

Company: San Diego Gas & Electric Company (U 902 M)
Proceeding: 2024 General Rate Case – Track 3
Application: A.22-05-016
Exhibit: SDG&E-T3-WPMA-01-R

CHAPTER 1
PREPARED DIRECT TESTIMONY OF
JONATHAN WOLDEMARIAM
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY
(TRACK 3 - WILDFIRE)

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



June 2025

TABLE OF CONTENTS

I.	INTRODUCTION AND SUMMARY	1
A.	Summary of Testimony.....	1
B.	Organization of Testimony	7
II.	SDG&E’S COMPREHENSIVE APPROACH TO WILDFIRE MITIGATION HAS ESTABLISHED THE COMPANY AS A WORLDWIDE EXAMPLE	9
A.	SDG&E’s Continued Wildfire Mitigation Efforts and Wildfire Mitigation Plans ..	9
B.	SDG&E’s Wildfire Mitigation Approach Is Thoughtful and Risk Based	14
C.	SDG&E’s Process for Recording WMP Costs	18
III.	SDG&E’s 2023 WMP COSTS ARE JUST AND REASONABLE	19
IV.	WILDFIRE MITIGATION STRATEGY DEVELOPMENT	23
A.	Summarized Risk Map (WMP.442)	23
	Initiative Description and Impact.....	23
	Costs and Efficiencies	24
B.	Wildfire-Related Data and Algorithms (WMP.521).....	24
	Initiative Description and Impact.....	24
	Costs and Efficiencies	25
C.	Allocation Methodology Development and Application (WMP.523).....	25
	Initiative Description and Impact.....	26
	Costs and Efficiencies	26
V.	GRID DESIGN, OPERATIONS, AND MAINTENANCE	27
A.	Covered Conductor Installation (WMP.455).....	28
	Initiative Description and Risk Impact	28
	Costs and Efficiencies	29
B.	Strategic Undergrounding (“SUG”) (WMP.473)	31
	Initiative Description and Risk Impact	31
	Costs and Efficiencies	32
C.	Distribution Underbuild (WMP.545).....	35
	Initiative Description and Risk Impact	35
	Costs and Efficiencies	36
D.	Distribution Overhead System Hardening (WMP.475).....	36
	Initiative Description and Risk Impact	36
	Costs and Efficiencies	37
E.	Microgrids (WMP.462).....	37
	Initiative Description and Risk Impact	38

	Costs and Efficiencies	38
F.	Advanced Protection (WMP.463).....	39
	Initiative Description and Risk Impact	39
	Costs and Efficiencies	40
G.	Early Fault Detection (WMP.1195).....	40
	Initiative Description and Risk Impact	41
	Costs and Efficiencies	42
H.	Distribution Communications Reliability Improvements (WMP.549).....	42
	Initiative Description and Risk Impact	42
	Costs and Efficiencies	43
I.	Avian Protection Program (WMP.972)	44
	Initiative Description and Risk Impact	44
	Costs and Efficiencies	44
J.	Strategic Pole Replacement Program (WMP.1189)	45
	Initiative Description and Risk Impact	45
	Cost and Efficiencies	45
K.	Wireless Fault Indicators (WMP.449)	46
	Initiative Description and Risk Impact	46
	Costs and Efficiencies	47
L.	PSPS Sectionalizing Enhancement Program (WMP.461)	47
	Initiative Description and Risk Impact	47
	Costs and Efficiencies	48
M.	Standby Power Program (WMP.468)	48
	Initiative Description and Risk Impact	48
	Costs and Efficiencies	49
N.	Generator Grant Program (WMP.466)	49
	Initiative Description and Risk Impact	49
	Costs and Efficiencies	50
O.	Generator Assistance Program (WMP.467)	50
	Initiative Description and Risk Impact	50
	Costs and Efficiencies	51
P.	Distribution Overhead Detailed Inspections (WMP.478).....	51
	Initiative Description and Risk Impact	51
	Costs and Efficiencies	52

Q.	Transmission Overhead Detailed Inspections (WMP.479)	53
	Initiative Description	53
	Costs and Efficiencies.....	54
R.	Distribution Infrared Inspections (WMP.481).....	54
	Initiative Description and Risk Impact	54
	Costs and Efficiencies.....	55
S.	Distribution Wood Pole Intrusive Inspections (WMP.483).....	55
	Initiative Description and Risk Impact	55
	Costs and Efficiencies.....	56
T.	Drone Assessments (WMP.552).....	56
	Initiative Description and Risk Impact	56
	Costs and Efficiencies.....	57
U.	Distribution Overhead Patrol Inspections (WMP.488).....	58
	Initiative Description and Risk Impact	58
	Costs and Efficiencies.....	58
V.	Capacitor Maintenance and Replacement Program (“SCADA”) (WMP.453).....	59
	Initiative Description and Risk Impact	59
	Costs and Efficiencies.....	60
W.	Expulsion Fuse Replacement Program (WMP.459).....	60
	Initiative Description and Risk Impact	60
	Cost and Efficiencies	60
X.	Hotline Clamp Replacement (“HLC”) Program (WMP.464).....	61
	Initiative Description and Risk Impact	61
	Cost and Efficiencies	62
Y.	Lightning Arrestor Removal and Replacement (WMP.550)	62
	Initiative Description and Risk Impact	62
	Cost and Efficiencies	63
Z.	Cleveland National Forest (CNF Distribution Overhead) (WMP.1017)	63
	Initiative Description and Risk Impact	63
	Costs and Efficiencies.....	63
AA.	LiDAR Inspections of Distribution Electric Lines and Equipment (WMP.484)..	64
	Initiative Description and Risk Impact	64
	Costs and Efficiencies.....	64
BB.	Centralized Repository for Data (WMP.519)	65

	Initiative Description	65
	Costs and Efficiencies.....	65
VI.	VEGETATION MANAGEMENT AND INSPECTIONS.....	66
A.	Fuels Management (WMP.497).....	66
	Initiative Description and Risk Impact	66
	Costs and Efficiencies.....	67
B.	Pole Clearing (Brushing) (WMP.512)	67
	Initiative Description and Risk Impact	67
	Cost and Efficiencies	68
C.	Tree Planting – Right Tree Right Place (WMP.1325).....	68
	Initiative Description	68
	Initiative Impact.....	69
	Costs and Efficiencies.....	69
VII.	SITUATIONAL AWARENESS AND FORECASTING	70
A.	Weather Stations and NDVI Cameras (WMP.447)	70
	Initiative Description and Risk Impact	70
	Costs and Efficiencies.....	70
B.	Air Quality Management Program (WMP.970)	71
	Initiative Description	71
	Costs and Efficiencies.....	71
C.	Fire Potential Index (WMP.450).....	72
	Initiative Description and Risk Impact	72
	Costs and Efficiencies.....	73
D.	High-Performance Computing Infrastructure (WMP.541).....	73
	Initiative Description and Risk Impact	73
	Costs and Efficiencies.....	74
VIII.	EMERGENCY PREPAREDNESS	74
A.	Public Emergency Communications Strategy (WMP.563)	74
	Initiative Description and Impact.....	74
	Costs and Efficiencies.....	75
B.	Aviation (WMP.557)	75
	Initiative Description and Impact.....	75
	Costs and Efficiencies.....	76
C.	Suppression Resources and Services (WMP.514)	76
	Initiative Description and Impact.....	77

	Costs and Efficiencies	78
D.	Emergency Preparedness Plan (WMP.1008).....	78
	Initiative Description and Impact.....	78
	Costs and Efficiencies	79
IX.	COMMUNITY OUTREACH AND ENGAGEMENT	80
A.	Community Engagement (WMP.1337)	80
	Initiative Description and Impact.....	80
	Costs and Efficiencies	81
X.	CONCLUSION.....	82
XI.	WITNESS QUALIFICATIONS	83

1 **PREPARED DIRECT TESTIMONY OF JONATHAN WOLDEMARIAM**
2 **ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY**
3 **INTRODUCTION AND SUMMARY**

4 **Summary of Testimony**

5 San Diego Gas and Electric Company's ("SDG&E" or "Company") safety-first culture is
6 the foundation of its unrelenting focus on wildfire safety. As required by California Public
7 Utilities ("Pub. Util.") Code Section 8386(a) and other applicable statutes and regulations,
8 SDG&E constructs, maintains, and operates its electric system in a manner that minimizes the risk
9 of catastrophic wildfire posed by its electric power lines and equipment. SDG&E's comprehensive
10 suite of wildfire mitigation activities, including but not limited to wildfire system hardening,
11 enhanced and ongoing inspection activities, emergency operations, situational awareness, and
12 vegetation management, address risk reduction important to achieve the requirements set by the
13 state Legislature and the California Public Utilities Commission ("Commission" or "CPUC"), and
14 necessary to protect the safety of SDG&E's customers, employees, and the communities we serve,
15 and includes the following:

- 16 Reducing the risk of ignition resulting from utility infrastructure;
- 17 Minimizing the risk of an ignition growing to a catastrophic wildfire;
- 18 Reducing the use and impacts of Public Safety Power Shutoff ("PSPS") and improving
19 reliability during emergency conditions; and
- 20 Adhering to requirements established by SDG&E's regulatory bodies, including the
21 Commission and the Office of Energy Infrastructure Safety ("OEIS" or "Energy
22 Safety").

23 Wildfire mitigation has been at the core of SDG&E's safety focus since catastrophic
24 utility-related fires led in part to two fatalities, dozens of injuries, and caused hundreds of millions
25 of dollars in damages. After those events, SDG&E committed to establishing itself as an industry
26 leader in wildfire mitigation. These efforts have been recognized by the utility industry, California

1 state officials,¹ and leading credit ratings agencies.² S&P Global Ratings described SDG&E's
2 position on the forefront of wildfire innovation as follows:

3 Over the past decade [SDG&E] has been a leader in wildfire prevention through
4 the implementation of technology and system hardening. These measures reduce
5 the probability that the company will be the cause of a catastrophic wildfire. As a
6 direct result of the company's proactive ingenuity . . . the company has developed
7 a strong track record of either avoiding wildfires or not being the cause of a
8 catastrophic wildfire.³

9 The risk of wildfire in San Diego County remains among the highest in the nation. The
10 Federal Emergency Management Authority ("FEMA") risk index assessment of wildfire risk
11 conditions, including but not limited to drought, vegetation condition, climatology, and proximity
12 of wildland areas to population places Southern California—and specifically San Diego County—
13 at the 100th percentile in the nation for wildfire risk.⁴ "The Risk Index rating is Very
14 High for San Diego County, CA when compared to the rest of the U.S."⁵ The Commission has
15 also recognized the risk of catastrophic fires in Southern California since 2007,⁶ and the

¹ Governor Newsom's Strike Force, *Wildfires and Climate Change: California's Energy Future* ("Strike Force Report") (April 12, 2019) at 11, available at: <https://www.gov.ca.gov/wp-content/uploads/2019/04/Wildfires-and-Climate-Change-California%E2%80%99s-Energy-Future.pdf?emrc=640077da6cc9b>. ("SDG&E engaged in a robust fire mitigation and safety program after experiencing devastating fires in its service territory in 2007 and has become a recognized leader in wildfire safety.") See also Governor's Office of Planning & Research, *Final Report of the Commission on Catastrophic Wildfire Cost and Recovery* (June 17, 2019) at 7, available at: https://opr.ca.gov/docs/20190618-Commission_on_Catastrophic_Wildfire_Report_FINAL_for_transmittal.pdf. ("[SDG&E] is widely recognized as a global leader on utility wildfire practices.")

² See S&P Global Ratings, *How are California's Wildfire Risks Affecting Utilities' Credit Quality* (June 3, 2021) at 10, available at <https://www.spglobal.com/ratings/en/research/articles/210603-credit-faq-how-are-california-s-wildfire-risks-affecting-utility-credit-quality-11954953>. (referring to SDG&E as a "global leader" in wildfire mitigation).

³ S&P Global Ratings, *Ratings Direct, San Diego Gas & Electric Co.*, (June 30, 2020) at 2.

⁴ See FEMA National risk Index for Natural Hazards, available at <https://www.fema.gov/flood-maps/products-tools/national-risk-index>.

⁵ *Id.*

⁶ Decision ("D.") 17-12-024 at 5.

1 heightened risk associated with specific areas of SDG&E’s service territory within the High Fire
2 Threat District (“HFTD”).⁷

3 Approximately 64% of SDG&E’s service territory is within the HFTD, where there is an
4 increased potential for wildfires. The HFTD consists of two areas:

- 5 1) Tier 2, “where there is an elevated risk for destructive utility-associated wildfires.”
- 6 2) Tier 3, “where there is an extreme risk for destructive utility-associated wildfires.”⁸

7 Although wildfire risk is not limited to the HFTD, a majority of the risk is associated with
8 conditions present in Tier 2 and Tier 3 areas.⁹ The majority of SDG&E’s wildfire mitigation
9 initiatives are targeted and prioritized to reduce risk in the HFTD.

10 Other portions of the service territory are in areas defined as Wildland Urban Interface
11 (“WUI”) by CAL FIRE. The WUI is the line, area, or zone where structures and other human
12 development meet or intermingle with undeveloped wildland or vegetation fuels.¹⁰ While wildfire
13 risk in the WUI is generally lower than in the HFTD, these areas can pose an increased risk of
14 wildfires than other areas of SDG&E’s service territory, particularly for fires that could potentially
15 impact more populated areas. SDG&E focuses wildfire mitigation efforts in the riskier areas of
16 Tier 2 and Tier 3 of the HFTD, however expansion of certain programs—such as asset
17 replacements—in the WUI is appropriate to reduce the likelihood and consequence of ignition in
18 those populated areas.

19 Mitigating the risk of ignition in the HFTD also results in qualitative benefits throughout
20 SDG&E’s service territory. For instance, a catastrophic wildfire that starts in the HFTD has the

⁷ *Id.*

⁸ *Id.* at 2.

⁹ SDG&E, *SDG&E’s 2020-2022 Wildfire Mitigation Plan Update* (February 11, 2022) at 157, available at: <https://www.sdge.com/2022-wildfire-mitigation-plan>.

¹⁰ *See*, 2026-2028 WMP Guidelines at Appendix A.

1 potential to spread outside the HFTD—which occurred during the 2007 Witch Fire—posing a
2 safety threat to additional homes, businesses, and lands. Additionally, fires that burn entirely
3 within the HFTD may result in impacts outside of the burn area such as reduced air quality and
4 other environmental impacts. Fires also “[poison] the air across vast swaths of the state,” putting
5 public health at risk and emitting millions of carbon particles into the air, compounding the
6 challenge of reducing greenhouse gas emissions.¹¹ Thus SDG&E’s efforts to reduce the risk of
7 catastrophic wildfire positively impact the entirety of its customer base and the overall public.

8 After the catastrophic fires of 2017 and 2018, the Legislature and the Commission
9 recognized the need for increased wildfire mitigation across California, requiring the state’s
10 electrical corporations to “invest in hardening of the state’s electrical infrastructure and vegetation
11 management to reduce the risk of catastrophic wildfire”¹² and to describe their efforts to mitigate
12 wildfire risk and reduce the scale and scope of PSPS events in annual Wildfire Mitigation Plans
13 and Updates.¹³

14 SDG&E responded to California’s call to action with large-scale infrastructure hardening
15 efforts, including strategic undergrounding, expanded use of covered conductor, expanded
16 situational awareness, increased inspections, and enhanced asset management. SDG&E has also
17 leveraged stakeholder, community, and regulatory feedback to further refine and enhance
18 programs to meet community and safety needs. Between 2007 and 2023, SDG&E spent nearly \$6
19 billion in overall wildfire mitigation and vegetation management efforts to protect the safety of its
20 customers and communities, including development of some of the following programs and
21 initiatives:

¹¹ Strike Force Report at 5 (citation omitted).

¹² Assembly Bill (“AB”) 1054, Stats. 2019-2020, Ch. 79 (Cal. 2019) at Sec. 2.

¹³ See Pub. Util. Code § 8386(c)(3).

1 The densest utility weather network in the nation with over 220 weather stations, fuel
2 moisture sensors, and Normalized Difference Vegetation Index (“NVDI”) cameras
3 in the HFTD.

4 A leading meteorology department to monitor real-time potential fires in the territory and
5 provide daily fire weather forecasts that inform PSPS preparedness and
6 construction and work schedules. SDG&E’s meteorology department also assists in
7 the development of SDG&E’s weather models, including the Fire Potential Index
8 (“FPI”) and the Santa Ana Wildfire Threat Index (“SAWTI”). Both of these
9 weather models benefit not only SDG&E but also inform community partners such
10 as the United States Forest Service.

11 Emergency response operations, including SDG&E’s in-house team of fire coordinators
12 who have built strong relationships with community first responders, fire
13 suppression crews who are dispatched to support SDG&E operations, and aerial
14 firefighting resources, including availability of two SDG&E leased H-60
15 Blackhawk helitankers.

16 A risk-informed approach to grid hardening, including an optimized combination of
17 overhead system hardening, covered conductor, and strategic undergrounding based
18 on SDG&E’s Wildfire Next Generation System (“WiNGS”) Planning model and
19 informed by SDG&E’s technological and engineering expertise.

