Appendix A  
Workpapers to SDG&E’s Wildfire Mitigation Plan

Consistent with the ALJ Ruling, for each identified preventative strategy or program in Section 4 of this Plan, the workpapers in this Appendix provide detailed information on: (1) whether the program/strategy is existing or new; (2) if existing, the proceeding where the program/strategy costs have been subjected to Commission review; (3) if new, identification of any memorandum account where related costs are being tracked and an explanation of how double tracking is prevented; (4) whether the program/strategy is implemented in compliance with existing regulations or exceeds current regulatory requirements; (5) if a program/strategy is identified as meeting a current regulatory requirement, a citation to the associated order, rule, or code; (6) a description of how the implementation of the program/strategy mitigates one or more of the wildfire risks or drivers identified in the Plan. Additionally, each of the identified preventive strategies and programs is delineated into one of the following categories: (1) Design and Construction, (2) Inspection and Maintenance, (3) Operational Practices, (4) Situational/Conditional Awareness, and (5) Response and Recovery.

In response to the ALJ Ruling, SDG&E has also included in this Appendix, “cost estimates for each activity in the WMP in order for the Commission to weigh the potential cost implications of measures proposed in the plans.”  SDG&E has included transmission-related activities in this Plan pursuant to the ALJ Ruling, however, because these activities are regulated by the Federal Energy Regulatory Commission, SDG&E has only included cost estimates for those activities that are CPUC jurisdictional.

SDG&E presents its cost estimates in direct dollars, in 2019 dollars given that this Plan is being filed in 2019 for mitigation activities planned for 2019. Further, consistent with SDG&E’s presentation in its 2016 RAMP Report and 2019 GRC workpapers, the cost estimates are provided in ranges of dollars and shown separately for Operations and Maintenance (O&M) and capital expenditures. These cost estimates will be further refined both in future RAMP and GRC filings and represent SDG&E’s current knowledge at a snapshot in time. To the extent that conditions change, the cost estimates put forth herein may be updated in future filings.

SDG&E is presenting O&M cost estimates in this Plan relative to its 2018 authorized revenue requirement, which was established in the 2016 GRC and approved by the CPUC in D.16-06-054. The basis for presenting costs in this Plan compared to SDG&E’s 2018 authorized revenue requirement is that it is consistent with P.U. Code § 8386(j), which requires SDG&E to track costs incurred for fire risk mitigation that are not otherwise covered in SDG&E’s revenue requirements.

**Response to Change in Operating Conditions**

**Plan Cross-Reference:** Section 4.1.1

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:** Response to change inOperating Conditions is an existing strategy.

**Meet or Exceed Regulations:** This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by changing how SDG&E operates (i.e., enabling or disabling reclosing, enabling or disabling sensitive protection settings, limiting or not limiting certain construction activities) to reduce the risk of creating an ignition during periods of elevated, extreme, and Red Flag Warning conditions.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:** This strategy was included in the Design, Operations and Maintenance mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-15 at SDGE 15-10 – SDGE 15-11).

**Costs:** The job activities described in this strategy are performed on a day to day basis by multiple work groups. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this strategy.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its Fire Risk Mitigation Memorandum Account (FRMMA), which is pending before the CPUC in Advice Letter 3333-E, to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Recloser Protocols**

**Plan Cross-Reference:** Section 4.1.2

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:** Recloser Protocols is an existing strategy.

**Meet or Exceed Regulations:** This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by disabling reclosing and enabling sensitive relay settings that can both more easily detect faults and trip faster when a fault is detected, limiting the fault energy. Both features when enabled during high risk operating conditions reduce the chance of ignitions.

This falls under the Operation Practices mitigation category.

**RAMP:** This strategy was included in the Design, Operations and Maintenance mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-15 at SDGE 15-10 – SDGE 15-11).

**Costs:** The job activities described in this strategy are performed on a day to day basis by multiple work groups. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this strategy.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Other Special Work Procedures**

**Plan Cross-Reference:** Section 4.1.3

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:** Other Special Work Procedures is an existing strategy.

**Meet or Exceed Regulations:** This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by restricting certain high-risk construction activities within the HFTD during elevated or higher operating conditions.

This falls under the Operational Practices mitigation category.

**RAMP:** This strategy was included in the Design, Operations and Maintenance mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-15 at SDGE 15-10 – SDGE 15-11).

**Costs:** The job activities described in this strategy are performed on a day to day basis by multiple work groups. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this strategy.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Wildfire Infrastructure Protection Teams (Contract Fire Resources)**

**Plan Cross-Reference:** Section 4.1.4.1

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:** Wildfire Infrastructure Protection Teams (Contract Fire Resources) is an existing program.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by providing fire suppression capability proximate to SDG&E work or operational activities during extreme weather events.

This falls under the Response and Recovery mitigation category.

**RAMP:** This program was included in the Rapid Response mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015 at Chapter SDG&E-1 at SDGE 1-15).

**Costs:** Costs for this program were approved in D.16-06-054 for the 2016 GRC cycle. While there are forecasted costs for this program requested and pending before the CPUC in A.17-10-007, in this Plan this program has been expanded beyond the levels in A.17-10-007.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Wildfire Infrastructure Protection Teams (Contract Fire Resources)** | **2019** | | **2020** | |
| Low | High | Low | High |
| Incremental O&M (Directs, 2019$ in MM) | $0.7 | $1.1 | $0.7 | $1.1 |

**Aviation Firefighting Program**

**Plan Cross-Reference:** Section 4.1.4.2

**Objective Time Frame:** This program that will continue over the compliance period of this Plan.

**New/Existing:** The aviation firefighting is an existing program.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by providing aerial firefighting capability throughout SDG&E’s service territory and beyond.

This falls under the Response and Recovery mitigation category.

**RAMP:** This program was included in the Rapid Response mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015 at Chapter SDG&E-1 at SDGE 1-15).

**Costs:** Certain costs for this program were approved in D.16-06-054 for the 2016 GRC cycle. Forecasted costs to expand this program for the 2019 GRC cycle were requested and are pending before the CPUC in A.17-10-007. However, in this Plan SDG&E is proposing to expand its Aviation Firefighting Program beyond the levels in A.17-10-007.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Aviation Firefighting Program** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $6.0 | $9.0 | $6.0 | $9.0 |

**Industrial Fire Brigade**

**Plan Cross-Reference:** Section 4.1.4.3

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:** TheIndustrial Fire Brigadeis an existing program.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by being available full-time to fight fires involving electrical equipment and flammable liquids.

This falls under the Response and Recovery mitigation category.

**RAMP:** This program was included in the Rapid Response mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015 at Chapter SDG&E-1 at SDGE 1-15).

**Costs:** Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this strategy.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Ignition Management Program**

**Plan Cross-Reference:** Section 4.1.4.5

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:** TheIgnition Management Programis an existing program.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the harmful impacts of wildfires on both electric infrastructure and fire prone communities, regardless of the cause of the ignition of those fires.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:** It was not presented in SDG&E’s 2016 RAMP Report.

**Costs:** SDG&E plans to utilize current resources within the Emergency Management work group to fund the job activities discussed in this program. Accordingly, SDG&E is not seeking or anticipating incremental costs associated with this program at this time.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Fuel Management Program**

**Plan Cross-Reference:** Section 4.1.4.6

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:** The Fuel Management Programis a new program.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program will mitigate the harmful impacts of wildfires on both electric infrastructure and fire prone communities, regardless of the cause of the ignition of those fires.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:** Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** This program is being presented for the first time in this Plan. It is SDG&E’s intent to record costs for this program in the FRMMA for evaluation at a later time.

