



# **Risk Assessment and Mitigation Phase Cross-Functional Factor**

**(SDG&E-CFF -2)**

**Climate Change Adaptation, Energy  
System Resilience, and Greenhouse Gas  
Emission Reductions**

**May 17, 2021**

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# **CROSS-FUNCTIONAL FACTOR: CLIMATE CHANGE ADAPTATION, ENERGY SYSTEM RESILIENCE, AND GREENHOUSE GAS EMISSION REDUCTIONS**

## **I. INTRODUCTION**

This Cross-Functional Factor (CFF) Chapter describes how activities related to Climate Change Adaptation, Energy System Resilience, and Greenhouse Gas (GHG) Emission Reductions impact the risks described in SDG&E's Risk Assessment Mitigation Phase (RAMP) risk chapters.

SDG&E is presenting CFF information in this RAMP Report to provide the Commission and parties additional information regarding the risks and mitigations described in its RAMP risk chapters. CFFs are not in and of themselves RAMP risks. Rather, CFFs are drivers, triggers, activities or programs that may impact multiple RAMP risks. CFFs are also generally foundational in nature. Therefore, SDG&E's CFF presentation differs from that of its RAMP risk chapters (*e.g.*, no risk spend efficiency calculations or alternatives are provided). SDG&E's CFF chapters provide narrative descriptions of the CFF projects and programs that impact multiple SDG&E's RAMP risk chapters through the 2022-24 time frame. Related cost forecasts are provided where available, consistent with an expected test year (TY) 2024 general rate case (GRC) request.

As described below, Climate Change Adaptation, Energy System Resilience, and GHG Emissions can significantly impact particular RAMP risks, in that they can impact the likelihood or the consequence of an event. Climate Change Adaptation, Energy System Resilience, and GHG Emissions are not easily quantified with respect to measuring their effects on particular RAMP risks or measuring alternate approaches in order to calculate risk spend efficiency (RSE). Below, SDG&E describes the significance of Climate Change Adaptation, Energy System Resilience, and GHG Emissions issues and related SDG&E activities intended to mitigate certain RAMP risks and enhance safety.

## **II. OVERVIEW**

### **A. Climate Change Adaptation**

SDG&E recognizes the need to ensure safety and reliability of its services to customers and to adapt to weather- and climate-related threats to its system. The National Oceanic and Atmospheric Administration (NOAA) website states that 2020 holds the record of having the

most weather/climate events with 22 events with losses exceeding \$1 billion each.<sup>1</sup> SDG&E is deeply committed to building safety and reliability protections against the most pressing threat of wildfire as well as the threat of other climate hazards expected to impact the region, with the same innovative and community-centric approach that SDG&E has pursued and will continue to pursue to mitigate the threat of wildfire. Extreme weather conditions, extreme temperatures, sea level rise, and cascading impacts are only a few of the many climate hazards with both short- and long-term ramifications to the San Diego region.

Climate hazards are expected to increase the severity and frequency of adverse weather and other natural events and create or enhance risks to SDG&E's system as a result. In addition to the wildfire threat risk, which is exacerbated by climate change, the other climate hazards listed above can pose safety risks to SDG&E's service territory. For example, the threat of a rising sea level poses safety risks to coastal regions, and SDG&E's safety risks can come in the form of damaged assets in its coastal regions as well as extended outages due to damaged assets. Similarly, the increasing frequency of extreme winter weather in the United States due to climate change,<sup>2</sup> as exemplified by the February 2021 Texas freeze (Storm Uri),<sup>3</sup> supports the need for a resilient energy system, which, for SDG&E electric and gas customers, may be enhanced by existing SoCalGas storage assets and potentially other technologies in the future.<sup>4</sup>

Climate hazards impact different groups in our community in varying degrees. Communities that lack resources, are located in areas experiencing greater impacts, have a greater number of residents with underlying medical conditions, and/or lack certain services will

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<sup>1</sup> NOAA, National Centers for Environmental Information, *Billion-Dollar Weather and Climate Disasters: Overview*, available at <https://www.ncdc.noaa.gov/billions/>.

<sup>2</sup> Nature Communications, *Warm Arctic episodes linked with increased frequency of extreme winter weather in the United States* (2018) at 2, available at <https://www.nature.com/articles/s41467-018-02992-9.pdf>.

