvement of overall reliability and performance of the electric system and safety for
17 customers, field personnel, and the public. Small to mid-scale reliability projects include repair,
18 replacement, and reinforcement activities including the replacement of aging or deteriorated
19 poles, crossarms, insulators, or hardware, and upgrading equipment that has reached or is nearing
20 the end of useful life.

21 The number of projects included in this GRC reflects the forecasted pace of work, which
22 is determined through a structured process that ties asset condition, risk, safety considerations,
23 WMPs, and capital planning to forecast revenue requirements. Specifically, the number of
24 transmission poles with distribution underbuild units to be replaced or mitigated each year is
25 established by evaluating equipment condition and performance data, including age and failure
26 history, along with risk and safety prioritization criteria, ensuring alignment with regulatory
27 expectations and overall grid reliability objectives.

28 Only capital costs are requested for this mitigation. Since the RAMP filing, O&M
29 expenditures associated with follow-up repairs identified during Transmission Overhead Detailed
30 Inspections (for distribution underbuild) have been transferred to the CMP Repairs and

1 Replacements workpaper. As a result, capital is requested for small reliability capital projects on
2 transmission structures with distribution underbuild in the HFTD.

3 **a. Description of Selection and Prioritization of RAMP Risk**
4 **Mitigations**

5 The initiative was selected and prioritized because it proactively reduces the risk of
6 equipment failures on transmission structures with distribution underbuild in areas where
7 reliability and safety risks are higher. By targeting aging or deteriorating components and
8 equipment nearing the end of useful life, the mitigation helps prevent outages and unplanned
9 failures before they occur. It supports system-wide reliability and performance improvements
10 while enhancing safety for customers, field personnel, and the public.

11 Projects are based on reliability, safety, operational, and cost effectiveness considerations,
12 including risk reduction, aging infrastructure, regulatory and standards compliance, safety
13 enhancement, and grid reliability. Implementation follows a data driven, risk-informed
14 approach. Projects are identified through an analysis that includes end of useful life indicators,
15 tracking equipment age and failure history, and structural capacity. Once prioritized, projects are
16 scoped, scheduled, and executed through standard construction and maintenance processes.

17 **b. Forecast Method**

18 A zero-based methodology was used to forecast capital costs. With the transfer of
19 follow-up repairs to the CMP Repairs and Replacements initiative, future activity and spend
20 levels for these projects are not appropriately represented by historical or base year expenditures.
21 Capital costs are forecasted based on the anticipated volume and type of small reliability projects
22 expected during the GRC period.

23 While historic-based data (e.g., applicable unit cost) was utilized to develop the forecast,
24 use of historic total dollars spent is not applicable for this item. The forecast is based on cost
25 estimates developed from the scope of work for each project. Cost estimates are developed
26 based on construction labor rates, material costs, contract pricing/quotes, and other project
27 specific details, as applicable.

28 The forecasted units are developed using a zero-based methodology. For 2026 and 2027,
29 unit counts reflect only the currently identified, in-flight projects with confirmed scope and
30 timing. For the remaining forecast years, unit levels are based on an estimate of the average
31 number of new projects expected to be identified and advanced.

1 **d. Description of Selection and Prioritization of RAMP Risk**
2 **Mitigations**

3 The mitigation was selected to reduce wildfire risk by replacing aging electrical
4 infrastructure serving the U.S. Forest Service, emergency service facilities, campgrounds,
5 residences, businesses, and other customers in and around the CNF. Environmental costs and
6 mitigation measures were evaluated and prioritized in accordance with the project’s Mitigation
7 Monitoring, Reporting, and Compliance Program and Habitat Restoration Plan. This approach
8 provides customer benefits by lowering the risk of wildfire ignition and improving service
9 reliability in a high fire-risk area.

10 **e. Forecast Method**

11 A zero-based methodology was used to forecast capital costs. Historical costs reflect
12 prior fire-hardening work on distribution circuits within the CNF; however, because work was
13 completed, historical costs are not applicable to future restoration activities. The forecast is
14 therefore based on project specific cost estimates developed from the defined scope of remaining
15 restoration work. Cost estimates reflect current construction labor rates, material costs,
16 contractor pricing and quotes, and other project specific assumptions.

17 **f. Cost Drivers**

18 Cost drivers are associated with post construction environmental restoration activities
19 required under the PLRP. Ongoing costs are driven by permit mandated habitat restoration and
20 monitoring to address temporary construction impacts to vegetation communities.
21 Environmental restoration associated with impacts from CNF fire-hardening projects is
22 necessary to fulfill regulatory commitments and promote sustainability.

23 **15. Early Fault Detection (C573)**

24 The specific details regarding Early Fault Detection are found in my capital workpapers.
25 See Ex. SDGE-07-CWP, WP 222560.

26 The EFD program aims to detect incipient faults on the electric system with sufficient
27 time to locate and potentially repair or replace equipment before permanent failure occurs.
28 These incipient faults develop on degrading equipment well in advance of violent failures that
29 can damage surrounding infrastructure. Three primary technologies, ARFS, PQ meters, and pole
30 mounted multi sensor devices, are deployed across circuits located in the HFTD.

1 Costs are requested to support the physical installation, integration, and expansion of
2 these technologies to enhance monitoring coverage and system visibility.

3 Physical installation activities include installing ARFS sensors at approximately 4-
4 kilometer intervals along selected circuits; deploying PQ meters at substations and field
5 locations, including wiring, relay installation, and communications hardware; upgrading existing
6 PQ nodes; installing pole mounted multi sensor devices on poles along targeted circuits; and
7 establishing IT interfaces and synchronization systems to support real-time data collection and
8 analysis.

9 The technical scope focuses on implementing advanced monitoring and analytics
10 capabilities to improve system reliability and reduce fire risk. ARFS technology enables
11 continuous radio frequency monitoring of partial discharge to detect early signs of equipment
12 deterioration. PQ meters provide high resolution monitoring of power quality, fault location, and
13 predictive analytics across transmission and distribution systems. Pole mounted multi sensor
14 devices continuously monitor electrical, physical, and environmental conditions, operate during
15 outages, and utilize on-device analytics to detect anomalies in real-time.

16 The program also includes integration of communication networks, back-office systems,
17 and synchronization protocols to provide accurate and timely data flow, as well as deployment of
18 software tools for signal filtering, data validation, and risk assessment reporting. Together, these
19 capital investments support enhanced grid visibility, early fault detection, and improved wildfire
20 risk mitigation in high-risk areas. By addressing issues before failure, the program helps avoid
21 emergency repairs, minimizes outage related impacts, and lowers long term maintenance costs.

22 **a. Description of Selection and Prioritization of RAMP Risk**
23 **Mitigations**

24 See Section III.A.17.a.i for a description of selection and prioritization of RAMP risk
25 mitigations for this RAMP control.

26 **b. Forecast Method**

27 A zero-based methodology was used to forecast capital costs. The forecast is based on
28 cost estimates developed using project-specific construction labor rates, material costs, overhead
29 rates, contract pricing and quotes, and other project-specific details. Upon project completion,
30 actual costs are compared to estimated costs to verify accuracy. Any significant variances

1 between estimated and actual costs are reviewed to determine whether cost estimate inputs
 2 should be adjusted for future projects.

3 **c. Cost Drivers**

4 Costs are driven by the need to proactively identify and locate equipment at risk of failure
 5 before an outage occurs. Program costs support activities that enhance system reliability by
 6 reducing the frequency and duration of unplanned outages through early identification of
 7 potential equipment issues.

8 Additional cost drivers include efforts to reduce safety risks associated with equipment
 9 failures that could create hazardous conditions for the public and utility personnel.

10 **B. Vegetation Management and Inspections**

11 This category includes capital investments to modernize, enhance, and replace vegetation
 12 management technology and data platforms that are foundational to wildfire risk mitigation,
 13 regulatory compliance, and public safety. Capital costs support application enhancements,
 14 system integrations, cloud-based data pipelines, curated datasets, and replacement of end-of-life
 15 systems, enabling reliable parallel operation of current and future platforms during transition.
 16 These investments establish scalable, secure, and auditable Software as a Service (SaaS) and
 17 analytics systems that improve data integrity, cybersecurity, enterprise reporting, and risk-based
 18 vegetation management prioritization. Collectively, these investments reduce long-term
 19 operational and compliance risk while strengthening system reliability, audit readiness, and
 20 uninterrupted vegetation management operations.

21 These costs will be balanced and recorded in a regulatory account, the VMBA.

22 **TABLE JW - 15**
 23 **Capital Expenditures Summary of Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)								
ID	B. Vegetation Management and Inspections	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
C537	Off Cycle Patrols	0	0	0	399	399	399	399
C578	QA/QC of Vegetation Management	0	0	0	404	404	404	404
M582	Application Support and	2,179	2,598	2,601	2,243	2,242	3,871	3,497

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)								
	Risk Analytics							
M584	Integrated Work Management & Risk Assessment Platform	0	0	0	8,574	5,123	0	0
	Total	2,179	2,598	2,601	11,620	8,168	4,674	4,300

1. Off-Cycle Patrols (C537)

The specific details regarding Off-Cycle Patrols are found in my capital workpapers. See Ex. SDGE-07-CWP, WP 26886B.

Off-Cycle Patrols are performed within the HFTD to confirm compliance between annual inspections cycles and to support the overall objective of preventing vegetation-related outages and ignitions. Section V.F.1 discusses how remote sensing data will be evaluated and potentially utilized to enhanced Off-Cycle Patrols.

Costs are requested for internal labor, contracted non-labor, and cloud computing costs for non-production environment to support processing of remote sensing (e.g., LiDAR) data.

a. Description of Selection and Prioritization of RAMP Risk Mitigations

See Section III.B.2.a.i for a description of selection and prioritization of RAMP risk mitigations for this RAMP control.

b. Forecast Method

A zero-based methodology was used to forecast capital costs. This approach is appropriate because this initiative represents new capabilities that are not adequately reflected in historical spending. Activities will rely heavily on specialized technical contractors and vendors whose resource requirements fluctuate based on project phase.

c. Cost Drivers

The use of remote sensing as the overarching program to support Off-Cycle Patrols introduces costs that are primarily influenced by data acquisition timing, data resolution and spatial coverage, and the analytics and audit processes required to convert collected data into actionable insights. Within the broader remote sensing approach, LiDAR may represent the

1 primary cost driver due to its higher resolution requirements, specialized acquisition methods,
2 and intensive data processing needs. Remote data collection following pruning, removal, or pole
3 clearing activities enables accurate validation of completed work; however, program costs are
4 affected by the frequency of capture, the geographic extent of coverage, and the specific remote
5 sensing technologies deployed.

6 **2. QA/QC of Vegetation Management (C578)**

7 The specific details regarding QA/QC of Vegetation Management are found in my capital
8 workpapers. See SDG&E-07-CWP, WP 26886A.

9 Testimony on how SDG&E is considering implementing technologies, such as LiDAR or
10 smart image processing to augment field inspection for QA/QC of pruning and pole clearing is
11 described in Section IV.F.1.

12 Costs are requested for both internal labor, contracted non-labor, and cloud computing
13 costs for non-production environment to support processing of remote sensing (e.g., LiDAR)
14 data.

15 **a. Description of Selection and Prioritization of RAMP Risk** 16 **Mitigations**

17 See Section III.B.5.a.i for a description of selection and prioritization of RAMP risk
18 mitigations for this RAMP control.

19 **b. Forecast Method**

20 A zero-based methodology was used to forecast capital costs. This approach is
21 appropriate because this initiative represents new capabilities that are not adequately reflected in
22 historical spending. Several of these activities rely heavily on specialized technical contractors
23 and vendors with resource levels and expertise scaled according to the project phase.

24 **c. Cost Drivers**

25 The use of remote sensing as the overarching program to support QA/QC of Vegetation
26 Management introduces costs that are primarily influenced by data acquisition timing, data
27 resolution and spatial coverage, and the analytics and audit processes required to convert
28 collected data into actionable QA/QC insights. Within the broader remote sensing approach,
29 LiDAR may represent the primary cost driver due to its higher resolution requirements,
30 specialized acquisition methods, and intensive data processing needs. Remote data collection
31 following pruning, removal, or pole clearing activities enables accurate validation of completed

1 work; however, program costs are affected by the frequency of capture, the geographic extent of
2 coverage, and the specific remote sensing technologies deployed.

3 **3. Application Support and Risk Analytics (M582)**

4 SDG&E plans to build and place in service Application Support and Risk Analytics
5 starting in the Test Year. The specific details regarding Application Support and Risk Analytics
6 are found in my capital workpapers. See Ex. SDGE-07-CWP, WP 268860.

7 Costs are requested for minor system enhancements for the current and future vegetation
8 management system and risk analytics and targeted system upgrades to maintain reliable
9 performance, audit-ready records, and continuous field operations while supporting compliance.
10 Investments also strengthen data and analytics capabilities to enable risk-based prioritization and
11 the transition to condition-based vegetation inspections.

12 **a. Description of Selection and Prioritization of RAMP Risk**
13 **Mitigations**

14 See Section III.B.7.a.i for a description of selection and prioritization of RAMP risk
15 mitigations for this RAMP control.

16 **b. Forecast Method**

17 A zero-based methodology was used to forecast labor costs because it more accurately
18 reflects future needs than historical or linear methods, which do not account for rapid technology
19 changes. Costs are developed using current market data and expert input, with detailed estimates
20 prepared by experienced internal and external delivery teams, as applicable. Estimates are
21 tailored to each project's scope and schedule and include required resources such as FTEs,
22 systems, and environments.

23 **c. Cost Drivers**

24 Cost drivers include both labor and non-labor resources dedicated to implementing minor
25 enhancements for current and future vegetation management applications, systems, and data
26 platforms. Capital expenditures are attributable to application and system upgrades, system
27 integration efforts, the development of cloud-based data pipelines, and the establishment of
28 scalable, secure, and auditable data foundations that will support future operations and advanced
29 risk analytics.

1 **4. Integrated Work Management & Risk Assessment Platform (M584)**

2 SDG&E plans to build and place in service Integrated Work Management & Risk
3 Assessment Platform by 2029. The specific details regarding Application Support and Risk
4 Analytics are found in my capital workpapers. See Ex. SDGE-07-CWP, WP 268900.

5 Costs are requested for an Integrated Work Management & Risk Assessment Platform
6 that will replace aging field and data systems used to plan, execute, document, and report
7 vegetation management activities, including the current system that will reach its end of life in
8 2027. This modernization shifts from on-premises infrastructure to a SaaS platform, aligning
9 with the Data Center Consolidation Program to reduce technical debt, strengthen cybersecurity,
10 and provide scalable, resilient technology.⁵⁷ The new cloud solution will also support built-in
11 digital assistant capabilities to streamline workflows and improve user experience.

12 Timely investment is critical due to the current platform reaching end of life in 2027, and
13 to maintain safe and reliable vegetation management operations and to meet evolving CPUC and
14 OEIS inspection, reporting, and compliance requirements. Without system replacement,
15 operational, cybersecurity, audit, and regulatory risks would increase, along with the potential for
16 non-compliance penalties. Collectively, these investments support wildfire risk mitigation by
17 improving data accuracy and transparency, enhancing coordination across inspection and
18 maintenance workflows, and enabling proactive customer communication, while supporting
19 long-term operational efficiency, regulatory compliance, and public safety.

20 Costs are requested for software implementation, SaaS licensing, system integration, data
21 platform development, and related non-labor services, along with labor for design, configuration,
22 testing, and deployment.

23 **a. Description of Selection and Prioritization of RAMP Risk**
24 **Mitigations**

25 See Section III.B.8.a.i for a description of selection and prioritization of RAMP risk
26 mitigations for this RAMP control.

27 **b. Forecast Method**

28 A zero-based methodology was used to forecast labor costs because it provides a more
29 accurate estimate of future costs than historical or linear methods, which fail to account for rapid

⁵⁷ See the Information Technology testimony and corresponding workpaper (Ex. SCG-10/SDGE-14 and Ex. SCG-10/SDGE-14-WP, WP H07700).

1 technological advancements. This approach builds costs from the ground up using current
 2 market data and expert input, rather than relying on outdated patterns. Detailed estimates are
 3 developed by internal and external delivery teams with experience in similar projects, covering
 4 resources such as FTEs, systems, and environments, and are tailored to each project’s scope and
 5 schedule.

6 **c. Cost Drivers**

7 Cost drivers relate primarily to labor and non-labor expenditures required to replace and
 8 modernize the Vegetation Management Technology platform to maintain regulatory compliance,
 9 system reliability, and cybersecurity. Software license cost, vendor services, and purchased labor
 10 are the primary cost drivers and are attributable to the implementation of a SaaS Vegetation
 11 Management system to replace an end-of-life platform, including system configuration,
 12 integration with enterprise applications, data migration, testing, and deployment.

13 **C. Situational Awareness and Forecasting**

14 **TABLE JW - 16**
 15 **Capital Expenditures Summary of Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)								
ID	C. Situational Awareness and Forecasting	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
C562	Weather Network & Technology Programs	75	0	0	0	0	7,000	0
C561	Fire Potential Index	-1,219	0	0	0	0	0	0
	Total	-1,144	0	0	0	0	7,000	0

16
 17 **1. Weather Network & Technology Programs (C562)**

18 The specific details regarding Weather Network & Technology Programs are found in my
 19 capital workpapers. See Ex. SDGE-07-CWP, WP 192470.

20 Weather Network & Technology programs support high performance computing
 21 capabilities that support situational awareness and forecasting functions, including the execution
 22 of the WRF model tailored to the unique weather patterns and terrain of the service territory.
 23 These computing platforms also support largescale data analytics efforts that process terabytes of
 24 environmental data required for operational meteorology products and procedures. Data
 25 generated and processed through this platform directly supports essential fire weather tools,

1 including the FPI and the SAWTI, which are used to inform time sensitive operational and
2 emergency response decisions aimed at mitigating fire and weather-related risks.

3 Costs are requested for the continued evolution of the Weather Network & Technology
4 platform during the TY 2028 GRC cycle, including enhancements needed to address coverage
5 gaps and support the long-term scalability and resiliency of situational awareness capabilities.
6 Currently, SDG&E owns and operates three high performance computing clusters, one of which
7 is approaching decommissioning after reaching the end of useful life. These systems form the
8 technological foundation that support the production of locally accurate forecasts and reduce
9 operational risk associated with extreme weather and fire conditions. Capital funding is
10 necessary to maintain sufficient computational capacity, performance, and system reliability to
11 support advanced weather and fire science applications. This capability may be delivered
12 through new high performance computing clusters or an equivalent cloud-based solution,
13 provided the platform is cost competitive and meets required standards for computational power,
14 reliability, data security, plus operational availability.

15 **a. Description of Selection and Prioritization of RAMP Risk**
16 **Mitigations**

17 See Section III.C.2.a.i for a description of selection and prioritization of RAMP risk
18 mitigations for this RAMP control.

19 **b. Forecast Method**

20 A zero-based methodology was used to forecast capital costs because the capital request
21 reflects a discrete, project specific scope of work. The forecast incorporates current market
22 pricing for private cloud computing hardware, construction and installation labor, and other
23 project specific requirements needed to replace systems that have reached the end of their
24 operational life.

25 **c. Cost Drivers**

26 Cost drivers are associated with maintaining and evolving the computing and sensing
27 infrastructure required to support situational awareness and forecasting capabilities. These
28 drivers include the need to replace or modernize computing platforms that have reached the end
29 of their useful life through high performance computing clusters or an equivalent cloud-based
30 solution.

D. Emergency Preparedness, Collaborations, and Public Awareness

Emergency Preparedness, Collaboration, and Public Awareness capital investments support the infrastructure, technology, and facilities necessary to strengthen coordinated emergency response, situational awareness, and public safety communications during wildfire events, PSPS activations, and other all-hazards incidents. These capital projects provide foundational systems and assets that enable effective collaboration with public safety partners, timely dissemination of critical information, and resilient emergency operations across the service territory.

Capital activities under this category focus on the development, enhancement, and sustained operation of emergency communication platforms, data integration and situational awareness tools, and physical facilities that support emergency coordination and outreach. These investments include systems that consolidate and distribute operational information to authorized public safety partners, technology and infrastructure that enhance emergency communications and coordination capabilities, and facilities designed to support emergency response. Collectively, these capital projects enable durable, scalable, and secure capabilities that support preparedness, response, and recovery activities and the ability to meet evolving regulatory and operational expectations related to public safety and emergency management.

SDG&E proposes to record these costs in its WMPMA.

**TABLE JW - 17
Capital Expenditures Summary of Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)								
ID	D. Emergency Prep Collab & Community Outreach	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
C567	Public Emergency Communication Strategy	5,218	3,200	3,780	0	0	0	0
C571	Emergency Preparedness and Recovery Plan	6,557	11,851	6,203	6,607	10,797	11,996	6,606
	Total	11,775	15,051	9,983	6,607	10,797	11,996	6,606

1 **1. Public Emergency Communication Strategy (C567)**

2 The specific details regarding Public Emergency Communications Strategy are found in
3 my capital workpapers. See Ex. SDGE-07-CWP, WP 258820.

4 The Public Emergency Communication Strategy program is a foundational program
5 designed to mitigate the impacts of wildfires and PSPS de-energizations by improving public
6 awareness, preparedness, and access to information and resources. Costs are requested to
7 support the CNS (referred to as the ENS Replacement project in the 2025 RAMP).

8 The CNS provides timely, reliable, and accessible notifications to customers affected by
9 PSPS de-energizations and load curtailments (the temporary reduction of electricity demand). It
10 enhances public safety by delivering advance notice, real-time updates, and restoration
11 communications, and is designed to meet CPUC requirements for enhanced customer
12 notification, including redundancy, accessibility, and targeted outreach to vulnerable populations.

13 The CNS was implemented in the fourth quarter of 2024 to replace the Enterprise
14 Notification System (ENS) and was used during the November and December 2024 PSPS
15 activations. It now serves as the primary enterprise platform for outbound emergency customer
16 notifications. The CNS delivers multi-channel communications (e.g., recorded voice calls, text
17 messages, and emails) to increase successful customer contact and supports the PSPS
18 notification timeline, from advance notices through restoration updates.

19 The CNS also addresses accessibility and language needs through ASL video integration,
20 audio read-out, screen-reader-accessible transcripts, and provides most notifications in 22
21 prevalent languages. Affirmative notification processes support Medical Baseline and other
22 vulnerable customers by tracking notification attempts and enabling follow-up when automated
23 notifications are not confirmed.

24 The system operates in coordination with the Alerts by SDG&E mobile application,
25 public websites, media communications, and the PSPP used by government agencies and
26 emergency responders, supporting shared situational awareness before, during, and after PSPS
27 de-energizations. Ongoing CNS enhancements focus on meeting evolving regulatory
28 requirements, strengthening system resiliency, integrating with critical internal systems, and
29 improving performance and reporting capabilities during large scale emergency events.

30 The CNS is driven by regulatory requirements and public safety obligations to provide
31 timely, accessible customer communications during PSPS de-energizations. The CPUC has

1 established clear expectations for enhanced, timely, and multi-channel (redundant) notifications
2 through Rulemaking 18-12-005 and related decisions, including D.19-05-042,⁵⁸ D.20-05-051,⁵⁹
3 and D.21-06-034.⁶⁰ The CNS meets these requirements by providing a modern, scalable, and
4 accessible platform that supports PSPS planning, execution, and post-event accountability.

5 **a. Description of Selection and Prioritization of RAMP Risk**
6 **Mitigations**

7 See Section III.D.3.a.i for a description of selection and prioritization of RAMP risk
8 mitigations for this RAMP control.

9 **b. Forecast Method**

10 A zero-based methodology was used to forecast capital costs because historical costs are
11 not representative of future needs and forecasted costs are based on defined project scope,
12 current contractor and labor costs, and anticipated implementation activities.

13 **c. Cost Drivers**

14 Cost drivers include labor and non-labor support including building and updating the
15 database, Power BI, and user interface to support business needs; managing the build out of
16 documentation for purposes of documenting the build application and performing knowledge
17 transfer for ongoing support and maintenance; and performing code changes and builds to
18 support business needs and identify system and process improvements.

19 Documentation of these cost drivers are included as supplemental capital workpapers.
20 See Ex. SDGE-07-CWP.

21 **2. Emergency Preparedness and Recovery Plan (C571)**

22 The specific details regarding Emergency Preparedness and Recovery Plan are found in
23 my capital workpapers. See Ex. SDGE-07-CWP, WP 228790. Costs requested are capital labor
24 and non-labor to build and place into service the Emergency Preparedness and Recovery Plan
25 through four foundational projects, Public Safety Partner Portal (PSPP), EOC App Hub,
26 Responder Lifecycle Platform, and Incident Field Support, that strengthen situational awareness,

⁵⁸ D.19-05-042, OPs 1 and 3 at 130-131, adopting and enforcing PSPS notification and communication guidelines.

⁵⁹ D.20-05-051, OP 4 at 100, requiring implementation of enhanced Phase 2 notification and communication guidelines.

⁶⁰ D.21-06-034, OP 1 at 169, requires utilities to comply with Phase 3 PSPS guidelines, including notification and communication requirements incorporated in Appendix A.

1 responder readiness, and coordinated emergency operations. The request includes software
2 development and system integration labor, training and data enhancements, and non-labor costs
3 for vehicles, communications, power systems, equipment, and associated engineering,
4 integration, testing, and commissioning needed to sustain effective PSPS and all-hazards
5 response.