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| --- | --- | --- | --- | --- |
| **Fuel Management Program** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $0.4 | $0.6 | $0.7 | $0.9 |

**Distribution System Inspection**

**Plan Cross-Reference:** Section 4.2.1

**Objective Time Frame:** This an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:**  Distribution System Inspection is an existing program, and includes SDG&E’s Corrective Maintenance Program inspections, Quality Assurance and Quality Control inspections, and Monitoring and Auditing process.

**Meet or Exceed Regulations:**  SDG&E’s Corrective Maintenance Program inspections meet the regulatory requirements of GO 165. SDG&E’s Quality Control inspections meet and exceed the GO 165 requirements.

**Risk Mitigation:** This program mitigates the risk of wildfire by inspecting SDG&E facilities to identify nonconformances that could lead to equipment failures before they occur. Preventing equipment failure within the HFTD reduces the risk of ignitions caused by equipment failure.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:**  This program was included in the Inspection, Repair, Maintenance & Replacement Programs mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-13 – 1-14, SDGE 1-16; Chapter SDG&E-15 SDGE 15-10 – SDGE 15-11).

**Costs:** The job activities described in this inspection program are performed on a day to day basis by multiple work groups. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this program.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Substation System Inspection**

**Plan Cross-Reference:** Section 4.2.2

**Objective Time Frame:** This an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:** Substation System Inspection is an existing program.

**Meet or Exceed Regulations:** This program meets the regulatory requirements of GO 174.

**Risk Mitigation:** This program mitigates the risk of wildfire by inspecting SDG&E facilities to identify nonconformances that could lead to equipment failures before they occur. Preventing equipment failure within the HFTD reduces the risk of ignitions caused by equipment failure.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:** This program was included in the Design, Operations and Maintenance mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-15 at SDGE 15-10 – SDGE 15-11).

**Costs:** The job activities described in this inspection program are performed on a day to day basis by the Substation Construction and Maintenance work group. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this program.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Transmission System Inspection**

**Plan Cross-Reference:** Section 4.2.3

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:**  Transmission System Inspection is an existing program.

**Meet or Exceed Regulations:**  This program meets the requirements of the maintenance plan filed with CAISO. Lines are inspected to ensure conformance with California Public Resources Code (PRC) §§ 4292 and 4293, as well as GO 95 and GO 128 rules.

**Risk Mitigation:** This program mitigates the risk of wildfire by inspecting SDG&E facilities to identify nonconformances that could lead to equipment failures before they occur. Preventing equipment failure within the HFTD reduces the risk of ignitions caused by equipment failure.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:**  This program was included in the Design, Operations and Maintenance mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-15 at SDGE 15-10 – SDGE 15-11).

**Costs:**  Costs for this program are O&M expenditures related to SDG&E’s transmission system and not CPUC jurisdictional. These costs will be recovered through SDG&E’s Transmission Owner (TO) 5 formula rate case filed with the Federal Energy Regulatory Commission (FERC).

**Geographic Information Systems Data**

**Plan Cross-Reference:** Section 4.2.4

**Objective Time Frame:** This is program that will continue over the compliance period of this Plan.

**New/Existing:**  Geographic Information Systems Data is a new program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by sharing GIS information with other agencies and stakeholders to improve collaboration and overall emergency event response.

This falls under the Response and Recovery mitigation category.

**RAMP:**   Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** SDG&E plans to utilize current resources to fund the job activities discussed in this program. Accordingly, SDG&E is not seeking or anticipating incremental costs associated with this program at this time.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Design and Construction Standards**

**Plan Cross-Reference:** Section 4.3.1

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:** Design and Construction Standards is an existing strategy. The Design and Construction Standards described in this strategy have already been completed and take input from multiple work groups to publish. However, SDG&E is constantly striving to improve through new methods or technologies to mitigate risk. The development of the covered conductor standards described in Section 4.3.14 is an example of this.

**Meet or Exceed Regulations:** This strategy meets and exceeds the requirements of GO 95 by leveraging SDG&E’s extensive weather network to design to known local conditions based on SDG&E’s wind map. While GO 95 requires utilities to design to “known local conditions,” it does not require utilities to have the weather network in place to identify the known local conditions. This strategy also meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by establishing design criteria that will withstand the extreme weather condition brought on by Santa Ana winds within the HFTD.

This falls under the Design and Construction mitigation category.

**RAMP:** This strategy was included in the Design and Engineering Approaches mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14).

**Costs:** Costs for performing the updating and creation of standards were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this strategy.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Testing and Deploying Emerging Technologies**

**Plan Cross-Reference:** Section 4.3.2

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:** Testing and Deploying Emerging Technologies is an existing strategy.

**Meet or Exceed Regulations:** This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by looking for new technologies to deploy such as the CalFire approved fuse (discussed in Section 4.3.11), and the falling conductor protection technology (discussed in Section 4.3.15) that reduce the risk of ignitions within the HFTD.

This falls under the Design and Construction mitigation category.

**RAMP:** Testing and Deploying Emerging Technologies was not presented in SDG&E’s 2016 RAMP Report as a specific strategy. However, programs such as Fire Threat Zone Advanced Protection which developed from this strategy were presented in the 2016 RAMP Report.

**Costs:**  The job activities described in this strategy are performed on a day to day basis by the Distribution Engineering work group. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this strategy.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Facility Analysis**

**Plan Cross-Reference:** Section 4.3.3

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:**  Facility analysis is an existing program.

**Meet or Exceed Regulations:**  This program exceeds regulations as these are not part of the GO 165 inspection plan filed with the CPUC. These inspections utilize multiple data sources including outage information and LiDAR in addition to what is identified with visual inspections to assess the risk of a facility.

**Risk Mitigation:** This program mitigates the risk of wildfire by analyzing SDG&E facilities to identify facility locations that have a higher probability of failure based on engineering data and outage history. This information is used by capital programs, such as FiRM and PRiME, along with other tools to prioritize replacements.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  This program was included in the System Modernization mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-12 at SDGE 12-14).

**Costs:** The job activities described in this program are performed on a day to day basis by multiple work groups. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this program.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Oversight of Activities in the Rural Areas**

**Plan Cross-Reference:** Section 4.3.4

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:**  Oversight of Activities in the Rural Areas is an existing strategy.

**Meet or Exceed Regulations:**  This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451, as there is no regulatory requirement to have an oversight team evaluate proposed mitigations within the HFTD.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by creating an oversight team that evaluates the impact of the proposed mitigations to ensure the most critical wildfire risks are addressed.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  While not explicitly presented as a mitigation in the 2016 RAMP Report, this team developed many of the mitigations presented in the 2016 RAMP Report.

**Costs:** The job activities performed by this team occur on a day to day basis. The members represent and support multiple work groups. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this program.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Asset Management**

**Plan Cross-Reference:** Section 4.3.5

**Objective Time Frame:** This new program will continue over the compliance period of this Plan.

**New/Existing:** Asset Management is a new program. The Asset Management work group is a new work group proposed in A.17-10-007. If authorized, it will perform the asset management work activities on an annual basis in an ongoing manner.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451 by developing and implementing an asset management program that conforms with ISO 55000, which is not required by regulation.

**Risk Mitigation:** This program mitigates the risk of wildfire by developing an asset health index for facilities located within the HFTD. Developing the asset health index will aid in prioritizing inspections, repairs, and replacements for at risk facilities.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  This program was not presented in the 2016 RAMP Report, but was listed as a “RAMP Post-Filing” program in A.17-10-007.