<sup>3</sup> See, e.g., ERCOT March 4, 2021 Letter to Texas Senate and Texas House of Representatives (providing a list of generators experiencing an outage or a reduction in available power during the extreme cold weather emergency affecting the Texas power grid that occurred on February 14-19, 2021), available at [http://www.ercot.com/content/wcm/lists/226521/ERCOT\\_Letter\\_Re\\_Feb\\_2021\\_Generator\\_Outages.pdf](http://www.ercot.com/content/wcm/lists/226521/ERCOT_Letter_Re_Feb_2021_Generator_Outages.pdf).

<sup>4</sup> See Western Interconnection Gas – Electric Interface Study Public Report (June 2018), a study that identified potential threats to grid reliability at present and in the future, available at <https://www.wecc.org/Reliability/Western%20Interconnection%20Gas-Electric%20Interface%20Study%20Public%20Report.pdf>.

continue to be more adversely affected by these events. To address these risks, equity (more specifically climate equity) should be kept front and center when crafting policy initiatives and partnering with community stakeholders, as SDG&E has emphasized in many recent interagency workshops.<sup>5</sup>

To build comprehensive mitigations to wildfire and other climate hazards, SDG&E has combined the best available science (and has spearheaded scientific development where it is lacking), cutting-edge situational awareness technology, integration of sustainability principles, and subject matter expertise dedicated to solving complex climate change-related issues. SDG&E has taken a path of bold action and extensive collaboration to respond to climate change impacts. For example, in late 2020, SDG&E released a Sustainability Strategy describing its efforts and projects to reduce GHG emissions, promote energy affordability and resilience, and create a more just and equitable future for our customers.<sup>6</sup> SDG&E aims to make its system more resilient to climate change for the benefit of customers, and in doing so, decrease the impacts of certain RAMP risks.

## **B. Energy System Resilience**

Energy system resilience is “[the] system’s ability to prevent, withstand, adapt to, and quickly recover from system damage or operational disruption.”<sup>7</sup> The discussion below describes SDG&E’s role in building and maintaining a resilient and reliable energy system in the face of infrequent extreme weather events driven by climate change and energy system transitions to clean and sustainable energy. This section will also discuss how climate equity and vulnerability perspectives inform energy system resilience, which affects all SDG&E customers.

In light of recent extreme weather events in other parts of the United States and other countries, the need for the energy system to withstand or quickly recover from a systemwide disruption is becoming clearer. There are many activities that impact energy system resilience,

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<sup>5</sup> See, e.g., Rulemaking (R.) 20-05-002, Order Instituting Rulemaking [OIR] to Review Climate Credit for Current Compliance with Statute and for Potential Improvements (May 7, 2020); see Comments of San Diego Gas & Electric Company (U 902 E) Responding to Administrative Law Judge (ALJ) Hymes’ January 28, 2021 Ruling (February 12, 2021).

<sup>6</sup> SDG&E, *Building a Better Future* (SDG&E’s 2020 Sustainability Strategy), available at [https://www.sdge.com/sites/default/files/documents/SDG%26E%20Sustainability%20Report\\_0.pdf](https://www.sdge.com/sites/default/files/documents/SDG%26E%20Sustainability%20Report_0.pdf).

<sup>7</sup> American Gas Foundation, *Building a Resilient Energy Future: How the Gas System Contributes to US Energy System Resilience* (January 2021) at 2, available at [https://gasfoundation.org/wp-content/uploads/2021/01/Building-a-Resilient-Energy-Future-Full-Report\\_FINAL\\_1.13.21.pdf](https://gasfoundation.org/wp-content/uploads/2021/01/Building-a-Resilient-Energy-Future-Full-Report_FINAL_1.13.21.pdf).

and SDG&E does not discuss them all here. Rather, this section introduces the concept of Energy System Resilience as a cross-functional factor, provides some examples and exclusions, and leaves further discussion to a future proceeding or filing. SDG&E will discuss how the existing natural gas system provides resiliency benefits during extreme weather events in addition to the day-to-day benefits it provides the electric system. SDG&E will also discuss how longer-duration energy storage, capable of storing energy for more than 8 hours, for days or even for weeks, could help reduce or mitigate risks. Although microgrids provide resilience against wildfires, that topic is addressed in SDG&E's Wildfire Mitigation Plan and in the RAMP Wildfire Chapter (SDG&E-Risk-1), and therefore will not be repeated here.