6 **Public Safety Partner Portal (PSPP)**

7 The PSPP is an existing, secure, web-based, mobile platform that provides authorized
8 CPUC-defined public safety partners with near real-time situational-awareness information
9 before, during, and after emergency events, including PSPS activations and other all-hazards
10 incidents. It integrates multiple internal data sources to support coordinated planning, response,
11 and recovery among public safety agencies, Tribal governments, utilities, and other designated
12 partners. Although the CPUC does not mandate specific software systems, to implement
13 requirements in CPUC decisions (Res. ESRB-8; D.19-05-042; D.20-05-051; D.21-06-034), the
14 PSPP was developed as a centralized, secure alternative to ad-hoc communication methods and
15 provides consistent, equitable access to actionable operational data that helps partners make
16 informed decisions during emergency conditions.

17 Key capabilities include:

- 18 • Centralized situational awareness: Geographic polygons for potential PSPS areas
19 and affected areas, outage information by community, estimated restoration times,
20 and incident timelines updated in near real-time.
- 21 • Advanced GIS mapping and filtering: Customizable views by hazard type,
22 community, or outage category, with exportable data for local planning.
- 23 • Secure access controls: Multi factor authentication and role-based permissions to
24 protect sensitive operational data.
- 25 • Information sharing resources: Talking points, community flyers, social media
26 toolkits, and links to customer and emergency contact information.
- 27 • Accessibility features: WCAG compliant design to support partners serving
28 individuals with AFN.
- 29 • By providing real-time situational awareness, improving multi-jurisdictional
30 coordination, and reducing reliance on manual communications during high-
31 impact events, the PSPP supports efficient emergency operations and reduces the
32 risk of miscommunication. It is a foundational, non-discretionary component of
33 PSPS operations and emergency preparedness.

34

EOC App Hub

The EOC App Hub (formerly “Digital Fortress” in the 2025 RAMP) is an existing, centralized, secure, and resilient platform that consolidates critical emergency management applications used during EOC activations. Its primary purpose is to support timely situational awareness, coordinated decision-making, and efficient response during PSPS activations and other all-hazards incidents.

The EOC App Hub is a cloud based, redundant application framework that provides a single point of access to mission critical tools across in person, virtual, and hybrid EOC activations. By integrating multiple internal data sources into one environment, it replaces fragmented systems and supports continuous, reliable operations during large scale emergencies.

The EOC App Hub houses key applications and dashboards, including:

- PSPS and outage dashboards, situational awareness tools, and GIS based applications for real-time monitoring of system conditions.
- Activation indicators and workflows that give responders quick visibility into activation status and relevant tools.
- Integrated navigation with role-based access controls to maintain security while allowing movement between applications from a single interface.

Supporting tools, such as the EOC Tracker, which aggregates data and automates notifications and reporting, further reduce manual processes and improve response timelines.

Although the CPUC does not mandate specific software systems, regulatory requirements establish the need for robust emergency management capabilities, including:

- Pub. Util. Code § 768.6(a): compliance with CPUC emergency preparedness standards.
- Pub. Util. Code § 8386(c)(19): inclusion of emergency preparedness and response activities in WMPs.
- Res. ESRB-8: Decisions D.19-05-042, D.20-05-051, and D.21-06-034: emphasis on timely situational awareness, coordination, and accountability during PSPS de-energizations.

The EOC App Hub meets these requirements by providing reliable, real-time access to critical information, improving coordination, and reducing delays associated with dispersed or manual systems.

By consolidating critical applications, the EOC App Hub increases operational efficiency, accelerates decision-making, and strengthens public safety during PSPS de-energizations and

1 other emergencies. The platform serves as a foundational element of the Emergency
2 Preparedness and Recovery framework, supporting non-discretionary systems that are critical to
3 resilient and effective emergency response operations.

4 **Responder Lifecycle**

5 The Responder Lifecycle platform will be a centralized platform for managing training,
6 credentials, availability, scheduling, activation, and compensation of EOC responders. Its
7 purpose will be to maintain a qualified and readily deployable responder workforce for PSPS
8 activations and other emergencies affecting electric and gas operations.

9 Integrated with the EOC App Hub, the Responder Lifecycle platform will consolidate
10 responder-related data in one system, reducing reliance on manual tracking and multiple tools
11 that can delay response coordination. It will support the broader Emergency Preparedness and
12 Recovery framework by improving responder readiness, reducing administrative workload
13 during activations, and standardizing documentation of qualifications and participation. Its core
14 functions will include:

- 15 • Onboarding and training management: tracking required courses, certifications,
16 and initial qualification.
- 17 • Ongoing readiness activities: annual exercises and role specific training led by
18 emergency management and ICS subject matter experts.
- 19 • Workforce management: monitoring readiness and experience, analyzing attrition
20 trends, and supporting team organization.

21 The platform is part of enterprise-wide modernization efforts and will be coordinated
22 with EOC facilities, training programs, and emergency response applications to create a unified
23 and scalable responder management system. While regulations do not require a specific software
24 solution, they establish clear expectations for responder qualification, staffing capability,
25 training, and documentation:

- 26 • Pub. Util. Code § 768.6(a): compliance with CPUC emergency preparedness
27 standards.
- 28 • Pub. Util. Code § 8386(c)(19): emergency preparedness and response activities
29 within Wildfire Mitigation Plans.
- 30 • Res. ESRB-8, and Decisions D.19-05-042, D.20-05-051, and D.21-06-034:
31 emphasize preparedness, coordination, accountability, and sustained EOC
32 capability during PSPS activations.

1 The platform will address challenges such as responder attrition, inconsistent credential
2 tracking, and the increasing duration and complexity of emergency events by providing better
3 visibility into responder availability, training status, and qualifications.

4 By improving responder readiness, reducing administrative delays, and supporting
5 coordinated operations, the Responder Lifecycle platform will strengthen the organization's
6 ability to execute PSPS and all hazards emergency response activities. It is a foundational, non-
7 discretionary investment within the Emergency Preparedness and Recovery Plan.

8 **Incident Field Support**

9 Incident Field Support involves the vehicles, tools, and equipment needed to provide
10 integrated redundant communications, hardened power, and environmental protection necessary
11 to sustain safe and effective field operations during major incidents. These vehicles and
12 associated equipment function as transportable emergency response facilities that support
13 command, coordination, and responder welfare in the field, ensuring long-term operational
14 readiness consistent with safety and reliability objectives.

15 Emergency Command Vehicles (ECVs) expand field-based emergency response
16 capabilities by providing deployable, mobile command platforms that enhance communication
17 and coordination during high wind conditions, Red Flag Warnings, and other wildfire related
18 incidents. ECVs support safe, risk informed field operations and accelerate service restoration
19 during disasters.

20 ECVs function as hardened, climate-controlled command, control, and coordination hubs
21 that integrate weather intelligence, operational data, and real-time field observations. They
22 support incident operations by:

- 23 • Providing forward command presence in the HFTD.
- 24 • Facilitating real-time coordination with leadership regarding field conditions,
25 circuit status, and go/no-go decisions for patrols, inspections, and restoration.
- 26 • Offering a protected space for crew briefings and adjustments to work plans as
27 conditions evolve.
- 28 • Maintaining ICS aligned command continuity when fixed facilities or commercial
29 communications are degraded.
- 30 • Supporting interoperability and coordination with fire agencies, Cal OES, first
31 responders, and local jurisdictions.

1 The program includes replacement of aging emergency response vehicles that no longer
2 meet reliability, safety, or technological requirements. Modern ECVs standardize a mobile
3 command function already embedded in PSPS emergency plans while improving capabilities
4 such as multi-channel communications (radio, satellite, LTE) and advanced situational awareness
5 tools.

6 Although regulations do not specify equipment types, multiple CPUC directives establish
7 the need for robust, scalable, safety focused field operations during wildfire mitigation and PSPS
8 activities:

- 9 • Pub. Util. Code § 8386(a), (b): utilities must operate systems to minimize wildfire
10 risk and include PSPS execution and field response in Wildfire Mitigation Plans.
- 11 • Pub. Util. Code § 768.6(a): requires compliance with CPUC emergency
12 preparedness standards.
- 13 • Res. ESRB-8; Decisions D.19-05-042, D.20-05-051, and D.21-06-034: emphasize
14 conservative operational decision-making, ICS based coordination, situational
15 awareness, and workforce protection during PSPS de-energizations.

16 ECVs directly support these expectations by improving oversight of field activities,
17 strengthening worker safety, and providing reliable mobile command capability during
18 prolonged or high-risk incidents.

19 ECVs offer a cost-effective alternative to expanding fixed facilities. A single deployable
20 unit can support multiple incidents across different regions, reducing lifecycle costs and
21 improving operational flexibility. By enabling effective field coordination, reducing safety risks
22 to personnel, and supporting timely restoration activities, ECVs represent a necessary reliability
23 and safety investment aligned with industry best practices in high fire threat environments.

24 **a. Description of Selection and Prioritization of RAMP Risk**
25 **Mitigations**

26 See Section III.D.4.a.i for a description of selection and prioritization of RAMP risk
27 mitigations for this RAMP control.

28 **b. Forecast Method**

29 A zero-based methodology was used to forecast capital costs because historical spending
30 is not representative of future needs. Forecasted costs are instead developed from defined
31 project scope, current labor and vendor rates, and anticipated work activities.

1 **c. Cost Drivers**

2 Cost drivers for the PSPP include internal and external labor for system enhancement
3 including:

- 4 • Creation of simulation-based training and exercise capabilities that allow first
5 responders and partners to train within realistic, scenario-driven environments.
6 These simulations will model evolving risk conditions, including multi-peak and
7 cascading events, and will reflect how communications, decision points, and
8 operational conditions change throughout an incident.
- 9 • Enhanced communications will allow executive-level briefings within the PSPP.
10 As incidents increase in complexity, partners require clear, consistent, and role-
11 appropriate updates. Portal-based briefings will align field-level information with
12 leadership decision-making by providing structured updates on event status,
13 anticipated impacts, and strategic considerations.
- 14 • Centralization of regulatory and Cal OES reporting within the PSPP will facilitate
15 consolidation of regulatory documentation, after-action reports, and event records
16 into a single system that improves data integrity, reduces manual effort, and
17 supports consistent compliance with CPUC and Cal OES requirements.

18 Cost drivers for the EOC App Hub include development efforts to support new
19 data-delivery requirements for end users and integration with the Emergency Management data
20 foundation to enable enterprise-wide alignment.

21 Cost drivers for Responder Lifecycle are tied to labor and non-labor to address the
22 consolidation of disparate systems into a centralized platform, gaps in data integrity, streamline
23 onboarding and training processes, and eliminate inefficiencies.

24 Cost drivers for Incident Field Support include the purchase of the base vehicle
25 (chassis/cab) and Original Equipment Manufacturer (OEM) options; body type, structural upfit
26 and interior buildout; and purchase and installation of necessary equipment including
27 communications, networking, and IT systems, electrical power systems (generation, storage, and
28 shore power), exterior equipment, and response features. Additional costs include safety and
29 compliance requirements; engineering and integration labor; logistics for spare parts and
30 lifecycle support; and testing, commissioning, and delivery.

1 **E. Enterprise Systems**

2 **1. Enterprise Data Foundation (C566)**

3 **TABLE JW - 18**
4 **Capital Expenditures Summary of Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)								
ID	E. Enterprise Systems	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
C566	Enterprise Data Foundation	4,340	4,349	4,352	11,365	9,052	9,851	13,862
	Total	4,340	4,349	4,352	11,365	9,052	9,851	13,862

5
6 SDG&E plans to build and place in service Enterprise Data Foundation starting in the
7 Test Year. The specific details regarding Enterprise Data Foundation are found in my capital
8 workpapers. See Ex. SDGE-07-CWP, WP 248770.

9 Increasing wildfire risk, expanding PSPS activity, and evolving regulatory and
10 operational requirements have materially increased the need for timely, high-fidelity, and
11 continuously updated data across wildfire prevention, response, and recovery activities.
12 Decisions that were historically supported by periodic or retrospective data now require near-
13 real-time visibility into asset conditions, environmental factors, operational status, and mitigation
14 effectiveness to support situational awareness, emergency operations, regulatory reporting, and
15 post-event analysis. As wildfire conditions intensify and operational windows compress, the
16 ability to rapidly integrate, validate, and operationalize data across multiple domains has become
17 a foundational requirement for safe, reliable, and compliant utility operations. The Enterprise
18 Data Foundation was established to address these emerging needs by treating data as a strategic
19 enterprise asset and providing the scalable, governed, and resilient data capabilities required to
20 support wildfire and climate driven operations.

21 Costs are requested to support three coordinated initiatives within the Enterprise Data
22 Foundation that provide the data infrastructure, real-time decision support, and intelligence
23 capabilities needed for wildfire mitigation, emergency management, and regulatory reporting:
24 OEIS Data Foundation, Emergency Management (EM) Data Foundation Resilience, and Wildfire
25 and Climate Science (WCS) Intelligence Enablement. These capital labor and non-labor costs

1 support internal and external labor, cloud licensing, and system development across the OEIS
2 Data Foundation, EM Data Foundation Resilience, and WCS Intelligence Enablement initiatives
3 to improve situational awareness, emergency response, wildfire mitigation, and regulatory
4 reporting.

5 These initiatives reduce operational burden, improve data integrity, and strengthen the
6 ability to make timely, risk informed decisions.

7 **OEIS Data Foundation**

8 The OEIS Data Foundation initiative (formally known as Data Governance) develops and
9 matures core cloud-based data structures, standards, and automated pipelines that transform raw
10 enterprise data into consistent, reusable data products. These standardized datasets support
11 wildfire risk modeling, CPUC and OEIS reporting, operational analytics, and cross-department
12 decision-making.

13 A strong data foundation reduces siloed or inconsistent datasets, improves data quality,
14 strengthens audit readiness, and supports accurate, traceable regulatory filings. Publishing
15 common data products across engineering, vegetation management, asset management,
16 emergency management, and climate programs improves operational efficiency and reduces
17 manual reconciliation.

18 Key outcomes include:

- 19 • Consistent, high quality data products stored in the cloud
- 20 • Automated processing that reduces manual validation
- 21 • Repeatable, traceable reporting for regulatory agencies
- 22 • Improved risk models and situational awareness

23 **EM Data Foundation Resilience**

24 The EM Data Foundation Resilience initiative will establish real-time data capabilities
25 required for emergency response operations. Unlike the OEIS Data Foundation, which works
26 with data in large batches, this initiative focuses on rapid ingestion, processing, and integration
27 of time sensitive operational data during active emergencies.

28 This real-time foundation supports:

- 29 • Near-real-time processing of incident, response, and communication data

- Integration of multi-domain operational feeds (weather, system status, responder activity, stakeholder communications)
- High-resolution location accuracy and timestamp precision
- Point-in-time data reconstruction, which captures exactly what information existed when decisions were made

The EM Data Foundation will focus on building the systems, architecture, and workflows necessary to consolidate real-time data streams and capture decision points across an evolving incident.

WCS Intelligence Enablement

The WCS Intelligence Enablement initiative will transform curated cloud foundation datasets into actionable insights for field crews, emergency responders, project managers, and other decision makers. It will serve as the delivery layer that operationalizes analytics, supports in-event workflows, and improves decision speed and accuracy.

Key capabilities include:

- Consolidation of platforms, maps, and workflows into unified decision support tools
- Advanced electric network tracing for spatial accuracy and customer level notifications
- Support for construction project validation through map reviews, field feedback loops, and correction workflows
- Tracking of construction and engineering decision points to improve transparency and regulatory compliance

This initiative reflects industry expectations that data platforms must support real-time decision-making, maintain resilience under system stress, and provide full traceability for CPUC and OEIS reporting.

The Enterprise Data Foundation provides the cloud infrastructure, real-time integration, and intelligence capabilities required to support wildfire mitigation, emergency management, and regulatory transparency. It reduces manual workload, improves consistency across programs, and enables a more agile, data driven organization.

1 **a. Description of Selection and Prioritization of RAMP Risk**
2 **Mitigations**

3 See Section III.E.1.a.i for a description of selection and prioritization of RAMP risk
4 mitigations for this RAMP control.

5 **b. Forecast Method**

6 A base-year methodology was used to forecast capital costs. The base-year forecast
7 methodology was selected as most indicative of future work as similar program work was
8 completed in 2025. Historical costs prior to 2025 are not representative of future costs. The EM
9 Data Foundation Resilience and WCS Intelligence Enablement are incremental costs as these are
10 new initiatives.

11 **c. Cost Drivers**

12 OEIS Data Foundation costs include external labor and non-production cloud licensing
13 for:

- 14 • Implementing enterprise data strategy and designing data architecture and
15 schemas based on shared data features across all use cases.
- 16 • Developing OEIS QDR data structures, validation logic, and automated
17 processing pipelines.
- 18 • Creating data products that support mitigation effectiveness reporting, including
19 streamlined data capture, tracking, and analytics.
- 20 • Building data products to support RDF benefit cost analyses, including integration
21 of financial data.
- 22 • Enhancing asset and work management data products, which are critical inputs for
23 risk analytics, Emergency Management operations, and OEIS regulatory filings,
24 by structuring asset and inspection datasets to increase reusability across all use
25 cases.
- 26 • Implementing data governance policies to establish standardized data.

27 EM Data Foundation Resilience initiative costs include internal and external labor for:

- 28 • Identifying and consolidating data definitions, transformation rules, and “single
29 source of truth” datasets across emergency management use cases
- 30 • Establishing a centralized emergency management cloud data repository that
31 houses authoritative event data across all emergency management domains.
- 32 • Creating standardized data products that are reusable across enterprise functions
33 and are aligned with enterprise data strategy and governance.

- Creating data products that support unique use cases and streamlining data feeds for emergency management applications.

WCS Intelligence Enablement initiative costs include external labor for:

- Ingesting data from the data mesh including from the OEIS Data Foundation and EM Data Foundation Resilience
- Creating near real-time network topology and ontology that integrates with Network Management Systems / Outage Management Systems and WiNGS models to provide a risk-informed operational picture during Red Flag Warnings and extreme weather conditions
- Identifying and inventorying decision support requirements
- Developing a business-aware model of assets, infrastructure, events, risks, and operational workflows.
- Designing and developing workflows to support continuous mitigation selection and validation
- Creating end-to-end process automation related to decision support
- Providing near real-time operational dashboard creation

F. Risk Methodology and Assessment

1. Risk Methodology and Assessment (C558)

**TABLE JW - 19
Capital Expenditures Summary of Costs**

WILDFIRE MITIGATION & VEGETATION MANAGEMENT (In 2025 \$)								
ID	G. Risk Methodology and Assessment	2025 Adjusted-Recorded (000s)	Est. 2026 (000s)	Est. 2027 (000s)	Est. 2028 (000s)	Est. 2029 (000s)	Est. 2030 (000s)	Est. 2031 (000s)
C558	Risk Methodology and Assessment	3,793	6,036	5,654	8,054	6,779	6,778	6,634
	Total	3,793	6,036	5,654	8,054	6,779	6,778	6,634

Investment in Risk Methodology and Assessment capabilities is planned through three coordinated capital initiatives: Advanced Risk Modeling, Advanced Analytics Enablement, and Remote Sensing Technologies (such as LiDAR Data Acquisition and Modeling, satellite imagery, and other emerging technologies) starting in the Test Year. The specific details regarding Risk

1 Methodology and Assessment are found in my capital workpapers. See Ex. SDGE-07-CWP, WP
2 238750.

3 For the Advanced Risk Modeling initiative, labor and non-labor costs are requested for
4 developing, modernizing, and deploying advanced data-driven models, including the
5 WiNGS-Planning and WiNGS-Ops model suites. These platforms use cloud computing,
6 machine learning, and standardized analytics and automation workflows to prioritize
7 grid-hardening strategies and operational mitigations. The models expand analytical capabilities
8 to meet evolving wildfire and PSPS risk modeling requirements and to support more granular,
9 forward-looking, risk-based decision-making.

10 For the Advanced Analytics Enablement Initiative, costs are requested to support
11 initiatives established pursuant to CPUC and OEIS guidance. This initiative will enhance
12 enterprise-wide analytical capabilities by standardizing methodologies, improving data
13 governance, and enabling scalable analytics that support wildfire risk assessment, mitigation
14 planning, and regulatory reporting. As part of this effort, the initiative will integrate with
15 Enterprise Systems, as described in Section IV.E, to create a single source of truth for wildfire
16 data. This integration will enable quantification of ignition likelihood and consequence at the
17 span, segment, and circuit levels to comply with CPUC decisions and Pub. Util. Code § 8386.

18 For Remote Sensing Technologies, capital costs are requested to support several
19 mitigations. While multiple remote sensing technologies may be explored, LiDAR is used as a
20 representative example for purposes of developing cost estimates in the GRC. The LiDAR Data
21 Acquisition and Modeling initiative will capture high-resolution, three-dimensional spatial data
22 across the HFTD and will establish an integrated analytics environment to support wildfire risk
23 modeling and operations. Beginning in 2028, the initiative will include a full system LiDAR
24 survey, complemented by targeted re-surveys to maintain up-to-date grid intelligence to improve
25 PSPS decision-making, enhance situational awareness, and provide time-stamped environmental
26 data to support regulatory compliance.

27 For Vegetation Management, remote-sensing technologies such as LiDAR have the
28 potential to enhance Off-Cycle Patrols by improving situational awareness and prioritization.
29 Integrating remote sensing data with information gathered by field inspections conducted by
30 trained and qualified inspectors can enable more targeted deployment of field resources by
31 prioritizing future inspections in areas with higher contact potential and supporting the

1 verification of vegetation clearance measurements. Leveraging the expertise of field personnel
2 to validate, calibrate, and refine these technologies supports a learning-based approach that
3 incrementally improves risk identification and optimizes operational decision-making. As the
4 use of remote sensing applications such as LiDAR mature, these tools may further enable more
5 precise differentiation between vegetation that presents a credible risk within the patrol cycle and
6 vegetation that is unlikely to require action before the next scheduled patrol cycle. Therefore, the
7 evolution of both the technology and its operational use cases has the potential to strengthen the
8 ability to confirm the need for corrective work while continuing to maintain public safety and
9 system reliability.

10 For Vegetation Management QA/QC, remote-sensing technologies such as LiDAR-
11 enabled inspections have the potential to provide remote confirmation of compliant vegetation
12 clearance distances across a significantly larger population of tree and pole units than is typically
13 feasible through traditional field-based audits. This capability is particularly valuable in
14 locations that are difficult to access through traditional field audits. These technologies also
15 create opportunities for desktop-based and analytics-driven QA/QC activities that supplement in-
16 person field reviews. The ability to remotely confirm vegetation clearances from electric
17 facilities may enhance data quality, support verification of contractual compliance, and identify
18 discrepancies between field documentation and real-world conditions. This approach has the
19 potential to improve audit efficiency and enhance field worker safety, while still maintaining
20 rigorous oversight. Over time, the application of remote sensing for QA/QC of Vegetation
21 Management could enable a more risk-based audit model by focusing in-person field inspections
22 on anomalous findings or areas of elevated concern, while also strengthening audit readiness and
23 data integrity. The effectiveness, cost, and quality of remote-sensing-enabled QA/QC would be
24 evaluated relative to existing audit processes to assess customer value, verify continued
25 compliance with regulatory requirements, and confirm alignment with industry best practices.

26 LiDAR survey data will also be utilized during CCC projects to improve planning
27 accuracy, target risk areas, optimize design, and verify post-installation. High-resolution LiDAR
28 creates a 3D representation of terrain, vegetation, structures, and existing conductors, which
29 allows utilities to pinpoint locations where CCC provides the strongest risk reduction. It also
30 improves pre-construction planning, reducing unanticipated field conditions (e.g. access

1 constraints) and installation delays. After deployment, LiDAR supports as-built validation and
2 ongoing asset management by confirming final conductor position, clearance, and sag behavior.

3 **a. Description of Selection and Prioritization of RAMP Risk**
4 **Mitigations**

5 See Section III.G.1.a.i for a description of selection and prioritization of RAMP risk
6 mitigations for this RAMP control.

7 **b. Forecast Method**

8 A zero-based methodology was used to forecast capital costs. This approach is
9 appropriate because many of the capital initiatives represent new or significantly expanded
10 capabilities that are not adequately reflected in historical spending. Programs such as Advanced
11 Analytics and LiDAR Data Acquisition & Data Modeling are either newly introduced or have
12 undergone substantial changes in scale and scope, making historical cost patterns unreliable
13 indicators of future needs. In addition, several of these activities rely heavily on specialized
14 technical contractors and vendors whose resource requirements fluctuate based on project phase
15 and work plan.

16 **c. Cost Drivers**

17 Cost drivers are related to the expansion and modernization of wildfire risk assessment
18 capabilities necessary to support risk informed planning, regulatory compliance, and operational
19 decision-making. These investments enable the quantification of ignition likelihood and
20 consequence at increasingly granular levels and the transition to a comprehensive cost benefit
21 framework aligned with CPUC expectations.