20 Additional infrastructure enhancements to reduce risk, including advanced protection such
21 as early fault detection and falling conductor protection, asset replacements, and
22 operational protocols such as Sensitive Ground Fault Settings.

23 Community engagement operations to support emergency and PSPS preparedness,
24 informed by SDG&E’s network of community partners and its Wildfire Safety
25 Community Advisory Council, which includes members from SDG&E senior
26 leadership and SDG&E’s Board Safety Committee, as well as important
27 community partners such as 211 San Diego and first responder agencies.

28 Infrastructure enhancements and tools to mitigate PSPS impacts, including targeted
29 installation of microgrids and generator grant programs to support customers and
30 communities during periods of de-energization.

1 Enhanced vegetation management operations, including pole brushing, to mitigate the risk
2 of an ignition spreading to nearby vegetation.¹⁴

3 SDG&E's comprehensive suite of wildfire mitigation efforts have not only served to
4 promote public safety but have also received approval from both the Commission and Energy
5 Safety during the annual WMP process as meeting the requirements laid out by Senate Bill ("SB")
6 901 and AB 1054. SDG&E was recently recognized by Energy Safety as having a "relatively
7 strong Wildfire Mitigation Plan compared to the plans of the other large electrical corporations
8 currently being evaluated. SDG&E knows its wildfire risk and is focused on the highest risk
9 circuits on its system."¹⁵

10 My testimony describes SDG&E's Wildfire Mitigation Plan initiatives implemented in
11 2023 and discusses the direct costs associated with their implementation. The WMPs became
12 effective in 2019, while SDG&E's Test Year 2019 decision was still pending with the
13 Commission. Due to this timing, costs associated with many of SDG&E's WMP initiatives were
14 not forecasted or authorized in its General Rate Case ("GRC"). SDG&E's authorized wildfire
15 mitigation costs as well as incremental amounts incurred to implement new activities were tracked
16 in SDG&E's Commission authorized Wildfire Mitigation Plan Memorandum Account, as further
17 addressed in the Prepared Direct Testimony of Jack Guidi. The entirety of SDG&E's wildfire
18 mitigation spending is just and reasonable to support public safety, achieve regulatory and
19 legislative mandates, and promote safe and reliable electric service to SDG&E's customers.

¹⁴ The majority of SDG&E's vegetation management operations, including SDG&E's Wildfire Mitigation Plan ("WMP") initiatives related to tree trimming, are recorded to SDG&E's Tree Trimming Balancing Account and are not the subject of SDG&E's Track 2 request. Vegetation management operations recorded to the Wildfire Mitigation Plan Memo Account ("WMPMA") include fuels management and pole brushing costs.

¹⁵ OEIS, *Decision on 2023-2025 Wildfire Mitigation Plan, San Diego Gas & Electric Company* (October 13, 2023) at 1, available at: <https://efiling.energysafety.ca.gov/Lists/DocketLog.aspx?docketnumber=2023-2025-WMPs>.

1 SDG&E's 2023-2025 Base WMP,¹⁶ including descriptions of forecasted WMP costs, was
2 approved by the Commission's Wildfire Safety Division and its successor, the Office of Energy
3 Infrastructure Safety, and were ultimately ratified by the Commission. These investments have
4 made the residents of SDG&E's service territory safer, reduced the impacts and use of PSPS, and
5 demonstrably reduced risk. The Commission should approve recovery of SDG&E's incremental
6 wildfire mitigation costs in full.

7 **Organization of Testimony**

8 For ease of comparison, my testimony follows the structure created by Energy Safety
9 across the six initiative categories of the 2023-2025 Base WMP. All of SDG&E's wildfire
10 mitigation initiatives serve to reduce either the risk of catastrophic wildfire or the impacts of PSPS
11 events. Within those risk reduction efforts there are two types of initiatives. The first type is
12 foundational to monitor and understand wildfire or PSPS risk but does not directly reduce risk.
13 SDG&E's weather station network is one example. The second type acts to directly reduce the risk
14 of ignition, the chance that an ignition will grow into a wildfire, or serves to mitigate the risks
15 associated with PSPS events. Grid hardening work, including undergrounding of electrical
16 infrastructure and installation of covered conductor, are examples of this type of initiative.

17 Table JW-1 provides the total direct costs incurred in 2023 related to activities and
18 initiatives for each WMP category.
19

¹⁶ SDG&E's 2023-2025 Wildfire Mitigation Plan (March 27, 2023) ("2023-2025 Base WMP"),
available at <https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53487&shareable=true> and
Appendix 1.

Table JW- 1: Overall Summary Totals (\$000)

Category	Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
Wildfire Mitigation Strategy Development	\$6,117	\$11,449	-	\$1,915	\$6,117	\$9,534
Grid Design, Operations, and Maintenance	\$292,965	\$83,928	\$116,528	\$18,629	\$176,437	\$65,299
Vegetation Management and Inspections	-	\$13,335	-	\$4,374	-	\$8,961
Situational Awareness and Forecasting	\$1,715	\$4,525	\$583	\$2,395	\$1,132	\$2,130
Emergency Preparedness	\$32,163	\$42,887	\$721	\$12,410	\$31,442	\$30,477
Community Outreach and Engagement	-	\$448	-	-	-	\$448
Total	\$332,960	\$156,572	\$117,832	\$39,723	\$215,128	\$116,849

The fully-loaded costs tracked in the Wildfire Mitigation Plan Memo Account (“WMPMA”) are presented in the Prepared Direct Testimony of Jack Guidi. Mr. Guidi also describes the inclusion of capital additions for wildfire mitigation assets placed into service in 2023 that were listed as direct capital expenditures in my Track 2 testimony but not included in the Track 2 requested revenue requirement, new capital expenditures in 2023 and 2024 to support completion of 2023 WMP initiatives and objectives, and trailing costs in 2024 associated with capital assets placed into service in 2023. Mr. Guidi addresses the process for recording these costs to the WMPMA and the calculation of SDG&E’s requested resulting incremental revenue requirement.

1 **SDG&E'S COMPREHENSIVE APPROACH TO WILDFIRE MITIGATION HAS**
2 **ESTABLISHED THE COMPANY AS A WORLDWIDE EXAMPLE**

3 **SDG&E's Continued Wildfire Mitigation Efforts and Wildfire Mitigation Plans**

4 The safety of SDG&E's customers, employees, and communities is foundational to
5 delivering clean, safe, and reliable energy and is therefore our highest priority. Virtually no
6 activity implicates safety more than SDG&E's efforts to mitigate the risk of catastrophic utility-
7 related wildfires. SDG&E's service territory experiences several conditions conducive to wildfire,
8 including Santa Ana winds that have powered some of the largest and most destructive wildfires in
9 Southern California, including the recent Los Angeles Fires. These Santa Ana winds, coupled with
10 other weather conditions and dry fuels, increase the risk of catastrophic wildfires.¹⁷ While the
11 highest risk Santa Ana winds are still most prevalent during the late summer and early fall,
12 wildfire conditions exacerbated by conditions such as persistent drought and extreme heat events
13 can now be present almost year-round.

14 Southern California is no stranger to wildfire risk. In 1970, the Laguna Fire burned over
15 175,000 acres during Santa Ana wind conditions, destroying over 400 homes in eastern San Diego
16 County.¹⁸ The Cedar Fire in San Diego County in 2003 destroyed over 270,000 acres and nearly
17 3,000 buildings and killed 15 people.¹⁹ In October 2007, power lines were linked to several fires
18 across California, including the Rice and Witch/Guejito Fires, which combined burned over
19 200,000 acres, destroyed 1,141 homes, and caused two fatalities.²⁰ The 2007 conflagration across

¹⁷ The Commission recognized specific areas of SDG&E's service territory at an even higher risk of fire in D.17-12-024, which established the HFTD. Approximately 64% of SDG&E's service territory is within the HFTD, where there is an increased potential for wildfires.

¹⁸ San Diego Union-Tribune, *San Diego Was On Fire 50 Years Ago, Too*, (August 30, 2020), available at: <https://www.sandiegouniontribune.com/news/public-safety/story/2020-08-30/california-fires-1970-legacy>.

¹⁹ The City of San Diego, *2003 - Cedar Fire*, available at <https://www.sandiego.gov/fire/about/majorfires/2003cedar>.

²⁰ D.17-11-033 at 14.

1 Southern California burned more than 780 square miles, killed 17 people, destroyed thousands of
2 homes and buildings, and resulted in the evacuation of hundreds of thousands of people.²¹ While
3 these large fires began in areas now included in the HFTD, ignitions and propagation are not
4 bound by boundaries, necessitating risk-informed mitigation efforts as location merits.

5 The devastation of the events in San Diego County were a stark reminder of the risks
6 associated with ignitions that could result from utility infrastructure.²² In the aftermath of the
7 catastrophic 2007 fires, SDG&E dedicated itself to revamping and enhancing its wildfire
8 prevention and mitigation measures across a wide spectrum of disciplines and activities. Many of
9 those initiatives were undertaken without any precedent or road map for SDG&E to follow.
10 Drawing on its culture of innovation and continuous improvement, SDG&E developed a wildfire
11 mitigation program to better understand meteorology and fire science, to employ ignition
12 reduction tools, and to design and build infrastructure that would be less likely to ignite. The
13 Company reached outside the traditional utility sphere to gain knowledge, expertise, and insights
14 from partnerships with academia, science, and public safety partners. The data developed through
15 this process has aided SDG&E in its efforts to pioneer wildfire risk assessment to prioritize
16 investments and refine the use of PSPS events to limit their impact on communities. Upon this
17 foundation, SDG&E has established itself as a leader in wildfire mitigation efforts for more than
18 15 years.

19 After the catastrophic fires throughout California in 2017 and 2018, the state legislature
20 enacted SB 901, which, among other things, established the requirement for electric utilities to

²¹ D.12-01-032 at 5.

²² The Commission has determined that ignitions that were not utility-related, such as the 2003 Cedar Fire, should also be considered when assessing potential fire risk. *See* D.17-11-033 at Conclusions of Law (“COL”) 12 at 71.

1 submit annual Wildfire Mitigation Plans.²³ On July 11, 2019,²⁴ the California State Legislature
2 passed an additional bill to address the growing risk of wildfires and ensure that electrical
3 corporations had access to the investment capital necessary to implement large-scale
4 improvements to statewide wildfire mitigation and system hardening. AB 1054, which was signed
5 into law by Governor Newsom on July 12, 2019, became effective immediately. In AB 1054, the
6 California Legislature stated that “[t]he increased risk of catastrophic wildfires poses an immediate
7 threat to communities and properties throughout the state.”²⁵ The Legislature further directed that
8 “[t]he state has dramatically increased investment in wildfire prevention and response, which must
9 be matched by increased efforts of the electrical corporations,”²⁶ and “[t]he state’s electrical
10 corporations must invest in hardening of the state’s electrical infrastructure and vegetation
11 management to reduce the risk of catastrophic wildfire.”²⁷ Electrical corporations must also
12 discuss their efforts to “reduce the need for, and impact of,” PSPS on frequently de-energized
13 circuits through “replacing, hardening, or undergrounding” of upstream lines.²⁸

14 After the passage of SB 901, the Commission approved SDG&E’s 2019 WMP submission,
15 finding that SDG&E’s existing efforts and additional planned future measures met the
16 requirements of Pub. Util. Code Section 8386(c).²⁹

²³ The initial requirement to submit annual wildfire mitigation plans was set forth in SB 901, Pub. Util. Code § 8386(b). This Pub. Util Code section was subsequently amended by AB 1054.

²⁴ AB 1054, Stats. 2019-2020, Ch. 79 (Cal. 2019).

²⁵ *Id.* at Section 1(a)(1).

²⁶ *Id.* at Section 2(a).

²⁷ *Id.* at Section 2(b).

²⁸ Pub. Util. Code § 8386(c)(8).

²⁹ Decision on San Diego Gas & Electric Company’s 2019 Wildfire Mitigation Plan Pursuant to Senate Bill 901 (D.19-05-039), June 6, 2019.

1 The Legislature modified the WMP process and requirements in AB 1054, including a new
2 three-year WMP cycle. Consistent with Commission direction,³⁰ SDG&E filed its initial three-
3 year comprehensive WMP in 2020. The 2020 Base WMP included additional details on the Plan,
4 organized in the structure required by the Commission. Since 2020, the Commission—and the
5 successor to the Commission’s Wildfire Safety Division, Energy Safety—have continued the
6 “iterative”³¹ process to further develop wildfire mitigation requirements, as well as the regulatory
7 process regarding “reporting, monitoring, evaluation and updating to ensure the electrical
8 corporations are targeting the greatest risk with effective programs.”³² SDG&E received approval
9 of its 2020-2022 Base WMP submission from the Wildfire Safety Division, which was ratified by
10 the Commission on June 19, 2020.³³

11 SDG&E submitted its 2023-2025 Base WMP on March 27, 2023, which described its
12 wildfire mitigation initiatives, objectives, and targets for both a three and 10-year basis, including
13 2023.³⁴ The plan was approved on October 13, 2023, where Energy Safety recognized the arc of
14 SDG&E’s progress in wildfire mitigation:

15 SDG&E knows its wildfire risk and is focused on the highest risk circuits on its
16 system. In particular, it is relatively strong in its vegetation management,
17 situational awareness, emergency preparedness, and community outreach and
18 engagement. Regarding vegetation management, SDG&E has the lowest number
19 of vegetation-caused ignitions and outages per 10,000 overhead circuit miles
20 among the large electrical corporations []. Regarding situational awareness,
21 SDG&E has a relatively dense weather station network, with all of the stations
22 able to report wind speed, wind gust, wind direction, temperature, and humidity
23 every 10 minutes and most of the stations able to report these indicators every 30

³⁰ Rulemaking 18-10-007, Administrative Law Judge’s Ruling on Wildfire Mitigation Plan Templates and Related Material and Allowing Comment, Attachment 1 – WMP Guidelines (issued December 16, 2019), as clarified by the Wildfire Safety Division (“WSD”) on January 15, 2020 and January 27, 2020.

³¹ Resolution WSD-002, Guidance Resolution on 2020 Wildfire Mitigation Plans Pursuant to Public Utilities Code Section 8386 (June 11, 2020) at 8.(citing D.19-05-036 at 36), available at <https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions>.

³² *Id.*

³⁴ See SDG&E’s 2023-2025 Base WMP.

seconds if needed. SDG&E is able to use past data to train its artificial intelligence forecasting system, which is now integrated into most of its stations.³⁵

SDG&E's 2023-2025 Base WMP expanded on successes and incorporated lessons learned from the implementation of its initial 2020-2022 Base WMP. Specifically, SDG&E continued to develop its grid hardening initiatives such as undergrounding of electric lines, installing covered conductor, and performing traditional overhead hardening, exceeding the planned wildfire and PSPS risk reduction. SDG&E's transition from utilizing the Wildfire Risk Reduction Model ("WRRM") to scope work in the 2020-2022 WMP cycle to the Wildfire Next Generation System ("WiNGS")-Planning model resulted in better risk insights, more informed decision-making, and prioritization of wildfire mitigation hardening efforts. The WiNGS-Planning model incorporated additional data inputs to, among other things, capture additional cost-efficiencies, update ignition and weather data, and capture risk reduction of existing infrastructure.

SDG&E's 2023-2025 Base WMP also responded to regulatory direction and incorporation of lessons learned from previous 2020-2022 WMP cycle, including the implementation of multiple Areas for Continued Improvement ("ACIs") required by Energy Safety in approving SDG&E's 2022 WMP Update.³⁶ Among other things, these ACIs consisted of streamlining pre-construction activities for grid hardening including permitting, design, and material purchasing to drive cost-efficiencies. These improvements are discussed in SDG&E's 2023-2025 WMP.

SDG&E's 2023 initiatives have resulted in demonstrable success in both wildfire and PSPS risk reduction, have enhanced situational awareness by leveraging expertise from academia and strategic partnerships, and have improved customer safety and community engagement. Due

³⁵ OEIS, Decision on SDG&E 2023-2025 Wildfire Mitigation Plan (October 13, 2023) at 1.

³⁶ Resolution SPD-1, Resolution Ratifying Action of the Office of Energy Infrastructure Safety on San Diego Gas & Electric Company's 2022 Wildfire Mitigation Plan Update Pursuant to Public Utilities Code Section 8386 (August 25, 2022) (ratifying Energy Safety's approval of SDG&E's 2022 WMP), available at <https://www.cpuc.ca.gov/industries-and-topics/wildfires/wildfire-related-resolutions>.