The natural gas system supports SDG&E's ability to provide resilient, safe, and reliable service, particularly as climate change related events such as wildfires and extreme weather increase in frequency and duration, and as the electric grid becomes increasingly dependent on intermittent renewable resources to provide electric system capacity. Electric generation plants, fueled by the natural gas infrastructure system, provide substantial generating capacity to the electric grid at all times. Peaker plants are often only activated as resources when the electric grid is approaching (or is in a time of) peak demand, which often occurs during extreme hot weather events, such as the August 2020 event.<sup>8</sup> The natural gas system allows SDG&E to remain resilient to extreme weather events while transforming to support a clean energy future and state climate change goals. The natural gas system, if decarbonized to meet long-term environmental goals through renewable natural gas, non-GHG emitting fuels such as hydrogen, or using carbon capture, holds the potential to provide alternate energy to homes and businesses that have gas connections when the electric system is de-energized and to provide electric capacity through existing natural gas-fueled power plants when renewables are not sufficient to meet peak demand.

The natural gas system helps to reduce the frequency and occurrence of electric power shortages by fueling electric generation plants. Additionally, the natural gas system reduces the impact of an electric outage event by providing customers access to gas-fueled heating or cooking systems in their homes and businesses. During an electric outage, use of the natural gas

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<sup>8</sup> California Energy Commission, *CAISO, CPUC, CEC Issue Final Report on Causes of August 2020 Rotating Outages* (January 13, 2021), available at <https://www.energy.ca.gov/news/2021-01/caiso-cpuc-cec-issue-final-report-causes-august-2020-rotating-outages>.

system helps customers better recover from certain risk events because the electric system may be dependent on intermittent renewable resources like solar or energy storage systems, like batteries that cannot be charged if the intermittent renewable resources are not available and not able to charge the energy storage systems. Impacts could also be exacerbated into the future as our transportation sector continues to electrify and become more reliant on intermittent electricity sources.

SDG&E is implementing long-duration energy storage, such as the Borrego Springs Green Hydrogen Project, that will provide additional support to ensure the grid remains resilient.<sup>9</sup> Energy storage at grid scale can help mitigate the effects of renewable intermittency and energy shifting by allowing SDG&E to absorb grid disturbances while also providing a buffering capability to alleviate grid constraints.<sup>10</sup> These energy storage projects will also play a central role in the rollout of future microgrids, which will provide communities with power to critical services during Public Safety Power Shutoff (PSPS) events and other extreme weather events. The CPUC is considering adding 1,000 MW of long-duration storage in addition to other resources as part of its mid-term reliability analysis,<sup>11</sup> and SDG&E will look for other opportunities to diversify the energy grid for reliability and resilience.

A diverse energy grid is critical to building a resilient energy system that provides equitable energy to all SDG&E customers. Climate equity is a combination of environmental justice and social equity, with the overarching goal of providing equitable access to the energy transition and climate resiliency regardless of race, national origin, income, or social status. While infrastructure is a major part of the energy resiliency conversation, it is important to implement strategies that do not create disparate impacts or produce unintended social consequences on customers or communities. Integrating community concerns into energy project planning will create stakeholder efficiencies and enhance the overall resiliency of the

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<sup>9</sup> See <https://www.sdge.com/more-information/environment/sustainability-approach#hydrogen>.

<sup>10</sup> See SDG&E's 2020 Sustainability Strategy.

11. R.20-05-003 ALJ's Ruling Seeking Feedback on Mid-Term Reliability Analysis and Proposed Procurement Requirements (February 22, 2021) at 17, "For all of these reasons, this ruling proposes that at least 1,000 MW of geothermal resources and 1,000 MW of long-duration storage (defined as providing 8 hours of storage or more) be required to be part of the procurement required by no later than 2025."

energy system. Working together, these strategies will help SDG&E meet energy system resilience and state and regional climate goals.