**Costs:** Forecasted costs for this program were requested and are pending before the CPUC in A.17-10-007. It is SDG&E’s intent to record costs for this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Asset Management** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $1.2 | $1.8 | $1.7 | $2.5 |

**Overhead Transmission and Distribution Fire Hardening**

**Plan Cross-Reference:** Section 4.3.6

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan. At the current rate, SDG&E plans to complete the wood to steel program by 2025.

**New/Existing:** Overhead Transmission and Distribution Fire Hardening is an existing program.

**Meet or Exceed Regulations:** This program meets and exceeds GO 95 requirements.

**Risk Mitigation:** This program mitigates the risk of wildfire by fire hardening transmission and distribution lines within the HFTD.

This falls under the Design and Construction mitigation category.

**RAMP:** This program was included in the Inspection, Repair, Maintenance & Replacement Programs mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-13 – SDGE 1-14).

**Costs:** Transmission costs for this program will be recovered through SDG&E’s TO5 Formula Rate Case filed with FERC. Associated distribution costs, such as underbuilt distribution on the transmission lines or distribution lines identified as connected actions for transmission jobs, are included in SDG&E’s GRC.

Associated distribution work was authorized in D.16-06-054 for the 2016 GRC cycle. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. It is SDG&E’s intent to record the distribution-related costs associated with this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Overhead Transmission and Distribution Fire Hardening** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM)  (Distribution-related Only) | $4.4 | $6.6 | $3.9 | $5.8 |
| Incremental O&M  (Directs, 2019$ in MM) | $0.09 | $0.33 | $0.08 | $0.29 |

**Underground Circuit Line Segments**

**Plan Cross-Reference:** Section 4.3.7

**Objective Time Frame:** This new program will continue over the compliance period of this Plan. SDG&E plans to continue the 20D program as well as strategic undergrounding on an ongoing annual basis.

**New/Existing:** Underground Circuit Line Segments is a new program.

**Meet or Exceed Regulations:** This program meets the regulatory framework established in Tariff 20D.

**Risk Mitigation:** This program mitigates the risk of wildfire by undergrounding overhead lines, reducing the risk of ignitions.

This falls under the Design and Construction mitigation category.

**RAMP:** Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** This program is being presented for the first time in this Plan, as the 20D program was being established but had not been finalized when SDG&E filed A.17-10-007. Costs for this program will vary with the planned scope of work. It is SDG&E’s intent to record costs for this program in the FRMMA for evaluation at a later time.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Underground Circuit Line Segments** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $1.2 | $1.8 | $4.9 | $7.3 |

**Cleveland National Forest Fire Hardening**

**Plan Cross-Reference:** Section 4.3.8

**Objective Time Frame:** This is an existing program that will continue over the compliance period of this Plan. This program is planned to be completed by 2021.

**Metric:** Miles of circuits hardened.

**New/Existing:**  Cleveland National Forest Fire Hardening is an existing program.

**Meet or Exceed Regulations:**  This program meets and exceeds GO 95 requirements.

**Risk Mitigation:** This program mitigates the risk of wildfire by fire hardening transmission and distribution lines within the HFTD.

This falls under the Design and Construction mitigation category.

**RAMP:**  This program was included in the Inspection, Repair, Maintenance & Replacement Programs mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-13 – SDGE 1-14).

**Costs:** Transmission costs for this program will be recovered through SDG&E’s TO5 Formula Rate Case filed with FERC. Associated distribution costs, such as underbuilt distribution on the transmission lines or distribution lines identified as connected actions for transmission jobs, are included in SDG&E’s GRC. Associated distribution work was authorized in D.16-06-054 for the 2016 GRC cycle. Forecasted costs are also pending before the CPUC in A.17-10-007 for the 2019 GRC cycle.

To the extent additional distribution-related costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Cleveland National Forest Fire Hardening** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM)  (Distribution-related Only) | $47.7 | $58.3 | $55.8 | $68.2 |
| Incremental O&M  (Directs, 2019$ in MM) | $0.95 | $2.9 | $1.1 | $3.4 |
| Miles of Transmission Circuits Hardened | 25 | 31 | 27 | 33 |
| Miles of Distribution Overhead  Circuits Hardened  (Excludes Transmission Underbuilt) | 20 | 24 | 18 | 22 |
| Miles of Distribution Overhead to Underground | 15 | 19 | 4 | 6 |

**Fire Risk Mitigation (FiRM)**

**Plan Cross-Reference:** Section 4.3.9

**Objective time frame:** SDG&E is seeking approval for this existing program over the compliance period of this Plan. As stated in Section 4.3.9, the FiRM program plans to accelerate the amount of circuit mileage hardened per year to complete the program in seven years (2019-2025) from the originally planned twelve years.

**Metric:** Miles of Distribution circuit hardened.

**New/Existing:** FiRM is an existing program.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451 by proactively targeting high risk conductor with known high failure rates and replacing them before they fail. The new construction meets and exceeds GO 95 requirements.

**Risk Mitigation:** This program mitigates the risk of wildfire by hardening the distribution system to known local wind conditions, reducing the risk of equipment failure in high wind. Additionally, the FiRM program installs high tensile strength conductors that are less likely to fail than the aged small wire that exists today.

This falls under the Design and Construction mitigation category.

**RAMP:** This program was included in the Inspection, Repair, Maintenance & Replacement Programs mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-13 – SDGE 1-14).

**Costs:** Costs for this program were approved in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested and are pending before the CPUC in A.17-10-007. However, in this Plan SDG&E is proposing to accelerate the FiRM program beyond the levels forecasted in A.17-10-007.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **FiRM Program** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $49.5 | $60.5 | $79.2 | $96.8 |
| Incremental O&M  (Directs, 2019$ in MM) | $0 | $0 | $.60 | $1.8 |
| Miles of Circuit Hardened | 81 | 99 | 121.5 | 148.5 |

**Pole Risk Mitigation and Engineering (PRiME)**

**Plan Cross-reference:** Section 4.3.10

**Objective Time Frame:** This new program will continue over the compliance period of this Plan.

**Metric:** Number of poles hardened.

**New/Existing:**  PRiME is a new program. As discussed in Section 4.3.10, the PRiME program within the HFTD plans to be completed by 2027.

**Meet or Exceed Regulations:**  This program meets and exceeds GO 95 requirements for overhead structures.

**Risk Mitigation:** This program mitigates the risk of wildfire by replacing at risk and aging distribution structures within the HFTD.

This falls under the Design and Construction mitigation category.

**RAMP:**  PRiME was presented in the 2016 RAMP Report[[1]](#footnote-1) in the Premature Overhead Failure proposed mitigation to Electric Infrastructure Integrity risk (*see* I.16-10-015, Chapter SDG&E-12 at SDG&E 12-17). The reason for that risk association was because PRiME was intended to be a system wide program (i.e., not limited to the HFTD). That said, SDG&E recognized in its Electric Distribution – Capital workpapers in A.17-10-007 that PRiME also helps to mitigate the risk of wildfire by reducing the potential for a fire ignition (*see* A.17-10-007, Exhibit 75 at 804). Given the recent California Fires, SDG&E is prioritizing the HFTD with this program, and this has included it in this Plan.

**Costs:** Forecasted costs for this program were first requested in A.17-10-007, which is pending before the CPUC. However, in this Plan SDG&E is proposing to accelerate PRiME beyond the levels forecasted in A.17-10-007 beginning in 2020. While the forecasted costs in A.17-10-007 were presented for the entire system, the cost estimates included below only include the activities related to wildfire mitigation.