22 Specific cost drivers include:

- 23 • Capital contracts required for LiDAR imaging capture of the HFTD, as well as the
24 development, build out, and deployment of supporting workflows to integrate
25 imagery into enterprise risk assessment tools and imaging processes.
- 26 • Capitalized non-labor contracts and associated IT support necessary to expand
27 wildfire risk model development from circuit level analyses to span, segment, and
28 system level assessments. These investments also support enhancements required
29 to implement a more comprehensive cost benefit and consequence based
30 analytical framework.

31 These cost drivers are supported by the Company identified need to reduce the likelihood
32 of catastrophic wildfire events and minimize customer impacts associated with PSPS de-
33 energizations. The proposed capital investments are necessary to meet evolving regulatory data

1 and analytical requirements and to align with industry best practices for enterprise risk
 2 management, including ISO 31000 based risk informed utility planning.

3 **G. RAMP to GRC – Capital**

4 The Capital activities described above were also presented in the 2025 RAMP Report and
 5 are listed in Table JW-20. Activities that are in compliance with or mandated by the CPUC or
 6 other agencies are listed in bold; and Appendix B attached to this testimony provides details
 7 regarding mandates for each control or mitigation. Controls/Mitigations that were not included
 8 in the 2025 RAMP report, but which would otherwise be classified as RAMP activities, are
 9 identified in Table JW-20 and assigned a corresponding RAMP ID. Controls/Mitigations with
 10 names that have changed since the 2025 RAMP are listed in italics in Table JW-20 and are
 11 further identified in Table JW-23.

12 **TABLE JW - 20**
 13 **RAMP and GRC Risk Control/Mitigation Activities - Capital**

Name of Testimony or Cost Category				
ID	Control/Mitigation Name	2025 RAMP 2028-2031 In 2024\$ (000s)	2028 GRC 2028-2031 In 2025 \$ (000s)	Change (\$000s)
C506	Microgrids	910	48,668	47,758
<i>C507</i>	<i>CMP Repairs and Replacements</i>	49,220	139,297	90,077
C508	Advanced Protection	3,756	26,206	22,450
C518	Strategic Undergrounding	1,393,461	929,279	(464,182)
C520	Distribution Overhead System Hardening	560	0	(560)
C522	Transmission Overhead Hardening (Distribution Underbuild)	4,039	4,652	613
C534	Risk-Informed Drone Inspections	51,188	2,800	(48,388)
C536	Distribution Overhead Patrol Inspections	0	0	0
<i>C546</i>	<i>Aviation Program</i>	0	1,740	1,740
C550	Combined Covered Conductor	239,888	262,599	22,711
C552	PSPS Sectionalizing Enhancements	4,725	8,535	3,810
C564	Distribution Communications Reliability Improvements	0	0	0

Name of Testimony or Cost Category				
ID	Control/Mitigation Name	2025 RAMP 2028-2031 In 2024\$ (000s)	2028 GRC 2028-2031 In 2025 \$ (000s)	Change (\$000s)
C565	<i>Distribution Underbuild Repairs on Transmission Structures</i>	4,178	2,585	(1,593)
C568	Strategic Pole Replacement	31,712	0	(31,712)
C569	Cleveland National Forest Fire Hardening	354	366	12
C573	Early Fault Detection	6,470	15,893	9,423
C537	Off-Cycle Patrol	0	1,596	1,596
C578	QA/QC of Vegetation Management	0	1,616	1,616
C540	Fuels Management Program	0	0	0
M582	Application Support and Risk Analytics	N/A	11,853	11,853
M584	Integrated Work Management & Risk Assessment Platform	N/A	13,697	13,697
C562	<i>Weather Network & Technology Platforms</i>	7,352	7,000	(352)
C567	Public Emergency Communication Strategy	0	0	0
C571	Emergency Preparedness and Recovery Plan	0	36,006	36,006
C566	Enterprise Data Foundation	20,843	44,130	23,287
C558	Risk Methodology and Assessment	15,896	28,245	12,349
		1,834,552	1,586,763	(247,789)

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V. RISK ASSESSMENT AND MITIGATION PHASE (RAMP) INTEGRATION

A. GRC Risk Controls/Mitigations and Benefit Cost Ratios

Costs supported in this testimony are for Control/Mitigation activities described in SDG&E’s May 15, 2025 RAMP Report.⁶¹ Specifically, the controls and mitigations in this testimony were included in SDG&E-Risk-4: Wildfire and PSPS and SDG&E-Risk-5: Electric Infrastructure Integrity. As further reference, a roadmap matching controls and mitigations to both the 2025 RAMP and the TY 2028 GRC testimony is appended to the RDF Integration

⁶¹ A.25-05-010/013 (cons.), Application of SDG&E to Submit Its 2025 RAMP Report (May 15, 2025).

1 testimony, Ex. SCG-02B/SDGE-02B. Table JW-21 summarizes the Control/Mitigations
 2 discussed in this testimony and in the 2025 RAMP, along with the associated BCRs.
 3 Controls/Mitigations that are mandated by CPUC or other agencies are listed in bold in Table
 4 JW-21. Appendix B, attached to this testimony, provides details regarding the respective
 5 mandates for each Control/Mitigation. Appendix D provides a GRC workpaper breakdown for
 6 the RAMP controls and mitigations sponsored in this testimony. Controls/Mitigations that were
 7 not included in the 2025 RAMP report, but which would otherwise be classified as RAMP
 8 activities, are identified in Table JW-21 and assigned a corresponding RAMP ID.
 9 Controls/Mitigations with names that have changed since the 2025 RAMP are listed in italics in
 10 Table JW-21 and are further identified in Table JW-24.

11 **TABLE JW - 21**
 12 **Comparison of RAMP and GRC Risk Control/Mitigation Benefit Cost Ratios (Risk-Averse)**

Wildfire Mitigation and Vegetation Management							
ID	Control/Mitigation Name	2025 RAMP			2028 GRC		
		Direct, in 2024 \$ (000s)			Direct, in 2025 \$ (000s)		
		2028-2031			2028-2031		
		BCR Societal	BCR Hybrid	BCR WACC	BCR Societal	BCR Hybrid	BCR WACC
C501	Wireless Fault Indicators	---	---	---	---	---	---
C502	Capacitor Maintenance and Replacement Program (SCADA)	---	---	---	---	---	---
C504	Standby Power Program (Fixed Backup Commercial)	---	---	---	---	---	---
C506	Microgrids ⁶²	0.00	0.00	0.00	0.22	0.06	0.21
C507	CMP Repairs and Replacements	---	---	---	---	---	---
C508	Advanced Protection	12.43	7.81	7.81	54.41	36.42	36.42
C510	Hotline Clamps	---	---	---	---	---	---

⁶² D.26-01-021, OP 5 at 188 (“If San Diego Gas & Electric Company requests cost recovery for any additional microgrid projects in a future application for cost recovery or General Rate Case, that request shall provide evidence of the energy source and cost-effectiveness of those microgrid projects as wildfire mitigations.”).

Wildfire Mitigation and Vegetation Management							
ID	Control/Mitigation Name	2025 RAMP			2028 GRC		
		Direct, in 2024 \$ (000s)			Direct, in 2025 \$ (000s)		
		2028-2031			2028-2031		
		BCR Societal	BCR Hybrid	BCR WACC	BCR Societal	BCR Hybrid	BCR WACC
C512	Customized Resiliency Assessments	---	---	---	---	---	---
C516	Generator Assistance Program	---	---	---	---	---	---
C518	Strategic Undergrounding	33.21	13.23	12.91	-467.05	55.25	52.18
C520	Distribution Overhead System Hardening	5.64	2.36	2.36	---	---	---
C522	Transmission Overhead Hardening (Distribution Underbuild)	0.00	0.00	0.00	0.29	0.11	0.11
C524	Lightning Arrestor Removal/Replacement Program	---	---	---	---	---	---
C526	Distribution Overhead Detailed Inspections	62.67	62.67	62.67	79.32	29.93	29.93
C528	Distribution Infrared Inspections	---	---	---	---	---	---
C530	Distribution Wood Pole Intrusive Inspections	16.75	16.87	16.87	0.44	0.17	0.17
C534	Risk-Informed Drone Inspections	60.38	59.3	59.3	327.17	127.96	127.96
C536	Distribution Overhead Patrol Inspections	190.53	190.53	190.53	246.9	94.29	94.29
C537	Off-Cycle Patrol	64.97	64.97	64.97	2.77	2.63	2.63
C540	Fuels Management Program	0.60	0.60	0.60	1.00	0.97	0.62
C551	Prune and Removal (Clearance)	---	---	---	---	---	---
C544	Pole Clearing	15.05	15.05	15.05	21.08	21.08	21.08
C546	Aviation Program	---	---	---	---	---	---
C548	Wildfire Infrastructure Protection Teams	---	---	---	---	---	---

Wildfire Mitigation and Vegetation Management							
ID	Control/Mitigation Name	2025 RAMP			2028 GRC		
		Direct, in 2024 \$ (000s)			Direct, in 2025 \$ (000s)		
		2028-2031			2028-2031		
		BCR Societal	BCR Hybrid	BCR WACC	BCR Societal	BCR Hybrid	BCR WACC
C550	Combined Covered Conductor	6.27	4.18	4.06	136.42	20.16	19.07
C552	PSPS Sectionalizing Enhancements	---	---	---	---	---	---
C554	Detailed Inspections	28.08	28.08	28.08	6.94	6.59	6.59
C555	Vegetation Restoration Initiative	---	---	---	---	---	---
C556	Engagement with AFN Populations	---	---	---	---	---	---
C557	Public Outreach and Education Awareness	---	---	---	---	---	---
C558	Risk Methodology and Assessment	---	---	---	---	---	---
C559	LiDAR Flights	---	---	---	---	---	---
C560	Mylar Balloon	---	---	---	---	---	---
C561	Fire Potential Index	NA	NA	NA	NA	NA	NA
C562	Weather Station Maintenance and Calibration	NA	NA	NA	NA	NA	NA
C563	Wildfire Mitigation Strategy Development	NA	NA	NA	NA	NA	NA
C564	Distribution Communications Reliability Improvements (DCRI)	---	---	---	---	---	---
C565	Distribution Underbuild Repairs on Transmission Structures	---	---	---	---	---	---
C566	Enterprise Data Foundation	NA	NA	NA	NA	NA	NA
C567	Public Emergency Communication Strategy	NA	NA	NA	NA	NA	NA
C569	Cleveland National Forest Fire Hardening	---	---	---	---	---	---

Wildfire Mitigation and Vegetation Management							
ID	Control/Mitigation Name	2025 RAMP			2028 GRC		
		Direct, in 2024 \$ (000s)			Direct, in 2025 \$ (000s)		
		2028-2031			2028-2031		
		BCR Societal	BCR Hybrid	BCR WACC	BCR Societal	BCR Hybrid	BCR WACC
C570	Expulsion Fuse Replacements	---	---	---	---	---	---
C571	Emergency Preparedness and Recovery Plan	NA	NA	NA	NA	NA	NA
C572	Situational Awareness and Forecasting	NA	NA	NA	NA	NA	NA
C573	Early Fault Detection	157.83	97.17	97.17	365.43	237.5	237.5
C575	Vegetation Management Enterprise System	---	---	---	---	---	---
C576	Avian Protection	---	---	---	---	---	---
C578	QA/QC of Veg Management	---	---	---	---	---	---
C582	Application Support and Risk Analytics	---	---	---	---	---	---
C584	Integrated Work Management & Risk Assessment Platform	---	---	---	---	---	---
M503	Grounding Banks	---	---	---	---	---	---

Note: --- means mitigation does not have a BCR and is explained in Table JW-23 BCR Summary below

TABLE JW-22
GRC Risk Control/Mitigation Benefit Cost Ratios (Risk Neutral)⁶³

Wildfire Mitigation and Vegetation Management				
ID	Control/Mitigation Name	2028 GRC		
		Direct, in 2025 \$ (000s)		
		2028-2031		
		BCR Societal	BCR Hybrid	BCR WACC
C501	Wireless Fault Indicators	---	---	---
C502	Capacitor Maintenance and Replacement Program (SCADA)	---	---	---

⁶³ In its comments on the SPD Evaluation Report of the 2025 RAMP, SDG&E agreed to include unscaled BCRs in the narrative of future filings to enhance transparency and facilitate comparison.

Wildfire Mitigation and Vegetation Management				
ID	Control/Mitigation Name	2028 GRC		
		Direct, in 2025 \$ (000s)		
		2028-2031		
		BCR Societal	BCR Hybrid	BCR WACC
C504	Standby Power Program (Fixed Backup Commercial)	---	---	---
C506	Microgrids	0.20	0.10	0.20
C507	CMP Repairs and Replacements			
C508	Advanced Protection	6.19	4.15	4.15
C510	Hotline Clamps	---	---	---
C512	Customized Resiliency Assessments	---	---	---
C516	Generator Assistance Program	---	---	---
C518	Strategic Undergrounding	-56.14	5.83	5.38
C520	Distribution Overhead System Hardening	---	---	---
C522	Transmission Overhead Hardening (Distribution Underbuild)	0.10	0.04	0.04
C524	Lightning Arrestor Removal/Replacement Program	---	---	---
C526	Distribution Overhead Detailed Inspections	8.43	8.43	8.43
C528	Distribution Infrared Inspections	---	---	---
C530	Distribution Wood Pole Intrusive Inspections	0.05	0.02	0.02
C534	Risk-Informed Drone Inspections	34.21	13.4	13.4
C536	Distribution Overhead Patrol Inspections	26.81	10.31	10.31
C537	Off-Cycle Patrol	0.31	0.29	0.29
C540	Fuels Management Program	0.11	0.11	0.07
C544	Pole Clearing	2.36	2.36	2.36
C546	Aviation Program	---	---	---
C548	Wildfire Infrastructure Protection Teams	---	---	---
C550	Combined Covered Conductor	14.58	2.28	2.14
C552	PSPS Sectionalizing Enhancements	---	---	---
C554	Detailed Inspections	0.78	0.74	0.74
C555	Vegetation Restoration Initiative	---	---	---
C556	Engagement with AFN Populations	---	---	---
C557	Public Outreach and Education Awareness	---	---	---
C558	Risk Methodology and Assessment	---	---	---
C559	LiDAR Flights	---	---	---
C560	Mylar Balloon	---	---	---
C561	Fire Potential Index	---	---	---
C562	Weather Station Maintenance and Calibration	---	---	---

Wildfire Mitigation and Vegetation Management				
ID	Control/Mitigation Name	2028 GRC		
		Direct, in 2025 \$ (000s)		
		2028-2031		
		BCR Societal	BCR Hybrid	BCR WACC
C563	Wildfire Mitigation Strategy Development	---	---	---
C564	Distribution Communications Reliability Improvements (DCRI)	---	---	---
C565	Distribution Underbuild Repairs on Transmission Structures	---	---	---
C566	Enterprise Data Foundation	---	---	---
C567	Public Emergency Communication Strategy	---	---	---
C569	Cleveland National Forest Fire Hardening	---	---	---
C570	Expulsion Fuse Replacements	---	---	---
C571	Emergency Preparedness and Recovery Plan	---	---	---
C572	Situational Awareness and Forecasting	---	---	---
C573	Early Fault Detection	30.47	20.21	20.21
C575	Vegetation Management Enterprise System	---	---	---
C576	Avian Protection	---	---	---
C578	QA/QC of Veg Management	---	---	---
C582	Application Support and Risk Analytics	---	---	---
C584	Integrated Work Management & Risk Assessment Platform	---	---	---
M503	Grounding Banks	---	---	---

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Table JW-23 provides additional commentary for control and mitigation programs that did not yield quantifiable BCRs.

**TABLE JW-23
BCR Summary**

ID	Control/Mitigation Name	Commentary
C501	Wireless Fault Indicators	BCR is not calculated as this control/mitigation is being discontinued in 2025 and there are no costs for this mitigation in 2028-2031.
C502	Capacitor Maintenance and Replacement Program (SCADA)	BCR is not calculated as this control/mitigation was completed in 2024 and there are no costs for this mitigation in 2028-2031.

ID	Control/Mitigation Name	Commentary
C504	Standby Power Program (Fixed Backup Power Commercial)	Quantifying a BCR for this mitigation would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. Predicting customer demand and location needs is challenging, making it difficult to forecast units and calculate an accurate BCR. This mitigation is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions.
C507	CMP Repairs and Replacements	The exact locations of CMP repairs are currently unknown, making it difficult to quantify a BCR for this program. Mitigation cost is captured in the BCR cost assumptions of asset inspections programs such as Distribution Overhead Detailed Inspections (C526) Distribution Wood Pole Intrusive Inspections (C530) RIDI (C534) Distribution Overhead Patrol Inspections (C536)
C510	Hotline Clamps	BCR is not calculated as this control/mitigation was merged with Combined Covered Conductor (C550) beginning in 2025 and there are no costs for this mitigation in 2028-2031 as a standalone program.
C512	Customized Resiliency Assessment	Quantifying a BCR for this mitigation would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. Predicting customer demand and location needs for resiliency assessments is challenging, making it difficult to forecast units and calculate an accurate BCR. This program is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions.
C516	Generator Assistance Program	Quantifying a BCR for this mitigation would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. Predicting customer demand and location needs for portable fuel generators is challenging, making it difficult to forecast units and calculate a cost-benefit ratio accurately. This program is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions.
C520	Distribution Overhead System Hardening	BCR is not calculated as there is no work planned for this program for the current GRC cycle.

ID	Control/Mitigation Name	Commentary
C524	Lightning Arrestor Removal/Replacement Program	BCR is not calculated as this control/mitigation was merged with Combined Covered Conductor (C550) beginning in 2025 and there are no costs for this mitigation in 2028-2031 as a standalone program.
C528	Distribution Infrared Inspections	BCR is not calculated as this control/mitigation was discontinued in 2025.
C546	Aviation Program	This mitigation does not have a BCR because it is considered foundational to supporting wildfire mitigation efforts. Quantifying a BCR would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver.
C548	Wildfire Infrastructure Protection Teams	Work activities and fire mitigation measures are adjusted based on FPI ratings and qualified fire resources are employed to support field crews during elevated fire risk periods, typically from June to November, aligning with local, state, and federal agencies' seasonal staffing. Quantifying a BCR for this mitigation would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. It is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions.
C552	PSPS Sectionalizing Enhancements	The exact locations of sectionalizing devices that will be installed through this program are currently unknown, therefore, it is difficult to quantify BCR for this program.
C556	Engagement with AFN Populations	This program does not have a BCR because the diversity of work activities makes it infeasible to identify a single unit of measurement for a BCR. It is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions.
C557	Public Outreach and Education Awareness	This program does not have a BCR because the diversity of work activities makes it infeasible to identify a single unit of measurement for a BCR.
C558	Risk Methodology and Assessment	This mitigation does not have a BCR because it is considered foundational to supporting wildfire mitigation efforts. Quantifying a BCR would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. Mitigation costs are captured in BCR cost assumptions.

ID	Control/Mitigation Name	Commentary
C559	LiDAR Flights	<p>The locations of LiDAR flights are currently unknown, making it difficult to quantify BCR for this program.</p> <p>There are no costs for this mitigation in 2028-2031 as a standalone program, however, costs for LiDAR are incorporated in C550, C578, C537, C558.</p>
C560	Mylar Balloon	BCR is not calculated as control/mitigation was completed in 2024 and there are no costs for this mitigation in 2028-2031.
C561	Fire Potential Index	BCR is not calculated as this control/mitigation was merged with C572 Situational Awareness and Forecasting (C572) in 2024. It is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions.
C562	Weather Station Maintenance and Calibration	This mitigation does not have a BCR because it is considered foundational to supporting wildfire mitigation efforts. Quantifying a BCR would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver.
C563	Wildfire Mitigation Strategy Development	This mitigation does not have a BCR because it is considered foundational to supporting wildfire mitigation efforts. Quantifying a BCR would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. Mitigation costs are captured in BCR cost assumptions.
C564	Distribution Communications Reliability Improvements (DCRI)	BCR is not calculated for this mitigation because it cannot be directly tied to reducing a risk driver. It is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions.
C565	Distribution Underbuild Repairs on Transmission Structures	The BCR is not calculated as this mitigation focuses on transmission poles and the WiNGS-Planning model suite does not currently define risk for transmission poles.
C566	Enterprise Data Foundation	This mitigation does not have a BCR because it is considered foundational to supporting wildfire mitigation efforts, and the work within this program makes it infeasible to identify a single unit of measurement for a BCR. Quantifying a BCR would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. Mitigation costs are captured in BCR cost assumptions.

ID	Control/Mitigation Name	Commentary
C567	Public Emergency Communication Strategy	This mitigation does not have a BCR because the diversity of work activities within the program makes it infeasible to identify a single unit of measurement for a BCR. It is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions.
C569	Cleveland National Forest Fire Hardening	BCR is not calculated as this control/mitigation is completed.
C570	Expulsion Fuse Replacements	BCR is not calculated as this control/mitigation was merged with Combined Covered Conductor (C550) in 2025 and there are therefore no costs for this mitigation in 2028-2031 as a standalone program
C571	Emergency Preparedness and Recovery Plan	This mitigation does not have a BCR because it is considered foundational to supporting wildfire mitigation efforts. Quantifying a BCR would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. Mitigation costs are captured in BCR cost assumptions.
C572	Situational Awareness and Forecasting	This mitigation does not have a BCR because it is considered foundational to supporting wildfire mitigation efforts. Quantifying a BCR would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. Mitigation costs are captured in BCR cost assumptions.
C575	Vegetation Management Enterprise System	This program supports vegetation management activities. The work within this program makes it infeasible to identify a single unit of measurement for a BCR.
C576	Avian Protection	BCR is not calculated as this control/mitigation was merged with Combined Covered Conductor (C550) in 2025 and there are therefore no costs for this mitigation in 2028-2031 as a standalone program.
C578	QA/QC of Veg Management	BCR is not calculated as the costs of this mitigation are captured as part of Vegetation Management programs including Off Cycle Patrols (C537), Pole Clearing (C544), and Detailed Inspections (C554).
C582	Application Support and Risk Analytics	Quantifying a BCR for this mitigation would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. It is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions

ID	Control/Mitigation Name	Commentary
C584	Integrated Work Management & Risk Assessment Platform	Quantifying a BCR for this mitigation would be difficult and not beneficial because it cannot be directly tied to reducing a risk driver. It is considered foundational to supporting wildfire mitigation efforts and mitigation costs are captured in BCR cost assumptions
M503	Grounding Banks	BCR is not calculated as this mitigation is not included in this GRC and there are no costs for this mitigation in the 2028-2031 GRC cycle.

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B. Justification for Proposed Mitigations with BCRs less than 1

- Microgrids (C506) - Microgrids are designed to maintain critical services during high-impact, low-frequency PSPS de-energizations. While the BCR is calculated primarily based on PSPS reliability benefits, this metric does not fully capture the broader resilience and public safety value provided by microgrids due to its relatively higher capital and maintenance cost. Given the relatively low frequency of PSPS de-energizations, the calculated BCR may not reflect the full scope of benefits, including avoided emergency response costs and the continued operation of essential services during extreme conditions. When these additional benefits are considered, investment in microgrids remains reasonable and aligned with public safety and resiliency objectives.⁶⁴
- Transmission Overhead Hardening (Distribution Underbuild) (C522) - For the Distribution Underbuilt program, the BCR is less than one. This outcome is primarily driven by the location of the targeted 5.5 miles of distribution line, which is situated just outside the substation boundary.
- Distribution Wood Pole Intrusive Inspections (C530) - This mitigation has a BCR of less than 1 because the calculation relies on the volume of inspection findings rather than the risk reduction associated with asset conditions. Confirming that a pole is in good condition is as important as identifying conditions that require corrective action. Additionally, these inspections are compliance-driven and mandated by GO 165, and failure to perform them could result in significant fines and penalties.
- Fuels Management Program (C540) - For the Fuel Management Program the BCR is less than one. The relatively lower BCR is a result of the benefits derived from fuels management not aligning with the traditional methodologies of the BCR calculation. Fuels management reduces the likelihood of negative consequences from all ignition types in treatment areas. This includes the reduced

⁶⁴ See *supra* note 63.

likelihood of utility equipment being damaged during fires that originate outside the utility ROW and the increased chances of fire behavior becoming less extreme in areas of reduced fuels. Even though the BCR is below one, in performing fuels management activities in areas consistent with the requirements of PRC 4292, within the HFTD, and/or areas identified by fire agencies as having increased fire risk, the program provides value to ratepayers. The overall benefits align with the methodology used by the state for consequence reduction activities along roads, codes related to home defensible space, and other mitigations that focus on the reduction of consequence of fires. In addition, ongoing maintenance cycles are necessary due to vegetation regrowth, creating recurring expenditures. Finally, the primary benefits are tied to the avoidance of low frequency, high consequence wildfire events, which are not fully captured in traditional BCR methodologies. Despite the lower BCR, the program remains essential. It provides critical risk reduction in the areas of highest consequence, supporting system reliability, protecting public safety, and advancing SDG&E’s wildfire mitigation objectives.