Strategies that include available distributed energy resources (DER), flexible load management, and energy storage also provide the potential to alleviate some of the concerns around peak resource adequacy and climate-related extended power outages. Additionally, fuel cells may also alleviate concerns if fueled by renewable natural gas, by hydrogen, or by natural gas combined with carbon capture technologies. The turbines that provide power within the electric generation plants are capable of adapting to renewable natural gas and low-level blends of hydrogen with natural gas, or may be replaced with turbines that can use a pure hydrogen fuel, to provide firm power while lowering GHG emissions. Energy efficiency (EE) programs and conservation measures intended for customers who may not have the upfront capital for higher cost conservation measures can help reduce demand and alleviate load on the grid. Because not every customer has the ability or means to implement solar, energy storage, and/or vehicle electrification on their own, it is important for SDG&E to continue to support these areas so that all customers can receive the same benefits of a resilient energy system. EE technologies and other sustainable energy practices are critical to accommodating the increasing electrification of the transportation and building sectors and the additional load on the grid, while continuing to meet GHG emission reduction goals. All of these are options for the future to avoid electric outages and to promote energy system resilience.

Climate change is a driver for energy system resilience mitigations. In 2019, the CPUC issued a decision in the Climate Change Adaptation OIR,<sup>12</sup> to enhance utility preparedness for climate change and related hazards. The CPUC issued a second Climate Change Adaptation OIR decision in 2020, which requires California utilities to conduct climate change vulnerability assessments and to develop Community Engagement Plans (CEP).<sup>13</sup> The vulnerability assessments will be system-wide and will analyze all assets under the utility's control, as well as utility operations and services. SDG&E has already begun work on both of these initiatives. SDG&E anticipates this work will enhance energy system resilience, as well as contribute to building resilience across the San Diego region.

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<sup>12</sup> R.18-04-019; D.19-10-054.

<sup>13</sup> D.20-08-046, Ordering Paragraph 5 at 120.



### C. GHG Emission Reductions

In addition to investing in Climate Adaptation and Energy System Resilience to respond to climate change, SDG&E supports California's efforts to mitigate GHG emissions in the first instance. In support of California's goal of achieving carbon neutrality by 2045, SDG&E has set a goal to reach Net Zero GHG emissions by 2045 and has adopted a Sustainability Strategy to facilitate the integration of GHG emission reduction strategies into SDG&E's day-to-day operations and long-term planning.<sup>14</sup> While GHG emissions are the collective result of various global and local activities, this discussion focuses on local activities that are a driver of GHG emissions and how GHG emissions are also a consequence of various risk factors.

SDG&E's pledge to reach Net Zero GHG emissions includes Scopes 1, 2, and 3 GHG emissions (as defined by the U.S. Environmental Protection Agency),<sup>15</sup> which would eliminate not only SDG&E's own direct emissions (Scope 1), but also those generated by other companies' generation of power we utilize (Scope 2) and customers' consumption of energy (Scope 3). These strategies and commitments, along with others such as Virtual Power Plants, green hydrogen, and collaboration with regional partners, will align our business operations with local and state emission reduction targets.

Achieving California and SDG&E's 2045 GHG reduction goals requires a focus on mid-term milestones. To that end, SDG&E must explore opportunities to reduce the Scope 1 GHG emissions associated with its gas generation fleet by 2030 (without compromising reliability). In addition, SDG&E's plans to reduce emissions from the company's business operations includes a reduction in fugitive emissions from our natural gas transmission and distribution systems. By 2030, SDG&E expects to have electrified 100% of our light duty fleet and aims to have a 100% zero emission vehicle (ZEV) fleet by 2035.<sup>16</sup> In the near-term, SDG&E must also explore and

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<sup>14</sup> SDGNews.com, *SDG&E's Commitment to Achieving Net Zero GHG Emissions by 2045* (March 22, 2021), available at <http://www.sdgenews.com/article/net-zero-ghg-emissions-by-2045#:~:text=On%20March%2023%2C%202021%2C%20SDG%26E,by%20customers'%20consumption%20of%20energy>.

<sup>15</sup> See United States Environmental Protection Agency, *Greenhouse Gases at EPA*, available at <https://www.epa.gov/greeningepa/greenhouse-gases-epa>. See, e.g., SDG&E's 2020 Sustainability Strategy at 16, (A detailed description of SDG&E's scope emissions.).

<sup>16</sup> SDG&E's 2020 Sustainability Strategy at 19.

pursue opportunities to reduce Scope 3 emissions associated with customers' consumption of energy, which comprise more than 80% of SDG&E's emissions portfolio.