It is SDG&E’s intent to record costs for this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PRiME** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $14.4 | $21.6 | $36.8 | $55.2 |
| Incremental O&M  (Directs, 2019$ in MM) | $0.29 | $1.0 | $0.74 | $2.8 |
| Poles Replaced | 560 | 840 | 1,360 | 2,040 |

**Expulsion Fuse Replacement**

**Plan Cross-reference:** Section 4.3.11

**Objective Time Frame:** This new program will continue over the compliance period of this Plan. This program is planned to be completed in three years (2021).

**New/Existing:**  Expulsion Fuse Replacement is a new program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451 by protectively replacing at risk fuses with CalFire approved fuses.

**Risk Mitigation:** This program mitigates the risk of wildfire by replacing existing expulsion fuses with fuses that are CalFire approved as a mitigation to wildfire risk.

This falls under the Design and Construction mitigation category.

**RAMP:**  Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** This program is being presented for the first time in this Plan. It is SDG&E’s intent to record costs for this program in the FRMMA for evaluation at a later time.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Expulsion Fuse Replacement** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $7.8 | $11.6 | $7.8 | $11.6 |

**Hotline Clamps**

**Plan Cross-reference:** Section 4.3.12

**Objective Time Frame:** This new program will continue over the compliance period of this Plan. This program is planned to be completed in six years (2024).

**New/Existing:**  The programmatic replacement of Hotline Clamps is a new program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451 by replacing high risk connectors.

**Risk Mitigation:** This program mitigates the risk of wildfire by reducing a potential wire down that occurs when this particular clamp fails.

This falls under the Design and Construction mitigation category.

**RAMP:**  Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** This program is being presented for the first time in this Plan, as the analysis of this type of failure was recently completed and not available when SDG&E filed A.17-10-007. It is SDG&E’s intent to record costs for this program in the FRMMA for evaluation at a later time.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hotline Clamps** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $1.2 | $1.8 | $2.4 | $3.6 |

**Wire Safety Enhancement (WiSE)**

**Plan Cross-reference:** Section 4.3.13

**Objective Time Frame:** This new program will continue over the compliance period of this Plan. SDG&E plans to continue this program into 2021 and will continue to monitor weather and wind conditions in areas outside the HFTD for wildfire risk mitigation in future years.

**New/Existing:**  WiSE is a new program.

**Meet or Exceed Regulations:**  This program meets and exceeds GO 95 requirements.

**Risk Mitigation:** This program mitigates the risk of wildfire by fire hardening distribution circuits in high fire risk areas outside the HFTD.

This falls under the Design and Construction mitigation category.

**RAMP:**  WiSE was presented in the 2016 RAMP Report as the Small Conductor Replacement Program (*see* I.16-10-015, Chapter SDG&E-12 at SDGE 12-15 – SDGE 12-17). At the time of the 2016 RAMP Report, it was presented as a mitigation to Electric Infrastructure Integrity risk with goals to harden circuit elements (similar to FiRM, but outside the HFTD), in urban areas where downed wire could cause public safety hazards. However, in the recent red flag warning high wind events of 2017 and 2018, SDG&E has noticed high winds and drier conditions outside the HFTD, thus wanted a program to address these concerns. WiSE has been repurposed as wildfire risk mitigation and therefore included in this Plan to address fire concerning areas outside the HFTD before moving into the urban areas.

**Costs:** Forecasted costs for this program were first requested in A.17-10-007, which is pending before the CPUC, as the Small Conductor Replacement Program. While the forecasted costs in A.17-10-007 were presented for the entire system, the cost estimates included below only include the activities related to wildfire mitigation.

It is SDG&E’s intent to record costs for this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

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| --- | --- | --- | --- | --- |
| **WiSE** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $1.8 | $3.0 | $4.2 | $6.7 |
| Incremental O&M  (Directs, 2019$ in MM) | $0.04 | $0.15 | $0.08 | $0.34 |

**Covered Conductor**

**Plan Cross-reference:** Section 4.3.14

**Objective Time Frame:** This new program will continue over the compliance period of this Plan.

**New/Existing:**  Covered Conductor is a new program.

**Meet or Exceed Regulations:**  This program meets or exceeds GO 95 requirements.

**Risk Mitigation:** This program mitigates the risk of wildfire by installing conductor that will be resistant to phase to phase faults caused by third-party objects and vegetation.

This falls under the Design and Construction mitigation category.

**RAMP:**  Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:**  This program is being presented for the first time in this Plan. It is SDG&E’s intent to record the incremental costs incurred by utilizing covered conductor, which are not planned to start until 2020, in the FRMMA for evaluation at a later time. As SDG&E is developing both the criteria and standards for this program, the actual scope for 2020 is unknown at this time, which accounts for the wide forecasted range.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Covered Conductor** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $0 | $0 | $0 | $20 |

**Fire Threat Zone Advanced Protection**

**Plan Cross-reference:** Section 4.3.15

**Objective Time Frame:** This new program will continue over the compliance period of this Plan.

**New/Existing:**  Fire Threat Zone Advanced Protection is a new program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451 by installing advanced protection and communications on substation and distribution circuit infrastructure.

**Risk Mitigation:** This program mitigates the risk of wildfire by installing the sectionalizing devices, relays, and controls to enable advanced protection features, including sensitive profile settings, sensitive ground fault detection, down conductor detection, and falling conductor protection.

This falls under the Design and Construction mitigation category.

**RAMP:**  This program was included in the Design and Engineering Approaches mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14).

**Costs:** Forecasted costs for this program were requested and are pending before the CPUC in A.17-10-007. It is SDG&E’s intent to record costs for this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Fire Threat Zone Advanced Protection** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $2.4 | $3.6 | $3.4 | $5.2 |

**LTE Communication Network**

**Plan Cross-reference:** Section 4.3.16

**Objective Time Frame:** This new program will continue over the compliance period of this Plan. This program is planned to finish deployment in the HFTD by 2021.

**New/Existing:**  LTE Communication Network is a new program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by enabling more reliable communication for all the remote devices that depend on communication to function as intended. In addition, it provides another means of communication for crews during red flag deployments.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  LTE Communication Network was not presented in the 2016 RAMP Report.

**Costs:** Forecasted costs for this program were requested and are pending before the CPUC in A.17-10-007. It is SDG&E’s intent to record costs for this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

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| --- | --- | --- | --- | --- |
| **LTE Communication Network** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $8.8 | $13.2 | $36 | $52 |

**Automated Reclosers**

**Plan Cross-reference:** Section 4.3.17

**Objective Time Frame:** This is a completed program that will remain in effect over the compliance period of this Plan.

**New/Existing:**  Automated Reclosers is an existing, completed program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire through the pulse closing technology when reclosing is enabled. In addition, these devices help to minimize impacts to customers during PSPS events.

This falls under the Design and Construction mitigation category.

**RAMP:**  Automated Reclosers were not part of the 2016 RAMP Report.

**Costs:** Costs for this program were authorized in D.16-06-054 for the 2016 GRC cycle. There are no new, incremental costs associated with this program.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time.

**Public Safety Power Shutoff Engineering Enhancements**

**Plan Cross-reference:** Section 4.3.18

**Objective Time Frame:** This new program will continue over the compliance period of this Plan.

**New/Existing:**  The Public Safety Power Shutoff Engineering Enhancements is a new program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the exposure of customers to PSPS events by installing additional sectionalizing devices so that SDG&E is able to take a targeted approach during de-energized events, impacting only the necessary customers.

This falls under the Response and Recovery mitigation category.

**RAMP:**  Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** This program is being presented for the first time in this Plan. It is SDG&E’s intent to record costs for this program in the FRMMA for evaluation at a later time.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Public Safety Power Shutoff Enhancements** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $0.4 | $0.7 | $0.4 | $0.7 |

**Pole Replacement and Reinforcement**

**Plan Cross-reference:** Section 4.3.19

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:**  Pole Replacement and Reinforcement is an existing program. This annual program spans the entire service territory. The scope of this program will vary depending on the prior year’s intrusive inspection results.