C. Changes From 2025 RAMP Report

Since the filing of the 2025 RAMP in May 2025 circumstances may have changed that impact the control/mitigation scope – including units, costs, and other factors that influence the forecast. In addition, updates may have occurred that affect the underlying assumptions used to calculate the BCRs and are described in the RDF Integration testimony (Ex. SCG-02B/SDGE-02B). Key changes impacting the forecasts include:

**TABLE JW- 24
Changes from 2025 RAMP**

ID	Control/Mitigation Name	Change
C507	CMP Repairs	Name changed to: CMP Repairs and Replacements
C528	Distribution Infrared Inspections	2025 RAMP: Discontinued in 2026 2028 GRC: Discontinued in 2025.
C530	Wood Pole Intrusive Inspections	2025 RAMP: C530 Repairs to be addressed as part of this initiative 2028 GRC: Repairs from C530 will be addressed as part of C507 CMP Repairs and Replacements
C534	Risk-Informed Drone Inspections	2025 RAMP: C534 Repairs to be addressed as part of this initiative 2028 GRC: Repairs from C534 will be addressed as part of C507 CMP Repairs and Replacements
C546	Aviation Firefighting Program	Name changed to: Aviation Program
C559	LiDAR Flights	2025 RAMP: Ongoing

ID	Control/Mitigation Name	Change
		2028 GRC: Costs related to LiDAR are now included in the forecasts for Risk Assessment & Methodology, QA/QC, Off Cycle and Combined Covered Conductor.
C561	Fire Potential Index	Treated differently in the 2028 GRC than in the 2025 RAMP due to a change in cost classification, not program scope. While the 2025 RAMP reflected all costs as capital, a portion of those costs are classified as O&M in the 2028 GRC to better align cost recovery with the program's ongoing operational nature.
C562	Weather Station Maintenance and Calibration	Name changed to: Weather Network & Technology Programs
C564	DCRI	2025 RAMP: Installations discontinued in 2026 2028 GRC: O&M Forecast from 2028-2031 and capital forecast in 2026.
C565	Transmission Overhead Detailed Inspections	Name changed to: Distribution Underbuild Repairs on Transmission Structures 2025 RAMP: C565 Repairs to be addressed as part of this initiative 2028 GRC: Transmission CMP – Distribution Underbuild Repairs from C565 will be addressed as part of C507 CMP Repairs and Replacements
C568	Strategic Pole Replacement	2025 RAMP: Ongoing 2028 GRC: Will be complete in 2026.
C575	Vegetation Management Enterprise System	Costs related to this system are now included in Application Support and Risk Analytics (M582) and Integrated Work Management & Risk Assessment Platform (M584)
M503	Grounding Banks	2025 RAMP: Included as a planned initiative 2028 GRC: Not included
M582	Application Support and Risk Analytics	New mitigation
M584	Integrated Work Management & Risk Assessment Platform	New mitigation

1 **D. Feedback from Safety Policy Division and parties**

2 The Commission’s Safety Policy Division (SPD) issued their assessment report on the
3 Companies’ 2025 RAMP Reports on October 10, 2025.⁶⁵ Parties subsequently served opening
4 and reply comments on November 17, 2025, and December 1, 2025, respectively. See Appendix
5 B: *2025 RAMP Report Stakeholder Recommendations and Companies’ Response* in the RDF
6 Integration testimony (Ex. SCG-02B/SDGE-02B), appends a comprehensive summary of the
7 feedback and recommendations received and the Companies’ responses. Feedback directly
8 attributable to this chapter has been incorporated into this GRC testimony.

9 **E. CAVA Integration**

10 Pursuant to Commission decisions in the Climate Adaptation OIR (R.18-04-019),⁶⁶
11 SDG&E performed a Climate Adaptation Vulnerability Assessment (CAVA) focused on years
12 2030, 2050, and 2070, with the aim of identifying asset and operational vulnerabilities to climate
13 hazards across the system. Climate hazards that will have short- and long-term ramifications in
14 the Southern California region include extreme temperatures, wildfire, inland flooding, coastal
15 flooding and erosion, and landslides. Climate change is recognized as a factor that can drive,
16 trigger, or exacerbate multiple RAMP risks. Implementing climate change adaptation measures
17 and integrating climate vulnerability considerations into RAMP controls and mitigations can
18 enhance system infrastructure longevity and reduce the severity of long-term negative climate
19 impacts. All controls and mitigation discussed within this Wildfire Mitigation and Vegetation
20 Management testimony are applicable to climate adaptation planning due to their alignment with
21 increasing resilience to wildfire. Additional information on the CAVA is provided in the Electric
22 Distribution O&M testimony (Ex. SDGE-09).

23 **VI. DEFERRED WORK**

24 The Commission has consistently acknowledged that a utility may reprioritize funds that
25 were authorized in a prior GRC.⁶⁷ D.24-12-074 requires that for the 2028 GRC, if SDG&E

⁶⁵ See A.25-05-010/013 (cons.), Application of SDG&E to Submit Its 2025 RAMP Report (May 15, 2025). Informal comments were received from Mussey Grade Road Alliance (MGRA) on August 22, 2025, from Cal Advocates on September 4, 2025 from The Utility Reform Network (TURN) on September 12, 2025, and from Indicated Shippers (IS) on September 30, 2025.

⁶⁶ D.19-10-054; D.20-08-046.

⁶⁷ See D.24-12-074, OP 11, and D.20-01-002 at 38.

1 requests funding for work that was authorized in the TY 2024 GRC but has not yet been
 2 performed, a Deferred Work Framework (DWF) must be used that shows the deferred work
 3 related to safety and reliability at the program level. The DWF and related principles are
 4 described in the Compliance testimony (Ex. SCG-30/SDGE-36). This testimony requests funds
 5 for the qualifying deferred work projects or activities listed in Table JW-25. Section IV.A.1 and
 6 IV.A.9 describe the costs and activities, the forecast method, cost drivers, and the customer
 7 benefits associated with these projects. The circumstances that caused the delay and any changes
 8 in scope are described below.

9 **TABLE JW - 25**
 10 **DEFERRED WORK**

Deferred Work Program/Activity	O&M/ Capital	TY2024 GRC Exhibit	TY2024 Authorized Funding In 2021 \$ (000s)	TY2028 Funding Request In 2025 \$ (000s)
A. Covered Conductor	Capital	SDGE-13- CWP-2R-E WP 202850	\$71,900	\$65,661
B. Microgrids	Capital	SDGE-13- CWP-2R-E WP 192490	\$2,400	\$0 ⁶⁸
C. Transmission Overhead Hardening (Distribution Underbuild)	Capital	SDGE-13- CWP-2R-E WP 141400	\$14,464	\$3,820

11 **A. Covered Conductor**

- 12 a. Activity Scope: The authorized scope of this activity remains the same
 13 between the 2024 GRC and the 2028 GRC. No modifications to the scope
 14 were required, as the work continues to address the same assets,
 15 conditions, and compliance requirements previously approved.
- 16 b. Reason(s) for Deferral: SDG&E is requesting additional funding for
 17 covered conductor in the 2028 GRC because the funding authorized in the
 18 2024 GRC did not fully reflect the actual scope, methods, costs, or
 19 implementation timeline required to deliver the approved 400 miles of

⁶⁸ 2028 GRC request includes capital spend of \$4,863k in 2029, \$36,297k in 2030, and \$7,508k in 2031.

1 work. While the CPUC approved a 400-mileage unit target in the 2024
2 GRC, it only authorized approximately half of the cost-per-mile funding
3 SDG&E requested, relying on a cost per mile benchmark derived from
4 SCE's program.⁶⁹ This approach materially understates SDG&E's costs
5 because SDG&E's covered conductor projects involve a substantially
6 more intensive scope of work. SCE replaces approximately 11 out of
7 every 29 poles per mile (about 38 percent), whereas SDG&E replaces
8 approximately 17 out of every 20 poles per mile (about 85 percent⁷⁰),
9 resulting in significantly higher labor, materials, and construction costs per
10 mile. In addition, SDG&E employs different engineering and design
11 practices, including pre- and post-construction LiDAR surveys and
12 detailed structural loading and clearance analyses using PLS CADD
13 software. These practices require additional upfront time and resources
14 but produce more accurate designs and safer, higher quality outcomes
15 tailored to SDG&E's operating environment. SDG&E's unit costs are
16 further driven by differences in scale, as SCE's covered conductor
17 program is approximately 20 times larger than SDG&E's. Due to this
18 difference in program size, SDG&E cannot achieve the same economies of
19 scale as SCE.⁷¹ Programmatic costs, such as engineering, project
20 management, and oversight, are spread across a much smaller number of
21 miles, resulting in higher costs per mile. Additionally, SDG&E does not
22 have sufficient volume to offer large, consistent work packages to
23 construction contractors, engineering firms, and other service providers
24 that would enable comparable bulk pricing or volume discounts.

25 Implementation of the 400-mile target was further constrained by the timing of the
26 CPUC's 2024 GRC decision. Because the decision was issued in December 2024, there was

⁶⁹ D 24-12-074, Findings of Facts (FOF) 174 at 990.

⁷⁰ SDG&E, 2020-2022 Wildfire Mitigation Plan Update, Amendment H at 47-48, *available at*:
<https://www.sdge.com/sites/default/files/regulatory/SDG%26E%202022%20WMP%20Update%2002-11-2022.pdf>.

⁷¹ *Id.*

1 insufficient time in 2024 to materially increase construction beyond work already in progress.
2 Similarly, SDG&E could not reasonably increase construction volumes in 2025, as the 2025
3 workplan had largely been scoped, engineered, permitted, and issued for construction by the end
4 of 2024. Expanding beyond this plan was not possible due to the additional time needed for
5 engineering and design, land rights acquisition, environmental permitting and releases,
6 contractor procurement and award, and material ordering, all of which follow multi-year lead
7 times.

8 Finally, the authorized funding level is insufficient to support the actual costs of
9 implementation. Based on SDG&E's recorded cost experience from 2022 through 2025,
10 including OP 44 reporting, direct costs are approximately \$1.3–\$1.4 million per mile. The 2024
11 GRC decision did not authorize funding at this level, resulting in a mismatch between authorized
12 funding and actual cost requirements. While SDG&E is pursuing cost efficiencies, such changes
13 require time to implement and are not expected to materially reduce unit costs until later in the
14 forecast period, such as the 2028 GRC cycle.

15 Accordingly, SDG&E cannot reasonably achieve both the authorized unit targets and cost
16 assumptions under the 2024 GRC decision, reinforcing the need for appropriately aligned
17 funding and implementation timelines in the 2028 GRC.

18 **B. Microgrids**

- 19 a. Activity Scope: The authorized scope of this activity has been updated.
20 The original scope included forecasted completion of eight remote grid
21 microgrid sites in 2024 and forecasted completion of two microgrids with
22 solar and battery storage in 2023. Under the revised scope, the activity
23 now includes the development of batteries and storage yards to support
24 two existing microgrid sites and development of one remote grid
25 microgrid. The remaining off-grid sites have been removed.
26 These changes were driven by the need to implement solar-plus-storage
27 standalone systems that enable de-energization of high-risk assets while
28 delivering cost-effective reliability and safety benefits in the HFTD. In
29 addition, the site chosen for a remote grid provides a standalone energy
30 resource to support California Department of Fish & Wildlife facilities
31 during PSPS de-energizations.

1 b. Reason(s) for Deferral: This project was expected to begin in advance of
2 the 2024 GRC cycle; however, work was deferred due to portfolio-level
3 funding constraints arising from the delayed 2024 GRC decision and the
4 associated reallocation of authorized funds. The approved post-test year
5 revenue requirement was insufficient to support the originally planned
6 microgrid portfolio, necessitating deferral and scope modification.
7 Additionally, available funding was redirected to address higher-priority
8 and emergent system needs, including other safety-critical and reliability-
9 driven projects, such as capital repairs associated with the drones
10 inspection program. The combination of regulatory timing, constrained
11 revenue authorization, and competing portfolio priorities resulted in the
12 deferral of the original off-grid microgrid installations.

13 **C. Transmission Overhead Hardening (Distribution Underbuild)**

14 a. Activity Scope: The authorized scope of this activity includes distribution
15 line improvements, and associated engineering, permitting, and
16 construction activities for a portfolio of transmission wildfire mitigation
17 projects intended to harden the distribution underbuild of existing
18 transmission facilities and reduce wildfire risk through wood-to-steel pole
19 replacement. This portfolio includes TL690E – Camp Pendleton – Wood
20 to Steel, TL695/6971 Talega Cristianitos Japanese (Camp Pendleton),
21 TL627 Tier 2 W2S Project, TL691 Tier 2 W2S Project, and TL6910 Tier 2
22 W2S Project. The objective of these projects remains unchanged. While
23 implementation timing has shifted from the original 2024 GRC forecasted
24 assumptions, the portfolio continues to support transmission hardening
25 and wildfire mitigation objectives.

26 b. Reason(s) for Deferral: SDG&E is requesting additional funding for
27 transmission overhead hardening (distribution underbuild) in the 2028
28 GRC primarily due to permitting and project development timing
29 differences relative to the 2024 GRC forecast. For the projects located
30 around Camp Pendleton, extended federal agency coordination and
31 National Environmental Policy Act (NEPA) review resulted in longer-

1 than-anticipated permitting timelines. In some cases, evaluation of
2 overhead and underground routing alternatives, as well as revisions related
3 to work pads and permit packages, further extended the schedule. For the
4 remaining projects, delays were driven by project development factors,
5 including scope refinement, permit revisions, evolving design
6 assumptions, and normal planning, engineering, and workload
7 prioritization. These factors delayed final design completion and permit
8 readiness, and in turn pushed construction timing beyond the 2024 GRC
9 forecast. Accordingly, the requested funding reflects schedule deferrals
10 rather than any change in the underlying safety or reliability need.

11 **VII. POST-TEST YEAR**

12 SDG&E is requesting a post-test year (PTY) revenue requirement mechanism for the
13 years 2029-2031. Although SDG&E's PTY mechanism is addressed in that PTY testimony,
14 SDG&E is proposing an exception to the capital PTY mechanism related to WMP Strategic
15 Undergrounding capital. The details of those WMP Strategic Undergrounding costs are included
16 herein and their impact on the PTY mechanism is addressed in the Post-Test Year Ratemaking
17 testimony (Ex. SDGE-33).

18 As discussed throughout this testimony, strategic undergrounding is a cornerstone of
19 SDG&E's long-term wildfire risk mitigation strategy that continues to meet increasing wildfire
20 risk, customer safety expectations, and system resiliency needs. As a result, reliance on
21 historical averaging or generalized escalation mechanisms alone would not accurately reflect the
22 level of investment that must be sustained in the post-test years.

23 In the 2024 GRC, SDG&E proposed a post-test year adder applicable to total WMP
24 capital to account for the rapid development of wildfire mitigation activities. In contrast, the
25 PTY request in this 2028 GRC is intentionally narrower in scope. SDG&E is requesting a post-
26 test year adder solely for strategic undergrounding, reflecting the program's unique scale, its
27 multi-year and ongoing nature, and the discrete timing and magnitude of its capital investments.
28 For the 2028 GRC cycle, SDG&E plans to significantly expand strategic undergrounding activity
29 to address the highest wildfire-risk segments of its system. Specifically, SDG&E plans to
30 construct approximately 400 miles of strategic undergrounding, supported by the following
31 forecasted costs:

1
2

TABLE JW - 26
STRATEGIC UNDERGROUNDING CAPITAL FORECAST

WILDFIRE MITIGATION - STRATEGIC UNDERGROUNDING (In 2025 \$)				
	Estimated TY 2028 (\$000)	Estimated 2029 (\$000)	Estimated 2030 (\$000)	Estimated 2031 (\$000)
Capital	\$162,683	\$212,024	\$302,025	\$252,547

3 These forecasts reflect the scale of work required to deliver sustained wildfire risk
4 reduction and mitigate PSPS impacts. Because strategic undergrounding involves large project
5 deployments rather than incremental unit-based growth, SDG&E proposes that the Commission
6 authorize a PTY adder based on projected investment levels, rather than relying solely on the
7 general post-test year escalation mechanism. Also, unlike the 2024 GRC, SDG&E is not
8 requesting balancing account treatment for strategic undergrounding or broader wildfire
9 mitigations in this proceeding. SDG&E proposes to retain its existing memorandum account
10 structure, consistent with prior Commission authorization, while requesting explicit PTY revenue
11 authorization for strategic undergrounding to support rate stability and transparency.

12 Authorizing the PTY revenue adder for strategic undergrounding will allow SDG&E to:

- 13 • Maintain continuity of strategic undergrounding deployment across the GRC
14 cycle
- 15 • Align authorized revenues with forecasted investment levels
- 16 • Reduce reliance on true-ups or balancing mechanisms and supplemental recovery
17 proceedings
- 18 • Enhance rate predictability and customer bill stability

19 **VIII. CONCLUSION**

20 This concludes my prepared direct testimony.

1 **IX. WITNESS QUALIFICATIONS**

2 My name is Jonathan T. Woldemariam. My business address is 8330 Century Park Court,
3 San Diego, California, 92123. I am employed by SDG&E as the Director of Wildfire Mitigation.
4 I am responsible for developing and overseeing the execution of the Company's Wildfire
5 Mitigation Plan, which includes the vegetation management program. I work to optimize a
6 portfolio of initiatives to help decrease wildfire risk.

7 I joined SDG&E in 1994 and have served as a director for Transmission and Substation
8 Operations, Electric Transmission and Distribution Engineering, and Construction Services. I
9 have over 28 years of experience in the electric utility industry. I am currently serving on the
10 Board of Directors of the San Diego Fire Rescue Foundation.

11 I have a bachelor's degree in electrical engineering, with a major field of study in
12 Electrical Power and am a licensed Professional Engineer in California.

13 I have previously testified before this Commission.

APPENDIX A
GLOSSARY OF TERMS

APPENDIX A – Glossary of Terms

ACRONYM	DEFINITION
A.	Application
AB	Assembly Bill
ADA	Americans with Disabilities Act
AFN	Access and Functional Needs
APP	Advanced Protection Program
ARFS	Advanced Radio Frequency Sensors
ASL	American Sign Language
AWS	Amazon Web Services
BOP	Balance-of-plant
CAISO	California Independent System Operator
CAVA	Climate Adaptation Vulnerability Assessment
CBO	Community Based Organization
CCC	Combined Covered Conductor
CDRI	Distribution Communications Reliability Improvements
CFR	Contracted Fire Resource
CMP	Corrective Maintenance Program
CNF	Cleveland National Forest
CNS	Customer Notification System
CPUC	California Public Utilities Commission
CRA	Customized Resiliency Assessment
CRC	Community Resource Center
D.	Decision
DAC	Disadvantaged Community
DFW	Deferred Work Framework
DVC	Disadvantaged Vulnerable Community
ECV	Emergency Command Vehicle
EFD	Early Fault Detection
EOC	Emergency Operations Center
EPC	Engineering, Procurement, and Construction
ESJ	Environmental and Social Justice
ESP	Energy Solutions Partner
FCP	Falling Conductor Protection
FERC	Federal Energy Regulatory Commission
FPI	Fire Potential Index
FSCA	Fire Science and Climate Adaptation
FTE	Full-time Equivalent
GAP	Generator Assistance Program
GGP	Generator Grant Program
GHBA	Grid Hardening Balancing Account
GO	General Order
GRC	General Rate Case
HFTD	High Fire Threat District

ICS	Incident Command System
IT	Information Technology
LEP	Limited English Proficiency
LiDAR	Light detection and ranging
LTE	Long Term Evolution
LTSA	Long-Term Service Agreement
MOU	Memoranda of Understanding
MSUP	Master Special Use Permit
O&M	Operations and Maintenance
OEIS	Office of Energy Infrastructure Safety
PQ	Power Quality
PSPP	Public Safety Partner Portal
PSPS	Public Safety Power Shutoff
QA/QC	Quality Assurance/Quality Control
QDR	Quarterly Data Report
RAMP	Risk Assessment Mitigation Phase
RDF	Risk-Based Decision-making Framework
RFW	Red Flag Warning
RIDI	Risk-Informed Drone Inspections
ROW	Right of Way
RTU	Remote Terminal Unit
SAWTI	Santa Ana Wildfire Threat Index
SB	Senate Bill
SCE	Southern California Edison
SDG&E	San Diego Gas & Electric
SGF	Sensitive Ground Fault
SRP	Sensitive Relay Profile
SUG	Strategic Undergrounding
SWRCB	State Water Resources Control Board
TEL	Tribal Energy Liaison
TTBA	Tree Trimming Balancing Account
TY	Test Year
UAS	Unmanned Aircraft Systems
VMA	Vegetation Management Area
VMBA	Vegetation Management Balancing Account
VRI	Vegetation Risk Index
WCRC	Wildfire and Climate Resilience Center
WCS	Wildfire and Climate Science
WiNGs	Wildfire Next Generation System
WiNGS-Ops	Wildfire Next Generation System-Operations
WMP	Wildfire Mitigation Plan
WMPMA	Wildfire Mitigation Plan Memorandum Account
WP	Workpaper
WRF	Weather Research and Forecasting
WUI	Wildland Urban Interface

APPENDIX B

CONTROLS AND MITIGATIONS COMPLIANCE DRIVER ROADMAP

APPENDIX B

CONTROLS AND MITIGATIONS COMPLIANCE DRIVER ROADMAP

The table below indicates the compliance drivers that underpin Risk Controls/Mitigations identified in testimony.

Control/ Mitigation ID	Control/Mitigation Name	Compliance Driver
C526	Distribution Overhead Detailed Inspections	GO 95, GO 165
C530	Distribution Wood Pole Intrusive Inspections	GO 95, GO 165
C536	Distribution Overhead Patrol Inspections	GO 95, GO 165
C576	Avian Protection	Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, Codes defined by California Department of Fish and Game
C544	Pole Clearing	Pub. Util. Code § 451; PRC § 4292
C551	Prune and Removal (Clearance)	Pub. Util. Code § 451
C554	Detailed Inspections	GO 95, Rule 35; PRC § 4293; FAC-003-4

APPENDIX C

CAPITAL EXPENDITURES

San Diego Gas Electric Company
Capital Expenditures
(In Thousands of 2025 \$)

Wildfire Mitigation & Vegetation Management	2026	2027	2028	2029	2030	2031
Total Capital	174,813	144,477	314,024	367,131	494,762	410,846
2026 - 2028 Capital Request	162,752	135,475	282,312	-	-	-
Post-Test Year Capital Forecast	12,061	9,002	31,712	367,131	494,762	410,846

Note:

These appendices include a correction/reduction in requested capital for the Aviation Program and Total, compared to the associated workpapers. This correction was not identified in time to be included in the 2028 Test-Year Application revenue requirement calculation. This will be included in the revenue requirement at the next available opportunity.