According to the City of San Diego, which makes up a significant proportion of SDG&E's service territory, the sources of GHG emissions in San Diego in 2018 were 55% transportation, 21% electricity, 20% natural gas, 3% solid waste, and 1% water and wastewater.<sup>17</sup> SDG&E's Sustainability Strategy and Net Zero pledge are intended to de-carbonize or to reduce the GHG emissions from these sectors in San Diego. Strategies for reducing these emissions are being implemented across our service territory and regional community. For example, the City of San Diego, County of San Diego, the Port of San Diego, San Diego County Regional Airport Authority, and over a dozen local municipalities have all issued climate action plans or sustainability plans that aim to reduce GHG emissions and decrease the negative impacts of climate change.<sup>18</sup> To align with our regional partners, SDG&E's Sustainability Strategy identifies opportunities for decreasing emissions in other sectors of the economy – not just the emissions associated with SDG&E's direct operations or customers' consumption of energy.<sup>19</sup> SDG&E's Sustainability Strategy demonstrates SDG&E's intention to collaborate with other regional stakeholders and to leverage resources to achieve the region's decarbonization goals. For example, SDG&E partners with the City of San Diego, the County of San Diego, and the San Diego Association of Governments (SANDAG) to reduce air pollution and GHG emissions through transportation electrification and through the Accelerate to Zero Emission Collaboration. These emissions from the transportation sector are not SDG&E's Scope 3 emissions, but they advance the region's climate goals and leverage our collective resources to accelerate transportation electrification. SDG&E is also exploring opportunities to partner with stakeholders to pursue pilot and demonstration projects that can accelerate an equitable energy

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<sup>17</sup> The City of San Diego, *Climate Action Plan 2020 Annual Report Appendix* (2020) at 2, available at <https://www.sandiego.gov/sites/default/files/cap-2020-annual-report-appendix.pdf>.

<sup>18</sup> See, The City of San Diego, *Climate Action Plan & Our Climate, Our Future*, available at <https://www.sandiego.gov/sustainability/climate-action-plan>; San Diego County, *Climate Action Plan*, available at <https://www.sandiegocounty.gov/content/sdc/sustainability/cap.html>; and Port of San Diego, *Climate Action Plan*, available at <https://www.portofsandiego.org/environment/energy-sustainability/climate-action-plan>.

<sup>19</sup> See SDG&E's 2020 Sustainability Strategy.

transition.<sup>20</sup> Collective and collaborative efforts are necessary to reduce GHG emissions and achieve climate goals.

SDG&E is also investing in hydrogen systems to demonstrate the potential to provide longer-duration energy storage and other decarbonization benefits.<sup>21</sup> Hydrogen systems can store electricity generated from solar and other renewable resources and convert that energy back into electricity at a later time, when intermittent renewable resources are not available to serve customers. SDG&E is investigating the use of hydrogen for combustion purposes in existing natural gas burning electric generation plants, which would have the potential to reduce the GHG emissions from these electric generation plants. SDG&E is investigating hybrid gas and energy storage enhancements at existing electric generation facilities that could have the potential to reduce the GHG emissions from these specific electric generation plants. SDG&E is monitoring efforts in carbon capture at SoCalGas and across the industry to determine if carbon capture, utilization, or sequestration is suitable for reducing GHG emissions in SDG&E's operations. Additionally, SDG&E has committed to planting 10,000 trees annually to sequester carbon and support local biodiversity through the "Right Tree, Right Place" Program, which also mitigates the overall wildfire risk.<sup>22</sup> With the support of local partners, we are exploring other nature-based solutions in our region, consistent with California policy.<sup>23</sup> SDG&E is monitoring renewable natural gas and biomethane activities to determine if they would be suitable for reducing GHG emissions in SDG&E's operations, particularly in the natural gas system. SDG&E and SoCalGas are investigating the use of hydrogen produced from renewable energy resources as a fuel for natural gas compressors in the gas transmission system, which would reduce GHG emissions. SDG&E is also investing in renewable energy resources to assist in

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<sup>20</sup> See California Energy Commission, *GFO-20-606 - Zero-Emission Drayage Truck and Infrastructure Pilot Project* (November 19, 2020), available at <https://www.energy.ca.gov/solicitations/2020-11/gfo-20-606-zero-emission-drayage-truck-and-infrastructure-pilot-project>. Although SDG&E was not successful in this proposal to fund the deployment of 50 zero-emission Class 8 cross-border regional haul trucks, SDG&E will continue to partner with regional stakeholders such as the San Diego Air Pollution Control District, local businesses, and community-based organizations and non-profits to pursue opportunities such as this one.