1 to these approved and ratified wildfire mitigation efforts, SDG&E has not been the cause of a
2 significant wildfire since 2007 , despite extreme fire risk in late 2024 and early 2025 resulting
3 from the driest start to the San Diego area’s water year since 1850. SDG&E also performed a
4 PSPS analysis using data from the prior worst case PSPS event (December 2020) that impacted
5 73,977 customers,³⁷ which demonstrated that approximately 11,832 customers would have
6 avoided de-energization had the same circumstances occurred after 2023.³⁸

7 **SDG&E’s Wildfire Mitigation Approach Is Thoughtful and Risk Based**

8 After the 2007 wildfires, the risks associated with SDG&E’s transmission system were
9 addressed by traditional hardening beginning in 2009. The “grave and ongoing risk that Santa Ana
10 windstorms will cause catastrophic power-line fires”³⁹ necessitated preparation and immediate risk
11 reduction through both additional inspections and maintenance and hardening of infrastructure.
12 SDG&E also began traditional hardening of its distribution system in 2013. To better understand
13 the risks associated with its system and to better prioritize work and investment, SDG&E
14 supported the development of additional fire prevention plans to reduce the risk of catastrophic
15 power line fires as early as 2012 and also led in the creation of the HFTD, which “incorporated the
16 fire hazards associated with historical power-line fires.”⁴⁰

17 In addition to its support of these regulatory efforts, SDG&E began working with
18 Technosylva in 2013 to develop the WRRM, prior to the introduction of any regulatory
19 requirements for risk modeling. WRRM provided the methodology to prioritize infrastructure

³⁷ See, SDGE, Public Safety Power Shutoffs Reports, Events: Nov. 26-Dec. 9, 2020: PSPS Post Event Report, Weather Event #2: December 2-5, 2020, available at <https://www.sdge.com/wildfire-safety/pmps-more-info#reports>.

³⁸ SDG&E’s 2025 Wildfire Mitigation Plan Update (April 2, 2024) (“2025 WMP Update”) at 53, available at <https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=56412&shareable=true>.

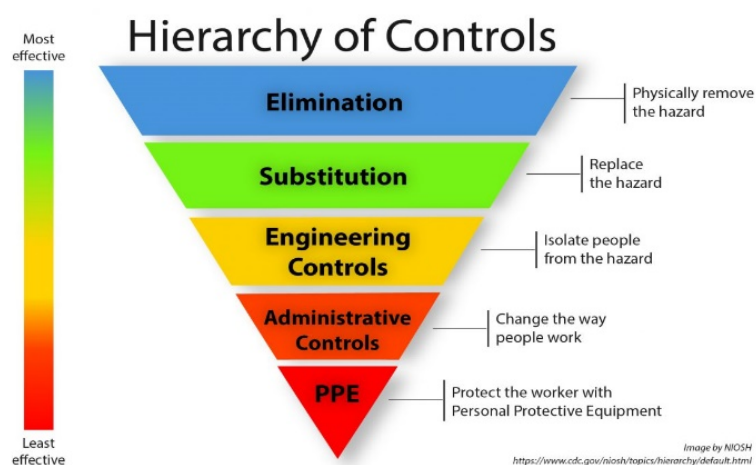
³⁹ D.12-01-032, Findings of Fact 3 at 166.

⁴⁰ D.17-12-024 at 8.

replacement to areas of high-risk and informed SDG&E's initial scoping for the installation of covered conductor and the undergrounding of electric lines.

While important, these initial efforts can be characterized as SDG&E's infancy stages of mitigating wildfire risk. Programs developed during this time were in approximately the middle of the well-known hierarchy of controls, illustrated in Figure JW-1. While bare wire hardening and asset replacements reduced risk, they did not remove or replace the hazard of ignition. During those early years, SDG&E's primary initiative to reduce the risk of wildfire was de-energization of power lines – a mitigation measure that manages wildfire risk but subjects customers and communities to other forms of risk. Further, in addition to the obvious customer and financial risks associated with sustained loss of power, PSPS in this form is subject the risk of human error in the selection of lines for de-energization and the re-energization process, as well as weather forecasting uncertainty. In part because of these risks, extensive reliance on PSPS does not present a long-term, sustainable approach consistent with the mandates of the Wildfire Legislation or Energy Safety's WMP requirements.

Figure JW- 1: Hierarchy of Controls



Wildfire risk mitigation leverages a hierarchy of controls similar to that used for mitigating safety risk. Where possible, SDG&E seeks to eliminate risk, utilizing more sustained mitigations

1 such as undergrounding. Where undergrounding is not merited by the associated risk presented,
2 additional efforts such as replacing grid assets or engineering controls such as inspections and
3 monitoring can be leveraged to reduce or eliminate the hazard.

4 As the need to reduce the scale, scope, and frequency of PSPS events became increasingly
5 apparent, SDG&E shifted to more permanent risk reduction efforts, including grid hardening tools
6 such as installing covered conductor and strategic undergrounding of lines posing the highest risk.
7 SDG&E continues to increase the mix of mitigations to reduce wildfire risk while lessening the
8 use of last resort controls such as PSPS.

9 To implement a risk-informed and cost-effective grid hardening strategy, SDG&E
10 developed its WiNGS-Planning Model to further prioritize installation of covered conductor and
11 undergrounding of electrical distribution lines. WiNGS-Planning recommends strategies based on
12 a two-fold assessment of SDG&E's overall system risk and the risk of specific circuit segments.
13 For 2023, the systemwide risk assessment of WiNGS-Planning was built upon the Risk Spend
14 Efficiency ("RSE") methodology adopted in SDG&E's Risk Assessment Mitigation Phase
15 ("RAMP").⁴¹ The model also allows for risk analysis at the portfolio level. By aggregating
16 segment risks and mitigations to arrive at an overall risk reduction result, this dual approach
17 allows for a better understanding of the cost and benefit of the investments compared to a segment
18 level view. A risk assessment limited to segments would likely not be able to achieve a balanced
19 scale of risk reduction across the service territory because it would fail to consider the combined
20 effect of various hardening efforts across the system.

21 SDG&E's risk models are subject to ongoing evolution based on current and new data,
22 technology enhancements, stakeholder feedback, and regulatory direction. Energy Safety
23 facilitates a risk assessment working group tailored at driving risk modeling innovations and

⁴¹ D.18-12-014 at 22-23.

1 challenging the state’s electrical corporations to explore additional technologies and
2 considerations. As required by Energy Safety in its approval of SDG&E’s 2023-2025 Base WMP
3 and as discussed in SDG&E’s 2025 WMP Update, ACI SDGE-23-07,⁴² SDG&E sought an
4 independent review of its models for validation and to identify opportunities for improvement.
5 The purpose of this review was to assess the end-to-end process utilized for model initiation,
6 development, and operation, with a focus on establishing whether industry best practices for the
7 deployment of advanced analytics and machine learning have been adopted. The independent
8 reviewer found that the WiNGS-Planning model has become more matured, better documented,
9 and presents an effective tool for use in capital planning for wildfire mitigation, meeting
10 regulatory requirements. It emphasized that WiNGS-Planning is a robust model which meets user
11 needs and performs the function for which it was designed. The report highlighted that SDG&E is
12 well aligned and has built and maintains a model with a level of competence in keeping with the
13 quality of the end product. SDG&E assessed the recommendations from the independent review
14 and implemented many, demonstrating SDG&E’s continued commitment to enhancing its models
15 to better inform the development of cost-effective, risk reducing strategies.

16 As SDG&E welcomes opportunities for improvement, it is also important to avoid
17 paralysis of action and delayed risk reduction that could occur if the company waited for the
18 “perfect” risk model before taking action. Consistent with the intent of the Legislature and
19 stakeholders, SDG&E rapidly responded to the Wildfire Legislation with comprehensive new
20 programs and efforts to further reduce wildfire risk. Waiting for consensus on risk modeling,
21 further data refinement, and more studies could have left communities at risk longer than
22 necessary. By 2023, when the efforts described in SDG&E’s Track 3 request were in place,
23 SDG&E had matured in its modeling capabilities and evolved in its strategy to focus efforts on

⁴² SDG&E’s 2025 WMP Update at 65-84.

1 covered conductor and strategic undergrounding of the highest risk circuit segments in the HFTD.
2 As further discussed below, as the company continues to realize the improving cost efficiencies
3 and benefits of undergrounding—which undeniably results in the highest long-term wildfire and
4 PSPS risk reduction—SDG&E’s models continue to support optimized deployment of strategic
5 undergrounding.

6 **SDG&E’s Process for Recording WMP Costs**

7 While SDG&E had an existing wildfire mitigation program prior to passage of the Wildfire
8 Legislation, many of its WMP initiatives were unanticipated in its Test Year 2019 GRC. As
9 authorized by AB 1054, SDG&E established its WMPMA to record costs associated with
10 implementing approved WMP initiatives. The WMPMA allowed SDG&E the flexibility to
11 implement actions necessary to reduce risk in an efficient and expedited manner without needing
12 to wait for approval through the GRC process. This was particularly important for SDG&E, as the
13 company’s TY 2019 GRC was submitted and litigated in 2017 and 2018, prior to understanding
14 the new requirements arising from the Wildfire Legislation and the widely recognized need for
15 additional risk reduction. My testimony discusses the “direct” costs of SDG&E’s wildfire
16 mitigation activities in furtherance of its 2023 WMP initiatives and targets. SDG&E’s
17 establishment of the WMPMA, the accounting process used to record wildfire costs, controls to
18 assess incrementality, and the loading of SDG&E’s direct costs to calculate the requested revenue
19 requirement, are addressed in the Prepared Direct Testimony of Jack Guidi.

20 While this request provides the final venue for a reasonableness review of costs recorded to
21 its WMPMA, the costs associated with SDG&E’s WMP have been continually subject to ongoing
22 review through various processes at the Commission and Energy Safety. SDG&E provides annual
23 spend projections for each WMP initiative in its annual WMP Base and Update submissions, and
24 its WMP distribution actual expenditures are reported annually to Energy Safety and the

Commission through its Quarterly Data Reporting and Annual Report on Compliance established by Pub. Util. Code Section 8389.

Additionally, the Legislature required that in overseeing compliance with the electrical corporations' WMPs, Energy Safety (and before that the Commission's Wildfire Safety Division) must assess and determine whether "the electrical corporation failed to fund any activities included in its plan."⁴³ SDG&E is required to provide "[d]escriptions of all planned WMP initiative spend vs actual WMP initiative spend and an explanation of any differentials between the planned and actual spends" in its Annual Report on Compliance.⁴⁴ Underspending of forecasted initiatives may result in a finding of non-compliance and potential fines.⁴⁵

SDG&E's 2023 WMP COSTS ARE JUST AND REASONABLE

As required by Energy Safety's 2023-2025 WMP Technical Guidelines ("Guidelines")⁴⁶ and as discussed in SDG&E's 2023-2025 Base WMP, SDG&E's implementation of wildfire mitigation activities in 2023 spanned multiple categories, including wildfire mitigation strategy development, Grid design, operations, and maintenance, vegetation management and inspection, situational awareness and forecasting, emergency preparedness, and community outreach and engagement. A large majority of the total costs to implement the 2023 WMP are associated with SDG&E's grid hardening strategy, which was developed in alignment with Energy Safety's improved Guidelines that require a risk-informed framework to guide the WMP development and substantiate risk-informed decision-making.⁴⁷ Further, as previously discussed, SDG&E's grid

⁴³ Pub. Util. Code § 8386.3(c)(2)(B)(i).

⁴⁴ CPUC, Wildfire Safety Division – Compliance Operational Protocols, (February 16, 2021) at 10.

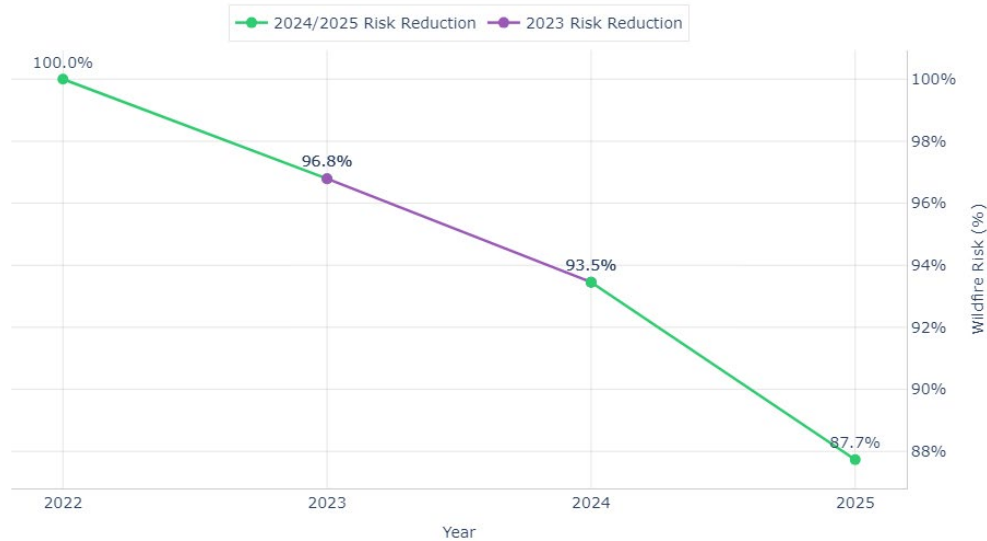
⁴⁵ See Pub. Util. Code § 8386.1.

⁴⁶ OEIS, 2023-2025 Wildfire Mitigation Plan Technical Guidelines, December 6, 2022, available at <https://energysafety.ca.gov/what-we-do/electrical-infrastructure-safety/wildfire-mitigation-and-safety/wildfire-mitigation-plans/2023-wildfire-mitigation-plans/>.

⁴⁷ Guidelines at 2.

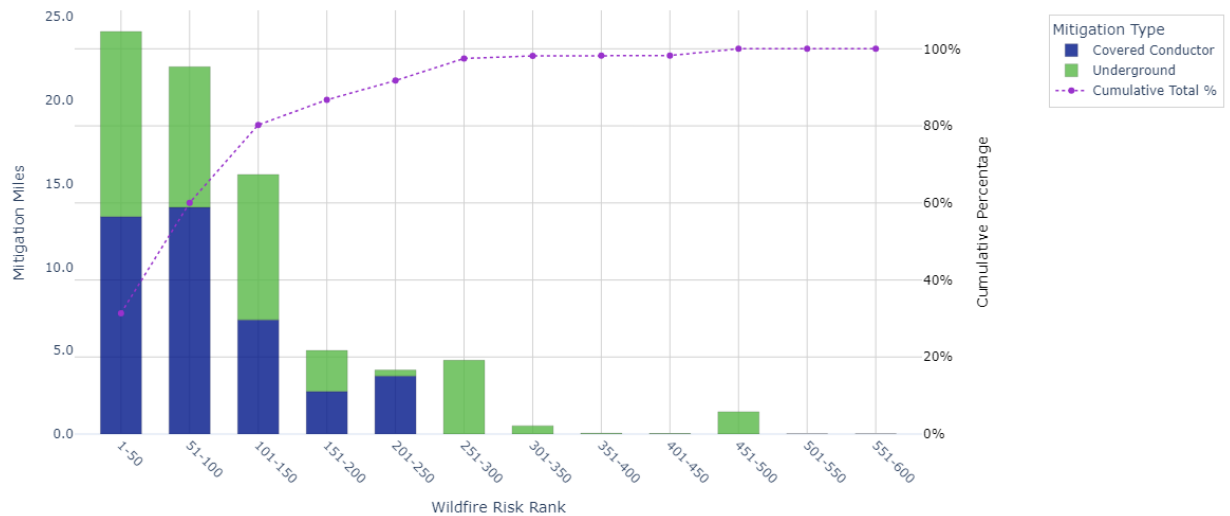
hardening strategy in 2023 was informed by improved risk models that incorporated cost-efficiencies realized in previous years. Figure JW-2 demonstrates that SDG&E achieved 3.3% wildfire risk reduction in 2023 (relative to its baseline risk in 2022) through implementation of its grid hardening strategy.

Figure JW- 2: Risk Reduction Achieved from 2022 (baseline)-2025



SDG&E reasonably incurred its 2023 costs through an informed approach to risk, particularly with respect to its approach to grid hardening. SDG&E effectively targeted most of its hardening efforts across the top wildfire risk ranked circuit-segments, with 60% of the work in 2023 performed on the 100 highest risk ranked segments. Figure JW-3 demonstrates this prioritization with respect to wildfire risk rankings, showing the cumulative percentage of work allocated in 2023 across the highest risk ranked circuit-segments in the HFTD.

Figure JW- 3: 2023 Mitigation Miles by Wildfire Risk Ranking



Additionally, in 2023, SDG&E continued its efforts to find cost efficiencies and methods to reduce the costs associated with grid hardening. SDG&E elected to partner with AECOM Technical Services, Inc. (“AECOM”) to develop the Strategic Undergrounding Project Management Office (“PMO”) with the goal of achieving increased volume of undergrounding work while reducing program costs.⁴⁸

SDG&E also reduced program costs for multiple initiatives through a competitive bidding process for its contractor workforce and materials. In spite of supply challenges that persisted beyond the height of the pandemic, SDG&E sought competitive pricing and reduced total cost by conducting thorough market analyses, sourcing (Request for Information and Request for Proposal (“RFP”)), leveraging strong supplier relationships, and executing bulk purchasing to generate economies of scale. Previously sourced master service agreements and equipment supply agreements were also utilized, promoting cost stability and reliability. At times, SDG&E also encouraged suppliers to apply value engineering principles, optimizing project designs and processes to deliver the best value without compromising safety or quality. For materials that were

⁴⁸ SDG&E further discusses the successes of this partnership below in Section V.B, Strategic Undergrounding (WMP.473).

1 competitively bid, the competitive bidding process, combined with accurate demand forecasting,
2 helped secure favorable terms, including optimal costs and timely delivery of materials. As it
3 pertains to undergrounding, SDG&E competitively bid new civil construction and electric
4 construction rates. These rates included cost per mile civil construction rates, fixed bid civil
5 construction rates, and competitively bid Time and Materials (“T&M”) rates for both civil and
6 electric construction.