San Diego Gas Electric Company
Capital Expenditures
(In Thousands of 2025 \$)

Wildfire Mitigation & Vegetation Management
2026 - 2028 Capital Request

Category	Workpaper Sub	Workpaper Description	In-Service Date	2026	2027	2028
Grid Design Operations and Maintenance	002390.001	CMP Repairs and Replacements	Routine	24,284	19,558	13,151
	101430.001	Transmission Overhead Hardening (Distribution Underbuild)	12/31/2026	89	-	-
	101430.002	Transmission Overhead Hardening (Distribution Underbuild)	12/31/2027	5,150	1,880	-
	101430.003	Transmission Overhead Hardening (Distribution Underbuild)	12/31/2028	1,692	2,687	440
	152590.001	Advanced Protection	Routine	2,991	1,864	1,873
	152590.002	Advanced Protection	Routine	1,187	161	-
	192450.001	PSPS Sectionalizing Enhancements	Routine	1,563	1,563	2,159
	192460.001	Strategic Undergrounding	Routine	-	-	162,683
	198720.001	Distribution Communications Reliability Improvements (DCRI)	Routine	450	-	-
	201270.001	Distribution Underbuild Repairs on Transmission Structures	Routine	760	673	623
	202770.001	Aviation Program	Routine	435	435	435
	202840.001	Distribution Overhead System Hardening	Routine	12,849	4,040	-
	202850.001	Combined Covered Conductor	Routine	65,351	65,382	65,358
	222420.001	Strategic Pole Replacement Program	Routine	4,157	-	-
	222560.001	Early Fault Detection	Routine	2,571	1,444	3,445
	222560.002	Early Fault Detection	Routine	1,823	1,723	623
	222590.001	Risk-Informed Drone Inspections	Routine	-	1,000	800
	231280.001	Cleveland National Forest Fire Hardening	Routine	437	299	187
	002390.002	CMP Repairs and Replacements	Routine	15,683	15,620	15,529
	002390.003	CMP Repairs and Replacements	Routine	903	759	722
	002390.004	CMP Repairs and Replacements	Routine	4,194	-	-
	152590.003	Advanced Protection	Routine	-	-	4,467
	152590.004	Advanced Protection	Routine	-	-	200
	Grid Design Operations and Maintenance Total				146,569	119,088
Vegetation Management and Inspections	268860.001	Application Support and Risk Analytics	12/31/2027	2,598	2,601	-
	268900.001	Integrated Work Management & Risk Assessment Platform	12/31/2028	-	-	4,000
Vegetation Management and Inspections Total				2,598	2,601	4,000
Emergency Prep Collab & Community Outreach	258820.001	Public Emergency Communication Strategy	12/31/2027	3,200	3,780	-
Emergency Prep Collab & Community Outreach Total				3,200	3,780	-
Enterprise Systems	248770.001	Enterprise Data Foundation	Routine	4,349	4,352	4,350
Enterprise Systems Total				4,349	4,352	4,350
Risk Methodology and Assessment	238750.001	Risk Methodology and Assessment	12/31/2027	6,036	5,654	-
	238750.004	Risk Methodology and Assessment	6/30/2028	-	-	1,267
Risk Methodology and Assessment Total				6,036	5,654	1,267
Grand Total				162,752	135,475	282,312

San Diego Gas Electric Company
Capital Expenditures
(In Thousands of 2025 \$)

Wildfire Mitigation & Vegetation Management
Post-Test Year Capital Forecast

Category	Workpaper Sub	Workpaper Description	In-Service Date	2026	2027	2028	2029	2030	2031	
Grid Design Operations and Maintenance	002390.001	CMP Repairs and Replacements	Routine	-	-	-	18,357	19,549	24,125	
	101430.003	Transmission Overhead Hardening (Distribution Underbuild)	12/31/2028	-	-	-	5	-	-	
	101430.004	Transmission Overhead Hardening (Distribution Underbuild)	12/31/2029	210	2,799	3,380	815	12	-	
	152590.001	Advanced Protection	Routine	-	-	-	1,871	1,870	1,870	
	152590.002	Advanced Protection	Routine	-	-	-	-	-	-	
	192450.001	PSPS Sectionalizing Enhancements	Routine	-	-	-	2,226	2,049	2,101	
	192460.001	Strategic Undergrounding	Routine	-	-	-	212,024	302,025	252,547	
	198720.001	Distribution Communications Reliability Improvements (DCRI)	Routine	-	-	-	-	-	-	
	201270.001	Distribution Underbuild Repairs on Transmission Structures	Routine	-	-	-	638	654	670	
	202770.001	Aviation Program	Routine	-	-	-	435	435	435	
	202840.001	Distribution Overhead System Hardening	Routine	-	-	-	-	-	-	
	202850.001	Combined Covered Conductor	Routine	-	-	-	65,348	65,340	65,341	
	212730.001	Microgrids	12/31/2030	-	-	-	4,863	36,297	7,508	
	222420.001	Strategic Pole Replacement Program	Routine	-	-	-	-	-	-	
	222560.001	Early Fault Detection	Routine	-	-	-	3,157	4,257	3,142	
	222560.002	Early Fault Detection	Routine	-	-	-	523	423	323	
	222590.001	Risk-Informed Drone Inspections	Routine	-	-	-	800	600	600	
	231280.001	Cleveland National Forest Fire Hardening	Routine	-	-	-	154	25	-	
	002390.002	CMP Repairs and Replacements	Routine	-	-	-	15,447	15,366	15,289	
	002390.003	CMP Repairs and Replacements	Routine	-	-	-	684	573	505	
	002390.004	CMP Repairs and Replacements	Routine	-	-	-	-	-	-	
	152590.003	Advanced Protection	Routine	-	-	-	4,485	4,485	4,485	
	152590.004	Advanced Protection	Routine	-	-	-	200	200	200	
	202850.002	Combined Covered Conductor	6/30/2029	-	-	303	303	303	303	
	Grid Design Operations and Maintenance Total				210	2,799	3,683	332,335	454,463	379,444
	Vegetation Management and Inspections	268860.002	Application Support and Risk Analytics	12/31/2029	-	-	2,243	2,242	-	-
268860.003		Application Support and Risk Analytics	12/31/2031	-	-	-	-	3,871	3,497	
26886A.001		QA/QC	6/30/2029	-	-	404	404	404	404	
26886B.001		Off Cycle Patrol	6/30/2029	-	-	399	399	399	399	
268900.002		Integrated Work Management & Risk Assessment Platform	12/31/2029	-	-	4,574	5,123	-	-	
Vegetation Management and Inspections Total						7,620	8,168	4,674	4,300	
Situational Awareness and Forecasting	192470.001	Weather Network & Technology Programs	12/31/2030	-	-	-	-	7,000	-	
Situational Awareness and Forecasting Total								7,000		
Emergency Prep Collab & Community Outreach	228790.001	Emergency Preparedness and Recovery Plan	12/31/2030	3,171	-	-	4,190	4,190	-	
	228790.002	Emergency Preparedness and Recovery Plan	12/31/2031	2,478	-	405	405	404	404	
	228790.003	Emergency Preparedness and Recovery Plan	12/31/2031	6,202	6,203	6,202	6,202	6,202	6,202	
	228790.004	Emergency Preparedness and Recovery Plan	12/31/2030	-	-	-	-	1,200	-	
Emergency Prep Collab & Community Outreach Total			11,851	6,203	6,607	10,797	11,996	6,606		
Enterprise Systems	248770.001	Enterprise Data Foundation	Routine	-	-	-	4,349	4,348	4,349	
	248770.002	Enterprise Data Foundation	12/31/2031	-	-	4,515	703	503	4,513	
	248770.003	Enterprise Data Foundation	12/31/2031	-	-	2,500	4,000	5,000	5,000	
Enterprise Systems Total					7,015	9,052	9,851	13,862		
Risk Methodology and Assessment	238750.002	Risk Methodology and Assessment	12/31/2029	-	-	5,828	5,552	-	-	
	238750.003	Risk Methodology and Assessment	12/31/2031	-	-	-	-	5,551	5,550	
	238750.004	Risk Methodology and Assessment	6/30/2028	-	-	-	317	317	317	
	238750.005	Risk Methodology and Assessment	6/30/2029	-	-	959	910	910	767	
Risk Methodology and Assessment Total						6,787	6,779	6,778	6,634	
Grand Total				12,061	9,002	31,712	367,131	494,762	410,846	

APPENDIX D

RAMP-GRC INTEGRATION

Area: WILDFIRE MITIGATION & VEGETATION MANAGEMENT

Witness: Jonathan Woldemariam

GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM001.501	Wireless Fault Indicators	1OR04 C501	SDG&E-Risk-4 Wildfires and PSPS Wireless Fault Indicators	No feasible units	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM001.502	Capacitor Maintenance and Replacement Program (SCADA)	1OR04 C502	SDG&E-Risk-4 Wildfires and PSPS Capacitor Maintenance and Replacement Program (SCADA)	Capacitors replaced	23	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM001.504	Standby Power Programs (Fixed Backup Power Commercial)	1OR04 C504	SDG&E-Risk-4 Wildfires and PSPS Standby Power Program (Fixed Backup Power Commercial)	No feasible units	436	1,040	1,040	1,040	1,040	1,040	1,040	0	0	0	0	0	0	0
1WM001.506	Microgrids	1OR04 C506	SDG&E-Risk-4 Wildfires and PSPS Microgrids	No feasible units	1,454	1,456	1,456	1,456	1,456	1,526	1,576	0	0	0	0	0	0	0
1WM001.507	CMP Repairs & Replacements	1OR04 C507	SDG&E-Risk-4 Wildfires and PSPS CMP Repairs	No feasible units	250	250	250	250	250	250	250	0	0	0	0	0	0	0
1WM001.507	CMP Repairs & Replacements	1OR04 C526	SDG&E-Risk-4 Wildfires and PSPS Distribution Overhead Detailed Inspections	No feasible units	146	151	151	301	301	301	301	0	0	0	0	0	0	0

Note: Totals may include rounding differences. Total amounts preceded by a double asterisk (**) are in millions (\$MM). Unit values preceded by a single asterisk (*) are displayed in thousands (000s).

Area: WILDFIRE MITIGATION & VEGETATION MANAGEMENT

Witness: Jonathan Woldemariam

GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM001.507	CMP Repairs & Replacements	1OR04 C534	SDG&E-Risk-4 Wildfires and PSPS Risk-Informed Drone Inspections	No feasible units	18,784	1,105	1,105	955	955	955	955	0	0	0	0	0	0	0
1WM001.508	Advanced Protection	1OR04 C508	SDG&E-Risk-4 Wildfires and PSPS Advanced Protection	Nodes	125	46	63	3,778	3,778	3,778	3,778	37	60	80	100	100	100	100
1WM001.510	Hotline Clamps	1OR04 C510	SDG&E-Risk-4 Wildfires and PSPS Hotline Clamps	Hotline clamps removed	249	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM001.512	Customized Resiliency Assessments	1OR04 C512	SDG&E-Risk-4 Wildfires and PSPS Customized Resiliency Assessment	No feasible units	3,759	4,095	4,095	4,095	4,095	4,095	4,095	0	0	0	0	0	0	0
1WM001.516	Generator Assistance Programs	1OR04 C516	SDG&E-Risk-4 Wildfires and PSPS Generator Assistance Program	Rebates Issued	691	698	698	698	698	698	698	290	300	300	300	300	300	300
1WM001.518	Strategic Undergrounding	1OR04 C518	SDG&E-Risk-4 Wildfires and PSPS Strategic Undergrounding	Miles UG	894	1,509	1,509	1,978	2,409	3,080	3,860	33	0	0	50	80	125	145

Note: Totals may include rounding differences. Total amounts preceded by a double asterisk (**) are in millions (\$MM). Unit values preceded by a single asterisk (*) are displayed in thousands (000s).

Area: WILDFIRE MITIGATION & VEGETATION MANAGEMENT

Witness: Jonathan Woldemariam

GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM001.520	Distribution Overhead System Hardening	1OR04 C520	SDG&E-Risk-4 Wildfires and PSPS Distribution Overhead System Hardening	Jobs completed	4,176	4,577	450	0	0	0	0	0	0	6	0	0	0	0
1WM001.522	Transmission Overhead Hardening (Distribution Underbuild)	1OR04 C522	SDG&E-Risk-4 Wildfires and PSPS Transmission Overhead Hardening (Distribution Underbuild)	No feasible units	-1	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM001.524	Lightning Arrestor Removal/Replace Program	1OR04 C524	SDG&E-Risk-4 Wildfires and PSPS Lightning Arrestor Removal/Replace Program	Lightning Arrestors	107	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM001.526	Distribution Overhead Detailed Inspections	1OR04 C526	SDG&E-Risk-4 Wildfires and PSPS Distribution Overhead Detailed Inspections	HFTD inspections	146	516	516	516	516	516	516	17,950	17,299	17,299	17,299	17,299	17,299	17,299
1WM001.528	Distribution Infrared Inspections	1OR04 C528	SDG&E-Risk-4 Wildfires and PSPS Dist. System Inspection IR/Corona	HFTD inspections	8	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: Totals may include rounding differences. Total amounts preceded by a double asterisk (**) are in millions (\$MM). Unit values preceded by a single asterisk (*) are displayed in thousands (000s).

Area: WILDFIRE MITIGATION & VEGETATION MANAGEMENT

Witness: Jonathan Woldemariam

GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM001.530	Distribution Wood Pole Intrusive Inspections	1OR04 C530	SDG&E-Risk-4 Wildfires and PSPS Distribution Wood Pole Intrusive Inspections	HFTD inspections	54	152	685	1,491	2,022	1,202	1,071	1,478	1,214	5,477	11,923	16,176	9,610	8,568
1WM001.534	Risk-Informed Drone Inspections	1OR04 C534	SDG&E-Risk-4 Wildfires and PSPS Risk-Informed Drone Inspections	HFTD inspections	1,513	1,331	1,331	1,331	1,331	1,331	1,331	13,500	9,000	9,000	9,000	9,000	9,000	9,000
1WM001.536	Distribution Overhead Patrol Inspections	1OR04 C536	SDG&E-Risk-4 Wildfires and PSPS Distribution Overhead Patrol Inspections	HFTD patrols	349	363	363	363	363	363	363	86,040	86,040	86,040	86,040	86,040	86,040	86,040
1WM001.546	Aviation Program	1OR04 C546	SDG&E-Risk-4 Wildfires and PSPS Aviation Firefighting Program	No feasible units	2,870	6,425	6,436	6,446	6,457	6,469	6,481	0	0	0	0	0	0	0
1WM001.548	Wildfire Infrastructure Protection Teams	1OR04 C548	SDG&E-Risk-4 Wildfires and PSPS Wildfire Infrastructure Protection Teams	No feasible units	4,665	4,665	4,665	4,665	4,665	4,665	4,665	0	0	0	0	0	0	0
1WM001.550	Combined Covered Conductor	1OR04 C550	SDG&E-Risk-4 Wildfires and PSPS Combined Covered Conductor	Miles hardened	4,169	3,750	3,750	3,750	3,750	3,750	3,750	52	50	50	50	50	50	50

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Area: WILDFIRE MITIGATION & VEGETATION MANAGEMENT

Witness: Jonathan Woldemariam

GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM001.552	PSPS Sectionalizing and Enhancements	1OR04 C552	SDG&E-Risk-4 Wildfires and PSPS Sectionalizing Enhancements	Switches installed	0	16	16	21	22	20	21	9	7	7	9	9	9	9
1WM001.559	LiDAR Flights	1OR04 C559	SDG&E-Risk-4 Wildfires and PSPS LiDAR Flights	Miles	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM001.564	Distribution Communications Reliability Improvements	1OR04 C564	SDG&E-Risk-4 Wildfires and PSPS Distribution Communications Reliability Improvements (DCRI)	No feasible units	2,352	2,873	2,873	2,873	2,873	2,873	2,873	0	0	0	0	0	0	0
1WM001.565	Distribution Underbuild Repairs on Transmission Structures	1OR04 C565	SDG&E-Risk-4 Wildfires and PSPS Transmission Overhead Detailed Inspections	Inspections	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM001.568	Strategic Pole Replacement	1OR04 C568	SDG&E-Risk-4 Wildfires and PSPS Strategic Pole Replacement	Poles	884	710	0	0	0	0	0	228	100	0	0	0	0	0
1WM001.569	Cleveland National Forest Fire Hardening	1OR04 C569	SDG&E-Risk-4 Wildfires and PSPS Cleveland National Forest Fire Hardening	No feasible units	83	0	0	0	0	0	0	0	0	0	0	0	0	0

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS							
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031	
1WM001.570	Expulsion Fuse Replacements	1OR04 C570	SDG&E-Risk-4 Wildfires and PSPS Expulsion Fuse Replacements	Fuses replaced	92	0	0	0	0	0	0	0	503	0	0	0	0	0	0
1WM001.573	Early Fault Detection	1OR04 C573	SDG&E-Risk-4 Wildfires and PSPS Early Fault Detection	No feasible units	84	24	34	41	47	61	67	0	0	0	0	0	0	0	0
1WM001.576	Avian Protection	1OR04 C576	SDG&E-Risk-4 Wildfires and PSPS Avian Protection	Poles protected	77	0	0	0	0	0	0	724	0	0	0	0	0	0	
1WM002.537	Off-Cycle Patrol	1OR04 C537	SDG&E-Risk-4 Wildfires and PSPS Off-Cycle Patrol	VMA (Vegetation Management Area)	1,363	1,387	1,409	1,452	1,476	1,500	1,535	106	106	106	106	106	106	106	
1WM002.540	Fuels Management Program	1OR04 C540	SDG&E-Risk-4 Wildfires and PSPS Fuels Management	structures cleared	3,164	3,168	3,168	3,168	3,168	3,168	3,168	500	500	500	500	500	500	500	
1WM002.544	Pole Clearing	1OR04 C544	SDG&E-Risk-4 Wildfires and PSPS Pole Clearing (Brushing)	Poles brushed	4,646	4,820	4,973	5,130	5,294	5,464	5,656	33,250	22,000	22,000	22,000	22,000	22,000	22,000	
1WM002.551	Prune and Removal (Clearance)	1OR04 C540	SDG&E-Risk-4 Wildfires and PSPS Fuels Management	Trees trimmed	251	251	251	251	251	251	251	0	0	0	0	0	0	0	

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM002.551	Prune and Removal (Clearance)	1OR04 C551	SDG&E-Risk-4 Wildfires and PSPS Prune and Removal (Clearance)	Trees trimmed	13,758	23,257	24,022	24,815	25,636	26,485	27,376	49,100	82,549	82,549	82,549	82,549	82,549	82,549
1WM002.551	Prune and Removal (Clearance)	1OR05 C551	SDG&E-Risk-5 Electric Infrastructure Integrity Prune and Removal (Clearance)	Trees trimmed	13,758	23,256	24,021	24,814	25,636	26,485	27,376	49,100	82,549	82,549	82,549	82,549	82,549	82,549
1WM002.554	Detailed Inspections	1OR04 C554	SDG&E-Risk-4 Wildfires and PSPS Detailed Inspections	Trees inspected	3,774	3,705	3,836	3,973	4,115	4,268	4,431	*255	*255	*255	*255	*255	*255	*255
1WM002.554	Detailed Inspections	1OR05 C554	SDG&E-Risk-5 Electric Infrastructure Integrity Detailed Inspections	Trees inspected	3,773	3,704	3,836	3,973	4,115	4,267	4,431	*255	*255	*255	*255	*255	*255	*255
1WM002.555	Vegetation Restoration Initiative	1OR04 C555	SDG&E-Risk-4 Wildfires and PSPS Vegetation Restoration Initiative	Trees planted	17	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM002.578	QA/QC of Vegetation Management	1OR04 C578	SDG&E-Risk-4 Wildfires and PSPS QA/QC of Veg Mgmt	No feasible units	3,106	3,133	3,207	3,293	3,371	3,451	3,620	0	0	0	0	0	0	0

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM002.578	QA/QC of Vegetation Management	1OR05 C578	SDG&E-Risk-5 Electric Infrastructure Integrity QA/QC of Veg Mgmt	No feasible units	3,106	3,132	3,206	3,293	3,370	3,451	3,620	0	0	0	0	0	0	0
1WM002.582	Application Support and Risk Analytics	1OR04 C558	SDG&E-Risk-4 Wildfires and PSPS Risk Methodology and Assessment	No feasible units	1,137	1,165	1,165	1,165	1,165	1,165	1,165	0	0	0	0	0	0	0
1WM002.582	Application Support and Risk Analytics	1OR04 C575	SDG&E-Risk-4 Wildfires and PSPS Vegetation Management Enterprise System	No feasible units	327	327	327	327	327	327	327	0	0	0	0	0	0	0
1WM002.582	Application Support and Risk Analytics	1OR04 M582	SDG&E-Risk-4 Wildfires and PSPS Application Support and Risk Analysis	No feasible units	0	609	609	609	609	759	759	0	0	0	0	0	0	0
1WM002.584	Integrated Work Management & Risk Assessment Platform	1OR04 M584	SDG&E-Risk-4 Wildfires and PSPS Integrated Work Management & Risk Assessment Platform	No feasible units	0	132	136	504	562	0	0	0	0	0	0	0	0	0
1WM003.561	Fire Potential Index	1OR04 C561	SDG&E-Risk-4 Wildfires and PSPS Fire Potential Index	No feasible units	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM003.561	Fire Potential Index	1OR04 C572	SDG&E-Risk-4 Wildfires and PSPS Situational Awareness and Forecasting	No feasible units	772	1,080	1,080	1,080	1,080	1,080	1,080	0	0	0	0	0	0	0
1WM003.562	Weather Network & Technology Programs	1OR04 C562	SDG&E-Risk-4 Wildfires and PSPS Weather Network & Technology Programs	Weather stations	0	0	0	0	0	0	0	225	225	225	227	229	231	233
1WM003.562	Weather Network & Technology Programs	1OR04 C572	SDG&E-Risk-4 Wildfires and PSPS Situational Awareness and Forecasting	Weather stations	189	319	319	378	378	378	378	0	0	0	0	0	0	0
1WM003.572	Situational Awareness and Forecasting	1OR04 C572	SDG&E-Risk-4 Wildfires and PSPS Situational Awareness and Forecasting	No feasible units	2,628	2,728	2,728	2,728	2,728	2,728	2,728	0	0	0	0	0	0	0
1WM003.572	Situational Awareness and Forecasting	1OR06 C328	SDG&E-Risk-6 Employee Safety Compliance & Industrial Hygiene Program	No feasible units	62	62	62	0	0	0	0	0	0	0	0	0	0	0

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM004.556	Engagement with AFN Populations	1OR04 C556	SDG&E-Risk-4 Wildfires and PSPS Engagement with AFN Populations Total	No feasible units	1,697	1,830	1,830	1,830	1,830	1,830	1,830	0	0	0	0	0	0	0
1WM004.557	Public Outreach and Education Awareness	1OR04 C557	SDG&E-Risk-4 Wildfires and PSPS Public Outreach and Education Awareness	No feasible units	948	1,205	1,507	1,518	1,387	1,387	1,387	0	0	0	0	0	0	0
1WM004.557	Public Outreach and Education Awareness	1OR04 C571	SDG&E-Risk-4 Wildfires and PSPS Emergency Preparedness and Recovery Plan	No feasible units	2,057	2,057	2,057	2,057	2,057	2,057	2,057	0	0	0	0	0	0	0
1WM004.560	Mylar Ballon Alternative	1OR04 C560	SDG&E-Risk-4 Wildfires and PSPS Mylar Ballon Alternative	No feasible units	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM004.567	Public Emergency Communication Strategy	1OR04 C567	SDG&E-Risk-4 Wildfires and PSPS Public Emergency Communication Strategy	No feasible units	7,139	7,185	7,185	6,185	6,185	6,185	6,185	0	0	0	0	0	0	0

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM004.571	Emergency Preparedness and Recovery Plan	1OR04 C571	SDG&E-Risk-4 Wildfires and PSPS Emergency Preparedness and Recovery Plan	No feasible units	32,909	33,182	33,182	33,181	33,181	33,181	33,181	0	0	0	0	0	0	0
1WM005.566	Enterprise Data Foundation	1OR04 C566	SDG&E-Risk-4 Wildfires and PSPS Enterprise Data Foundation	No feasible units	0	1,892	2,230	2,564	2,564	2,564	2,564	0	0	0	0	0	0	0
1WM005.575	Vegetation Management Enterprise System	1OR04 C575	SDG&E-Risk-4 Wildfires and PSPS Vegetation Management Enterprise System	No feasible units	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM006.563	Wildfire Mitigation Strategy Development	1OR04 C558	SDG&E-Risk-4 Wildfires and PSPS Risk Methodology and Assessment	No feasible units	125	125	125	125	125	125	125	0	0	0	0	0	0	0
1WM006.563	Wildfire Mitigation Strategy Development	1OR04 C563	SDG&E-Risk-4 Wildfires and PSPS Wildfire Mitigation Strategy Development	No feasible units	1,785	3,696	3,696	3,696	3,696	3,696	3,696	0	0	0	0	0	0	0

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
1WM006.563	Wildfire Mitigation Strategy Development	1OR04 C566	SDG&E-Risk-4 Wildfires and PSPS Enterprise Data Foundation	No feasible units	2,020	0	0	0	0	0	0	0	0	0	0	0	0	0
1WM007.558	Risk Methodology and Assessment	1OR04 C558	SDG&E-Risk-4 Wildfires and PSPS Risk Methodology and Assessment	No feasible units	4,733	5,730	5,810	7,385	7,408	7,407	7,407	0	0	0	0	0	0	0

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
002390.001	RAMP - CMP Repairs and Replacements	1CR04 C507	SDG&E-Risk-4 Wildfires and PSPS CMP Repairs	Jobs completed	0	24,284	19,558	13,151	18,357	19,549	24,125	0	1,005	806	540	752	800	985
002390.002	RAMP - Risk Informed Drone Repairs	1CR04 C507	SDG&E-Risk-4 Wildfires and PSPS CMP Repairs	Jobs completed	0	15,683	15,620	15,529	15,447	15,366	15,289	0	780	776	772	768	765	761
002390.003	RAMP - Distribution Underbuilt CMP Repairs	1CR04 C507	SDG&E-Risk-4 Wildfires and PSPS CMP Repairs	Jobs completed	0	903	759	722	684	573	505	0	20	17	16	15	13	11
002390.004	RAMP - DIAR Tier 2	1CR04 C507	SDG&E-Risk-4 Wildfires and PSPS CMP Repairs	Jobs completed	0	4,194	0	0	0	0	0	0	24	0	0	0	0	0
101430.001	RAMP - Transmission Overhead Hardening (Distribution Underbuild) - ISD 2026	1CR04 C522	SDG&E-Risk-4 Wildfires and PSPS Transmission Overhead Hardening (Distribution Underbuild)	Miles hardened	0	89	0	0	0	0	0	0	0	0	0	0	0	0
101430.002	RAMP - Transmission Overhead Hardening (Distribution Underbuild) - ISD 2027	1CR04 C522	SDG&E-Risk-4 Wildfires and PSPS Transmission Overhead Hardening (Distribution Underbuild)	Miles hardened	0	5,150	1,880	0	0	0	0	0	7	2	0	0	0	0
101430.003	RAMP - Transmission Overhead Hardening (Distribution Underbuild) - ISD 2028	1CR04 C522	SDG&E-Risk-4 Wildfires and PSPS Transmission Overhead Hardening (Distribution Underbuild)	Miles hardened	0	1,692	2,687	440	5	0	0	0	1	3	0	0	0	0