**Meet or Exceed Regulations:**  This program meets GO 165 inspection and maintenance requirements. In addition, pole replacements are constructed to meet or exceed GO 95 requirements.

**Risk Mitigation:** This program mitigates the risk of wildfire by replacing poles found in poor condition through visual or intrusive inspections.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:**  This program was included in the Inspection, Repair, Maintenance & Replacement Programs mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-13 – SDGE 1-14).

**Costs:** Costs for this program were approved in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested and are pending before the CPUC in A.17-10-007. However, in this Plan SDG&E is proposing to expand this program beyond the levels in A.17-10-007. In this Plan, costs for this program have been prorated based on the estimated number of poles to be replaced within the HFTD.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

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| --- | --- | --- | --- | --- |
| **Pole Replacement and Reinforcement** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $10.6 | $16.0 | $10.6 | $16.0 |
| Incremental O&M  (Directs, 2019$ in MM) | $0.1 | $0.25 | $0.1 | $0.25 |

**Backup Power for Resilience**

**Plan Cross-reference:** Section 4.3.20

**Objective Time Frame:** This new program will continue over the compliance period of this Plan.

**New/Existing:**  Backup Power for Resilience is a new program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by focusing on investing in infrastructure to provide back-up power to strategic locations to minimize the impact that PSPS events have on the communities impacted.

This falls under the Response and Recovery mitigation category.

**RAMP:**  Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** While there are forecasted costs for this program requested and pending before the CPUC in A.17-10-007, in this Plan the Backup Power for Resilience program has been expanded beyond the levels in A.17-10-007.

It is SDG&E’s intent to record costs for this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Backup Power for Resilience** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $2.4 | $3.6 | $5.4 | $8.0 |
| Incremental O&M  (Directs, 2019$ in MM) | $0.5 | $0.9 | $1.0 | $1.6 |

**Tree Database**

**Plan Cross-reference:** Section 4.4.1

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing**: The Vegetation Management Tree Database is an existing program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451, GO 95, PRC § 4293, and North American Electric Reliability Corporation (NERC) reliability standard FAC-003-4 by allowing the timely capture and management of vegetation near electrical lines and equipment. The system “PowerworkZ” (PWZ) was developed inhouse to meet the specific needs for SDG&E by enabling historical tracking of all vegetation management work activities.

**Risk Mitigation:** This program mitigates the risk of wildfire by providing a schedule-driven system that enables the management of a tree population with current and historic information including the growth rates, health, and status of all trees within SDG&E’s inventory. This system allows for pre-planning and documentation of all work.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:**  SDG&E’s Vegetation Management program was included as a mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14).

**Costs:**  Costs for this program were approved through a one-way balancing account in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested via a two-way balancing account and are pending before the CPUC in A.17-10-007. If the two-way balancing account is approved in A.17-10-007, it would allow SDG&E to recover costs above the authorized GRC levels. SDG&E is not seeking or anticipating incremental costs associated with this program at this time.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

**Patrol and Pruning**

**Plan Cross-reference:** Section 4.4.2

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:**  Patrol and Pruning is an existing program.

**Meet or Exceed Regulations:**  This program meets or exceeds GO 95, PRC §§ 4292 and 4293, and NERC FAC-003-4.

**Risk Mitigation:** This program mitigates the risk of wildfire by increasing the frequency of tree inspections beyond an annual assessment of trees that have the potential to impact the overhead electrical facilities. The patrol is in addition to the routinely-scheduled inspection of trees and includes the assessment of the hazard potential of all trees within striking distance of the lines. Patrol and Pruning activities take place before the onset of the most dangerous fire weather conditions which occur during the fall.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:**  SDG&E’s Vegetation Management program was included as a mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14).

**Costs:** Costs for this program were approved through a one-way balancing account in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested via a two-way balancing account and are pending before the CPUC in A.17-10-007. If the two-way balancing account is approved in A.17-10-007, it would allow SDG&E to recover costs above the authorized GRC levels. SDG&E is not seeking or anticipating incremental costs associated with this program at this time.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

**Enhanced Inspections, Patrols, and Trimming**

**Plan Cross-reference:** Section 4.4.3

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:**  Enhanced inspections, patrols, and trimming is a new program.

**Meet or Exceed Regulations:**  This program meets or exceeds GO 95, PRC §§ 4292 and 4293, and NERC FAC-003-4.

**Risk Mitigation:** This program mitigates the risk of wildfire by both increasing the frequency of vegetation inspections, and by increasing the minimum vegetation clearance from the lines to 25’ where achievable.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:**  Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** This program is being presented for the first time in this Plan. It is SDG&E’s intent to record costs for this program in the FRMMA for evaluation at a later time.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Enhanced Inspections Patrols and Trimming** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $2.4 | $3.6 | $2.4 | $3.6 |

**Technology (Vegetation Management)**

**Plan Cross-reference:** Section 4.4.4

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:**  Technology (Vegetation Management) is an existing program.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451, GO 95, PRC §§ 4292 and 4293, and NERC FAC-003-4.

**Risk Mitigation:** This program mitigates the risk of wildfire by utilizing historical and contextual data to forecast where vegetation management operations may be focused or prioritized. GIS and database analyses using metrics including vegetation type, weather, topography, outage history can help predict where tree failures are likely to occur. SDG&E has implemented the use of LiDAR to enhance its inspection operations and to validate vegetation clearances. The use of this technology is intended to only supplement these activities and will be integrated on a limited basis.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  SDG&E’s Vegetation Management program was included as a mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14).

**Costs:** Costs for this program were approved through a one-way balancing account in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested via a two-way balancing account and are pending before the CPUC in A.17-10-007. If the two-way balancing account is approved in A.17-10-007, it would allow SDG&E to recover costs above the authorized GRC levels. SDG&E is not seeking or anticipating incremental costs associated with this program at this time.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

**Quality Assurance**

**Plan Cross-reference:** Section 4.4.5

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:**  Quality Assurance is an existing program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451, GO 95, PRC §§ 4292 and 4293, and NERC FAC-003-4.

**Risk Mitigation:** This program mitigates the risk of wildfire by measuring all work performed by contractors to validate that they meet or exceed the Scopes of Work, and are in compliance with the requirements of GO 95, Rule 35 and Public Resources Codes 4292 and 4293. This includes the activities of pre-inspection, tree pruning and removal, and pole brush clearing. Included in the Scope of Work for Quality Assurance, the contractor performs a full patrol of all overhead primary and transmission lines to confirm minimum clearance requirements will be maintained until the next pre-inspection activity. The Quality Assurance inspection serves as a de facto mid-cycle patrol of the lines and provides an additional opportunity to identify hazardous trees.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:**  SDG&E’s Vegetation Management program was included as a mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14).

**Costs:** Costs for this program were approved through a one-way balancing account in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested via a two-way balancing account and are pending before the CPUC in A.17-10-007. If the two-way balancing account is approved in A.17-10-007, it would allow SDG&E to recover costs above the authorized GRC levels. SDG&E is not seeking or anticipating incremental costs associated with this program at this time.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

**Hazard Tree Removal and Right Tree-Right Place**

**Plan Cross-reference:** Section 4.4.6

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:** Hazard Tree Removal and Right Tree-Right Place is an existing program.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451, GO 95, PRC §§ 4292 and 4293, and NERC FAC-003-4 by preventing fire ignition caused by tree-line contacts. Right Tree-Right Place is the concept of replacing incompatible trees located near power lines with compatible species that do not pose a threat to electrical infrastructure.