<sup>21</sup> See SDG&E's 2020 Sustainability Strategy at 8, 11, 42, and 53.

<sup>22</sup> See SDG&E's 2020 Sustainability Strategy at 11 and 26.

<sup>23</sup> See Executive Order N-82-20 (issued October 7, 2020), available at <https://www.gov.ca.gov/wp-content/uploads/2020/10/10.07.2020-EO-N-82-20-.pdf>.

powering several microgrids that are currently under construction in SDG&E's Wildfire Mitigation Plan and assessing whether microgrids could be reliably powered solely by non-GHG emitting resources.<sup>24</sup> And, for decades, SDG&E has been implementing energy efficiency programs that have saved customers millions of dollars, hundreds of gigawatt hours, and thousands of metric tons of GHG emissions.<sup>25</sup>

Scientific studies have shown that reductions in GHG emissions would mitigate climate change by reducing the frequency and impact of climate-related risk events.<sup>26</sup> SDG&E cannot quantify the link between the GHG emission reduction with the risk to life, safety, or the reduction in drivers to risk events like wildfires or other climate change events, because climate change is affected by GHG emissions worldwide. If SDG&E and SoCalGas were to completely eliminate GHG emissions, climate change would likely still be driven by GHG emissions in neighboring states, neighboring countries, and global GHG emissions from every other part of the world. Thus, if SDG&E and SoCalGas were to completely eliminate GHG emissions, there would be no clear way to quantify the resulting reduction in climate change risk events. While the risk reductions cannot be measured or quantified, SDG&E nevertheless recognizes the importance of pursuing activities that do, and for that reason has provided this information regarding CFF GHG emissions activities. At this time, SDG&E is reviewing costs for its Sustainability Strategy and will provide them in its GRC (or other) application, as applicable, but complete cost information is not currently available to be provided for this program. SDG&E is actively pursuing partnerships, grants, and other opportunities that may lead to non-ratepayer funding for sustainability initiatives.

### **III. ASSOCIATED RISK EVENTS**

The table below shows how Climate Change Adaptation, Energy System Resilience, and GHG Emission Reductions present drivers, consequences, and/or mitigations to the safety risks described in RAMP Risk Chapters (listed in the far-left column).

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<sup>24</sup> SDG&E 2020-2022 Wildfire Mitigation Plan Update (February 5, 2021) at 76-78, *available at* <https://www.sdge.com/sites/default/files/regulatory/SDG%26E%202021%20WMP%20Update%2002-05-2021.pdf>.

<sup>25</sup> See SDG&E's 2020 Sustainability Strategy at 36.

<sup>26</sup> Intergovernmental Panel on Climate Change, *Assessment Report 5 Synthesis Report, Climate Change 2014, Headline Statements*, *available at* <https://www.ipcc.ch/report/ar5/syr/>.

<b>Risk Chapter/Cross Functional Factor</b>	<b>Climate Change Adaptation</b>	<b>Energy System Resilience</b>	<b>GHG Emission Reductions</b>
<b>SDG&amp;E-Risk-1 Wildfires Involving SDG&amp;E Equipment</b>	Consequence	Mitigation, Consequence	Driver, Mitigation
<b>SDG&amp;E-Risk-2 Electric Infrastructure Integrity</b>	Consequence	Driver, Mitigation	Mitigation
<b>SDG&amp;E-Risk-3 Incident Related to the High Pressure System (Excluding Dig-In)</b>	Consequence	Driver	Mitigation
<b>SDG&amp;E-Risk-4 Incident Involving a Contractor</b>	Driver	-	-
<b>SDG&amp;E-Risk-5 Customer and Public Safety – Contact with Electrical Equipment</b>	-	-	-
<b>SDG&amp;E-Risk-6/SCG- Risk-6 Cybersecurity</b>	-	-	-
<b>SDG&amp;E-Risk-7 Excavation Damage (Dig-In) on the Gas System</b>	Consequence	-	Mitigation
<b>SDG&amp;E-Risk-8 Incident Involving an Employee</b>	Driver	-	-
<b>SDG&amp;E-Risk-9 Incident Related to the Medium Pressure System (Excluding Dig-In)</b>	Consequence	Driver	Mitigation