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS							
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031	
101430.004	RAMP - Transmission Overhead Hardening (Distribution Underbuild) - ISD 2029	1CR04 C522	SDG&E-Risk-4 Wildfires and PSPS Transmission Overhead Hardening (Distribution Underbuild)	Miles hardened	0	210	2,799	3,380	815	12	0	0	0	0	2	0	6	0	0
152590.001	RAMP - Advanced Protection	1CR04 C508	SDG&E-Risk-4 Wildfires and PSPS Advanced Protection	Circuits enabled	0	2,991	1,864	1,873	1,871	1,870	1,870	0	8	8	8	8	8	8	8
152590.002	RAMP - Advanced Protection - Jamacha Substation	1CR04 C508	SDG&E-Risk-4 Wildfires and PSPS Advanced Protection	Circuits enabled	0	1,187	161	0	0	0	0	0	0	0	0	0	0	0	0
152590.003	RAMP - Advanced Protection - Wildfire Sensor Camera Technology	1CR04 C508	SDG&E-Risk-4 Wildfires and PSPS Advanced Protection	Circuits enabled	0	0	0	4,467	4,485	4,485	4,485	0	0	0	0	0	0	0	0
152590.004	RAMP - Advanced Protection - Video Based Operational Insights Program	1CR04 C508	SDG&E-Risk-4 Wildfires and PSPS Advanced Protection	Circuits enabled	0	0	0	200	200	200	200	0	0	0	0	0	0	0	0
192450.001	RAMP - PSPS Sectionalizing Enhancements	1CR04 C552	SDG&E-Risk-4 Wildfires and PSPS Sectionalizing Enhancements	Switches installed	994	1,563	1,563	2,159	2,226	2,049	2,101	9	8	8	12	12	11	11	

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GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
192460.001	RAMP - Strategic Underground ing	1CR04 C518	SDG&E-Risk-4 Wildfires and PSPS Strategic Undergroundi ng	Miles UG (Capital)	84,708	0	0	**162	**212	**302	**252	32	0	0	50	80	125	145
192470.001	RAMP - Weather Network & Technology Programs	1CR04 C562	SDG&E-Risk-4 Wildfires and PSPS Weather Station Maintenance and Calibration	Super Computer	75	0	0	0	0	7,000	0	0	0	0	0	0	2	0
198720.001	RAMP - Distribution Communications Reliability Improvements	1CR04 C564	SDG&E-Risk-4 Wildfires and PSPS Distribution Communications Reliability Improvements (DCRI)	Base stations	11,205	450	0	0	0	0	0	4	1	0	0	0	0	0
201270.001	RAMP - Distribution Underbuild Repairs on Transmission Structures	1CR04 C565	SDG&E-Risk-4 Wildfires and PSPS Transmission Overhead Detailed Inspections	Poles	564	760	673	623	638	654	670	17	17	15	14	14	14	15
202770.001	RAMP - Aviation Program-UAS	1CR04 C546	SDG&E-Risk-4 Wildfires and PSPS Aviation Firefighting Program	No feasible units	0	435	435	435	435	435	435	0	0	0	0	0	0	0

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GRC - RAMP Integration

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					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
202770.002	RAMP - Aviation Program Helicopter	1CR04 C546	SDG&E-Risk-4 Wildfires and PSPS Aviation Firefighting Program	No feasible units	0	0	8,000	8,000	1,000	0	0	0	0	0	0	0	0	0
202840.001	RAMP - Distribution Overhead System Hardening	1CR04 C520	SDG&E-Risk-4 Wildfires and PSPS Distribution Overhead System Hardening	Miles hardened (Capital)	2,896	12,849	4,040	0	0	0	0	0	4	2	0	0	0	0
202850.001	RAMP - Combined Covered Conductor	1CR04 C550	SDG&E-Risk-4 Wildfires and PSPS Combined Covered Conductor	Miles hardened (Capital)	0	65,351	65,382	65,358	65,348	65,340	65,341	0	50	50	50	50	50	50
202850.002	RAMP - LIDAR	1CR04 C550	SDG&E-Risk-4 Wildfires and PSPS Combined Covered Conductor	Miles hardened (Capital)	0	0	0	303	303	303	303	0	0	0	0	0	0	0
212730.001	RAMP - Microgrids	1CR04 C506	SDG&E-Risk-4 Wildfires and PSPS Microgrids	Microgrids (Capital)	888	0	0	0	4,863	36,297	7,508	0	0	0	0	0	3	0
222420.001	RAMP - Strategic Pole Replacement	1CR04 C568	SDG&E-Risk-4 Wildfires and PSPS Strategic Pole Replacement	Poles	8,193	4,157	0	0	0	0	0	230	100	0	0	0	0	0
222560.001	RAMP - Early Fault Detection	1CR04 C573	SDG&E-Risk-4 Wildfires and PSPS Early Fault Detection	Nodes	0	2,571	1,444	3,445	3,157	4,257	3,142	0	99	95	1,068	1,050	1,083	1,048

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Area: WILDFIRE MITIGATION & VEGETATION MANAGEMENT

Witness: Jonathan Woldemariam

GRC - RAMP Integration

GRC Workpaper	GRC Wkp Description	RAMP WKP	RAMP Wkp Description	RAMP Unit Measure	TOTAL (in 000s)							UNITS						
					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
222560.002	RAMP - Early Fault Detection - iPredict Software	1CR04 C573	SDG&E-Risk-4 Wildfires and PSPS Early Fault Detection	Nodes	0	1,823	1,723	623	523	423	323	0	0	0	0	0	0	0
222590.001	RAMP - Risk-Informed Drone Inspections	1CR04 C534	SDG&E-Risk-4 Wildfires and PSPS Risk-Informed Drone Inspections	No feasible units	32	0	1,000	800	800	600	600	0	0	0	0	0	0	0
228790.001	RAMP - Emergency Preparedness and Recovery Plan - Digital Fortress	1CR04 C571	SDG&E-Risk-4 Wildfires and PSPS Emergency Preparedness and Recovery Plan	No feasible units	0	3,171	0	0	4,190	4,190	0	0	0	0	0	0	0	0
228790.002	RAMP - Emergency Preparedness and Recovery Plan - Responder Life Cycle	1CR04 C571	SDG&E-Risk-4 Wildfires and PSPS Emergency Preparedness and Recovery Plan	No feasible units	0	2,478	0	405	405	404	404	0	0	0	0	0	0	0
228790.003	RAMP - Emergency Preparedness and Recovery Plan PSPP	1CR04 C571	SDG&E-Risk-4 Wildfires and PSPS Emergency Preparedness and Recovery Plan	No feasible units	0	6,202	6,203	6,202	6,202	6,202	6,202	0	0	0	0	0	0	0

Note: Totals may include rounding differences. Total amounts preceded by a double asterisk (**) are in millions (\$MM). Unit values preceded by a single asterisk (*) are displayed in thousands (000s).

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					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
228790.004	RAMP - Emergency Preparedness and Recovery Plan Incident Command Vehicle	1CR04 C571	SDG&E-Risk-4 Wildfires and PSPS Emergency Preparedness and Recovery Plan	No feasible units	0	0	0	0	0	1,200	0	0	0	0	0	0	0	0
231280.001	RAMP - Cleveland National Forest Fire Hardening	1CR04 C569	SDG&E-Risk-4 Wildfires and PSPS Cleveland National Forest Fire Hardening	No feasible units	451	437	299	187	154	25	0	0	0	0	0	0	0	0
238750.001	RAMP - Risk Methodology and Assessment - Advanced Analytics - ISD 2027	1CR04 C558	SDG&E-Risk-4 Wildfires and PSPS Risk Methodology and Assessment	No feasible units	0	6,036	5,654	0	0	0	0	0	0	0	0	0	0	0
238750.002	RAMP - Risk Methodology and Assessment - Advanced Analytics - ISD 2029	1CR04 C558	SDG&E-Risk-4 Wildfires and PSPS Risk Methodology and Assessment	No feasible units	0	0	0	5,828	5,552	0	0	0	0	0	0	0	0	0
238750.003	RAMP - Risk Methodology and Assessment - Advanced Analytics - ISD 2031	1CR04 C558	SDG&E-Risk-4 Wildfires and PSPS Risk Methodology and Assessment	No feasible units	0	0	0	0	0	5,551	5,550	0	0	0	0	0	0	0

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					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
238750.004	RAMP - Risk Methodology and Assessment - LiDAR capture	1CR04 C558	SDG&E-Risk-4 Wildfires and PSPS Risk Methodology and Assessment	No feasible units	0	0	0	1,267	317	317	317	0	0	0	0	0	0	0
238750.005	RAMP - Risk Methodology and Assessment - LiDAR	1CR04 C558	SDG&E-Risk-4 Wildfires and PSPS Risk Methodology and Assessment	No feasible units	0	0	0	959	910	910	767	0	0	0	0	0	0	0
248770.001	RAMP - Enterprise Data Foundation - OEIS Data Foundation	1CR04 C566	SDG&E-Risk-4 Wildfires and PSPS Enterprise Data Foundation	No feasible units	0	4,349	4,352	4,350	4,349	4,348	4,349	0	0	0	0	0	0	0
248770.002	RAMP - Enterprise Data Foundation - Emergency Management Data Foundation Resilience	1CR04 C566	SDG&E-Risk-4 Wildfires and PSPS Enterprise Data Foundation	No feasible units	0	0	0	4,515	703	503	4,513	0	0	0	0	0	0	0
248770.003	RAMP - Enterprise Data Foundation - WCS Intelligence Enablement	1CR04 C566	SDG&E-Risk-4 Wildfires and PSPS Enterprise Data Foundation	No feasible units	0	0	0	2,500	4,000	5,000	5,000	0	0	0	0	0	0	0

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					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
258820.001	RAMP - Public Emergency Communication Strategy	1CR04 C567	SDG&E-Risk-4 Wildfires and PSPS Public Emergency Communication Strategy	No feasible units	5,217	3,200	3,780	0	0	0	0	0	0	0	0	0	0	0
268860.001	RAMP - Application Support and Risk Analytics Future Ssystem - ISD 2027	1CR04 M582	SDG&E-Risk-4 Wildfires and PSPS Application Support and Risk Analysis	No feasible units	0	2,598	2,601	0	0	0	0	0	0	0	0	0	0	0
268860.002	RAMP - Application Support and Risk Analytics - Future System - ISD 2029	1CR04 M582	SDG&E-Risk-4 Wildfires and PSPS Application Support and Risk Analysis	No feasible units	0	0	0	2,243	2,242	0	0	0	0	0	0	0	0	0
268860.003	RAMP - Application Support and Risk Analytics - Future System - ISD 2031	1CR04 M582	SDG&E-Risk-4 Wildfires and PSPS Application Support and Risk Analysis	No feasible units	0	0	0	0	0	3,871	3,497	0	0	0	0	0	0	0
26886A.001	RAMP - QA/QC	1CR04 C578	SDG&E-Risk-4 Wildfires and PSPS QA/QC of Veg Mgmt	No feasible units	0	0	0	404	404	404	404	0	0	0	0	0	0	0

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					2025	2026	2027	2028	2029	2030	2031	2025	2026	2027	2028	2029	2030	2031
26886B.001	RAMP - Off Cycle Patrol	1CR04 C537	SDG&E-Risk-4 Wildfires and PSPS Off-Cycle Patrol	No feasible units	0	0	0	399	399	399	399	0	0	0	0	0	0	0
268900.001	RAMP - Intregrated Work Management & Risk Assessment Platform - License Cost	1CR04 M584	SDG&E-Risk-4 Wildfires and PSPS Integrated Work Management & Risk Assessment Platform	No feasible units	0	0	0	4,000	0	0	0	0	0	0	0	0	0	0
268900.002	RAMP - Intregrated Work Management & Risk Assessment Platform - Future System	1CR04 M584	SDG&E-Risk-4 Wildfires and PSPS Integrated Work Management & Risk Assessment Platform	No feasible units	0	0	0	4,574	5,123	0	0	0	0	0	0	0	0	0

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APPENDIX E

WILDFIRE GRC COMPLIANCE ITEMS MAPPING

APPENDIX E - WILDFIRE MITIGATION COMPLIANCE ITEMS MAPPING

Requirement	Source	2028 GRC Location
<p>In the next GRC, the Commission expects SDG&E to provide more information, as required by its WMP, including the number of miles of electrical lines it has undergrounded and installed with covered conductor in HFTDs, along with the number of miles of electrical lines it proposes to underground and install with covered conductor in HFTDs, and where. This information should improve planning designed to avoid leaving a gap in high-risk areas, paying to harden any areas twice, or otherwise contribute to delay, which the Commission expects the utility to avoid in this rate cycle as well. See, for example, SDG&E’s overview in its 2023-2025 WMP of its key electrical equipment, including that it has undergrounded over 2,800 miles of its 11,252 miles of transmission and distribution line circuit. SDG&E shall also coordinate its risk analysis for its WMP with its RAMP to the extent possible.</p>	<p>D.24-12-074, at 483</p>	<p>Chapter 2, Section I.A, Section I.G.2, and Chapter 1 Appendix F</p>
<p>In its next rate case, San Diego Gas & Electric Company must provide cost and mileage data separately for these two components of system hardening and explain and justify its selection of circuit segments for undergrounding based on risk analyses or other factors.</p>	<p>D.24-12-074, FOF 173</p>	<p>Chapter 2 Section I.A , Section I.E.2.b, and Section I.G.1</p>
<p>In its next general rate case or other application seeking funding for undergrounding, San Diego Gas & Electric Company shall provide the cost per mile (based on both (a) miles of underground line installed and on (b) miles of overhead line replaced) and risk reduction for each undergrounding project installed over the previous four years, organized by year and by high-fire threat district.</p>	<p>D.24-12-074, OP 43</p>	<p>Chapter 1, Appendix F</p>

In its next general rate case, or other application seeking funding for covered conductor, San Diego Gas & Electric shall provide the cost per mile and risk reduction for each covered conductor project installed over the previous four years, organized by year and by high-fire threat district.	D.24-12-074, OP 44	Chapter 1, Appendix F
San Diego Gas & Electric Company shall coordinate its risk analysis for its Wildfire Mitigation Plans with its Risk Assessment and Mitigation Phase, to the extent possible.	D.24-12-074, OP 45	Chapter 2, Section I.C.2, Section I.C.3, Section I.D.1, and Section 1.E.1
In future applications for cost recovery, San Diego Gas & Electric Company shall provide and incorporate Cost-Benefit Ratios in its analysis as required by the Commission’s Risk-Based Decision-Making Framework.	D.26-01-021, OP 3	SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF
San Diego Gas & Electric Company (SDG&E) shall continue to monitor, evaluate, and report the cost-effectiveness of replacing wood poles with steel poles. In the next general rate case, SDG&E shall perform cost-benefit analyses to compare the costs and benefits of the use of wood poles compared to metal poles and to demonstrate how SDG&E has accounted for savings in using metal poles instead of wood poles.	D.26-01-021, OP 4	Chapter 2, Section I.E.4.b.iii.
If San Diego Gas & Electric Company requests cost recovery for any additional microgrid projects in a future application for cost recovery or General Rate Case, that request shall provide evidence of the energy source and cost effectiveness of those microgrid projects as wildfire mitigations.	D.26-01-021, OP 5	Chapter 1, Section IV.A.1, V.A and V.B.
In future Wildfire Mitigation Plans and other reports regarding wildfire mitigation work, San Diego Gas & Electric Company shall fully disclose the work and costs performed within and outside High Fire Threat Districts.	D.26-01-021, OP 6	SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF

<p>In San Diego Gas & Electric Company's (SDG&E's) next General Rate Case application, SDG&E shall provide evidence of the unit cost of generator and standby sources of power, including renewable options, and the distance at which grid hardening remote customers is unreasonable and standby power is recommended.</p>	<p>D.26-01-021, OP 7</p>	<p>Chapter 1, Section III.5.C</p>
<p>In its next General Rate Case application, San Diego Gas & Electric Company (SDG&E) shall specify the Operations & Maintenance costs for all Asset Management and Inspection programs separately from the capital costs for repair or replacement of poles and other equipment and the number of poles being replaced. SDG&E shall also coordinate and optimize pole inspection and replacement programs and demonstrate the lack of redundancy between such programs.</p>	<p>D.26-01-021, OP 8</p>	<p>Chapter 1, Section III.A.3, III.A.10, III.A.11, and IV.A.2. Chapter 2, Section I.E.4.a.iv.</p>
<p>If San Diego Gas & Electric Company (SDG&E) seeks recovery of wildfire mitigation costs for years 2024 and 2025, SDG&E shall file an application before it files its next General Rate Case (GRC). SDG&E's application for recovery of wildfire costs for 2026 shall be part of SDG&E's next GRC.</p>	<p>D.26-01-021, OP 11</p>	<p>Ex. SDGE-26</p>
<p>(1) SDG&E should report the total mileage of distribution (and, where applicable, transmission) lines, disaggregated by HFTD tier and associated tranche. SDG&E should also report how its grid-hardening plan affects line miles within each HFTD tier and tranche, to allow assessment of whether mitigations are aligned with risk exposure.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #1</p>	<p>SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>
<p>(2) SDG&E should create tranches based on risk scores or LoRE × CoRE pairs across all segments for Wildfire and PSPS risk and avoid redundant steps that could introduce unnecessary</p>	<p>SPD Evaluation Report on</p>	<p>Chapter 2, Section I.D.1.f, I.G.1 and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>

<p>complexity or lead to biased or inconsistent outcomes. SDG&E’s tranching methodology should be designed to enable data-driven decision-making for hardening prioritization.</p>	<p>Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #2</p>	
<p>(3) When summing LoRE (or risk) across multiple segments to calculate the total LoRE or the total risk(e.g., for a tranche), SDG&E should clearly demonstrate whether the LoRE events are mutually exclusive. If they are not, SDG&E should apply methods that account for overlap in risk exposure to avoid double-counting and overestimating total LoRE, and total risk.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #3</p>	<p>Chapter 2, Section I.D.1.e, I.D.1.f.</p>
<p>(4) SDG&E should explicitly integrate its tranching methodology into its mitigation planning. Mitigation decisions should be clearly linked to tranches with homogeneous risk or LoRE/CoRE values, ensuring that the highest-risk and most cost-efficient projects (e.g., those with high CBRs) are prioritized. If SDG&E allocates capital to lower-risk segments, it should provide a clear justification.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #4</p>	<p>Chapter 2, Section I.D.1.f, I.G.1.</p>
<p>(5) SDG&E should provide detailed documentation of its mitigation selection process, including a clear step-by-step description and an accompanying decision tree or flowchart. In addition, SDG&E should:</p> <ul style="list-style-type: none"> a. Disclose weighting or prioritization criteria used when/if multiple factors (e.g., risk reduction, CBR, residual risk, feasibility) conflict. b. Provide case examples demonstrating how specific projects 	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E</p>	<p>Chapter 2, Section I.G.1.</p>

<p>were selected or rejected using this framework.</p> <p>c. Clarify the role of modeling vs. expert judgment in the final decision, including thresholds or conditions under which expert overrides are applied.</p> <p>d. Ensure consistency with the CPUC’s risk-based decision-making standards like RDF, so that mitigation selection is transparent, repeatable, and auditable.</p>	<p>Wildfire and PSPS Rec #5</p>	
<p>(6) To ensure accountability, SDG&E should maintain a transparent version-controlled record of its risk calculations and mitigation selection (criteria), so that stakeholders can verify whether mitigation priorities are consistently risk-based and not subject to arbitrary shifts.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #6</p>	<p>Chapter 2, Section I.C.4, I.G.1.</p>
<p>(7) SDG&E should not assume mutual exclusivity of risk drivers solely from historical data. SDG&E should provide clear documentation showing how its methodology avoids overlap among drivers that are summed up to calculate the total LoRE. To prevent double-counting and overstating risk, SDG&E should either:</p> <p>a. Demonstrate mutual exclusivity by clearly defining driver events such that no overlap can occur, or</p> <p>b. Explicitly model dependencies/overlap using mathematically appropriate methods (e.g., inclusion–exclusion for unions of events, joint/conditional probabilities)</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #7</p>	<p>Chapter 2, Section I.D.1.e.</p>
<p>(8) To ensure SDG&E’s risk modeling is transparent and does not overstate total risk, the following clarifications are needed:</p>	<p>SPD Evaluation Report on Sempra's</p>	<p>Chapter 2, Section I.D.1.e.</p>

<p>a. SDG&E should clearly demonstrate how overlaps between the drivers of PSPS, PEDS, and wildfire ignition risks are modeled or excluded.</p> <p>b. If risks are treated additively (as SDG&E did in 2025 RAMP), SDG&E should provide evidence that risks, and their drivers are statistically mutually exclusive.</p> <p>c. SDG&E should document the methods used to avoid overstating total risk, including how correlation, dependency, or joint probability structures are addressed in its modeling.</p>	<p>2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #8</p>	
<p>(9) SDG&E should calculate and use ICE Calculator granularity at the level of customer class (i.e., residential vs non-residential) separated by HFTD and non-HFTD regions. SDG&E should use the corresponding dollars per CMI values for each customer class and HFTD tier in the CBR calculation of mitigation projects to ensure consistent and representative valuation of electric reliability.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #9</p>	<p>Chapter 2, Section I.D.1.b.ii.5, I.D.1.b.ii.6, I.D.1.c.ii, I.D.1.d.ii.</p>
<p>(10) SDG&E should provide robust justification for its assumptions in monetizing the PSPS and PEDS financial attributes and explain how the use of \$482 and \$1446 cost per de-energization for residential customers and C&I customers respectively, reflects best practice in monetizing the financial attribute of CoRE. Also, SDG&E should explain whether these costs are not already included in the electric reliability values determined by ICE.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #10</p>	<p>Chapter 2, Section I.D.1.b.ii.5, I.D.1.b.ii.6, I.D.1.c.ii, I.D.1.d.ii.</p>
<p>(11) SDG&E should reconsider Alt 2, the covered conductor approach, after correcting the CBR calculation to include only incremental O&M costs as part of the net benefits</p>	<p>SPD Evaluation Report on Sempra's</p>	<p>Chapter 2, Section I.E.4, I.F.1, I.F.1.a, I.F.4.a, I.H.</p>

	2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #11	
<p>(12) SDG&E indicated that its selected scaling exponent ($\alpha = 1.47$) was derived by averaging two values (1.34 from the DOE study and 1.6 from the GRI study).</p> <p>a. SDG&E should clearly justify why the use of $\alpha = 1.47$ is appropriate across all segments and attributes. This justification should include demonstrating that the selected exponent aligns with stakeholder risk preferences and is not arbitrarily applied.</p> <p>b. SDG&E should report both unscaled and scaled risk values along with their associated risk attributes (Safety, Reliability, Financial) side-by-side for each segment. SDG&E should also clearly demonstrate how scaling affects each attribute, how it alters segment risk rankings, and how it influences project prioritization in its hardening plans.</p> <p>c. SDG&E should conduct and publish a sensitivity analysis to illustrate how different values of the α impact total Risk Scores, CBR results, and mitigation prioritization.</p>	SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #12	<p>Chapter 2, Section I.D.1.1.</p> <p>a. Chapter 2, Section I.D.1.1, I.H.1.</p> <p>b. Chapter 2, Section I.D.1.1.</p> <p>c. Chapter 2, Section I.D.1.1, I.H.1.</p>
<p>(13) SDG&E should clearly document and explain both the justification for applying risk scaling and the process used to apply it to any segment when:</p> <p>a. Risk scaling results in the segment being included in or excluded from SDG&E's grid hardening plan.</p> <p>b. Risk scaling causes significant changes to the segment's tranche assignment.</p>	SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #13	Chapter 2, Section I.D.1.1.