7 Finally, while most of SDG&E’s work in support of its 2023 WMP occurred in the HFTD,
8 SDG&E elected to perform some wildfire mitigation activities outside of the HFTD and
9 specifically in the WUI. Wildfire activity in the SDG&E service territory is not limited to within
10 HFTD boundaries, and ignitions that occur outside of the HFTD can propagate into the HFTD
11 where consequences are typically greater. Small fires that originate in canyon areas can traverse to
12 more urban settings. While these fires typically do not have the potential to propagate to the size
13 of the Cedar or Laguna fires discussed previously in this testimony, they can have devastating
14 impacts on homes and communities located in WUI areas, which generally have a larger density of
15 customers and utility equipment than the HFTD and a higher consequence of an ignition. For
16 example, in 1985 the Normal Heights Fire consumed only 300 acres but destroyed 76 homes in the
17 Mission Valley area.⁴⁹ Further, utility ignitions occur in both in and outside of the HFTD; since
18 the CPUC adopted the definition of a reportable ignition in 2014,⁵⁰ through 2022, there have been
19 more reportable ignitions outside of the HFTD than in either Tier 2 or Tier 3 of SDG&E’s service
20 territory. This merits a reasonable approach to risk reduction in the WUI, which SDG&E has
21 implemented as a component of its WMPs.

⁴⁹ City of San Diego, 1985 - Normal Heights Fire, available at
<https://www.sandiego.gov/fire/about/majorfires/1985normalheights>.

⁵⁰ D.14-02-015, Appendix C at C-3.

For these reasons, SDG&E elected to perform additional inspections, prioritize follow up repairs, and replace specific equipment with CAL FIRE approved equipment in the WUI regions of its service territory in 2023. These efforts reasonably align with the risk presented in the WUI. In addition to infrastructure work performed, SDG&E also utilized fire prevention resources during at-risk activities performed adjacent to wildland fuels. Further discussion on work performed and associated costs outside of the HFTD is provided in this testimony and associated workpapers where applicable.

WILDFIRE MITIGATION STRATEGY DEVELOPMENT

Table JW- 2: Wildfire Mitigation Strategy Development (Total \$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
6,117	11,449	-	1,915	6,117	9,534

Summarized Risk Map (WMP.442)

Table JW- 3: Summarized Risk Map Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	4,057	-	-	-	4,057

Initiative Description and Impact

SDG&E is committed to reducing wildfire risk and promoting reliability by preparing for and minimizing risks through a Company-wide risk informed focus, collaborative efforts, and drive for continuous improvement. The WiNGS-Planning model is utilized to obtain segment risk ranking, segment RSE analysis, and portfolio analysis. This informs scoping for higher-capital programs, including grid hardening initiatives in the HFTD. The mitigations proposed in the WiNGS-Planning model are strategic undergrounding of electric lines and installing covered conductor; these initiatives are the most effective at reducing risk events on utility equipment and thus lowering the likelihood of ignition. The WiNGS-Planning model has been used to analyze segments in Tier 2 and Tier 3 of the HFTD, segments with historical PSPS event occurrences, and

higher-risk urban areas such as coastal canyons or wildland open spaces. This segment approach and scoping the whole circuit segment not only addresses wildfire risk but reduces the impact of PSPS events. An approach used by SDG&E to retroactively look at mitigation selection was to create bins by riskiest overhead circuit-segment in the HFTD. This approach shows the distribution of wildfire risk across the HFTD and shows the deployment of mitigation in the highest wildfire risk areas.

Costs and Efficiencies

Costs incurred for Wildfire Mitigation Strategy and Development are just and reasonable in that they fund SDG&E's Wildfire Mitigation Risk Analytics team, who is responsible for developing and improving the WiNGS-Planning and WiNGS-Ops models. In 2023, all Wildfire Mitigation data scientists and analysts were shifted to one team, increasing efficiencies and reducing redundancies across the organization. This team is critical in ensuring proper governance and oversight of evolving risk quantification methodologies and models to meet regulatory requirements.

Wildfire-Related Data and Algorithms (WMP.521)

Table JW- 4: Wildfire-Related Data and Algorithms Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	1,760	-	532	-	1,228

Initiative Description and Impact

The WiNGS-Planning model is used to calculate the wildfire and PSPS risk scores used in the Overall Wildfire and PSPS Risk components of the Utility Risk. It was developed to aid with the allocation of grid hardening initiatives across the HFTD by assessing both wildfire risk and PSPS impacts. WiNGS-Planning is built upon the MAVF framework in RAMP and evaluates both wildfire and PSPS impacts at the sub-circuit/segment level. The segment level of data granularity

is required to establish the segment parameters. Information is used to inform investment decisions by determining and prioritizing mitigation based on cost-benefit analysis.

In 2023, version 2.0 of the model was developed and implemented. This version more accurately captured hardening miles within the HFTD, improving the calculation of the overhead-to-underground mileage conversion contingency factor, and by updating the data incorporated from WRRM. Updated data, such as the effectiveness of mitigations at reducing wildfire risk and refreshing historical ignition counts, was also incorporated to enhance the model's estimated ignition rates. In addition, components like historical wind, weather station additions, PSPS history, system assets, information regarding vulnerable customers, and vegetation data were updated.

Costs and Efficiencies

Costs to develop version 2.0 the WiNGS-Planning model are justified by the functional requirements to meet the goal of informing investment decisions by prioritizing mitigation based on RSEs,⁵¹ improving wildfire safety, and limiting the impact of PSPS events on customers. Requirements include advanced AWS infrastructure, comprehensive data integration and processing, accuracy and real-time data updates, an interactive and scalable user interface, and an enterprise data governance strategy. The costs associated with these features are justified by the need to meet stringent functional requirements, which are essential to deliver a high-quality, reliable, and user-friendly risk platform.

Allocation Methodology Development and Application (WMP.523)

Table JW- 5: Allocation Methodology Development and Application Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
6,117	5,632	-	1,383	6,117	4,249

⁵¹ D.18-12-014, *passim*.

Initiative Description and Impact

Asset Management utilizes many kinds of data to improve risk-informed decision making. This data from across the enterprise must be unified into a consumable and curated fashion. Curated asset data is now embedded into risk models and business processes throughout the Company to improve decision making. The Asset 360 program⁵² ingests data from imagery, other risk models, and external data sources to improve model accuracy and performance. Integrating results of image-based analytics including Intelligent Image Processing (WMP.1342) improves asset predictive models in the future. Data quality is measured and improvement efforts to remediate data in the source systems are underway. SDG&E has also developed cross functional partnerships between Asset Management, Enterprise Risk Management, Wildfire Mitigation Program, and the source system teams to continuously improve data quality.

The integration of asset data and the development of asset health predictive models are also used to formulate an assessment of asset risk, which can be utilized by operating and engineering teams to develop and analyze their projects, programs, and/or initiatives, improving risk-based decision making.

Costs and Efficiencies

The Capital costs associated with Allocation Methodology Development and Application were used to initiate the development of a systematic data-driven, risk-informed approach to decision-making, which included process and technological advancements to better manage and utilize data. Activities included the creation of data products to consolidate critical asset data; development of custom asset health indices to understand current asset performance; and the establishment of data quality metrics for critical asset attributes and data remediation processes to continuously improve asset data. These activities support data-informed approaches by enabling

⁵² 2023-2025 Base WMP at 222-225.

the accessibility and timeliness of critical data and establishing a framework to continuously enhance data quality. For example, in 2023, the Asset 360 platform was utilized to address data gaps such as missing asset installation dates for distribution poles and conductor as required by Energy Safety.⁵³

Approximately 15% of the total capital costs incurred for this program occurred in 2024. These costs are associated with projects initially planned to be completed in 2023 and not forecast in SDG&E's Test Year 2019 GRC, but were placed into service in 2024.

The O&M costs incurred for this program are just and reasonable in that they fund SDG&E's Wildfire Mitigation Program and Strategy Team, who is responsible for the development of the Wildfire Mitigation Plan and provides support for wildfire mitigation initiatives, including the support of regulatory and legislative activities related to wildfire mitigation. The team also fosters collaboration efforts with other utilities and external stakeholders and develops innovative ways to advance existing wildfire mitigation programs. In addition, the team tracks and monitors wildfire mitigation program progress and metrics, develops and updates the utility wildfire mitigation maturity model, spearheads vision projects, promotes new methods to enhance fire safety, and explores advancements to drive further improvement and change. This includes tracking WMP activities, complying with reporting requirements, and providing governance specifications and procedures.

GRID DESIGN, OPERATIONS, AND MAINTENANCE

Table JW- 6: Grid Design, Operations, and Maintenance Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
292,965	83,928	116,528	18,629	176,437	65,299

⁵³ 2023-2025 Base WMP, Appendix D at 25 (ACI SDGE-22-19).

Covered Conductor Installation (WMP.455)

Table JW- 7: Covered Conductor Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
39,409	3,372	-	-	39,409	3,372

Table JW- 8: Covered Conductor Installation - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
60 Miles	65.05	29.69	0.814%

Initiative Description and Risk Impact

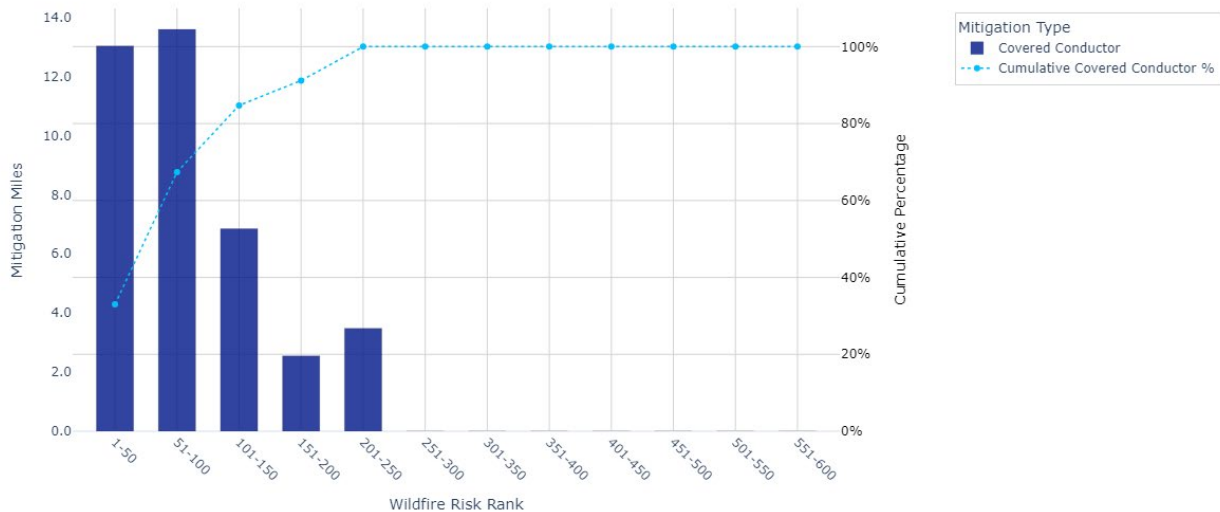
The Covered Conductor Program replaces bare conductors with covered conductors in the HFTD. Covered conductors are manufactured with an internal semiconducting layer and external insulating ultraviolet-resistant layers to provide incidental contact protection. Covered conductor is a widely accepted term to distinguish from bare conductor. RSE calculations developed in the WiNGS-Planning model were utilized to prioritize installation of covered conductors within the HFTD.

Covered conductors mitigate against contact from objects, including vegetation contact and wire-to-wire, that could lead to equipment failure and ignition. SDG&E estimates that covered conductor is 58% effective at mitigating against these risk drivers. Covered conductors also offer a degree of PSPS risk reduction as circuit segments with covered conductors have the potential for a higher wind speed de-energization threshold during high-risk conditions compared to bare conductor. See Table JW-8 for actual wildfire and PSPS risk reduced in 2023, framed as a percentage of the overall baseline risk at the end of 2022.

Figure JW-4 shows the distribution of Covered Conductor work in 2023 across wildfire risk ranked circuit segments. As shown in the figure, work was generally performed in areas of the highest risk. Approximately 67% of covered conductor work in 2023 was performed on the 100

highest risk circuit segments, therefore the majority of work achieved by the Covered Conductor Program in 2023 targeted the highest wildfire risk areas of the service territory.

Figure JW- 4: 2023 Mitigation Miles by Wildfire Risk Ranking – Covered Conductor



Costs and Efficiencies

To achieve cost efficiencies in 2023, SDG&E categorized contracted services into three distinct areas: PMO, Engineering and Design (“E&D”), and Construction Contracting (“CC”).

The scope of PMO services includes project and program management, scheduling, document control, financial management, public relations, Geographic Information System (“GIS”) services, and permitting. These services collectively enhance long-term planning and project/program reporting, ensuring effective program management. PMO services were competitively bid and awarded to a single supplier, allowing for economies of scale and streamlined processes for implementation in 2023. This centralization improved reporting, communication, and resource optimization.

For E&D (including engineering, design, surveying) and CC (covering electric and civil construction contracting), projects in 2023 were bundled by circuits and awarded to a pool of pre-approved suppliers. A standardized pricing workbook and instructional template were used to compare bids between contractors, which streamlined the bidding process. This strategy promoted

1 the highest quality, lowest cost, and optimal schedule services. The payment structure was tailored
2 to the type and scope of work, including time and expense (“T&E”) rates, fixed costs with
3 milestone payments, unit rates, and combinations of all three based on scope of work.

4 SDG&E implemented an additional cost-saving measure by utilizing internal construction
5 crews as much as possible, resulting in a cost savings compared to utilizing contracted crew
6 resources.

7 Finally, program material & equipment supply chains were constrained significantly in the
8 aftermath of the COVID-19 pandemic. This prompted SDG&E to evaluate its existing material &
9 equipment suppliers and, ultimately led to on-boarding both new and additional suppliers to
10 mitigate the risk of material being unavailable or in short supply. SDG&E Supply Management
11 optimizes business efficiencies through continually aligning and strengthening strategic sourcing,
12 vendor management and contractor management processes.

13 The first key efficiency is aggregating purchasing power by opening up the scope of the
14 WMP to be bid on by several vendors to negotiate better prices for services, software and any
15 other required materials. By bringing an expanded scope to bid, SDG&E can lower per-unit costs
16 and have the potential to take advantage of volume discount, while mitigating some of the
17 pressures of macro-pricing inflation throughout the labor and material markets. The competitive
18 bidding process ensures that the utility receives the best possible prices from qualified vendors and
19 allows SDG&E to secure long-term contracts with key suppliers to provide price stability and
20 service or material continuity. Many agreements that come out of the competitive bidding process
21 include performance-based incentives to encourage efficiency and quality. In 2024, Supply
22 Management advanced sourcing efforts ahead of their normal cycles in the areas of Project
23 Management, Electric Line Construction, Freight, Engineering & Design, Contingent Workforce
24 Management, and Electric Materials Distribution, resulting in favorable pricing.

The second key efficiency is the ability to closely monitor the performance of vendors, ensuring that they meet safety, quality and performance standards. Establishing vendor performance monitoring also strengthens vendor relationships leading to reduced administrative overhead and lead times.

Finally, optimizing processes used to manage workflow and contractors enhances SDG&E's operational efficiency and reduces construction downtime.

By strategically onboarding PMO, E&D, and CC and effectively managing material availability and suppliers, SDG&E effectively managed resources and optimized costs to promote high-quality project delivery in 2023.

Approximately 4.9% of the total capital costs associated with this initiative occurred in 2024 due to trailing costs associated with assets placed in service in 2023 or prior. Trailing costs are primarily comprised of QA/QC activities, including remediation if needed, and project close out activities.