**Risk Mitigation:** This program mitigates the risk of wildfire by removing hazardous trees (i.e., dead, dying, diseased, structural defective) that could shed a limb or fall onto a powerline and cause an ignition. SDG&E targets for removal species, such as eucalyptus and palm, with known growth and failure patterns. As a standard pruning practice, SDG&E also proactively removes all tree branches overhanging the conductor to reduce the chance of impact with the power lines. SDG&E’s Right Tree-Right Place program follows the concept of planting trees near powerlines that will not encroach upon or require maintenance near power lines. The Right Tree-Right Place program provides for higher reliability, public safety, reduced maintenance costs, and preserves the health of trees.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:** SDG&E’s Vegetation Management program was included as a mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14).

**Costs:** Costs for this program were approved through a one-way balancing account in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested via a two-way balancing account and are pending before the CPUC in A.17-10-007. If the two-way balancing account is approved in A.17-10-007, it would allow SDG&E to recover costs above the authorized GRC levels. SDG&E is not seeking or anticipating incremental costs associated with this program at this time.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

**Pole Brushing**

**Plan Cross-reference:** Section 4.4.7

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:**  Pole Brushing is an existing program.

**Meet or Exceed Regulations:**   This program meets and exceeds the regulations set forth in PRC § 4292 to prevent the ignition and propagation of fire caused by SDG&E pole-mounted equipment.

**Risk Mitigation:** This program mitigates the risk of wildfire by performing inspection, customer communications, and multiple brushing activities within the annual cycle including mechanical brush, herbicide application and re-clear. These activities are scheduled in sequence to ensure compliance for the duration of the annual cycle. The timing of the pole brushing activities prevents vegetation from recurring within the cleared radius of the subject poles. Additionally, SDG&E conducts pole brushing on approximately 3,000 poles that are not subject to the clearance requirements in areas with flammable vegetation, steep slope, or adjacent to wildland interfaces where a fire could propagate.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:**  SDG&E’s Vegetation Management program was included as a mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14).

**Costs:** The job activities described in this program are performed on a day to day basis by the Vegetation Management work group. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business within Electric Distribution O&M. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. SDG&E is not seeking or anticipating incremental costs associated with this program at this time.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Electric Equipment Training**

**Plan Cross-reference:** Section 4.4.8

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:**  Electric Equipment Training is new program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by jointly inspecting SDG&E facilities with CalFire to better understand wildfire risk and site-specific hazards.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:**  SDG&E’s Vegetation Management program was included as a mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-16).

**Costs:** Forecasted costs for this program were requested and are pending before the CPUC in A.17-10-007 for the 2019 GRC cycle. It is SDG&E’s intent to record costs for this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

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| --- | --- | --- | --- | --- |
| **Electric Equipment Training** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $0.024 | $0.036 | $0.024 | $0.036 |

**Red Flag Operations (Vegetation Management)**

**Plan Cross-reference:** Section 4.4.9

**Objective Time Frame:** This program will continue over the compliance period of this Plan. This program has high variability as the utilization will depend on the number of red flag events, and the amount of circuits forecasted to be impacted by red flag events.

**New/Existing:** Red Flag Operations (Vegetation Management) is a new program.

**Meet or Exceed Regulations:** This program meets or exceeds GO 95, PRC §§ 4292 and 4293, and NERC FAC-003-4 by conducting additional vegetation inspections around red flag events.

**Risk Mitigation:** This program can mitigate the risk of wildfire by proactively staging inspectors in known areas of high fire potential, such as large tree density and high wind corridors, to monitor for conditions that may cause an ignition in the upcoming red flag event.

This falls under the Inspection and Maintenance mitigation category.

**RAMP:** Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** This program is being presented for the first time in this Plan. It is SDG&E’s intent to record costs for this program in the FRMMA for evaluation at a later time.

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| --- | --- | --- | --- | --- |
| **Red Flag Operations (Vegetation Management)** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $0.30 | $0.90 | $0.30 | $0.90 |

**Fire Science and Climate Adaption Department**

**Plan Cross-reference:** Section 4.5.1

**Objective Time Frame:** This strategy that will continue over the compliance period of this Plan.

**New/Existing:** The Fire Science and Climate Adaption Department is a new strategy, created in 2018. The FS&CA department is responsible to manage wildfire risk. It also has the responsibility of producing, compiling, and finalizing SDG&E’s reoccurring Wildfire Mitigation Plan to reflect the planned activities to achieve the requirements of P.U. Code § 8386(c). In addition, many of the existing situational awareness tools (e.g., SAWTI and FPI) are managed through this department.

**Meet or Exceed Regulations:** The establishment of the Fire Science and Climate Adaption Department is a fire mitigation strategy, which meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates risk by enhancing the ability to anticipate, prepare for, react to, and recover from significant fire weather events.

This falls primarily under the Situational/Conditional Awareness mitigation category.

**RAMP:** While this department was not presented in the 2016 RAMP Report, several of the situation awareness tools managed by this new department were included in the Monitoring and Detection mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14 and SDGE 1-17).

**Costs:**  Certain costs for this strategy were approved in D.16-06-054 for the 2016 GRC cycle. Forecasted costs to expand aspects of this strategy for the 2019 GRC cycle were requested and are pending before the CPUC in A.17-10-007. However, this department in its current form was not included in A.17-10-007 as it was not established when SDG&E filed its 2019 GRC. Accordingly, in this Plan SDG&E is proposing to expand this strategy beyond the levels in A.17-10-007.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

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| --- | --- | --- | --- | --- |
| **Fire Science and Climate Adaption Department** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $1.6 | $2.4 | $1.6 | $2.4 |

**Meteorological Capabilities and Technologies**

**Plan Cross-reference:** Section 4.5.2

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:** Meteorological Capabilities and Technologies is an existing strategy. As stated in Section 4.5.2, SDG&E has five full-time degreed and experienced meteorologists on staff with expertise in program management, utility forecasting, data science, and Southern California fire weather. SDG&E owns and operates a network of over 175 weather stations that are physically located on electric distribution and transmission poles and provide temperature, humidity, and winds observation every 10 minutes. SDG&E owns four high-performance computing clusters that are used to generate high quality weather data that is incorporated directly into operations.

**Meet or Exceed Regulations:** This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by supporting the SDG&E situational awareness capabilities.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:** This strategy was included in the Monitoring and Detection mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14 and SDGE 1-17).

**Costs:** Please refer to the Fire Science and Climate Adaption Department workpaper.

**Fire Potential Index (FPI)**

**Plan Cross-reference:** Section 4.5.3

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:**  Fire Potential Index is an existing strategy. As stated in Section 4.5.3, the FPI was developed by SDG&E subject matter experts to communicate the wildfire potential on any given day to promote safe and reliable operations.

**Meet or Exceed Regulations:**  This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by classifying the fire potential based on weather and fuels conditions and historical fire occurrences within each of SDG&E’s eight operating districts. This is also shared with local fire agencies, emergency responders, and the National Weather Service.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  This strategy was included in the Monitoring and Detection mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14 and SDGE 1-17).

**Costs:** Please refer to the Fire Science and Climate Adaption Department workpaper.

**Santa Ana Wildfire Threat Index (SAWTI)**

**Plan Cross-reference:** Section 4.5.4

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:**  Santa Ana Wildfire Threat Index is an existing strategy. As stated in Section 4.5.4, the SAWTI categorizes Santa Ana winds based on anticipated fire potential and uses several meteorological and fuel moisture variables generated from the Weather Research and Forecasting (WRF) Model to forecast the index out to six days.