<p>(14) SDG&E should revise its risk assessment and scaling methodology to incorporate full CoRE (and risk) distributions when/if applying risk scaling. This revision should appropriately account for rare segments associated with low-probability, high-impact scenarios. Additionally, SDG&E should demonstrate how its revised model better captures tail risks and guides mitigation decisions for segments where extreme events are plausible.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #14</p>	<p>Chapter 2, Section I.D.1.1, I.G.1.a.</p>
<p>(15) SDG&E should explain and justify the linkage (or lack thereof) between the application of risk scaling, and the resulting tranche changes and mitigation selections. If SDG&E's risk scaling application does not lead to changes in mitigation plans and merely increases the CBRs of most high-risk segments, it calls into question the practical utility of the risk scaling function.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #15</p>	<p>Chapter 2, Section I.D.1.1, I.G.1.a.</p>
<p>(16) SDG&E should file and serve a technical whitepaper detailing all assumptions, data sources, and formulas used to develop and apply any scaling factors (e.g., associated with population and housing growth or other forecasts) in wildfire consequence modeling, prior to incorporating such factors into its risk modeling. Also, SDG&E should provide version-controlled data to enable SPD and stakeholders to review the effect of these factors on mitigation selection.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #16</p>	<p>Chapter 2, Section I.D.1.j.</p>
<p>(17) The CBR calculation should be based solely on the incremental difference between the proposed mitigation and the no-build baseline (i.e., a well-defined baseline scenario representing no mitigation). Net O&M benefits (or costs) should</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP</p>	<p>Chapter 2, Section I.E.4.a and I.F.4.b.</p>

<p>be calculated from the no-build baseline. This approach prevents double-counting and ensures analytical consistency.</p>	<p>Applications: SDG&E Wildfire and PSPS Rec #17</p>	
<p>(18) SDG&E should restructure its reporting templates for costs and units across control and mitigation plans in a more consistent and transparent format. SDG&E should provide the units (e.g., miles of UG, inspections) for each year of the GRC cycle without splitting them into O&M and Capital categories. While it may be appropriate to break down forecasted costs into O&M and Capital, such cost information should be presented consistently (e.g., annual reporting or clearly defined multi-year blocks) for all relevant years to allow for clear comparison and alignment with physical work.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #18</p>	<p>Chapter 2, Section I.E.1 and I.E.4.a.i.</p>
<p>(19) SDG&E should provide clear cost allocation rules and reconcile overlapping categories. Each cost element (e.g., capital, O&M, VM, foundational) should be uniquely defined and consistently applied across mitigations. SDG&E should also provide reconciliation tables demonstrating that no cost is double counted across mitigations.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E Wildfire and PSPS Rec #19</p>	<p>Chapter 2, Section I.E.3 and I.E.4.a.i.</p>
<p>(20) SDG&E should reconcile conflicting cost figures and ensure consistency across all filings (RAMP, GRC, and data requests). If differences arise due to methodological assumptions or updated estimates, SDG&E should explicitly disclose the rationale and provide a crosswalk table showing how each figure was derived.</p>	<p>SPD Evaluation Report on Sempra's 2025 RAMP Applications: SDG&E</p>	<p>Chapter 2, Section I.E.4.b.i.</p>

	Wildfire and PSPS Rec #20	
(CBR Calculations, Observations & Findings #1) SDG&E has included the existing O&M baseline activity costs required to maintain overhead conductors in the calculation of the combined covered conductor CBR, rather than just the incremental costs or savings expected from the mitigation. SPD finds that inclusion of O&M costs already incurred by ratepayers in establishing the baseline level of risk is not appropriate since these costs will continue to be paid in a non-build scenario. For a true cost-benefit analysis of a proposed improvement, only the incremental O&M cost, or potentially the savings, should be accounted for to show the benefits of making a change. As a rough estimate, when O&M costs are excluded from the denominator of the CBR calculations, the CBR for CC increases substantially (from 0.62 to 1.23), nearly matching the CBR of Strategic Undergrounding at 1.33. The treatment of O&M costs can significantly shift the comparative assessment of these strategies	SPD Evaluation Report on Sempra's 2025 RAMP Applications: CBR Calculations, Observations & Findings #1	Chapter 2, Section I.E.4, I.F.1, I.F.1.a.
(ESJ Pilot Study) SDG&E estimates a disproportionate exposure to wildfire risk exposure for DVCs (primarily tribal lands) in the HFTD (31 percent risk exposure despite making up less than 10 percent of the square mileage). SPD recommends that SDG&E include in its 2028 GRC filing references to its Wildfire Mitigation Plan's measures to address the mitigations that reduce risk the most in DVCs.	SPD Evaluation Report on Sempra's 2025 RAMP Applications: Rec #ESJ	Chapter 2, Section I.D.1.k and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF
DA 2.1: Improve Comparability of Risk-Scaled Analyses To ensure SoCalGas's and SDG&E's analyses are transparent and allow for independent validation of their results, Sempra shall provide results from non-linear and linear scaling models for mitigation programs seeking cost recovery in the TY 2028 GRC application. Specifically, Sempra shall:	ALJ Ruling Directing the Service of Additional Information and Other	Item 1: Chapter 2, Section I.D.1.1 and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF

<p>1. Present both risk-neutral (linear) and risk-scaled (including any convex risk-averse scaling, if used) results for each enterprise risk, at the reporting-tranche level used to support mitigation selection, including risk-adjusted consequences of a risk event (CoRE), and resulting risk values, and the associated CBRs. Consistent with D.24-05-064 (Row 7), where the utilities address tail risk pursuant to Rows 5 and 24 using a power-law or other statistical approach and present convex risk-scaled results, the utilities shall also present the corresponding linear results.</p> <p>2. Demonstrate, using an example, how the utility has used its risk-scaling function (purpose, inputs, parameters, assumptions) to select the proposed mitigation programs. Identify explicitly which risk-scaling results whether linear, or convex or both are relied upon for GRC mitigation selection and explain why that reliance is reasonable for ratepayers.</p> <p>3. Provide workpapers in editable Microsoft (MS) Excel format (.xlsx) sufficient for the Commission and parties to replicate the scaled and linear outputs used in testimony and the mitigation-selection results. At a minimum, for each enterprise risk, the workpapers shall include standardized tables corresponding to:</p> <ul style="list-style-type: none"> i. Input parameters, ii. Output calculations/results, and iii. A model description (including algorithms/tools used). The MS Excel workpapers shall be provided with formulas intact (not PDF images or values-only exports), with all variables and assumptions explicitly identified, and with sufficient structure for the Commission and parties to substitute alternative input values and reproduce the results. 	<p>Requirements: Deficiency Area 2.1</p>	<p>Item 2: Chapter 2, Section I.G.1.d and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p> <p>Item 3: Chapter 2, Section I.D.1.a and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>
<p>DA 2.3: Clarify Tranching Method Reporting To ensure compliance with the Phase 3 Decision requirements for risk tranching, and to allow evaluation of whether mitigations are targeted to the riskiest portions of Sempra’s</p>	<p>ALJ Ruling Directing the Service of Additional</p>	<p>Item 1: Chapter 2, Section I.D.1.f and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>

<p>system, Sempra shall take the following actions to clarify tranche construction, homogeneity, and supporting rationale:</p> <ol style="list-style-type: none"> 1. Clearly define and distinguish (a) HTM tranches (internal segmentation) from (b) LoRE/CoRE quintile-based tranches. 2. Provide a crosswalk that maps HTM tranches to LoRE/CoRE quintile-based reporting tranches for all RAMP risks and explains how tranche boundaries are constructed in the same way as shown in Excel Workbooks, “SCG_UGS_CBR_Main_Workbook_R,” “SDGE_Wildfire&PSPS_CBR_Main_Workbook_Aversion,” and “SDGE_Wildfire&PSPS_CBR_Main_Workbook_NoAversion.” 3. Present key risk and CBR results in LoRE/CoRE quintile based reporting tranches, even if HTM is used internally. 4. Provide workpapers in editable MS Excel format (.xlsx) sufficient for the Commission and parties to replicate the tranche mapping used in testimony. At a minimum, for each gas and electric enterprise risk, the workpapers shall include standardized tables corresponding to: <ol style="list-style-type: none"> i. Input parameters (including all tranche boundary definitions and mapping rules), ii. Output calculations/results (including tranche assignments and any aggregation outputs used for reporting), and iii. A model listing (including algorithms/tools used). The Excel workpapers shall be provided with formulas intact (not PDF images or values-only exports), with all variables and assumptions explicitly identified, and with sufficient structure for the Commission and parties to substitute alternative input values and reproduce the tranche mapping results used in testimony. 	<p>Information and Other Requirements: Deficiency Area 2.3</p>	<p>Item 2: Chapter 2, Section I.D.1.f and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p> <p>Item 3: Chapter 2, Section I.D.1.f and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p> <p>Item 4: Chapter 2, Section I.D.1.a, I.D.1.f and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>
<p>DA 2.4: Establish a clear connection between the Cost-Benefit Ratio and the mitigation selection to the respective tranche To enable the Commission and parties to trace how mitigations</p>	<p>ALJ Ruling Directing the Service of</p>	<p>Item 1: SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>

<p>and cost benefit results correspond to specific tranches, Sempra shall take the following actions to improve the linkage between tranches, mitigations, risk reduction, and reported cost-benefit ratios:</p> <ol style="list-style-type: none"> 1. Provide an exhibit for each enterprise risk showing, for each mitigation: the targeted reporting tranches, the tranche-level risk reduction, and the associated tranchelevel CBRs and overall (mitigation/program) CBR (aggregated across targeted tranches). 2. Provide a detailed explanation of whether and which tranche information is used in mitigation selection and portfolio construction, and ensure testimony and workpapers are consistent with that description. 3. Provide workpapers in editable MS Excel format (.xlsx) sufficient for the Commission and parties to replicate the mitigation-to-tranche linkages used in testimony. At a minimum, for each enterprise risk, the workpapers shall include standardized tables corresponding to: <ol style="list-style-type: none"> i. Input parameters (including tranche definitions, mitigation identifiers, and mapping rules/assumptions), ii. Output calculations/results (including mitigation-to-tranche assignments and any aggregation used to calculate risk reductions and CBRs), and iii. A model listing (including algorithms/tools used). The MS Excel workpapers shall be provided with formulas intact (not PDF images or values-only exports), with all variables and assumptions explicitly identified, and with sufficient structure for the Commission and parties to substitute alternative input values and reproduce the mapping and associated results used in testimony. 	<p>Additional Information and Other Requirements: Deficiency Area 2.4</p>	<p>Item 2: Chapter 2, Section I.D.1.f, 1.G.1 and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p> <p>Item 3: Chapter 2, Section I.D.1.a and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>
<p>DA 2.5: Inconsistencies in Cost-Benefit Ratio calculation To improve the consistency, interpretability, and replicability of Sempra's cost-benefit results and to address inconsistencies with</p>	<p>ALJ Ruling Directing the Service of</p>	<p>Item 1: Chapter 2, Section I.E.4 and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>

<p>the Phase 3 Decision in the construction of CBR denominators, Sempra shall take the following actions to standardize CBR construction, including treatment of incremental costs and the distinction between capital and O&M expenditures:</p> <ol style="list-style-type: none"> 1. Compute and present CBRs using incremental capital and incremental O&M costs made necessary by the mitigation (i.e., costs in excess of the baseline that would be incurred absent the mitigation), applied consistently across all mitigations and any mitigation portfolios used for decision support. 2. Clearly separate capital and O&M components in all CBR denominators and explicitly list what is included and excluded. 3. For each CBR presented in supporting exhibits (at the mitigation program level and for any aggregated portfolio), shall identify the discount-rate scenario(s) and risk attitude (risk-neutral/unscaled vs. risk-scaled) used, and provide workpapers in editable MS Excel format (.xlsx) sufficient for the Commission and parties to replicate the CBR denominators and assumptions used in testimony. For each gas and electric enterprise risk, the workpapers shall include standardized tables corresponding to: <ol style="list-style-type: none"> i. Input parameters (including discount rate(s), escalation assumptions, cost components, allocation/attribution rules, and any other denominator assumptions), ii. Output calculations/results (including capital and O&M denominator calculations and any aggregation used for mitigation program-level and aggregated portfolio CBRs), and iii. A model listing (including algorithms/tools used). The MS Excel workpapers shall be provided with formulas intact (not PDF images or values-only exports), with all variables and assumptions explicitly identified, and with sufficient structure for the Commission and parties to substitute alternative input values and reproduce the CBR denominators used in testimony. 	<p>Additional Information and Other Requirements: Deficiency Area 2.5</p>	<p>Item 2: Chapter 2, Section I.E.2, I.E.4, I.F.1 and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p> <p>Item 3: Chapter 2, Section I.D.1.a and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>
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<p>DA 2.6: Justification for Proposed Mitigations with Cost-Benefit Ratio less than 1.0</p> <p>To ensure a complete and transparent record where mitigations exhibit CBRs below 1.0, Sempra shall take the following actions to identify such mitigations and to explain the rationale, alternatives considered, and implications for prioritization and affordability:</p> <ol style="list-style-type: none"> 1. Identify all proposed mitigations programs (across all RAMP risks) with a CBR < 1.0 under the utility’s CBR methodology used to support the GRC proposal (including identification of the risk scaling function and discount-rate values used), as a separate category in the risk and mitigation testimony. 2. For each mitigation program, explain why it is reasonable to pursue the proposal notwithstanding a CBR < 1.0, including any statutory/Commission requirements, safety or reliability standards, Environmental and Social Justice (ESJ) considerations, or other Commission-recognized considerations. 3. For all proposed mitigations programs with a CBR < 1.0 that are calculated using scaled risk, also produce calculations using a risk-neutral scaling, and summarize whether the mitigation remains below a CBR of 1.0 and how that affects the proposal’s rationale. 	<p>ALJ Ruling Directing the Service of Additional Information and Other Requirements: Deficiency Area 2.6</p>	<p>Item 1: Chapter 1, Section V.A, V.B. Item 2: Chapter 1, Section V.A, V.B. Item 3: Chapter 1, Section V.A, V.B and SDG&E – Wildfire and PSPS Risk BCR Workbook: Ex. SCG-02/SDGE-02-WP-S_SDGE-04_WF</p>
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APPENDIX F

GRID HARDENING COMPLIANCE DATA

	ACTUAL						PROJECTED					
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
SUG Miles	29.9	25.92	65	72	112	32.56	0	0	56.4	98.31	120.23	131.27
CCC Miles	1.9	20.6	61.23	60	35.91	52.03	50	50	52.63	55.91	47.14	51.88

Assumptions: D.24-12-074 Ordering Paragraph 43/44 - Method 5

- 1 Direct \$, project to date through March 2026.
- 2 Programmatic Costs are included as a stand-alone line item for both CC and SUG. These costs represent the non-construction costs that predominantly occur during the pre-construction phase of each project and includes but is not limited to project management, engineering and design, survey, land management, environmental services, permitting, communication/public relations, GIS services, staging yards, etc. However, over the course of this four year period a process change was implemented on SUG in 2023 to move these pooled programmatic charges to each active project in the portfolio. By 2025 the pooled Programmatic Costs went down to \$0.
- 3 Cost includes all costs incurred on the work order through March of 2026. For example, a job may start construction in 2022 and finish in 2023 and may continue to see trailing charges in future years due to post construction activities and accounting corrections. This is more significant with CC hardening due to our post-construction activities including QA/QC inspections & corrections and the True-Up analysis & remediations. The True-Up analysis can take up to 1-2 years to complete due to the need to collect post construction LiDAR Surveys, engineering analysis, and issuance of a job for corrective actions, if necessary.
- 4 Miles include primary and secondary miles for both CC and SUG.
- 5 Miles are counted in the year the project is fully completed. For example, if a project was partially hardened in 2021 and fully completed in 2022, all the miles and project to date costs are counted in 2022 for the ordering paragraph 43/44 responses. Projects partially hardened in 2025 as reported in the QDR will not be included in the ordering paragraph responses because the miles will not be fully installed and costs will not be fully incurred until 2026.
- 6 Each project typically consists of two or more Work Orders (WO). For example, a typical SUG project will have five WO's (trench & conduit, cable & connection, cable poles, overhead removals, and SCADA) and for covered conductor a typical project has two WO's (overhead reconductor and associated underground for riser poles), where each WO will have a different start and finish date. However, the date used for the "Year" attribute in this report is based on our scheduling database energized date (i.e., P6) where for SUG projects the cable and connection WO is used and for CC projects the overhead reconductor WO is used.
- 7 For projects completed in 2025 we will continue to see additional trailing costs in 2026. For example, with CC post construction costs will continue into 2026 for QA/QC activities and True-Up analysis & remediation and with SUG post construction activities will continue into 2026 for OH removals and project closeout.
- 8 Risk reduction estimates are presented in 2025 terms and reflect one year of risk reduction under risk-neutral scenarios, rather than the total reduction over the full life of the mitigation. These estimates are based on standard mitigation effectiveness assumptions from SUG (98%) and CCC (61.7%), along with SDG&E 2025 model assumptions applied in this GRC.

Program	Year	ProjectID	UG Miles - T2	UG Miles - T3	UG Miles - Total	OH Miles Removed - T2	OH Miles Removed - T3	OH Miles Removed - Total	Total Direct Costs	Direct Cost Per Mile UG	Direct Cost Per Mile OH Removals	Risk Reduction (\$/year)
SUG	2022	ESH C0216 2 SUG	-	2.15	2.15	-	0.16	0.16	\$3,822,981	\$1,781,528	\$24,196,082	\$974,369
SUG	2022	ESH C0216 1 SUG	-	3.83	3.83	-	0.08	0.08	\$7,703,756	\$2,009,431	\$102,716,742	\$1,740,759
SUG	2022	ESH C0357 SUG	1.91	-	1.91	-	-	-	\$2,867,520	\$1,501,319	\$-	\$473,745
SUG	2022	ESH C1030 3A SUG	-	4.5	4.5	-	3.1	3.1	\$5,264,438	\$1,170,890	\$1,698,206	\$1,059,906
SUG	2022	ESH C1030 1A SUG	-	4.39	4.39	-	2.59	2.59	\$4,082,409	\$930,867	\$1,576,220	\$1,033,853
SUG	2022	ESH C1458 2 SUG	2.7	-	2.7	1.59	-	1.59	\$3,596,251	\$1,331,649	\$2,261,793	\$636,636
SUG	2022	ESH C1458 1A SUG	-	6.75	6.75	-	1.17	1.17	\$4,591,565	\$680,312	\$3,921,063	\$1,591,055
SUG	2022	Programmatic Costs	15.5	26.73	42.22	2.87	7.15	10.02	\$32,819,047	\$777,323	\$3,275,681	n/a
SUG	2023	ESH C0073 A SUG	-	2.49	2.49	-	1.57	1.57	\$2,648,622	\$1,062,935	\$1,687,020	\$551,239
SUG	2023	ESH C0221 A SUG	-	2.43	2.43	-	0.26	0.26	\$3,713,849	\$1,531,358	\$14,284,035	\$577,860
SUG	2023	ESH C0221 B2 SUG	-	1.13	1.13	-	-	-	\$2,368,232	\$2,089,125	\$-	\$270,120
SUG	2023	ESH C0221 D SUG	-	0.25	0.25	-	0.17	0.17	\$346,854	\$1,383,542	\$2,040,318	\$59,726
SUG	2023	ESH C0222 A SUG	-	0.1	0.1	-	0.02	0.02	\$539,427	\$5,191,790	\$26,971,350	\$147,544
SUG	2023	ESH C0222 C SUG	-	3.34	3.34	-	-	-	\$2,829,921	\$847,536	\$-	\$4,739,634
SUG	2023	ESH C0222 DD SUG	-	1.87	1.87	-	1.1	1.1	\$2,325,450	\$1,244,754	\$2,114,045	\$2,651,897
SUG	2023	ESH C0222 E SUG	-	2.51	2.51	-	-	-	\$2,882,791	\$1,148,019	\$-	\$3,564,377
SUG	2023	ESH C0222 EE SUG	-	2.42	2.42	-	1.78	1.78	\$3,603,372	\$1,489,674	\$2,024,366	\$3,433,584
SUG	2023	ESH C0222 L SUG	-	1.52	1.52	-	1.21	1.21	\$1,568,618	\$1,032,733	\$1,296,379	\$2,155,975
SUG	2023	ESH C0222 V SUG	-	1	1	-	0.67	0.67	\$1,302,873	\$1,304,700	\$1,944,587	\$1,417,527
SUG	2023	ESH C0222 X SUG	-	2.62	2.62	-	0.79	0.79	\$2,720,289	\$1,039,906	\$3,443,404	\$3,713,116
SUG	2023	ESH C0445 A SUG	1.32	-	1.32	1.04	-	1.04	\$1,533,399	\$1,163,164	\$1,474,422	\$271,629
SUG	2023	ESH C0445 B SUG	2.36	-	2.36	1.97	-	1.97	\$1,607,975	\$682,415	\$816,231	\$485,499
SUG	2023	ESH C0445 C SUG	1.96	-	1.96	1.48	-	1.48	\$1,663,590	\$850,332	\$1,124,047	\$403,112
SUG	2023	ESH C00K1 A SUG	-	10.2	10.2	-	3.22	3.22	\$7,354,531	\$721,238	\$2,284,016	\$10,285,300
SUG	2023	ESH C00K1 B SUG	-	6.58	6.58	-	3.78	3.78	\$5,849,616	\$888,527	\$1,547,517	\$6,640,410
SUG	2023	ESH C05L1 A SUG	-	2.21	2.21	-	0.42	0.42	\$3,442,203	\$1,560,029	\$8,195,721	\$2,225,543
SUG	2023	ESH C1030 4 SUG	-	11.16	11.16	-	10.74	10.74	\$5,515,638	\$494,206	\$513,560	\$11,257,084
SUG	2023	Programmatic Costs	20.32	58.38	78.7	12.15	26.3	38.45	\$41,394,749	\$525,996	\$1,076,586	n/a
SUG	2024	ESH C0073 C SUG	-	3.95	3.95	-	2.14	2.14	\$5,273,015	\$1,335,143	\$2,464,026	\$873,693
SUG	2024	ESH C0073 G SUG	-	1.8	1.8	-	-	-	\$3,505,574	\$1,948,624	\$-	\$397,993
SUG	2024	ESH C0220 J SUG	-	3.28	3.28	-	2.26	2.26	\$5,826,360	\$1,777,359	\$2,578,035	\$506,084
SUG	2024	ESH C0220 L SUG	-	2.63	2.63	-	0.64	0.64	\$4,306,878	\$1,638,842	\$6,729,497	\$405,710
SUG	2024	ESH C0220 Q SUG	-	1.25	1.25	-	-	-	\$3,191,471	\$2,551,748	\$-	\$193,079
SUG	2024	ESH C0220 S SUG	-	1.55	1.55	-	0.8	0.8	\$3,295,500	\$2,125,580	\$4,119,375	\$239,356
SUG	2024	ESH C0220 U SUG	-	3.31	3.31	-	3.17	3.17	\$6,402,901	\$1,936,517	\$2,019,843	\$510,451
SUG	2024	ESH C0222 BB SUG	-	1.23	1.23	-	1.29	1.29	\$1,774,058	\$1,441,035	\$1,375,239	\$1,747,457
SUG	2024	ESH C0222 CC SUG	-	2.11	2.11	-	0.59	0.59	\$2,297,180	\$1,090,106	\$3,893,525	\$2,991,167
SUG	2024	ESH C0222 F SUG	-	2.83	2.83	-	2.6	2.6	\$4,449,941	\$1,573,696	\$1,711,516	\$4,013,732
SUG	2024	ESH C0222 FF SUG	-	2.28	2.28	-	-	-	\$5,204,973	\$2,284,085	\$-	\$3,234,704
SUG	2024	ESH C0222 G SUG	-	5.21	5.21	-	2.8	2.8	\$7,292,126	\$1,398,513	\$2,604,331	\$7,401,268
SUG	2024	ESH C0222 H SUG	-	3.83	3.83	-	0.68	0.68	\$4,678,534	\$1,220,179	\$6,880,197	\$5,442,581
SUG	2024	ESH C0222 I SUG	-	1.41	1.41	-	2.08	2.08	\$2,891,758	\$2,055,265	\$1,390,268	\$1,997,107
SUG	2024	ESH C0222 N SUG	-	1.3	1.3	-	0.84	0.84	\$1,911,479	\$1,466,645	\$2,275,570	\$1,849,928
SUG	2024	ESH C0222 U SUG	-	4.27	4.27	-	3.12	3.12	\$4,968,598	\$1,164,970	\$1,594,492	\$6,053,968
SUG	2024	ESH C0222 W SUG	0.56	2.71	3.27	1.82	-	1.82	\$3,159,268	\$965,458	\$1,735,862	\$4,644,936
SUG	2024	ESH C0222 Y SUG	-	4.3	4.3	-	7.1	7.1	\$4,715,857	\$1,097,094	\$664,205	\$6,101,489
SUG	2024	ESH C0222 Z SUG	-	5.05	5.05	-	2.6	2.6	\$4,689,370	\$928,919	\$1,803,604	\$7,165,684
SUG	2024	ESH C0442 A SUG	-	3.43	3.43	-	3.22	3.22	\$5,329,979	\$1,555,063	\$1,655,273	\$935,190
SUG	2024	ESH C0442 B SUG	-	3.62	3.62	-	-	-	\$5,706,439	\$1,574,625	\$-	\$988,800
SUG	2024	ESH C0445 A2 SUG	0.79	-	0.79	0.34	-	0.34	\$1,021,502	\$1,295,993	\$3,004,418	\$162,396
SUG	2024	ESH C0445 D SUG	5.61	-	5.61	3.5	-	3.5	\$5,421,016	\$966,520	\$1,548,862	\$1,155,668
SUG	2024	ESH C0445 F SUG	6.97	-	6.97	7.85	-	7.85	\$5,653,188	\$811,540	\$720,151	\$1,435,308
SUG	2024	ESH C0445 G SUG	3.75	-	3.75	2.28	-	2.28	\$4,761,635	\$1,268,315	\$2,088,437	\$773,552
SUG	2024	ESH C0445 N SUG	1.79	-	1.79	0.8	-	0.8	\$2,740,378	\$1,530,168	\$3,425,473	\$369,002
SUG	2024	ESH C0445 O SUG	1.3	-	1.3	0.75	-	0.75	\$2,332,708	\$1,793,425	\$3,110,277	\$268,003
SUG	2024	ESH C0909 A SUG	2.61	-	2.61	-	-	-	\$5,036,479	\$1,930,425	\$-	\$2,356,740
SUG	2024	ESH C0972 C SUG	3.33	-	3.33	3.09	-	3.09	\$11,496,254	\$3,449,842	\$3,720,471	\$953,642
SUG	2024	ESH C1458 1B SUG	0.51	-	0.51	-	-	-	\$3,473,085	\$6,788,673	\$-	\$248,966
SUG	2024	Programmatic Costs	27.22	67.06	94.28	20.43	35.93	56.36	\$17,199,686	\$182,433	\$305,197	n/a
SUG	2025	ESH C0073 D SUG	-	5.64	5.64	-	3.7	3.7	\$7,506,011	\$1,330,735	\$2,028,651	\$1,247,808
SUG	2025	ESH C0073 E SUG	-	4.1	4.1	-	1.95	1.95	\$5,781,453	\$1,411,729	\$2,964,848	\$905,972
SUG	2025	ESH C0078 B SUG	-	0.56	0.56	-	0.44	0.44	\$1,263,076	\$2,270,902	\$2,870,627	\$355,044
SUG	2025	ESH C0078 C SUG	-	0.17	0.17	-	0.02	0.02	\$801,969	\$4,627,634	\$40,098,450	\$110,608
SUG	2025	ESH C0078 D SUG	-	0.44	0.44	-	0.99	0.99	\$900,818	\$2,057,601	\$909,917	\$279,421
SUG	2025	ESH C0210 F SUG	3.51	-	3.51	1.14	-	1.14	\$4,718,944	\$1,344,160	\$4,139,425	\$487,318
SUG	2025	ESH C0210 G SUG	4.34	-	4.34	4.37	-	4.37	\$6,261,837	\$1,444,184	\$1,432,915	\$601,870
SUG	2025	ESH C0217 A SUG	-	6.01	6.01	-	3.07	3.07	\$6,746,383	\$1,122,470	\$2,197,519	\$634,199
SUG	2025	ESH C0217 B SUG	-	4.8	4.8	-	7.52	7.52	\$6,263,837	\$1,305,102	\$832,957	\$506,439
SUG	2025	ESH C0220 B SUG	-	3.22	3.22	-	0.22	0.22	\$6,540,023	\$2,032,010	\$29,327,456	\$496,879
SUG	2025	ESH C0220 J2 SUG	-	0.28	0.28	-	-	-	\$585,158	\$2,086,869	\$-	\$43,284
SUG	2025	ESH C0220 W SUG	-	1.63	1.63	-	-	-	\$3,668,061	\$2,253,385	\$-	\$251,297