Strategic Undergrounding (“SUG”) (WMP.473)

Table JW- 9: Strategic Undergrounding Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
98,301	429	-	-	98,301	429

Table JW- 10: Strategic Undergrounding - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
72 Miles	120.88	105.12	4.335%

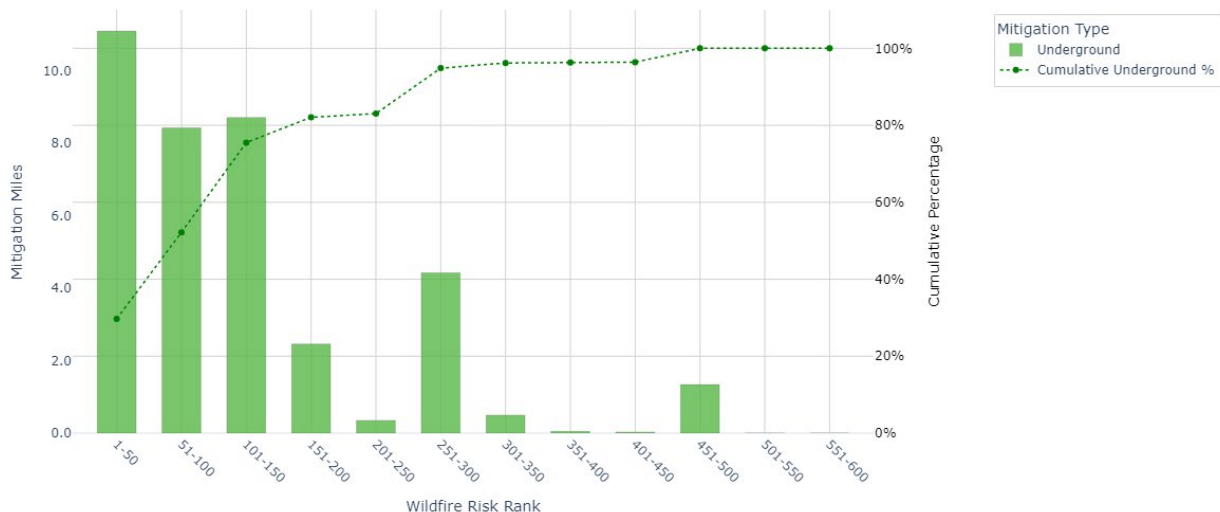
Initiative Description and Risk Impact

The Strategic Undergrounding Program converts overhead systems to underground, providing the dual benefits of significantly reducing wildfire risk and the need for PSPS events in these areas. Strategic undergrounding is deployed in the HFTD where wildfire risk is high and where SDG&E can achieve reductions in the scale, scope, and frequency of PSPS events. RSE

calculations developed in the WiNGS-Planning model were utilized to prioritize circuit segments undergrounding within the HFTD. Because the effectiveness of undergrounded lines at mitigating wildfire risk is over 99%, this mitigation nearly eliminates the risk of wildfires from utility-related ignition. Circuit segments that are fully undergrounded back to the substation source are also no longer considered to have a PSPS risk. See Table JW-10 for actual reduction of wildfire and PSPS in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Figure JW-5 below shows the distribution of Strategic Undergrounding work in 2023 across wildfire risk ranked circuit segments. As shown in the figure, SDG&E's undergrounding in 2023 was prioritized in areas with the highest risk. Approximately 52% of strategic undergrounding work in 2023 was performed on the 100 highest risk circuit segments, therefore the majority of work achieved by the Strategic Undergrounding Program in 2023 targeted the highest wildfire risk areas of the service territory.

Figure JW- 5: 2023 Mitigation Miles by Wildfire Risk Ranking - Undergrounding



Costs and Efficiencies

Given the increased volume of strategic undergrounding work in 2023 and the goal to reduce program costs and drive efficiencies, SDG&E identified the need to develop a new strategic contracting approach that would have a program management focus to effectively

1 execute on key areas of project delivery, including survey and design, permitting, land/easement
2 acquisition, communication and public outreach and environmental management. In late 2022,
3 SDG&E selected AECOM as their strategic partner to effectively serve as the PMO for the
4 Strategic Undergrounding Program. First, AECOM reviewed the strategic undergrounding
5 portfolio of existing and planned projects, researched established SDG&E program management
6 procedures, and planned and began implementing best-in-class program management systems
7 tailored to the needs of the Strategic Undergrounding. Next, AECOM performed a Program
8 Maturity Assessment of the program's current state and delivered several key products that
9 addressed how the PMO would function, including the first iteration of the *SUG Program*
10 *Execution Plan* ("PEP"). Subsequently, AECOM implemented transition phases to move from the
11 internally managed program to one supported by AECOM. During these phases, AECOM added
12 staff, aided in program implementation, and refined processes for the planned expansion of the
13 program.

14 Together with AECOM, SDG&E implemented several improvements within the Strategic
15 Undergrounding Program to capture business efficiencies. These improvements reflect a
16 programmatic approach to planning and executing undergrounding work with the ultimate
17 objective of reducing total program cost. Notable improvements were made with respect to
18 material forecasting and procurement, land rights acquisition, permitting, stakeholder engagement,
19 and overall program and project management. Importantly, these actions improved overall
20 schedule adherence, which allows for a consistent issuance of work to construction.

21 The material forecasting and procurement improvements SDG&E made in 2023 reduced
22 the impacts of material shortages experienced on the Strategic Undergrounding Program in prior
23 years. Prior to 2023, material suppliers sometimes missed their forecasted delivery dates and
24 extended lead times for a broad range of items required by the program. Without sufficient notice

1 or buffer stock, this led to a pause or delay in construction work or required additional engineering
2 resources to accommodate the use of alternate materials. These delays affected construction crew
3 efficiency and mobilization or demobilization costs, which ultimately increased construction
4 costs—the single biggest cost category of the program. SDG&E addressed this issue by improving
5 its material demand forecasting strategy and process to give suppliers a longer-term view of
6 enterprise-wide demand for required materials, increasing buffer stock for key materials, and
7 improving tracking to identify potential issues further in advance.

8 Easement acquisition improvements in 2023 similarly reduced schedule delays and
9 increased the efficiency of the easement acquisition process. Historically, communications with
10 property owners had been decentralized across survey firms, design firms, and construction firms
11 depending on project stage. In 2023 SDG&E created a property owner liaison role as a central
12 point of contact to facilitate early, clear, and consistent property owner communication throughout
13 the project lifecycle. Regular meetings were held to work through challenging easements. These
14 efficiencies streamlined the easement acquisition process allowing work to proceed to construction
15 without delay, reducing overall construction costs.

16 Another area where SDG&E was able to improve business efficiency was the permitting
17 and approval process. The Strategic Undergrounding Program requires a significant volume of
18 permits and approvals from several authorities, many of which have a lengthy review process. In
19 2023, SDG&E engaged agencies such as Caltrans, the County of San Diego, and the Bureau of
20 Indian Affairs to discuss upcoming work, identify and resolve common issues or concerns, and
21 develop efficient business processes at the program level, rather than on a project-by-project basis.
22 This significantly reduced the back-and-forth submittal of comments, time spent preparing
23 responses to comments, and ultimately the total project timeline. The improvement in schedule

adherence allowed for a more consistent issuance of work to construction, which lowers overall construction cost.

SDG&E also implemented technical solutions to drive down cost. For example, upon review of the construction standard for underground construction, SDG&E determined that the typical trench depth could be safely reduced from 30 inches to 24 inches, dramatically reducing the cost of trenching. Because digging is among the most significant drivers of cost on the program, this change significantly reduced costs.

Approximately 9.9% of the total capital costs occurred in 2024 due to trailing costs associated with projects placed in service in 2023 or prior. Trailing costs are primarily comprised of QA/QC activities, including remediation if needed, and project close out activities.

Distribution Underbuild (WMP.545)

Table JW- 11: Distribution Underbuild Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
16,537	-	537	-	16,000	-

Table JW- 12: Distribution Underbuild - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
21.5 Miles	0.00	13.02	0.1556%

Initiative Description and Risk Impact

The Distribution Underbuild Program replaces overhead distribution equipment that is attached to the same structures and is along the same route as work performed for overhead transmission hardening. The Transmission System Hardening Program prioritizes hardening activity in Tiers 2 and 3 of the HFTD.

Hardening distribution underbuilt lines in the HFTD reduces the risk of ignition due to foreign object contacts, wire slaps, and equipment failure during high wind conditions. By

replacing wood poles with steel poles, replacing aging conductors with high strength conductors, and designing to known local wind conditions, the risk of equipment failure is reduced during adverse weather conditions. Correspondingly, increasing conductor spacing reduces the risk of vegetation contact and wire slaps during adverse weather conditions. See Table JW-12 for actual reduction of wildfire and PSPS risk 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

Costs were optimized for this program in 2023 by including distribution underbuild work with overhead transmission work for engineering, design, and labor. As discussed previously and where applicable, SDG&E's competitive bidding strategies for contractor workforce and materials also helped increase cost efficiencies.

Approximately 39% of the total capital costs incurred for this program occurred in 2024 for projects initially planned to be completed in 2023 that were ultimately placed in service in 2024, and therefore were not contemplated in SDG&E's 2024 GRC.

Distribution Overhead System Hardening (WMP.475)

Table JW- 13: Distribution Overhead System Hardening Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
4,122	1,094	59,561	5,250	(55,439)	(4,156)

Table JW- 14: Distribution Overhead System Hardening - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
2.33 Miles	1.96	7.24	0.0045%

Initiative Description and Risk Impact

The Distribution Overhead System Hardening Program, previously known as the Fire Risk Mitigation ("FiRM"), Pole Risk Mitigation & Engineering ("PRiME"), and Wire Safety

Enhancements (“WiSE”) programs, is a program whose scope includes the replacement of wood poles with steel, the replacement of conductors, and in some cases the permanent removal of overhead facilities in the HFTD and WUI.

This program reduces the likelihood of equipment failure that could result in an ignition. See Table JW-14 for actual risk reduction of wildfire in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

Consolidating PRiME, FiRM, and WiSE into a single program resulted in the execution of projects based on a circuit-by-circuit approach that considered risk inputs rather than scoping projects based on specific wire type or at-risk structures. It also made project engineering, design, construction, and management more efficient and minimized impacts to customers during job walks, construction, and post construction close-out activities, all of which resulted in cost efficiencies.

The variance in capital spend against authorized spend in 2023 was largely due to the evolution of SDG&E’s hardening strategy from traditional hardening to installing covered conductor and undergrounding as SDG&E became more mature in its understanding of risk and implemented more effective mitigations to achieve more risk reduction. At the time the 2019 GRC was developed, PRiME, FiRM, and WiSE were forecasted to include a higher volume of hardening work than was actually performed under the combined Distribution Overhead System Hardening Program.

Microgrids (WMP.462)

Table JW- 15: Microgrids Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
6,857	1,241	-	-	6,857	1,241

Table JW- 16: Microgrids - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
0 Microgrids	98.98	7.97	100%

Initiative Description and Risk Impact

The Microgrid Program designs and builds microgrids that can be electrically isolated during a PSPS event, thereby maintaining electric service to customers who would otherwise be affected. While alternative hardening solutions, such as strategic undergrounding, may be better at simultaneously mitigating wildfire risk, those options are not always technically feasible or timely. A combination of data including the risk of wildfire from overhead infrastructure, feasibility of traditional overhead hardening solutions, alternative solutions such as undergrounding distribution infrastructure, and historical PSPS impact data is used to guide the installation of microgrids.

The focus of the Microgrid Program is to reduce the impacts of PSPS events on customers that would otherwise be affected by de-energization. Because microgrids are designed to keep customers energized throughout the duration of a PSPS event, the effectiveness of the mitigation is estimated to be 100%.

Costs and Efficiencies

The costs incurred for this program in 2023 are associated with implementing renewable energy generation and battery storage at existing microgrid locations. Most of these costs are attributed to the completion of solar generation and energy storage at the Cameron Corners microgrid. Regardless of type of generation, all existing microgrids can serve customers who would have been impacted by a PSPS event through the use of mobile generators.

Approximately 72% of the total capital costs incurred for this program occurred in 2024 for work initially planned to be completed in 2023, but was were ultimately placed in service in 2024, and therefore were not contemplated in SDG&E's 2024 GRC.

Advanced Protection (WMP.463)

Table JW- 17: Advanced Protection Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
7,488	232	11,494	-	(4,006)	232

Table JW- 18: Advanced Protection - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
4 Circuits	355.32	167.14	0.4556%

Initiative Description and Risk Impact

The Advanced Protection Program (“APP”) implements advanced protection technologies within electric substations and on the electric distribution system. It aims to mitigate the risks of fire incidents, provide better transmission and distribution sectionalization, create higher visibility and situational awareness in fire-prone areas, and allow for the implementation of new relay and automation standards in locations where protection coordination is difficult due to lower fault currents attributed to high impedance faults. More advanced technologies, such as microprocessor-based relays with synchrophasor/phasor measurement unit (“PMU”) capabilities, real-time automation controllers, auto-sectionalizing equipment, line monitors, direct fiber lines, and Private LTE and wireless communication radios comprise the portfolio of devices that are installed in substations and on distribution circuits to allow for a more comprehensive protection system and greater situational awareness in the fire-prone areas of the HFTD.

APP also replaces aging substation infrastructure such as obsolete 138 kV, 69 kV, and 12 kV substation circuit breakers, electro-mechanical relays, aging solid-state relays, aging microprocessor relays, and Remote Terminal Units (“RTUs”). New circuit breakers incorporating microprocessor-based relays, RTUs, and the most updated communication equipment are also installed in substations within the HFTD. On distribution circuits within the HFTD, APP

coordinates with overhead system hardening programs to strategically install or replace sectionalizing devices, line monitors, direct fiber lines, and communication radios to facilitate the requirements of SDG&E’s advanced protection systems.

By replacing aging infrastructure, installing distribution sectionalizing devices, increasing the sensitivity and speed of protection systems, and utilizing high accuracy, high speed communication networks, APP reduces fault energies and increases the isolation of system faults, resulting in lower wildfire risk. See Table JW-18 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

In 2023, several strategies were implemented from lessons learned during the first three years of deployment that resulted in cost efficiencies. For example, standardizing hardware such as solar charging cabinets, controller cabinets, wiring, connectors, and other common parts across the enterprise allowed for bulk pricing opportunities. Additionally, line controller cabinets were competitively bid in 2023 and a more cost-effective option was ultimately selected over the previously deployed custom designed and built cabinet. Beginning in 2023, APP and Early Fault Detection (“EFD”) programs were managed and scoped together, reducing redundant coverage, streamlining deployment costs, and ultimately requiring fewer crew resource deployments.

Approximately 9.2% of the total capital costs occurred in 2024 due to trailing costs from work placed in service in 2023 or prior.

Early Fault Detection (WMP.1195)

Table JW- 19: Early Fault Detection Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
1,920	4	-	-	1,920	4

Table JW- 20: Early Fault Detection - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
32 Nodes	2638.92	846.76	1.4341%

Initiative Description and Risk Impact

The EFD program utilizes technologies to detect incipient faults on the system with enough time to locate and potentially repair or replace equipment prior to permanent failure. These incipient faults occur long before equipment fails violently, potentially causing damage to the surrounding area or resulting in ignition. Technologies implemented by the EFD Program include Advanced Radio Frequency Sensors (“ARFS”) and Power Quality (“PQ”) meters.

ARFS uses sensors to monitor electrical components for damage and transmits data that can be used to pinpoint issues. Monthly reports help target inspections, identifying subtle damage not visible through traditional methods.

The PQ Meter Deployment, Replacement, and Expansion portion of the EFD Program focuses on deploying PQ meters to remotely monitor and transmit high-resolution electric system data. This supports asset management, operations, power quality investigations, distributed energy integration, reliability improvement, fire risk reduction, fault location, and predictive fault analytics. The project aims to expand monitoring capabilities, upgrade existing equipment, and install new communication systems. Benefits include improved system health information, advanced fault detection, and enhanced analytics for historical events and trends. Continued deployment will support various aspects of electric system management and reliability.

See Table JW-20 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

Prior to 2023, EFD was a pilot program and therefore scoped and managed separate from APP, which resulted in overlap of coverage on targeted circuits. Beginning in 2023, these two programs were managed and scoped together to reduce redundant coverage, streamline deployment costs, and ultimately require fewer crew resource deployments. SDG&E also developed design and construction standards following the pilot phase of EFD to ensure proper deployment and to drive efficiencies such as increased production and decreased post-construction corrective work.

Approximately 1.4% of the total capital costs occurred in 2024 due to trailing costs from work placed in service in 2023 or prior.

Distribution Communications Reliability Improvements (WMP.549)

Table JW- 21: Distribution Communications Reliability Improvements Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
46,512	910	14,349	-	32,163	910

Table JW- 22: Distribution Communications Reliability Improvements - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
10 Base Stations	n/a	n/a	n/a

Initiative Description and Risk Impact

The Distribution Communications Reliability Improvements (“DCRI”) Program (WMP.549) was developed to deploy a privately-owned LTE network using licensed radio frequency spectrum, enhancing the reliability of the communication network to support wildfire mitigation technologies such as APP and EFD. A reliable communication network is necessary for these initiatives that require continuous communication. In 2023, four sites were constructed in the

1 HFTD and six were constructed outside the HFTD. Sites constructed outside the HFTD were
2 scoped because they provide communications coverage for circuits in the HFTD.

3 This initiative does not have a direct risk reduction impact because it is a communication
4 technology that enables other wildfire mitigations with direct wildfire risk reduction impact.

5 **Costs and Efficiencies**

6 The majority of the costs incurred for this program are associated with procurement of
7 materials, design, and construction for site builds and the Spectrum purchase. Site builds include
8 installation of fiber materials including all-dielectric self-supporting fiber optic cable (“ADSS”)
9 and optical ground wire (“OPGW”), which enable communications from substation to substation.
10 Installation of fiber may also necessitate pole replacements if the fiber installation results in an
11 overloaded structure.

12 Spectrum is a purchased frequency that SDG&E owns for this communication and is
13 licensed through the FCC. Frequency is used by many different types of wireless communication
14 devices. It allows the device to wirelessly attach to a protected frequency to transmit data. This
15 type of installation is not only highly secure to protect critical utility data, but meets all the
16 requirements for latency and Service Line Agreements for transmission of critical grid monitoring
17 and information out in the field.

18 Approximately 6.6% of the total capital costs occurred in 2024 due to trailing costs from
19 work placed in service in 2023 or prior.