**Meet or Exceed Regulations:**  This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by leveraging big data and analytics to assess the wildfire potential associated with an approaching weather event and sharing that information with stakeholder in the community and the public.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  This strategy was included in the Monitoring and Detection mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14 and SDGE 1-17).

**Costs:**  Please refer to the Fire Science and Climate Adaption Department workpaper.

**Wildfire Risk Reduction Model – Operational System (WRRM-Ops)**

**Plan Cross-reference:** Section 4.5.5

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:**  WRRM-Ops (Fire Behavior Modeling) is an existing program. As stated in Section 4.5.5, significant intelligence related to the wildfire potential is also gathered from SDG&E’s WRRM-Ops, which integrates the latest weather and GIS technology to understand wildfire growth patterns across the region.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by assessing the areas of highest fire danger before a wildfire begins so preventative measures can be taken to enhance public safety and ensure the reliable operation of the electric system.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  This program was included in the Monitoring and Detection mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14 and SDGE 1-17).

**Costs:** While there are forecasted costs for this program requested and pending before the CPUC in A.17-10-007, in this Plan the WRRM-Ops program has been expanded beyond the levels in A.17-10-007. It is SDG&E’s intent to record costs for this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

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| --- | --- | --- | --- | --- |
| **WRRM-Ops** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $0.3 | $0.5 | $0.3 | $0.5 |

**Camera Networks and Fire Detection**

**Plan Cross-reference:** Section 4.5.6

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:**  Camera Networks and Fire Detection is an existing strategy. As stated in Section 4.5.6, SDG&E utilizes a total of 107 cameras that enhance situational awareness around wildfire. Twenty of these cameras are owned by SDG&E, while 87 cameras are supported by SDG&E in collaboration with the University of California San Diego (UCSD) as part of the High Performance Wireless Research and Education Network (HPWREN).

**Meet or Exceed Regulations:**  This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by enhancing situational awareness and improving SDG&E’s ability to react to wildfires on the landscape. These cameras are also heavily used by CalFire.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  This strategy was included in the Monitoring and Detection mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14 and SDGE 1-17).

**Costs:** Please refer to the Fire Science and Climate Adaption Department workpaper.

**Climate Change Adaptation**

**Plan Cross-reference:** Section 4.6

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:**  Climate Change Adaptation is an existing strategy. As stated in Section 4.6, data ranging back to 1984 across San Diego County confirms that the number of high fire potential days has increased since the early 2000’s. These trends are projected to continue as a combination of factors leads to increases in both fire season duration and severity through the end of the century.

**Meet or Exceed Regulations:**  This strategy meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This strategy mitigates the risk of wildfire through tracking and better understanding the impact that our changing climate is likely to have on the fire environment.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  This strategy was included in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-8 – SDGE 1-9 and Chapter SDG&E-14).

**Costs:** Incremental, forecasted costs related to Climate Change Adaptation pending in A.17-10-007 are not included in this Plan as they are not associated with wildfire. Accordingly, SDG&E is not seeking or anticipating incremental costs associated with this program at this time.

**Wireless Fault Indicators**

**Plan Cross-reference:** Section 4.6.2

**Objective Time Frame:** This program will continue over the compliance period of this Plan. This program is planned for completion in 2021.

**New/Existing:**  Wireless Fault Indicators is an existing program.

**Meet or Exceed Regulations:**  This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by providing awareness to where faults occurred so that remote cameras can be directed to see if an ignition took place. This program helps to minimize the consequence of a fire should it occur.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:**  This program was included in the Design and Engineering Approaches mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-1 at SDGE 1-14).

**Costs:** Costs for this program were approved in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested and are pending before the CPUC in A.17-10-007.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

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| --- | --- | --- | --- | --- |
| **Wireless Fault Indicators** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $0.48 | $0.72 | $0.48 | $0.72 |

**Advanced Weather Station Integration and Forecast**

**Plan Cross-reference:** Section 4.6.3

**Objective Time Frame:** This program will continue over the compliance period of this Plan.

**New/Existing:** Advanced Weather Station Integration and Forecast is a new program. As stated in Section 4.6.3, the Advanced Weather Station Integration and Forecast program seeks to further modernize the SDG&E weather network.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by continuously monitoring the wildfire environment across the SDG&E service territory using the best tools available.

This falls under the Situational/Conditional Awareness mitigation category.

**RAMP:** Because this is a new program, it was not presented in the 2016 RAMP Report.

**Costs:** While there are costs for this program requested and pending before the CPUC in A.17-10-007, in this Plan the Advanced Weather Station Integration and Forecast program has been expanded beyond the levels in A.17-10-007.

It is SDG&E’s intent to record costs for this program in the FRMMA. Once a decision in A.17-10-007 is implemented, SDG&E will reconcile the amounts for purposes of the FRMMA.

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| --- | --- | --- | --- | --- |
| **Advanced Weather Station Integration and Forecast** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Capital (Directs, 2019$ in MM) | $0.5 | $0.7 | $0.5 | $0.7 |

**Strategy for Minimizing Public Safety Risk During High Wildfire Conditions**

**Plan Cross-reference:** Section 4.7.1

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:**  Public Safety Power Shutoff Protocols is an existing strategy. As stated in Section 4.7, SDG&E has an obligation to operate its system safely. This obligation requires SDG&E to de-energize circuits (i.e., turn off power) when necessary to protect public safety (Public Safety Power Shutoff or PSPS).

**Meet or Exceed Regulations:**  This strategy meets and exceeds P.U. Code §§ 399.2(a) and 451, D.12-04-024, and Commission Resolution ESRB-8.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by de-energizing power lines that are experiencing extreme fire weather conditions.

This falls under the Operation Practices mitigation category.

**RAMP:**  This strategy was not presented in the 2016 RAMP Report.

**Costs:** The job activities that occur during a PSPS event are performed by multiple work groups. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this strategy.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Public Safety Power Shutoff Protocols**

**Plan Cross-reference:** Section 4.7.2

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:** Public Safety Power Shutoff Protocols is an existing strategy. As stated in Section 4.7.2, if SDG&E determines it is necessary to employ a PSPS for portions of its system, re-energization will take place after the SDG&E Weather Network shows that wind speeds have decreased, and SDG&E weather forecasts indicate that winds will not re-accelerate above dangerous levels.

**Meet or Exceed Regulations:** This strategy meets and exceeds P.U. Code §§ 399.2(a) and 451, D.12-04-024, and Commission Resolution ESRB-8.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by confirming that electrical lines are structurally sound and free of debris after the extreme fire weather conditions have ceased.

This falls under the Operation Practices mitigation category.

**RAMP:** This strategy was not presented in the 2016 RAMP Report.

**Costs:** The job activities that occur during a PSPS event are performed by multiple work groups. Costs for performing this work were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this strategy.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

**Communication Practices**

**Plan Cross-reference:** Section 4.7.4

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:**  Communication Practices related to Public Safety Power Shutoff is an existing program. As stated in Section 4.7, in advance of the peak of fire season, SDG&E will conduct ongoing education campaigns in five languages (English, Spanish, Chinese, Filipino, Vietnamese) regarding how to be prepared for emergencies in the event of a wildfire, natural disaster or major outage. SDG&E anticipates that this education campaign will also encourage customers to sign up for outage notifications, with the goal of raising awareness about SDG&E’s PSPS procedures. SDG&E will also be updating its Enterprise Notification System (ENS) to enhance customer service.