Program	Year	ProjectID	UG Miles - T2	UG Miles - T3	UG Miles - Total	OH Miles Removed - T2	OH Miles Removed - T3	OH Miles Removed - Total	Total Direct Costs	Direct Cost Per Mile UG	Direct Cost Per Mile OH Removals	Risk Reduction (\$/year)
SUG	2025	ESH C0222 B SUG	6.85	0.67	7.52	-	8.51	8.51	\$8,332,941	\$1,107,839	\$979,194	\$10,676,896
SUG	2025	ESH C0222 D SUG	-	4.03	4.03	-	5.4	5.4	\$6,707,036	\$1,664,483	\$1,242,044	\$5,719,718
SUG	2025	ESH C0222 GG SUG	-	0.05	0.05	-	-	-	\$2,121,303	\$47,140,057	\$-	\$63,859
SUG	2025	ESH C0222 T SUG	-	1.8	1.8	-	3.21	3.21	\$3,475,733	\$1,933,649	\$1,082,783	\$2,551,517
SUG	2025	ESH C0972 D SUG	0.19	-	0.19	-	-	-	\$1,812,120	\$9,537,471	\$-	\$54,373
SUG	2025	ESH C0972 E2 SUG	1.76	-	1.76	-	-	-	\$3,813,000	\$2,167,093	\$-	\$503,524
SUG	2025	ESH C0SL1 B SUG	-	7.45	7.45	-	3.93	3.93	\$8,742,747	\$1,174,217	\$2,224,618	\$123,846
SUG	2025	ESH C0SL1 C SUG	-	5.28	5.28	-	2.66	2.66	\$7,583,372	\$1,437,497	\$2,850,892	\$87,748
SUG	2025	ESH C1215 D SUG	-	1.27	1.27	-	2.4	2.4	\$4,166,806	\$3,287,680	\$1,736,169	\$21,082
SUG	2025	Programmatic Costs	16.65	47.37	64.02	5.51	44.02	49.53	\$-	\$-	\$-	n/a
Total			79.68	199.54	279.22	40.96	113.4	154.36	\$492,508,115.03	\$1,763,898	\$3,190,685	\$167,227,259

Program	Year	ProjectID	OH Miles - WUI	OH Miles - T2	OH Miles - T3	OH Miles - Total	Total Direct Costs	Direct Cost Per Mile OH	Risk Reduction (\$/year)
CC	2022	0078-H-CC	-	-	1.61	1.61	\$ 1,356,220	\$ 843,001	\$ 646,531
CC	2022	0157-C-CC	-	-	2.79	2.79	\$ 3,352,869	\$ 1,200,420	\$ 257,137
CC	2022	0157-EE-CC	-	-	2.53	2.53	\$ 1,391,308	\$ 550,036	\$ 232,870
CC	2022	0157-N-PH-02-CC	-	-	2.15	2.15	\$ 2,618,850	\$ 1,217,321	\$ 198,055
CC	2022	0157-O-CC	-	-	1.84	1.84	\$ 2,991,653	\$ 1,625,898	\$ 169,394
CC	2022	0157-P-CC	-	-	3.40	3.40	\$ 4,018,185	\$ 1,181,819	\$ 313,011
CC	2022	0157-S-CC	-	-	2.31	2.31	\$ 1,612,928	\$ 698,237	\$ 212,664
CC	2022	0157-S-CC-PH-02	-	-	2.49	2.49	\$ 1,098,727	\$ 441,942	\$ 228,879
CC	2022	0176-Q-CC	-	1.29	-	1.29	\$ 1,213,829	\$ 941,731	\$ 180,236
CC	2022	0176-R-CC	-	1.95	-	1.95	\$ 1,393,090	\$ 713,478	\$ 273,029
CC	2022	0176-S-CC	-	1.86	-	1.86	\$ 2,365,417	\$ 1,269,043	\$ 260,641
CC	2022	0176-T-CC	0.34	-	0.11	0.45	\$ 767,144	\$ 1,708,561	\$ 63,345
CC	2022	0212-A-CC	-	0.35	-	0.35	\$ 136,397	\$ 389,706	\$ 28,350
CC	2022	0212-B-CC	-	-	-	-	\$ 36,517	\$ -	\$ -
CC	2022	0212-O-CC	-	3.88	-	3.88	\$ 3,016,787	\$ 777,423	\$ 314,317
CC	2022	0212-R-CC	-	3.08	-	3.08	\$ 1,661,852	\$ 539,074	\$ 249,704
CC	2022	0237-T-CC-FT	-	-	1.30	1.30	\$ 893,799	\$ 686,694	\$ 398,566
CC	2022	0445-H-CC	-	1.16	-	1.16	\$ 490,517	\$ 422,860	\$ 150,481
CC	2022	0445-L-CC	-	2.10	-	2.10	\$ 1,453,385	\$ 692,088	\$ 272,422
CC	2022	0448-C2-CC	-	-	0.76	0.76	\$ 587,930	\$ 773,592	\$ 59,092
CC	2022	0448-C-CC	-	-	0.55	0.55	\$ 383,731	\$ 700,885	\$ 42,569
CC	2022	0448-E3-CC	-	-	0.82	0.82	\$ 171,851	\$ 210,703	\$ 63,416
CC	2022	0448-F2-CC	-	-	1.35	1.35	\$ 648,278	\$ 480,206	\$ 104,967
CC	2022	0448-H2-CC	-	-	1.47	1.47	\$ 967,955	\$ 658,473	\$ 114,297
CC	2022	0448-J2-CC	-	-	0.65	0.65	\$ 908,712	\$ 1,398,019	\$ 50,540
CC	2022	0448-J3-CC	-	-	0.71	0.71	\$ 469,799	\$ 661,691	\$ 55,205
CC	2022	0448-L2-CC	-	-	1.79	1.79	\$ 2,075,709	\$ 1,159,614	\$ 139,178
CC	2022	0448-L3-CC	-	-	0.92	0.92	\$ 291,377	\$ 316,715	\$ 71,533
CC	2022	0448-L-CC	-	-	1.99	1.99	\$ 1,640,367	\$ 822,432	\$ 155,081
CC	2022	0448-M2-CC	-	-	1.69	1.69	\$ 1,493,198	\$ 883,549	\$ 131,403
CC	2022	0448-M-CC	-	-	1.77	1.77	\$ 1,661,714	\$ 937,096	\$ 137,876
CC	2022	0448-N-CC	-	-	1.34	1.34	\$ 930,658	\$ 693,322	\$ 104,369
CC	2022	0448-P2-CC	-	-	1.91	1.91	\$ 885,874	\$ 463,808	\$ 148,508
CC	2022	0448-XX-CC	-	-	0.53	0.53	\$ 252,874	\$ 476,236	\$ 41,286
CC	2022	1090-A-CC	-	-	2.39	2.39	\$ 2,586,581	\$ 1,082,251	\$ 137,083
CC	2022	448AA CC	-	-	0.50	0.50	\$ 150,600	\$ 301,200	\$ 38,877
CC	2022	448CC CC	-	-	1.90	1.90	\$ 1,353,509	\$ 712,373	\$ 147,731
CC	2022	448CCC CC	-	-	0.73	0.73	\$ 303,732	\$ 418,639	\$ 56,412
CC	2022	448CCC2 CC	-	-	0.11	0.11	\$ 24,672	\$ 224,289	\$ 8,553
CC	2022	448N CC	-	-	0.40	0.40	\$ 110,540	\$ 276,351	\$ 31,101
CC	2022	Programmatic Costs	0.34	15.68	44.81	60.83	\$ 33,803,159	\$ 555,719	n/a
CC	2023	0073-BB-CC	-	-	0.11	0.11	\$ 163,272	\$ 1,484,295	\$ 15,321
CC	2023	0073-N-CC	-	-	0.76	0.76	\$ 943,477	\$ 1,241,417	\$ 105,854
CC	2023	0157-A2-CC	-	-	0.40	0.40	\$ 303,896	\$ 764,809	\$ 36,581

Program	Year	ProjectID	OH Miles - WUI	OH Miles - T2	OH Miles - T3	OH Miles - Total	Total Direct Costs	Direct Cost Per Mile OH	Risk Reduction (\$/year)
CC	2023	0157-A-CC	-	-	4.20	4.20	\$ 4,863,867	\$ 1,158,064	\$ 386,661
CC	2023	0157-Z-CC	-	-	1.73	1.73	\$ 1,118,093	\$ 646,297	\$ 159,268
CC	2023	0176-K-CC	-	-	2.76	2.76	\$ 3,471,186	\$ 1,257,676	\$ 385,940
CC	2023	0212-N2-CC	-	0.13	-	0.13	\$ 116,802	\$ 898,481	\$ 10,530
CC	2023	0212-N-CC	-	4.26	-	4.26	\$ 4,317,576	\$ 1,013,515	\$ 345,057
CC	2023	0445-A-CC	-	1.57	-	1.57	\$ 1,118,947	\$ 712,705	\$ 203,668
CC	2023	0445-D-CC	-	0.98	-	0.98	\$ 1,049,854	\$ 1,071,279	\$ 127,130
CC	2023	0445-E-CC	-	0.45	-	0.45	\$ 288,191	\$ 640,424	\$ 58,376
CC	2023	0445-I-CC	-	1.41	-	1.41	\$ 470,644	\$ 333,790	\$ 182,912
CC	2023	0445-J-CC	-	0.54	-	0.54	\$ 292,018	\$ 540,775	\$ 70,051
CC	2023	0445-K-CC	-	1.36	-	1.36	\$ 697,771	\$ 513,067	\$ 176,426
CC	2023	0445-P-CC	-	2.11	-	2.11	\$ 995,842	\$ 471,963	\$ 273,719
CC	2023	0448-A3-CC	-	-	1.79	1.79	\$ 1,355,182	\$ 757,085	\$ 139,178
CC	2023	0448-B2-CC	-	-	1.78	1.78	\$ 845,649	\$ 475,084	\$ 138,401
CC	2023	0448-B-CC	-	-	2.70	2.70	\$ 950,206	\$ 351,839	\$ 209,986
CC	2023	0448-D-CC	-	-	3.76	3.76	\$ 1,351,713	\$ 359,940	\$ 291,992
CC	2023	0448-E-CC	-	-	2.73	2.73	\$ 949,641	\$ 347,912	\$ 212,231
CC	2023	0448-F3-CC	-	-	1.44	1.44	\$ 558,445	\$ 388,074	\$ 111,888
CC	2023	0448-G2-CC	-	-	2.25	2.25	\$ 943,790	\$ 418,630	\$ 175,292
CC	2023	0448-G-CC	-	-	1.87	1.87	\$ 1,392,633	\$ 746,326	\$ 145,086
CC	2023	0448-I-CC	-	-	2.66	2.66	\$ 1,854,347	\$ 696,944	\$ 206,876
CC	2023	0448-J-CC	-	-	2.06	2.06	\$ 1,826,723	\$ 886,759	\$ 160,171
CC	2023	0448-K2-CC	-	-	2.36	2.36	\$ 1,992,656	\$ 844,346	\$ 183,497
CC	2023	0448-N2-CC	-	-	1.84	1.84	\$ 737,946	\$ 401,852	\$ 142,783
CC	2023	0448-O2-CC	-	-	1.34	1.34	\$ 635,608	\$ 474,334	\$ 104,189
CC	2023	0448-O-CC	-	-	2.35	2.35	\$ 1,410,225	\$ 599,439	\$ 182,920
CC	2023	0972-Q-CC	-	-	1.79	1.79	\$ 1,951,762	\$ 1,092,590	\$ 321,852
CC	2023	0972-R-CC	-	-	0.79	0.79	\$ 827,953	\$ 1,042,841	\$ 143,045
CC	2023	0972-S-CC	-	-	0.88	0.88	\$ 794,738	\$ 899,472	\$ 159,193
CC	2023	Programmatic Costs	-	12.81	44.35	57.16	\$ 34,833,259	\$ 609,443	n/a
CC	2024	0073-AA-CC	-	-	1.07	1.07	\$ 904,508	\$ 845,334	\$ 149,031
CC	2024	0073-O-CC	-	-	1.34	1.34	\$ 855,734	\$ 638,608	\$ 186,637
CC	2024	0073-P-CC	-	-	1.52	1.52	\$ 1,218,989	\$ 801,967	\$ 211,707
CC	2024	0073-Q-CC	-	-	0.40	0.40	\$ 550,193	\$ 1,375,483	\$ 55,712
CC	2024	0073-R-CC	-	-	1.43	1.43	\$ 1,110,042	\$ 776,253	\$ 199,172
CC	2024	0073-U-CC	-	-	1.07	1.07	\$ 1,404,817	\$ 1,312,913	\$ 149,031
CC	2024	0073-V-CC	-	-	0.75	0.75	\$ 932,424	\$ 1,243,232	\$ 104,461
CC	2024	0073-X-CC	-	-	1.48	1.48	\$ 1,907,617	\$ 1,288,930	\$ 206,136
CC	2024	0073-Y-CC	-	-	0.78	0.78	\$ 802,840	\$ 1,029,282	\$ 108,639
CC	2024	0073-Z-CC	-	-	0.70	0.70	\$ 765,002	\$ 1,092,860	\$ 97,497
CC	2024	0157-Y-CC	-	-	1.73	1.73	\$ 1,066,401	\$ 616,417	\$ 159,268
CC	2024	0350-A-CC	-	1.17	-	1.17	\$ 700,414	\$ 596,264	\$ 89,953
CC	2024	0350-B-CC	-	0.58	-	0.58	\$ 520,535	\$ 897,474	\$ 44,415
CC	2024	0350-C-CC	-	1.35	-	1.35	\$ 1,069,723	\$ 792,387	\$ 103,379

Program	Year	ProjectID	OH Miles - WUI	OH Miles - T2	OH Miles - T3	OH Miles - Total	Total Direct Costs	Direct Cost Per Mile OH	Risk Reduction (\$/year)
CC	2024	0350-H-CC	-	0.75	-	0.75	\$ 784,821	\$ 1,046,428	\$ 57,433
CC	2024	0445-B-CC-ESH	-	1.65	-	1.65	\$ 539,675	\$ 327,076	\$ 214,046
CC	2024	0445-C-CC	-	0.32	-	0.32	\$ 97,753	\$ 305,479	\$ 41,512
CC	2024	0445-F-CC	-	0.79	-	0.79	\$ 177,160	\$ 224,253	\$ 102,483
CC	2024	0445-G-CC	-	0.94	-	0.94	\$ 634,192	\$ 673,240	\$ 122,201
CC	2024	0445-H-CC-ESH	-	0.71	-	0.71	\$ 304,948	\$ 429,504	\$ 92,105
CC	2024	0445-I-CC-ESH	-	1.22	-	1.22	\$ 412,560	\$ 338,164	\$ 158,264
CC	2024	0445-L-CC-ESH	-	2.05	-	2.05	\$ 1,289,335	\$ 628,944	\$ 265,936
CC	2024	0445-M-CC	-	0.89	-	0.89	\$ 348,069	\$ 391,089	\$ 115,455
CC	2024	0445-N-CC	-	1.34	-	1.34	\$ 742,611	\$ 554,187	\$ 173,831
CC	2024	0445-O-CC	-	1.09	-	1.09	\$ 461,073	\$ 423,003	\$ 141,400
CC	2024	0448-A2-CC	-	-	1.82	1.82	\$ 1,624,794	\$ 892,744	\$ 141,511
CC	2024	0448-D2-CC	-	-	1.87	1.87	\$ 1,119,813	\$ 598,830	\$ 145,398
CC	2024	0448-H3-CC	-	-	0.02	0.02	\$ 29,409	\$ 1,329,599	\$ 1,720
CC	2024	0448-K3-CC	-	-	2.08	2.08	\$ 1,635,597	\$ 786,345	\$ 161,726
CC	2024	0448-K-CC	-	-	0.35	0.35	\$ 283,277	\$ 800,218	\$ 27,525
CC	2024	0448-P-CC	-	-	2.66	2.66	\$ 1,225,822	\$ 460,835	\$ 206,823
CC	2024	0520-C-CC	-	1.03	-	1.03	\$ 1,233,301	\$ 1,197,380	\$ 77,148
CC	2024	0520-F-CC	-	1.15	-	1.15	\$ 1,083,753	\$ 942,394	\$ 86,137
CC	2024	0972-P-CC	-	-	1.01	1.01	\$ 1,379,647	\$ 1,365,987	\$ 181,973
CC	2024	Programmatic Costs	-	17.04	22.09	39.12	\$ 27,961,988	\$ 714,724	n/a
CC	2025	0073-BB2-CC	-	-	0.11	0.11	\$ 86,985	\$ 767,704	\$ 15,781
CC	2025	0073-CC-CC	-	-	0.56	0.56	\$ 250,807	\$ 447,675	\$ 78,031
CC	2025	0073-S-CC	-	-	1.72	1.72	\$ 1,918,516	\$ 1,115,416	\$ 239,564
CC	2025	0073-T-CC	-	-	0.78	0.78	\$ 1,170,807	\$ 1,501,035	\$ 108,639
CC	2025	0073-W-CC	-	-	0.39	0.39	\$ 823,766	\$ 2,112,220	\$ 54,320
CC	2025	0209-A-CC	-	0.22	-	0.22	\$ 93,644	\$ 425,656	\$ 10,162
CC	2025	0212-E-CC	-	0.93	-	0.93	\$ 682,337	\$ 733,695	\$ 75,329
CC	2025	0212-F-CC	-	0.77	-	0.77	\$ 554,677	\$ 720,360	\$ 62,369
CC	2025	0212-G-CC	-	0.89	-	0.89	\$ 686,112	\$ 768,144	\$ 72,349
CC	2025	0212-H-CC	-	1.39	-	1.39	\$ 1,002,573	\$ 721,276	\$ 112,589
CC	2025	0212-I-CC	-	0.97	-	0.97	\$ 449,174	\$ 463,066	\$ 78,569
CC	2025	0212-J-CC	-	0.97	-	0.97	\$ 535,308	\$ 551,864	\$ 78,569
CC	2025	0212-L-CC	-	1.40	-	1.40	\$ 744,797	\$ 531,998	\$ 113,399
CC	2025	0212-N-CC-ESH	-	0.45	-	0.45	\$ 196,311	\$ 436,247	\$ 36,450
CC	2025	0350-D-CC	-	1.36	-	1.36	\$ 1,020,915	\$ 750,673	\$ 104,145
CC	2025	0350-E-CC	-	0.71	-	0.71	\$ 491,477	\$ 692,221	\$ 54,370
CC	2025	0350-F-CC	-	1.53	-	1.53	\$ 1,240,408	\$ 810,724	\$ 117,163
CC	2025	0350-G-CC	-	1.30	-	1.30	\$ 1,201,458	\$ 924,198	\$ 99,550
CC	2025	0350-I-CC	-	0.99	-	0.99	\$ 1,206,090	\$ 1,218,273	\$ 75,811
CC	2025	0350-J-CC	-	0.97	-	0.97	\$ 422,685	\$ 435,758	\$ 74,280
CC	2025	0350-K-CC	-	0.81	-	0.81	\$ 834,892	\$ 1,030,731	\$ 62,027
CC	2025	0350-L-CC	-	0.43	-	0.43	\$ 234,090	\$ 544,396	\$ 32,928
CC	2025	0350-M-CC	-	1.17	-	1.17	\$ 979,445	\$ 837,132	\$ 89,595

Program	Year	ProjectID	OH Miles - WUI	OH Miles - T2	OH Miles - T3	OH Miles - Total	Total Direct Costs	Direct Cost Per Mile OH	Risk Reduction (\$/year)
CC	2025	0350-N-CC	-	1.69	-	1.69	\$ 939,675	\$ 556,021	\$ 129,415
CC	2025	0350-O-CC	-	0.64	-	0.64	\$ 753,115	\$ 1,176,742	\$ 49,009
CC	2025	0350-P-CC	-	0.69	-	0.69	\$ 484,262	\$ 701,829	\$ 52,838
CC	2025	0350-Q-CC	-	0.74	-	0.74	\$ 793,782	\$ 1,072,678	\$ 56,667
CC	2025	0350-R-CC	-	1.25	-	1.25	\$ 930,052	\$ 744,042	\$ 95,721
CC	2025	0444-A2-CC	-	0.17	-	0.17	\$ 167,706	\$ 973,856	\$ 8,023
CC	2025	0444-A-CC	-	0.99	-	0.99	\$ 576,912	\$ 582,739	\$ 46,121
CC	2025	0444-B-CC	-	1.26	-	1.26	\$ 1,058,422	\$ 840,017	\$ 58,699
CC	2025	0444-C-CC	-	0.88	-	0.88	\$ 784,057	\$ 890,974	\$ 40,996
CC	2025	0444-D-CC	-	0.75	-	0.75	\$ 313,944	\$ 416,924	\$ 35,080
CC	2025	0444-E-CC	-	1.09	-	1.09	\$ 489,752	\$ 447,799	\$ 50,951
CC	2025	0445-I2-CC	-	2.12	-	2.12	\$ 1,298,394	\$ 612,450	\$ 275,016
CC	2025	0445-S-CC	-	0.73	-	0.73	\$ 330,125	\$ 452,226	\$ 94,699
CC	2025	0448-K4-CC	-	-	0.19	0.19	\$ 50,307	\$ 264,773	\$ 14,773
CC	2025	0520-A-CC	-	1.32	-	1.32	\$ 1,669,726	\$ 1,264,944	\$ 98,870
CC	2025	0520-B-CC	-	1.37	-	1.37	\$ 1,360,264	\$ 992,893	\$ 102,615
CC	2025	0520-D-CC	-	1.00	-	1.00	\$ 1,095,834	\$ 1,095,834	\$ 74,901
CC	2025	0520-E-CC	-	1.18	-	1.18	\$ 1,312,645	\$ 1,112,411	\$ 88,384
CC	2025	0520-G-CC	-	1.20	-	1.20	\$ 874,408	\$ 728,674	\$ 89,882
CC	2025	0520-H-CC	-	1.53	-	1.53	\$ 1,280,917	\$ 837,201	\$ 114,599
CC	2025	1233-A-CC	-	-	1.10	1.10	\$ 1,068,767	\$ 971,606	\$ 76,300
CC	2025	1233-B2-CC-RFS	-	0.16	-	0.16	\$ 12,269	\$ 76,679	\$ 11,098
CC	2025	1233-B-CC	-	-	2.06	2.06	\$ 1,865,796	\$ 905,726	\$ 142,888
CC	2025	1233-C-CC	-	-	0.86	0.86	\$ 873,379	\$ 1,011,589	\$ 59,886
CC	2025	1233-D-CC	-	-	1.29	1.29	\$ 1,633,392	\$ 1,266,195	\$ 89,479
CC	2025	1233-E-CC	-	-	0.73	0.73	\$ 603,147	\$ 826,228	\$ 50,635
CC	2025	1233-I-CC	-	-	0.98	0.98	\$ 1,044,038	\$ 1,065,345	\$ 67,976
CC	2025	1233-J-CC	-	-	1.15	1.15	\$ 1,357,198	\$ 1,180,172	\$ 79,768
CC	2025	1233-O-CC	-	-	1.44	1.44	\$ 1,071,224	\$ 743,906	\$ 99,883
CC	2025	1233-P-CC	-	-	1.02	1.02	\$ 1,154,432	\$ 1,131,796	\$ 70,751
CC	2025	1233-Q-CC	-	-	1.03	1.03	\$ 1,322,185	\$ 1,283,675	\$ 71,444
CC	2025	1233-R-CC	-	-	0.44	0.44	\$ 513,037	\$ 1,165,992	\$ 30,520
CC	2025	1233-S-CC	-	-	0.89	0.89	\$ 836,918	\$ 940,358	\$ 61,733
CC	2025	Programmatic Costs	-	38.03	16.75	54.78	\$ 28,160,841	\$ 514,081	n/a