Avian Protection Program (WMP.972)

Table JW- 23: Avian Protection Program Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
1,519	10	1,034	-	485	10

Table JW- 24: Avian Protection Program - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
657 Poles	112.25	63.70	0.0635%

Initiative Description and Risk Impact

The Avian Protection Program involves installing avian protection equipment on distribution poles in the service territory to reduce the risk of faults and wire-down events associated with avian contact that can lead to ignitions. Avian protection equipment is installed concurrently with other asset replacement initiatives across the HFTD such as lightning arrestors, hot line clamps, and fuses. Approximately 9% of the work performed in 2023 was in the WUI, outside of the HFTD to address specific equipment removals and replacements in the WUI that reasonably align with the risk present.

This initiative mitigates against animal contact that could result in a fault or ignition. See Table JW-24 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

Because this program is scoped alongside lightning arrestor replacements, it is designed, engineered, and constructed in tandem with lightning arrestors. In addition, hotline clamps and fuses are also scoped, designed, engineered, and constructed with these assets. Deploying these asset replacements together resulted in cost efficiencies in every project phase from design and permitting through construction by reducing the number of mobilizations for site visits,

1 permitting, and construction crews. Additionally, overlaps with other programs were identified
2 during the scoping phase to avoid situations where an asset might be replaced or removed from
3 service shortly after being put into service.

4 Approximately 0.1% of the total capital costs occurred in 2024 due to trailing costs from
5 work placed in service in 2023 or prior.

6 **Strategic Pole Replacement Program (WMP.1189)**

7 **Table JW- 25: Strategic Pole Replacement Program Totals (\$000)**

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
59	-	-	-	59	-

8
9
10 **Table JW- 26: Strategic Pole Replacement Program - Completed Units and Risk Reduction**

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
1 Pole	163.03	76.39	0.0009%

11 **Initiative Description and Risk Impact**

12
13 The Strategic Pole Replacement Program replaces gas-treated poles in fire prone areas of
14 the service territory, including Tier 2 and 3 of the HFTD and the WUI, that are not planned for
15 other mitigations such as covered conductor or undergrounding. Gas treated poles have a higher
16 propensity for dry rot due to the pole's interaction with the moisture in the soil, and poles set in
17 concrete are more difficult to inspect and determine the integrity of the pole; therefore, these
18 structures have a higher potential for failure.

19 This program mitigates against equipment failure that could result in a fault or ignition.
20 See Table JW-26 for actual wildfire risk reduced in 2023, which is a percentage of the overall
21 baseline risk at the end of 2022.

22 **Cost and Efficiencies**

23 The cost incurred for this program in 2023 is reasonable and aligns with the work
24 performed. The first year of implementation for this program was 2023 and one pole was replaced.

While the driver for this program is to target gas treated and overloaded poles, SDG&E made every effort to identify poles that were planned for another mitigation (*i.e.*, covered conductor, undergrounding) or that were identified for replacement through its Corrective Maintenance Program (“CMP”) to avoid redundant planning, design, and engineering.

Wireless Fault Indicators (WMP.449)

Table JW- 27: Wireless Fault Indicators Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
11	-	1,877	-	(1,866)	-

Table JW- 28: Wireless Fault Indicators - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
0 WFIs	958.12	4291.94	0.0000%

Initiative Description and Risk Impact

Wireless Fault Indicators (“WFI”) are used to monitor distribution lines and locate faults more efficiently and accurately using Low Power Communication Network (“LPCN”) communication to alert distribution system operators when and where a fault on any line or circuit occurs. WFIs can detect faults without having a minimum continuous current on the line, and therefore can be installed in remote locations that have very little load. Distribution operators can then dispatch electric troubleshooters close to the exact fault location to identify and isolate the fault and begin service restoration quickly.

The WFI Program reduces the risk of wildfires by providing awareness of the location of faults that have occurred on distribution lines, improving electric safety and reliability during typical and extreme weather conditions. WFIs also promote a timely response to fault locations, thus reducing the consequence of an ignition.

Costs and Efficiencies

The capital underspend is due to deploying fewer units than anticipated in 2023. In 2023, the manufacturer for the wireless fault indicator upgraded the equipment, which made it incompatible with SDG&E's communications network. For that reason, SDG&E paused the program to evaluate alternative equipment for future use.

PSPS Sectionalizing Enhancement Program (WMP.461)

Table JW- 29: PSPS Sectionalizing Enhancement Program Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
2,684	-	-	-	2,684	-

Table JW- 30:PSPS Sectionalizing Enhancement Program - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
13 Switches	7251.08	3989.24	15.5172%

Initiative Description and Risk Impact

The PSPS Sectionalizing Enhancement Program installs switches in strategic locations, enabling the isolation of higher-risk areas for potential de-energization. For example, switches are installed on circuits that have significant sections underground, allowing customers served with this lower-risk infrastructure to remain energized during PSPS events. These sectionalizing devices are associated with weather stations and provide real-time weather data at a more granular circuit-segment level, which allows for more precise de-energization decisions.

The purpose of the PSPS Sectionalizing Enhancement Program is to reduce the risk of PSPS events. By increasing the number of remotely operated sectionalizing devices on higher risk circuits, SDG&E can reduce the number of customers that have the potential to be impacted by a PSPS event or potentially reduce the duration of de-energization based on local wind events. This program does not impact wildfire risk. See Table JW-30 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

In 2023, costs were incurred to install switches in high-risk circuits. The expenses align with the work performed, ensuring enhanced safety and reliability. The overall investment is justified by the intent to reduce scale, scope, and frequency of PSPS events.⁵⁴

Approximately 20% of the total capital costs incurred for this program occurred in 2024 for projects initially planned to be completed in 2023, but were ultimately placed in service in 2024, and therefore were not contemplated in SDG&E's 2024 GRC. In addition, approximately 7.2% of the total costs occurred in 2024 due to trailing costs from projects placed in service in 2023 or prior.

Standby Power Program (WMP.468)

Table JW- 31: Standby Power Program Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	12,712	-	-	-	12,712

Table JW- 32: Standby Power Program - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
362 Generators	225.69	214.26	33.3333%

Initiative Description and Risk Impact

The Standby Power Program consists of the Fixed Backup Power ("FBP") Program that targets residential and commercial customers and the Mobile Home Park Resilience Program ("MHRP") that targets mobile home park clubhouses to provide fixed standby generators, reducing the impacts of PSPS events. The program targets customers and communities that would not directly benefit from other grid hardening programs and that are likely to experience a PSPS de-energization.

⁵⁴ D.20-05-051, Appendix A at 9.

This program reduces the impacts of PSPS events on customers. It does not have a wildfire risk reduction impact. See Table JW-32 for actual PSPS reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

In 2023, SDG&E renegotiated the contract with its vendor with the intention of continuing to refine program operations and reduce operating costs. This amendment resulted in cost savings for the program while surpassing the goal of 300 generator installations. In addition, SDG&E leveraged cross-marketing approaches to promote the program in parallel campaigns in order to reach similar profiles of customers (e.g., SDG&E Wildfire Safety Fairs), resulting in overall efficiencies for customer resiliency programs.

Generator Grant Program (WMP.466)

Table JW- 33: Generator Grant Program Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	5,465	-	-	-	5,465

Table JW- 34: Generator Grant Program - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
805	49.26	9.54	11.4795%

Initiative Description and Risk Impact

The Generator Grant Program (“GGP”) promotes resiliency for the most vulnerable customers providing access to electricity for medical devices and critical appliances during a PSPS event. The GGP offers portable backup battery units with solar charging capacity to customers, leveraging cleaner, renewable generator options to give vulnerable customers a means to keep small devices and appliances charged and powered during PSPS events. The GGP, launched in 2019, focuses on the needs of MBL and Life Support customers in addition to other customers

with access and functional needs in Tiers 2 and 3 of the HFTD who have experienced a PSPS event. Eligible customers are proactively contacted and educated about the program offerings.

This program reduces the impacts of PSPS on customers and does not have a wildfire risk reduction impact. See Table JW-34 for actual achieved risk reduction in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

In 2022, SDG&E conducted a competitive solicitation and RFP for program implementation to begin in 2023. The supplier contract was successfully renegotiated to achieve more favorable pricing terms, thereby achieving a more efficient invoicing process and greater flexibility when placing orders to better adapt to fluctuations in the number of eligible customers. In addition, a reduced per unit price was negotiated, which resulted in overall cost savings for the program.

Generator Assistance Program (WMP.467)

Table JW- 35: Generator Assistance Program Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	282	-	-	-	282

Table JW- 36: Generator Assistance Program - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
250	234.33	45.95	25.0000%

Initiative Description and Risk Impact

The Generator Assistance Program (“GAP”) enhances resiliency for customers who reside in Tiers 2 and 3 of the HFTD and may be impacted by PSPS events. While the GGP addresses the needs of the most medically vulnerable and the Standby Power Program targets customers that do not have other grid hardening initiatives planned in their area, the GAP expands resilience opportunities to the general public in Tiers 2 and 3 of the HFTD. The program offers rebates for

portable fuel generators and portable power stations so customers can acquire backup power options, which enhances preparedness and mitigates the impacts of PSPS events. The targeted population are customers who reside within Tiers 2 and 3 of the HFTD and have experienced at least one PSPS event since 2019.

This program reduces the impacts of PSPS events on customers. It does not have a wildfire risk reduction impact. See Table JW-36 for actual PSPS reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

SDG&E conducted a competitive solicitation and RFP for procuring equipment and contracting with vendors. The compensation table structure in the vendor contract was renegotiated, reducing monthly costs for call center support and rebate processing paid to the selected vendor. In addition, SDG&E leveraged cross-marketing approaches to promote the program in parallel campaigns to reach similar profiles of customers (e.g., SDG&E Wildfire Safety Fairs), resulting in overall efficiencies for customer resiliency programs.

Distribution Overhead Detailed Inspections (WMP.478)

Table JW- 37: Distribution Overhead Detailed Inspections Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
1,451	792	1,398	13,379	53	(12,587)

Table JW- 38: Distribution Overhead Detailed Inspections - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
11,755 inspections	177.02	90.23	2.0289%

Initiative Description and Risk Impact

General Order (“GO”) 165 requires SDG&E to perform a service territory-wide inspection of its electric distribution system, generally referred to as the Corrective Maintenance Program

(CMP). The CMP helps mitigate wildfire risk by providing additional information about the condition of the electric distribution system, including the HFTD. GO 165 establishes inspection cycles and record-keeping requirements for utility distribution equipment. Utilities must conduct detailed inspections at a minimum of every 5 years for overhead structures, lines and sub-equipment. Additionally, SDG&E prioritizes detailed inspections in the HFTD prior to Santa Ana wind season. Inspections and resulting corrective work is captured within this initiative. The timeframes for remediating corrective work are dictated by GO 95, Rule 18.

This program mitigates against equipment failures that could result in an ignition and mitigates against contact with objects such as vegetation and debris that could pose ignition risk. See Table JW-38 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

The costs recorded for this program are just and reasonable because this is a mandated inspection program with required timeframes for remediating findings. To the extent possible, SDG&E optimizes inspection cycles and may reduce the number of site visits as long as compliance with GO165 is maintained, driving cost efficiencies.

Approximately 1.5% of the total capital costs incurred for this program occurred in 2024 for projects initially planned to be completed in 2023, but were ultimately placed in service in 2024, and therefore were not contemplated in SDG&E's 2024 GRC. In addition, approximately 12% of the total capital costs occurred in 2024 due to trailing costs associated with assets placed in service in 2023 or prior.

While all authorized O&M costs for distribution inspection programs are included with this program, consistent with how they were authorized in SDG&E's TY 2019 GRC, actual O&M costs are presented within each distribution inspection program to better demonstrate the costs

associated with individual inspection programs. In summary, the overall O&M differential for distribution detailed inspections, distribution infrared inspections, distribution wood pole intrusive inspections, distribution patrol inspections, and drone inspections is \$41.483 million and is tied primarily to the drone inspection program described below.

Transmission Overhead Detailed Inspections (WMP.479)

Table JW- 39: Transmission Overhead Detailed Inspections Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
1,314	36	596	-	718	36

Table JW- 40: Transmission Overhead Detailed Inspections - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
1,928 inspections	62.74	31.58	0.9487%

Initiative Description

GO 165 requires SDG&E to perform a service territory-wide inspection of its electric transmission system, generally referred to as the CMP. Detailed inspections are currently completed on a 3-year cycle for all overhead structures, including those in the HFTD. Inspections are prioritized and scheduled based on safety, reliability, and operational need. The program also ensures that conditions are corrected in timeframes that meet or exceed GO 95 requirements.

The CMP helps mitigate wildfire risk by providing additional information about the condition of the electric transmission system, including structures in the HFTD. With this information, potential infractions can be addressed before they develop into issues. This program mitigates equipment failures that could result in ignition and mitigates contact with objects such as vegetation and debris that could also pose an ignition risk. See Table JW-40 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

The costs associated with this program include distribution underbuild related corrective work resulting from detailed transmission inspections. The costs recorded for this program are just and reasonable because this is a mandated inspection program with required timeframes for remediating findings. The incremental spend is a result of the inability to perfectly forecast the volume, and therefore spend, of necessary work that will be identified during inspections.

Approximately 6.6% of the total capital costs occurred in 2024 due to trailing costs from work associated with assets placed in service in 2023 or prior.

Distribution Infrared Inspections (WMP.481)

Table JW- 41: Distribution Infrared Inspections Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	330	-	-	-	330

Table JW- 42: Distribution Infrared Inspections - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
11,900 inspections	1639.70	978.04	2.0602%

Initiative Description and Risk Impact

Distribution Infrared Inspections utilize infrared technology to examine the radiation emitted by connections to determine if there are potential issues with a connection prior to failure. The scope of this program includes the inspection of approximately 12,000 distribution structures each year. Thermographers perform ground inspections to capture and assess thermal imagery that may indicate an abnormality on the system. Findings are documented and repair work is tracked through completion. Inspections and the resulting corrective work are captured within this initiative.

This program mitigates against equipment failures that could result in ignition. See Table JW-42 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

The costs associated with distribution infrared inspections are just and reasonable due to several factors. In 2023, structures were selected based on their location in HFTD Tier 2 areas, recent reliability concerns, and subject matter expertise. The program also adopted a risk-informed approach, which led to the inclusion of additional inspections beyond the initial selection of structures. This approach enhanced SDG&E's ability to detect damage and collect data on distribution assets, thereby improving overall reliability and safety.

Distribution Wood Pole Intrusive Inspections (WMP.483)

Table JW- 43: Distribution Wood Pole Intrusive Inspections Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
111	108	123	-	(12)	108

Table JW- 44: Distribution Wood Pole Intrusive Inspections - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
1,038 Inspections	129.56	68.40	0.1160%

Initiative Description and Risk Impact

GO 165 requires all wood poles over 15 years of age to be intrusively inspected within 10 years and all poles that previously passed intrusive inspection to be inspected intrusively again on a 20-year cycle. SDG&E performs distribution wood pole intrusive inspections on a 10-year cycle. An intrusive inspection typically involves an excavation around the pole base and/or a sound and bore of the pole at the ground-line. Industry standards are then used to estimate the remaining pole strength. Poles with greater than 80 percent strength remaining pass the inspection. Poles that do

not pass are scheduled for replacement. The inspections themselves and the corrective work for replacement are captured within this initiative.

Non-routine intrusive inspections may occur when current pole strength (percent strength remaining) information is needed for pole loading calculations necessary for design work.

This program mitigates against equipment failures that could result in ignition and against contact with objects such as vegetation and debris that could also pose ignition risk. See Table JW-44 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

The costs recorded for this program are just and reasonable because this is a mandated inspection program with required timeframes for remediating findings.

Drone Assessments (WMP.552)

Table JW- 45: Drone Assessments Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
43,708	53,301	-	-	43,708	53,301

Table JW- 46: Drone Assessments - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
15,311 Inspections	47.19	24.25	16.9848%

Initiative Description and Risk Impact

The Drone Assessments Program involves flight planning, drone flight and image capture, field observations, image assessment, determination of issues, and repair. Imagery collected by drones improves traditional ground inspections by providing inspectors with a “birds eye view” of overhead facilities, as well as high resolution imagery of overhead equipment and components. The use of drones to collect imagery enhances an inspector’s ability to identify potential fire

1 hazards related to certain types of issues or when conditions such as terrain and vegetation density
2 make full detailed inspections difficult. Approximately 10% of the work performed for this
3 initiative is in the WUI, which is outside of the HFTD. As discussed previously in this testimony,
4 SDG&E elected to perform risk-informed drone inspections as an additional wildfire mitigation
5 measure in the WUI that reasonably align with the risk present and reduce the risk of ignition in
6 those urban interface areas.

7 Drone inspections mitigate against risk drivers such as equipment failure and contact from
8 object that could result in an ignition. Generally, inspections are intended to identify and correct
9 issues found on the grid before a risk event occurs. See Table JW-46 for actual wildfire risk
10 reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

11 **Costs and Efficiencies**

12 The majority of costs incurred for this program in 2023 are related to capital repairs
13 resulting from drone inspections that were performed between 2020 and 2022. During this
14 timeframe, the program was developed to initially inspect every structure in Tier 2 and tier 3 of the
15 HFTD and fully understand the various risks that might be present on infrastructure. Because this
16 was the first round of drone inspections, they revealed a higher volume of resulting findings than
17 expected, increasing the need for repairs beyond expectations.