**Meet or Exceed Regulations:** This program meets and exceeds P.U. Code §§ 399.2(a) and 451, D.12-04-024, and Commission Resolution ESRB-8.

**Risk Mitigation:** This program mitigates the risk of wildfire by its association to de-energizing power lines that are experiencing extreme fire weather conditions.

This falls under the Operation Practices mitigation category.

**RAMP:**  SDG&E’s Customer Communications and First Responder Training was included as a mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-3 at SDGE 3-16 and SDGE 3-17).

**Costs:** Certain costs for this program were approved in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested and are pending before the CPUC in A.17-10-007. However, in this Plan SDG&E is proposing to expand the Communication Practices related to the Public Safety Power Shutoff program beyond the levels in A.17-10-007.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

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| --- | --- | --- | --- | --- |
| **Communication Practices related to Public Safety Power Shutoff** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $2.0 | $3.0 | $2.0 | $3.0 |
| Capital (Directs, 2019$ in MM) | $0.50 | $0.70 | $0.50 | $0.70 |

**Mitigating the Public Safety Impact of PSPS Protocols**

**Plan Cross-reference:** Section 4.7.5

**Objective Time Frame:** This is an ongoing strategy that will continue over the compliance period of this Plan.

**New/Existing:**  Mitigating the Public Safety Impact of PSPS Protocols is an existing strategy. As stated in Section 4.7.5, SDG&E manages and mitigates the impacts of a PSPS event through collaborations with key stakeholders in the wildfire response community.

**Meet or Exceed Regulations:**  This strategy meets and exceeds P.U. Code §§ 399.2(a) and 451, D.12-04-024, and Commission Resolution ESRB-8.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by mitigating the risk associated with Public Safety Power Shutoff.

This falls under the Operation Practices and Response and Recovery mitigation category.

**RAMP:**  SDG&E’s Customer Communications and First Responder Training was included as a mitigation in the 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-3 at SDGE 3-16 and SDGE 3-17).

**Costs:** Please refer to the Fire Science and Climate Adaption Department workpaper.

**Emergency Management Operations**

**Cross-reference:** Sections 4.1.4.2, 4.1.4.3, and 5.1

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:**  This is an existing program that supports effective, efficient, and collaborative planning, preparedness, response, and recovery processes for all hazards and risks, including those associated with wildfire and RFW incidents enterprise-wide.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by effectively coordinating the SDG&E’s pre-incident and response/recovery activities during periods of high wildfire risk and/or wildfire activity, which is inclusive of Aviation Services’ operation of air resources, and SDG&E’s full operational response to Red Flag Warning or extreme FPI activation and response.

This falls under the Operational Practices and Response and Recovery mitigation categories.

**RAMP:**  This program was addressed in the Customer Communications and First Responder Training mitigation in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-3 at SDGE 3-16 – SDGE-17).

**Costs:** Certain costs for this program were approved in D.16-06-054 for the 2016 GRC cycle. Forecasted costs for this program for the 2019 GRC cycle were requested and are pending before the CPUC in A.17-10-007. However, in this Plan SDG&E is proposing to expand the Emergency Management Operations program beyond the levels in A.17-10-007.

To the extent additional costs are incurred that are not otherwise covered in SDG&E’s revenue requirements, it is SDG&E’s intent to record those costs in its FRMMA to be evaluated at a later time. SDG&E will reconcile the amounts in the FRMMA, as necessary, once a decision in A.17-10-007 is implemented.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Emergency Management Operations** | **2019** | | **2020** | |
| **Low** | **High** | **Low** | **High** |
| Incremental O&M  (Directs, 2019$ in MM) | $4.0 | $6.0 | $4.0 | $6.0 |
| Emergency Response Preparedness Trainings Conducted | 225 | 250 | 225 | 250 |

**Disaster and Emergency Preparedness Plan**

**Cross-reference:** Section 5.2

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:**  This is an existing program. As stated in Section 5.2.1, SDG&E’s Company Emergency Response Plan (CERP) and risk specific response plans provide a framework by which SDG&E can effectively coordinate SDG&E’s pre-incident and response/recovery activities to a given threat or hazard.

**Meet or Exceed Regulations:** This program meets and exceeds the requirement to furnish and maintain a safe and reliable utility system in accordance with P.U. Code § 451.

**Risk Mitigation:** This program mitigates the risk of wildfire by effectively planning and documenting SDG&E’s pre-incident and response/recovery activities during periods of high wildfire risk and/or wildfire activity.

This falls under the Response and Recovery mitigation category.

**RAMP:**  This program was addressed in the Customer Communications and First Responder Training mitigation and the Workforce Planning risk chapter in SDG&E’s 2016 RAMP Report (*see* I.16-10-015, Chapter SDG&E-3 at SDGE 3-16 – SDGE 3-17; Chapter SDG&E-17).

**Costs:** Please refer to the Emergency Management Operations workpaper.

**Customer Support in Emergencies**

**Cross-reference:** Section 5.3

**Objective Time Frame:** This is an ongoing program that will continue over the compliance period of this Plan.

**New/Existing:**  Customer Support in Emergencies is an existing program to accommodate for the impacts from wildfire. Consumer protections are for more than just wildfires, they cover all emergencies. As stated in Section 5.3, SDG&E provides emergency residential and non-residential customer protections and available communications for wildfire victims, as ordered by the CPUC.

**Meet or Exceed Regulations:**  SDG&E’s Customer Support in Emergencies program meets or exceeds Resolution M-4835.

**Risk Mitigation:** This program mitigates the risk of wildfire impacts to customers by providing consumer protections to customers impacted by wildfire.

This falls under the Response and Recovery mitigation category.

**RAMP:**  This program was not included in the 2016 RAMP Report.

**Costs:** General customer support related costs were authorized through D.16-06-054 for the 2016 GRC cycle by funding base business. Forecasted costs are also pending CPUC approval in A.17-10-007 for the 2019 GRC cycle. There are no incremental costs associated with this strategy as consumer protection costs in emergencies are addressed through a separate mechanism.

Upon the Governor of California declaring a state of emergency because of a disaster, SDG&E will make an advice filing and begin recording costs for each applicable event to the Emergency Customer Protections Memorandum Account (ECPMA). Costs that are incurred outside of a state of emergency are funded through current resources, as noted above.

**Monitoring and Correcting Deficiencies**

**Plan Cross-Reference:** Section 6.4.1

**Objective Time Frame:** This strategy will continue over the compliance period of this Plan.

**New/Existing:** Monitoring and Correcting Deficiencies is a new strategy. It will execute, monitor, review, and address deficiencies in SDG&E’s approach to wildfires, consistent with SDG&E’s Plan. This strategy allows for wide collaboration and information gathering, as well as the ability to inform, plan, act, and improve within a compressed timeline, when needed.

**Meet or Exceed Regulations:** This strategy meets and exceeds the requirements set forth in P.U. Code § 8386, as amended by Senate Bill 901.

**Risk Mitigation:** This strategy mitigates the risk of wildfire by closely monitoring and evaluating the initiatives and programs designed to mitigate fire and enable course correction as necessary.

This strategy is associated with the all of the mitigation categories: (1) Design and Construction, (2) Inspection and Maintenance, (3) Operational Practices, (4) Situational/Conditional Awareness, and (5) Response and Recovery.

**RAMP:** Because this is a new strategy, it was not presented in SDG&E’s 2016 RAMP Report.

**Costs:** Please refer to the Fire Science and Climate Adaption Department workpaper.

1. PRiME was renamed from Post Construction True-Up Quality Assurance and Quality Control which was presented in the 2016 RAMP Report. The program was presented as PRiME in A.17-10-007. [↑](#footnote-ref-1)