#### **IV. 2020 PROGRAMS**

##### **A. Climate Change Vulnerability Assessment**

SDG&E is engaged in a system-wide climate change vulnerability assessment that will assess all SDG&E assets, operations, and services to understand what current and future climate hazards pose threats. The assessment will examine three future time horizons, identify vulnerabilities, inform enhancements and investments in the system, and will consider a multitude of climate hazards, including, but not limited to, extreme temperature, extreme precipitation, sea level rise, and wildfire. This assessment is being conducted pursuant to a CPUC mandate (in D. 20-08-046) and will be developed through iterations on four-year cycles.

##### **B. Scripps Institution of Oceanography**

SDG&E is committed to having the best available science surrounding climate change to enhance decision-making abilities as well as provide better information to be used across the region. In pursuit of this goal, SDG&E has developed a partnership with Scripps Institution of Oceanography to learn more about what climate change will bring to the San Diego region. Currently, there are two key research projects underway, one focused on the impact of autumn rainfall on catastrophic wildfires as well as one studying coastal flooding impacts in San Diego Bay.<sup>27</sup>

##### **C. Community Engagement Plan**

Climate change will impact everyone in SDG&E's service territory in some way, but of particular concern are Disadvantaged Vulnerable Communities, as defined in the Climate Change Adaptation OIR's 2020 decision.<sup>28</sup> SDG&E is committed to doing what it can to promote equity in these communities by engaging with local jurisdictions and other non-governmental organizations on the topic of climate change adaptation. The Community Engagement Plan will be a guiding document outlining how SDG&E will engage with these communities and best practices for involving communities in decision-making and planning regarding utility climate change adaptation efforts.

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<sup>27</sup> SDG&ENews.com, *SDG&E Partners with Scripps Institution of Oceanography to Expand Climate Change Research* (February 3, 2021), available at <http://www.sdgenews.com/article/sdge-partners-scripps-institution-oceanography-expand-climate-change-research>.

<sup>28</sup> D.20-08-046, Ordering Paragraph 1 at 119.

**D. California Energy Commission (CEC) Grant Opportunities**

SDG&E is a key partner in two climate-related CEC-funded research projects. This research will provide key information to SDG&E for climate change adaptation and advance climate science statewide. This research will be incorporated into California's Fifth Climate Change Assessment and future iterations of Cal-Adapt.

**V. 2022-2024 PROGRAMS**

The activities listed above will continue through 2024, and there are no other planned enhancements or activities.

**VI. COSTS**

The table below contains the 2020 recorded and forecast dollars for the programs and projects discussed in this CFF. 2020 Recorded dollars duplicate dollars that are also reflected in the Wildfire Chapter.

**Costs (Direct After Allocations, in 2020 \$000)<sup>29</sup>**

Line No.	Description	Recorded		Forecast			
		2020 Capital	2020 O&M	2022-2024 Capital (Low)	2022-2024 Capital (High)	TY 2024 O&M (Low)	TY 2024 O&M (High)
1	Scripps Institution of Oceanography Climate Research	N/A	\$125*	N/A	N/A	\$383**	\$469**
2	Climate Change Vulnerability Assessment	N/A	\$157*	N/A	N/A	\$460**	\$562**
3	Community Engagement Plan	N/A	\$000*	N/A	N/A	\$000	\$000
4	CEC Grant Opportunities	N/A	\$000*	N/A	N/A	\$000	\$000

**Notes:**

\* 2020 spend captured in Wildfire Chapter & Wildfire Mitigation Memo Account (WMPMA).

\*\* 2022-2024 spend will be captured in Climate Change & Vulnerability Assessment Memo Account (CAVAMA).

<sup>29</sup> Costs presented in workpapers may differ from this table due to rounding. The figures provided are direct charges and do not include company loaders, with the exception of vacation and sick. The costs are presented in 2020 dollars and have not been escalated in forecasts beyond 2020.