18 This program identified a higher percentage of total issues than traditional inspection
19 programs. Drone inspections found significantly more issues related to damaged arrestors,
20 damaged insulators, issues with pole top work, issues with armor rods, crossarm or pole top
21 damage, exposed connections, loose hardware, improper splices, damaged conductor, damaged
22 transformer and Communication Infrastructure Provider (“CIP”) connection issues. The ongoing
23 remediation of these findings resulted in the reduction of more potential risk conditions on
24 SDG&E’s grid, thus reducing more risk in its service territory.

Approximately 1.5% of the total capital costs occurred in 2024 due to trailing costs from work associated with assets placed in service in 2023 or prior.

Distribution Overhead Patrol Inspections (WMP.488)

Table JW- 47: Distribution Overhead Patrol Inspections Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
9,163	331	10,208	-	(1,045)	331

Table JW- 48: Distribution Overhead Patrol Inspections - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
85,847 Inspections	2843.13	1544.00	4.3265%

Initiative Description and Risk Impact

GO 165 requires utilities to perform annual patrols in Tier 2 and 3 of the HFTD and in urban areas. Patrol inspections in rural areas outside of the HFTD are required once every 2 years. However, SDG&E performs patrol inspections in all areas on an annual basis. Both the patrol inspections themselves and the corrective work are included in this program. This program mitigates against equipment failures that could result in ignition and against contact with objects such as vegetation and debris that could also pose ignition risk. See Table JW-48 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

The costs recorded for this program are just and reasonable because this is a mandated inspection program with required timeframes for remediating findings.

Capacitor Maintenance and Replacement Program (“SCADA”) (WMP.453)

Table JW- 49: Capacitor Maintenance and Replacement Program Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
1,296	-	1,880	-	(584)	-

Table JW- 50: Capacitor Maintenance and Replacement Program - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
20 Capacitors	18.00	23.86	0.0116%

Initiative Description and Risk Impact

The SCADA Capacitors Maintenance and Replacement Program replaces non-SCADA capacitors with a more modern SCADA-switchable capacitor or removes non-SCADA capacitors if not required for voltage or reactive support. These modernized capacitors have a monitoring system to check for imbalances and isolate internal faults before they become catastrophic. SCADA capacitors also have the capacity for remote isolation and monitoring of the system, which provides additional situational awareness during extreme weather conditions. Approximately 70% of the work performed in this initiative is in the WUI. As discussed previously in this testimony, SDG&E elected to address specific equipment replacements in the WUI that reasonably align with the risk present. Although most of the work performed was outside the HFTD, the capacitors benefit the HFTD portion of the circuit by providing voltage support enhancing reliability and safety.

While this program does not reduce capacitor faults, the advanced protection equipment is designed to detect and isolate issues before a capacitor rupture occurs, reducing the failure mode most likely to lead to an ignition. See Table JW-50 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

SDG&E accomplished more work than planned while remaining under authorized costs, thus increasing risk reduction. The SCADA capabilities enhance remote monitoring of the capacitors providing more efficient operations by reducing the number of site visits and helping get ahead of issues.

Expulsion Fuse Replacement Program (WMP.459)

Table JW- 51: Expulsion Fuse Replacement Program Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
42	-	-	-	42	-

Table JW- 52: Expulsion Fuse Replacement Program - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
36 Fuses	0.00	2811.78493 7.77	0.0763%

Initiative Description and Risk Impact

The Expulsion Fuse Replacement Program replaces existing expulsion fuses with new, more fire safe expulsion fuses that are approved by CAL FIRE. These new expulsion fuses reduce the discharge expelled into the atmosphere, reducing the chance of a fuse operation leading to an ignition. See Table JW-52 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Cost and Efficiencies

Because this program is scoped alongside lightning arrestor replacements, it is therefore designed, engineered, and constructed in tandem with lightning arrestors. Hotline clamps and avian protection are also scoped, designed, engineered, and constructed with these assets. Deploying these asset replacements together reduced the number of mobilizations for site visits, permitting, and construction crews, resulting in cost efficiencies in all project phases.

1 Additionally, overlaps with other programs were identified during the scoping phase to avoid
2 situations where an asset might be replaced or removed from service shortly after being put into
3 service. This coordinated approach ensured that asset replacements and sectionalizing efforts were
4 both efficient and sustainable.

5 Approximately 7.5% of the total capital costs occurred in 2024 due to trailing costs
6 associated with assets placed in service in 2023 or prior.

7 Hotline Clamp Replacement (“HLC”) Program (WMP.464)

8 **Table JW- 53: Hotline Clamp Replacement Program Totals (\$000)**

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	1,662	-	-	-	1,662

9
10 **Table JW- 54: Hotline Clamp Replacement Program - Completed Units and Risk Reduction**

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
967 HLC	321.37	94.83	0.0841%

11 Initiative Description and Risk Impact

12
13 The HLC Replacement Program replaces HLC connections that are connected directly to
14 overhead primary conductors with compression, wedge, or other approved connections to
15 eliminate the risk of wire-down failure and the associated ignition risk. HLC connections are
16 installed concurrently with other asset replacement initiatives across the HFTD and WUI such as
17 lightning arrestors, avian protection, and fuses. Approximately 23% of the work performed in this
18 initiative is in the WUI, which is outside of the HFTD. As discussed previously in this testimony,
19 SDG&E elected to address specific equipment removals/replacements in the WUI that reasonably
20 align with the risk present. See Table JW-54 for actual wildfire risk reduced in 2023, which is a
21 percentage of the overall baseline risk at the end of 2022.

Cost and Efficiencies

This program is designed, engineered, and constructed in tandem with lightning arrestors. Avian protection and fuses are also scoped, designed, engineered, and constructed with these assets. Deploying these asset replacements together reduced the number of mobilizations for site visits, permitting, and construction crews, resulting in cost efficiencies in all project phases. Additionally, overlaps with other programs were identified during the scoping phase to avoid situations where an asset might be replaced or removed from service shortly after being put into service. This coordinated approach ensured that asset replacements and sectionalizing efforts are both efficient and sustainable.

Lightning Arrestor Removal and Replacement (WMP.550)

Table JW- 55: Lightning Arrestor Removal and Replacement Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
2,173	86	-	-	2,173	86

Table JW- 56: Lightning Arrestor Removal and Replacement - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
2,202 Arrestors	644.74	199.38	0.6409%

Initiative Description and Risk Impact

The Lightning Arrestors Replacement Program installs CAL FIRE-approved lightning arresters to mitigate the impact of transient overvoltage on the electric system. CAL FIRE-approved lightning arrestors are equipped with an external device that operates prior to the arrestor overloading, dramatically reducing the potential of becoming an ignition source. Approximately 0.8% of the work performed in this initiative is in the WUI, which is outside of the HFTD. As discussed previously in this testimony, SDG&E elected to address specific equipment removals/replacements in the WUI that reasonably align with the risk present. See Table JW-56

for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Cost and Efficiencies

This program is the driver for scoping other asset replacement programs such as HLCs, avian protection, and expulsion fuses, and is therefore designed, engineered, and constructed in tandem with those assets. Deploying these asset replacements together reduced the number of mobilizations for site visits, permitting, and construction crews, resulting in cost efficiencies in all project phases. Additionally, overlaps with other programs were identified during the scoping phase to avoid situations where an asset might be replaced or removed from service shortly after being put into service. This coordinated approach ensured that asset replacements and sectionalizing efforts are both efficient and sustainable.

Approximately 2.5% of the total capital costs occurred in 2024 due to trailing costs from work associated with assets placed in service in 2023 or prior.

Cleveland National Forest (CNF Distribution Overhead) (WMP.1017)

Table JW- 57: Cleveland National Forest Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
1,384	658	13,470	-	(12,086)	658

Initiative Description and Risk Impact

Hardening work within Cleveland National Forest was completed in the 2020-2022 WMP cycle and hardened 53 miles of distribution overhead lines and undergrounded 14 miles of distribution lines.

Costs and Efficiencies

This program was underspent in 2023 due to completing the program in 2022. Costs incurred for this program in 2023 were related to ongoing environmental restoration work in

compliance with the Mitigation Monitoring, Compliance and Reporting Program (MMCRP), which is required by the project.

Approximately 1.6% of the total capital costs occurred in 2024 due to trailing costs from 2023.

LiDAR Inspections of Distribution Electric Lines and Equipment (WMP.484)

Table JW- 58: LiDAR Inspections of Distribution Electric Lines and Equipment Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	873	-	-	-	873

Initiative Description and Risk Impact

Light detection and ranging (“LiDAR”) inspections of distribution lines and equipment were performed in the HFTD between 2021 and 2022. Data collected from those inspections continues to be leveraged for multiple use cases including improving data integrity and quality in asset inventory systems and supporting PLS-CADD design of future projects.

This initiative does not directly reduce wildfire risk. Instead, it provides situational awareness and enables identification and correction of gaps in data quality.

Costs and Efficiencies

The costs incurred for this initiative in 2023 are related to correcting data quality gaps in GIS, the asset inventory system of record, utilizing previously collected LiDAR data to identify where inconsistencies occurred. Using the data collected, SDG&E was able to increase its understanding of the condition of the grid and improve electric infrastructure data quality. Data quality projects can be extremely costly and time consuming from conception through implementation, so leveraging an existing data set to support the effort was reasonable.

Centralized Repository for Data (WMP.519)

Table JW- 59: Centralized Repository for Data Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
6,905	-	-	-	6,905	-

Initiative Description

The WMP Data Platform (previously the Centralized Repository for Data) provides a centralized data lake that enables consistent, reliable and automated reporting of the spatial and non-spatial Quarterly Data Report (“QDR”) mandated by Energy Safety and subject to Energy Safety’s Data Guidelines.⁵⁵ Data is ingested into the data foundation from more than 10 data sources including asset inventory systems, asset management systems, outage systems, vegetation management systems, and other internal and external systems, which creates one source of truth for data consumption. Data consumption includes regulatory reporting, internal reporting, efficacy studies, and advanced analytics. The WMP Data Platform is governed by management oversight, policies and procedures, education, and standards.

Costs and Efficiencies

Costs incurred for this initiative in 2023 were necessary as SDG&E was required to transition from previous versions of the Data Guidelines to version 3.0 and 3.1. In 2023, SDG&E reached a steady state of costs associated with the development, testing, and implementation of the WMP Data Platform as demonstrated by the decrease in expenditures from 2022 (\$15 million). The primary cost driver for this initiative was development work required to transition to version 3.0 of the Data Guidelines, which included vegetation management and risk event restructure and the introduction of more metrics related to transmission and distribution inspections.

⁵⁵ OEIS, Data Guidelines, Version 3.0 (December 14, 2022) (“Data Guidelines”) available at <https://efiling.energysafety.ca.gov/eFiling/Getfile.aspx?fileid=53314&shareable=true>.

In 2023, SDG&E transitioned the project development team to a support team that would continue enhancing the WMP Data Platform. This organizational restructure leveraged existing resources, optimized functional teams, and found cost efficiencies that included moving the WMP Data Foundation, OEIS Data Aggregation, and GIS Regulatory Reporting teams under one organization to increase synergies and reduce redundancies between data architects and system developers on tabular metrics and spatial reporting data development (in line with the common data architectures).

VEGETATION MANAGEMENT AND INSPECTIONS

Fuels Management (WMP.497)

Table JW- 60: Fuels Management Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	4,071	-	-	-	4,071

Table JW- 61: Fuels Management - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Projected % Risk Reduction
514 Poles Cleared	20.81	10.46	0.6259%

Initiative Description and Risk Impact

The fuels activity treatment includes the thinning of ground vegetation surrounding structures located in the HFTD where there is an increased risk of ignition and propagation. Specifically, vegetation is thinned in a 50-foot radius from the outside circumference of a structure down to an approximate 30 percent vegetation cover where achievable. Non-native vegetation is prioritized for thinning. The activity is also intended to protect infrastructure in the event of wildfire. SDG&E annually targets approximately 500 poles for fuels management on a risk informed basis, subject to environmental and property owner constraints on work. SDG&E's risk analysis when identifying targeted structures includes an assessment of where the surrounding

fuels may be conducive to ignition. SDG&E's also leverages its risk modeling tools such as the WRRM model and the Circuit Risk Index to identify higher risk areas in the HFTD to prioritize and perform fuels modification activities.

This initiative removes fuels from under electric infrastructure to reduce the likelihood that an ignition propagates by reducing and thinning fuels. See Table JW-61 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Costs and Efficiencies

In 2023, Vegetation Management restructured all its contracted service agreements, including those for Fuels Management. This restructuring is aimed to optimize vendor alignment and creating synergies in contractor insurance. The mechanical thinning activity of the Fuels Management program was awarded to an existing tree trim contractor. By awarding the mechanical thinning activity to an existing contractor, the overall cost of performing this activity was reduced. The initiative therefore successfully lowered expenses while maintaining or improving service quality.

Pole Clearing (Brushing) (WMP.512)

Table JW- 62: Pole Clearing (Brushing) Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	8,045	-	4,374	-	3,671

Table JW- 63: Pole Clearing (Brushing) - Completed Units and Risk Reduction

Units	Actual RSE Tier 3	Actual RSE Tier 2	Actual % Risk Reduction
35,258 Poles Brushed	73.75	52.63	3.0659%

Initiative Description and Risk Impact

Pole clearing is a fire prevention measure involving the removal of vegetation at the base of poles that carry specific types of electrical hardware that could cause sparking or molten

material to fall to the ground. Public Resource Code § 4292 requires the removal of all vegetation down to bare mineral soil within a 10-foot radius from the outer circumference of subject poles located within the boundary of the State Responsibility Area (“SRA”), subject to certain exemptions. The requirement also includes the removal of live vegetation up to 8 vertical feet and the removal of dead vegetation up to the conductor level within the clearance cylinder.

This initiative removes fuels from around the base of structures to reduce the likelihood that an ignition propagates. See Table JW-63 for actual wildfire risk reduced in 2023, which is a percentage of the overall baseline risk at the end of 2022.

Cost and Efficiencies

The costs for this program are just and reasonable in that they facilitate compliance with Public Resources Code § 4292 and reduce the risk of an ignition emerging into a wildfire through contact with vegetation. To further promote cost efficiencies, in 2023, Vegetation Management completed a strategic sourcing initiative to renew contracts for all its vegetation management activities, including pole brushing. The initiative included a marketing analysis to assess associated industry rates, and a request-for-information survey from eligible vendors to analyze contractor safety, cost, performance, capabilities, sustainability, etc. Under the comprehensive vegetation management strategic sourcing initiative, safety and cost were the two primary drivers in the process of selecting vendors.

Tree Planting – Right Tree Right Place (WMP.1325)

Table JW- 64: Tree Planting – Right Tree Right Place Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	1,218	-	-	-	1,218

Initiative Description

As part of its tree removal program and a component of its “Right Tree, Right Place” initiative for safety and reliability, SDG&E continues to offer customers the incentive to remove

1 incompatible trees growing near power lines, and provide replacement trees that are compatible to
2 plant near power lines. As part of its overall sustainability initiative, SDG&E has a goal to plant or
3 provide 100,000 trees to its customers, communities, and agencies by 2035 to promote
4 environmental health and mitigate the impacts of climate change.

5 **Initiative Impact**

6 This initiative is not directly tied to reducing a specific risk driver or reducing ignitions.
7 Instead, trees planted as part of this program help incentivize removal of vegetation that could
8 otherwise pose a risk, in addition to benefiting customers and communities by improving air
9 quality, improving aesthetics, and controlling erosion. The program is also a key sustainability
10 strategy to reduce tree/line encroachment and contacts, reduce impacts to customers, to promote a
11 healthy urban and rural forest, and lower maintenance costs to ratepayers.

12 **Costs and Efficiencies**

13 SDG&E's Tree Planting – Right Tree, Right Place initiative follows the vegetation
14 management industry best management practice and standard of removing trees incompatible with
15 power lines. Incompatible trees are typically fast-growing or otherwise costly and difficult to
16 manage safely with continued pruning. Replacing these trees with species that do not require
17 utility management increases safety and reliability, reduces outages and ignitions, and creates cost
18 savings to ratepayers over time. SDG&E's broader sustainability initiative also includes providing
19 trees to customers, communities, and other stakeholders, which promotes environmental
20 stewardship, supports city climate action plans, reduces carbon in the atmosphere, and improves
21 the health of communities.

SITUATIONAL AWARENESS AND FORECASTING

Weather Stations and NDVI Cameras (WMP.447)

Table JW- 65: Weather Stations and NDVI Cameras Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
293	4,459	583	2,395	(290)	2,064

Initiative Description and Risk Impact

The Weather Station Network, comprised of 222 weather stations, increases situational awareness and obtains foundational data for operational and mission critical activities. When developing the Weather Station Network, the use of pre-existing weather stations was considered, however, the existing data did not have the resolution needed to support emergency operations during PSPS events. Weather stations in the network record wind speed, wind direction, wind gusts, temperature, and humidity every 10 minutes and transmit the data to our publicly available website. In addition, 95 percent of the weather stations can report every 30 seconds if needed during fire weather conditions.

Weather events have the potential to cause damage to electrical infrastructure, which may lead to faults or ignitions within the service territory. Understanding the precise location and severity of weather events that may impact SDG&E's system is critical for planning and scoping grid hardening activities and responding to real-time events that may lead to PSPS events. SDG&E's weather network provides the situational awareness and foundational data required for planning and operational activities.

Costs and Efficiencies

Costs incurred for this initiative in 2023 were related to expanding SDG&E's Fire Science and Climate Adaptation group and onboarding additional meteorologists, fire coordinators, and climate adaptation advisors who bring expertise to understanding weather and climate data and their impact on grid infrastructure. This group also provides insights for SDG&E's WiNGS-

Planning and WiNGS-Ops models, which consider weather data as a key input. In addition, these resources support operations during PSPS events, offering subject matter expertise on weather conditions and forecasts.

Approximately 27.8% of the total capital costs occurred in 2024 due to trailing costs associated with assets placed in service in 2023 or prior.

Air Quality Management Program (WMP.970)

Table JW- 66: Air Quality Management Program Totals (\$000)

Units	Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
6 Sensors	82	66	-	-	82	66

Initiative Description

Cal/OSHA Title 8 Section 5141.1 requires employers to protect workers from wildfire smoke (“emissions from fires in wildlands or in adjacent developed areas”). Specifically, employers must establish and implement a system for communicating wildfire smoke hazards that includes effective procedures for informing employees of current PM_{2.5} levels. SDG&E’s Air Quality Index (“AQI”) Program includes obtaining AQI measurements from particulate sensors and communicating the AQI and protective measures to employees. Particulate sensors measure the levels of PM_{2.5} and when thresholds are exceeded, Safety is automatically notified. If the particulate source is confirmed to be a wildfire, notifications with AQI information are sent to supervisors via text and email.

Costs and Efficiencies

The costs incurred for this program are just and reasonable because SDG&E is required by law to notify its employees if wildfire smoke conditions pose a risk at the time.. Installation of AQI sensors support compliance with these requirements.

Fire Potential Index (WMP.450)

Table JW-67: Fire Potential Index Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
1,330	-	-	-	1,330	-

Initiative Description and Risk Impact

The FPI was developed to communicate the wildfire potential on any given day to promote safe and reliable operations. This 7-day forecast, which is produced daily, classifies the fire potential based on weather and fuels conditions and historical fire occurrences. The FPI reflects key variables such as the state of native grasses across the service territory (“green-up”), fuels (ratio of dead fuel moisture (“DFM”) component to live fuel moisture (“LFM”) component), and weather (sustained wind speed and dew point depression). Each of these variables is assigned a numeric value and those individual numeric values are summed to generate an FPI value from 0 to 17. The numeric values are then grouped as “Normal” (<12), “Elevated” (12-14), and “Extreme” (>14). The FPI does not provide direct risk reduction; however, it provides situational awareness that dictates operational procedures and protocols promoting a safe working environment. For example, some operations may be stopped if the FPI is elevated or extreme.

The Center for Western Weather and Water Extremes (“CW3E”) operates the West-Weather Research and Forecasting (“WRF”) model, which is optimized for extreme weather prediction in the Western U.S., particularly during the Pacific Coast Santa Anas and winter storms. This model uses a 200-member ensemble at 9-kilometer grid spacing to forecast high wind speeds and heavy rainfall, lightning, and icing for SDG&E. The large ensemble size helps capture the probability and severity of extreme events, improving medium and extended range fire weather forecasting, especially for fire weather conditions. San Jose State University is developing a live fuel moisture content model to better assess fire danger using high-resolution satellite data. Meanwhile, the San Diego Supercomputer Center (“SDSC”) stores and makes SDG&E datasets

accessible for weather forecasts, fire potential, and fuels, with daily archiving and APIs for querying. This project includes data storage at SDSC and backup on Amazon Cloud, facilitating the use of these datasets in fire modeling and product developments.

Costs and Efficiencies

Costs incurred for this initiative are related to third-party vendor support contracts that improve SDG&E's situational awareness capabilities and directly support the above-mentioned technologies.

High-Performance Computing Infrastructure (WMP.541)

Table JW-68: High-Performance Computing Infrastructure Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
10	-	-	-	10	-

Initiative Description and Risk Impact

SDG&E owns and operates three supercomputers running five ensembles of the Weather Research and Forecasting (WRF) Model at 2-kilometer and 6-kilometer horizontal resolution, generating 170 GB of data daily. These WRF forecast simulations are displayed in visualization portals to help Meteorology analyze and prepare accurate weather forecasts. Collected weather data and forecast modeling is integrated into fire behavior and fire potential tools, contributing to ignition probability and estimated wildfire consequence. Supercomputers collectively compute nearly 2,000 core hours per day of high-performance computing to generate operational products, including the SAWTI, FPI, and WFA-E. The forecast data generated by these supercomputers is shared with researchers and various stakeholders, and APIs enable public access to WMP-related datasets by authorized users for use in fire modeling.

Supercomputers do not provide direct risk reduction; however, they enable situational awareness and obtain foundational data for operational and mission critical activities. SDSC

ingests and stores SDG&E datasets for weather forecasts, fire potential index and fuels to enable accessibility of these datasets for various stakeholders through web services and visual maps.

Costs and Efficiencies

The costs incurred for this initiative are just and reasonable because they directly support SDG&E's ability to process and utilize weather data, which enhances situational awareness and supports operational decision-making.

EMERGENCY PREPAREDNESS

Public Emergency Communications Strategy (WMP.563)

Table JW-69: Public Emergency Communications Strategy Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
10,408	10,397	-	290	10,408	10,107

Initiative Description and Impact

During outages due to wildfires and PSPS events, notifications, media updates, in-community signage, and situational awareness postings are used across social media to keep customers and the general public informed. Social media kits are also shared with community partners to reach a broad audience. Additionally, SDG&E provides affected customers and the public with real-time updates during an outage due to a wildfire or PSPS event. Key communications are available in 22 prevalent languages.

SDG&E also utilizes communications channels geared towards individuals who may not be account holders (e.g., visitors, mobile home park residents, caretakers, etc.). These channels include SDG&E's PSPS Mobile Application (Alerts by SDG&E), roadside electronic message signs placed in strategic, highly traveled locations, tribal casino marquees, and flyers posted around impacted communities.

PSPS notifications are sent to all impacted individuals as soon as possible through the Customer Notification System (“CNS”) (recorded voice message, email, and text message). Notifications for outages due to wildfire and PSPS are also converted into American Sign Language video, audio read-out, and written transcript. Address-level alerts are also enabled for customers and the general public through the Alerts by SDG&E Application.

Costs and Efficiencies

The costs incurred for this initiative in 2023 are just and reasonable because they directly support a two-fold emergency communications strategy. First, they supported the development and implementation of tools such as the CNS and the Public Safety Partner Portal (“PSPP”) that were utilized for mandatory customer and public safety partner notifications⁵⁶ prior to, during, and following potential and actual PSPS de-energizations with targeted communications to more vulnerable communities such as AFN and Tribal communities. Second, they directly funded the Company’s Wildfire Safety public campaigns through media such as TV, radio, print, and digital campaigns that provided information about PSPS events and emergency preparedness.

Aviation (WMP.557)

Table JW-70: Aviation Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
5,069	8,016	-	7,389	5,069	627

Initiative Description and Impact

Fire agencies could divert local aerial resources to fight wildfires outside of the service territory, leaving the service territory with limited or no aerial firefighting resources. The Aviation Firefighting Program focuses on reducing the consequences of wildfires through suppression of fire spread, ensuring aerial firefighting resources remain available in the region. These resources

⁵⁶ D.19-05-042, Appendix A at A18 - A19.

are available to the entire community regardless of the cause of ignition. SDG&E has agreements with the County of San Diego, CAL FIRE, and the Orange County Fire Authority for aerial firefighting within the service territory. Dispatch of aviation firefighting assets is performed through CAL FIRE and these assets support the initial attack strategy to contain wildfires to less than 10 acres. SDG&E employs flight operations staff to assist in dispatching aerial assets 365 days per year, throughout the service territory. This allows the assets to be launched rapidly once dispatched by CAL FIRE.

Costs and Efficiencies

The costs associated with the aviation firefighting program in 2023 are both reasonable and justified. Aviation costs were carefully negotiated to restructure Blackhawk contracts and were benchmarked against standard United States Forest Service (“USFS”) rates, resulting in lower monthly expenses.

Approximately 15.6% of the total capital costs incurred for this program occurred in 2024 for projects initially planned to be completed in 2023, but were ultimately placed in service in 2024, and therefore were not contemplated in SDG&E’s 2024 GRC. In addition, approximately 16.3% of the total capital costs occurred in 2024 due to trailing costs associated with assets placed in service in 2023.

Suppression Resources and Services (WMP.514)

Table JW-71: Suppression Resources and Services Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	4,641	-	2,688	-	1,953

Initiative Description and Impact

SDG&E worksites are required to have increasing levels of wildfire prevention mitigation based on the activity being performed and the FPI rating as stated in ESP 113.1.⁵⁷ Depending on the severity of the FPI rating, mitigations can range from carrying wildfire suppression tools to including a dedicated fire resource to observe work. These fire resources are required to have specific training and experience, as listed in ESP 113.1.

While these resources can be ordered throughout the year, SDG&E takes the proactive step of supplying field crews with 12 to 17 daily resources once the fire environment and FPI indicate an elevated risk. This daily staffing changes from year to year but typically runs from approximately June through the end of November. SDG&E also works to align with the staffing of the seasonal resources of the local, state, and federal agencies in the service territory.

These qualified resources, referred to as Contract Fire Resources (“CFRs”), are staffed by two personnel that have the appropriate amount of training, water, and tools to meet the needs of the work activity. The use of CFRs is not limited to the HFTD as ESP 113.1 requires a dedicated fire patrol for specific activities when they are performed adjacent to wildland fuels and there is elevated risk. The primary missions of CFRs are fire prevention and compliance. Secondly, because of the required training tools, the resource can take action to mitigate an ignition should it occur and communicate to the fire agencies to ensure transparent reporting. At-risk activities for which a dedicated fire patrol is utilized include hot work, vegetation clearing, and energized switching.

⁵⁷ SDG&E, Electric Standard Practice – 113.1, SDG&E Operations & Maintenance Wildland Fire Prevention Plan (February 25, 2022), available at https://www.sdge.com/sites/default/files/regulatory/Electric%20Standard%20Practice%20No.%20113.1_4_0.pdf.

Costs and Efficiencies

The costs incurred for this program in 2023 are just and reasonable as they reduce risk in the aforementioned manner. The incremental amount requested reflects an increase in renewal rates for the contracted CFRs that was unforeseen at the time SDG&E developed its 2019 GRC forecasts.

Emergency Preparedness Plan (WMP.1008)

Table JW-72: Emergency Preparedness Plan Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
16,686	19,834	721	2,043	15,965	17,791

Initiative Description and Impact

The Company Emergency and Disaster Preparedness Plan (“CEADPP”), dated December 28, 2021, was established to provide an all-hazards strategic framework that SDG&E personnel can use to respond effectively to emergencies using the Incident Command System (“ICS”) and National Incident Management System (“NIMS”) (“ICS-NIMS”) required by federal and state mandates.

The CEADPP addresses emergency preparedness, crisis management, and business resumption planning to provide for the safety of employees, contractors, customers, and the public, and the protection of property in the event of an incident affecting employees, contractors, customers, or other stakeholders.

The CEADPP supports an all-hazards approach to incident response. As described by the Department of Homeland Security (“DHS”), all-hazards emergency management considers all hazards and incidents that the entity may encounter. Emergency Management must be able to respond to natural and man-made hazards, homeland security-related incidents, and other emergencies that may threaten the safety and well-being of citizens and communities. An all-

1 hazards approach to emergency preparedness encourages an effective and consistent response to
2 any condition, emergency, disaster, or catastrophe, regardless of the cause.

3 The CEADPP is developed, updated, and maintained in compliance with CPUC GO 166 as
4 modified by D.98-07-097, D.00-05-022, D.12-01-032 and D.14-05-020.⁵⁸

5 **Costs and Efficiencies**

6 In 2023, SDG&E commenced construction of its Wildfire and Climate Resilience Center
7 (“WCRC”), which was formally unveiled in 2024. The WCRC serves as a hub for collaborative
8 research, development, and implementation of innovative solutions to build an energy system that
9 can withstand the intensifying effects of climate change while supporting community safety and
10 resiliency. It also houses the company’s Emergency Operations Center and the Wildfire
11 Mitigation, Fire Science & Climate Adaptation, and Emergency Management departments. The
12 WCRC not only houses situational awareness expertise and tools like advanced weather modeling,
13 it also provides critical support and regional coordination during extreme weather events and
14 major disasters. Some examples of innovations include:

15 Advanced weather monitoring through SDG&E’s weather stations, which offer real-time
16 data to better anticipate and address weather-related threats. The Company’s
17 systems use millions of historical weather data points going back to 2010 to assist
18 in training AI-based wind forecasting models, including one of the first AI-trained
19 Santa Ana Wind Gust forecast models in the industry.

20 AI and machine learning to help predict and mitigate wildfire impacts on the energy grid.
21 For example, SDG&E conducts more than 10 million virtual wildfire simulations
22 daily to inform operational wildfire risk models, and uses more than 3.8 million
23 drone images of company infrastructure to train AI-based inspection models.

⁵⁸ SDG&E Emergency and Disaster Preparedness Plan (Public) (March 2024) at 13, available at https://www.sdge.com/sites/default/files/regulatory/Appendix%202%20-%20SDGE%20CEADPP_PUBLIC.pdf.

Collaboration with climate science experts at local academic institutions and national labs to evaluate extreme weather events, study fuel moisture plots, detect wildfires using real-time satellite imaging, analyze fire potential, and inform climate adaptation planning.

Workforce training and community engagement to achieve a more inclusive and effective climate resilience plan and equip SDG&E's current and future workforce to manage and maintain a resilient grid.

To help minimize its impact on the environment, the WCRC was constructed with sustainable materials, efficient water fixtures, and rooftop solar panels to support its operation through renewable energy generation. It received a U.S. Green Building Council LEED® Platinum certification in December 2024.

Approximately 3.6% of the total capital costs incurred for this program occurred in 2024 for projects initially planned to be completed in 2023, but were ultimately placed in service in 2024, and therefore were not contemplated in SDG&E's 2024 GRC.

COMMUNITY OUTREACH AND ENGAGEMENT

Community Engagement (WMP.1337)

Table JW-73: Community Engagement Totals (\$000)

Actual Capital	Actual O&M	Authorized Capital	Authorized O&M	Differential Capital	Differential O&M
-	448	-	-	-	448

Initiative Description and Impact

Public education and communication efforts related to wildfire safety and PSPS are intended to educate customers throughout the service territory on the regional threat of wildfire, climate resilience, and emergency preparedness. Outreach efforts focus on communities who are most at risk of wildfires and PSPS events, such as communities within the HFTD. SDG&E hosts five Wildfire Safety Fairs annually in the HFTD including areas in Mountain Empire, Ramona,

1 Alpine, Julian, and Valley Center. Online Webinars are also offered for customers who are unable
2 to attend Wildfire Safety Fairs in their communities.

3 SDG&E's Energy Solutions Partner network, which is comprised of more than 200 CB
4 Community Based Organizations, is utilized by outreach advisors to promote wildfire
5 preparedness information, amplify PSPS notifications, and provide information on available
6 support services during a PSPS event. SDG&E also has a dedicated Tribal Relations team that
7 develops and implements culturally appropriate communications and outreach based on feedback
8 from Tribes via listening sessions, online surveys, and focus groups.

9 Several SDG&E teams regularly engage with local governments at various levels. The
10 Regional Public Affairs team engages senior and elected officials while the Emergency
11 Management team works with first responders and other emergency management agencies.

12 Key to SDG&E's stakeholder engagement is its relationships with emergency response
13 agencies, both locally and at the state level. SDG&E is widely recognized as a world-class
14 innovator with its Fire Science and Climate Adaptation business unit. This team routinely provides
15 best practices to other national utilities, as well as internationally. This cooperation, in addition to
16 communication practices, lays the foundation for success in stakeholder cooperation and
17 community engagement.

18 **Costs and Efficiencies**

19 The costs incurred for this program in 2023 directly support the five Wildfire Safety Fairs
20 that were held in 2023 in communities most at risk and potentially impacted by wildfire and PSPS
21 events. These communities include Mountain Empire, Ramona, Alpine, Julian, and Valley Center,
22 which are all within the HFTD.

1 **CONCLUSION**

2 SDG&E's incremental wildfire mitigation costs support programs that are risk informed,
3 effective, and facilitate the implementation of SDG&E's approved WMPs. The Commission
4 should authorize the costs associated with the activities described in my testimony because they
5 are just and reasonable to promote public safety.

6 This concludes my prepared direct testimony.

1 **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. I
4 am responsible for developing and overseeing the execution of the Company's Wildfire Mitigation
5 Plan, which includes the vegetation management program. I work to optimize a portfolio of
6 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 have
9 over 28 years of experience in the electric utility industry. I am currently serving on the Board of
10 Directors 2-1-1 San Diego, a local non-profit which is the region's trusted source for access to
11 community, health, social, and disaster services.

12 I have a bachelor's degree in electrical engineering, with a major field of study in
13 Electrical Power and am a licensed Professional Engineer in California.

14 I have previously testified before this Commission.

Appendix 1

2023-2025 Wildfire Mitigation Plan

Appendix 2

Capital and O&M Direct Costs and Units