

Module: Introduction**Page: Introduction**

CC0.1**Introduction**

Please give a general description and introduction to your organization.

PG&E Corporation is an energy-based holding company whose core business is Pacific Gas and Electric Company (PG&E). PG&E is one of the largest combined natural gas and electric utilities in the United States. Based in San Francisco, with approximately 24,000 employees, the company delivers some of the nation's cleanest energy to nearly 16 million people in Northern and Central California. PG&E Corporation had more than \$65 billion in assets as of December 31, 2016, and generated revenues more than \$17 billion in 2016.

PG&E has a long history of taking action to combat climate change. Doing so is integral to the company's ongoing efforts to provide safe, reliable, affordable and clean energy to customers. PG&E's efforts remain focused on managing its carbon footprint, advancing low-carbon policies for California and the nation, helping customers reduce their energy use with industry-leading tools and incentives, and addressing the need to adapt to changing climate conditions.

With the change in the federal administration, there is significant uncertainty regarding what further actions may occur regarding climate change at the federal level. However, California has committed to continue and enhance its leadership on climate change nationally and globally. In 2016, the California Legislature passed Senate Bill (SB) 32 which requires that the California Air Resources Board (CARB) ensure a 40% reduction in greenhouse gases by 2030 compared to 1990 levels. CARB is currently considering regulatory amendments to the cap-and-trade program to extend the program's authority to 2030. PG&E supports the decarbonization of California's economy through timely, durable, environmentally-effective and least-cost policy and energy solutions and remains committed to climate actions to reduce greenhouse gases and address the impacts of global warming – from deploying clean energy technologies to continuing to lead and innovate on energy efficiency.

In 2016, PG&E announced a joint proposal with labor and leading environmental organizations that would increase investment in energy efficiency, renewables and storage beyond current state mandates while phasing out PG&E's production of nuclear power in California by 2025. The joint proposal includes a voluntary increase in PG&E's target for Renewable Portfolio Standard (RPS)-eligible resources to 55%, effective in 2031, an unprecedented voluntary commitment by a major U.S. energy company. It also includes PG&E's commitment to obtain 2,000 GWh from energy efficiency installed by 2025, measured as the sum of the first year gross GWh from energy efficiency installed in 2018-2024.

CC0.2**Reporting Year**

Please state the start and end date of the year for which you are reporting data.

The current reporting year is the latest/most recent 12-month period for which data is reported. Enter the dates of this year first.

We request data for more than one reporting period for some emission accounting questions. Please provide data for the three years prior to the current reporting year if you have not provided this information before, or if this is the first time you have answered a CDP information request. (This does not apply if you have been offered and selected the option of answering the shorter questionnaire). If you are going to provide additional years of data, please give the dates of those reporting periods here. Work backwards from the most recent reporting year.

Please enter dates in following format: day(DD)/month(MM)/year(YYYY) (i.e. 31/01/2001).

Enter Periods that will be disclosed

Fri 01 Jan 2016 - Sat 31 Dec 2016

CC0.3**Country list configuration**

Please select the countries for which you will be supplying data. If you are responding to the Electric Utilities module, this selection will be carried forward to assist you in completing your response.

Select country

United States of America

CC0.4**Currency selection**

Please select the currency in which you would like to submit your response. All financial information contained in the response should be in this currency.

USD(\$)

CC0.6

Modules

As part of the request for information on behalf of investors, companies in the electric utility sector, companies in the automobile and auto component manufacturing sector, companies in the oil and gas sector, companies in the information and communications technology sector (ICT) and companies in the food, beverage and tobacco sector (FBT) should complete supplementary questions in addition to the core questionnaire.

If you are in these sector groupings, the corresponding sector modules will not appear among the options of question CC0.6 but will automatically appear in the ORS navigation bar when you save this page. If you want to query your classification, please email respond@cdp.net.

If you have not been presented with a sector module that you consider would be appropriate for your company to answer, please select the module below in CC0.6.

Further Information

Module: Management

Page: CC1. Governance

CC1.1

Where is the highest level of direct responsibility for climate change within your organization?

Board or individual/sub-set of the Board or other committee appointed by the Board

CC1.1a

Please identify the position of the individual or name of the committee with this responsibility

The Compliance and Public Policy Committee of the PG&E Corporation Board of Directors has responsibility for climate change policies and programs. In addition, the Board's Finance Committee reviews the company's potential financial impacts associated with climate change and the steps that management has taken to

monitor and control such impacts. PG&E Corporation's Chief Executive Officer (CEO) has the overall responsibility for climate change within the company. PG&E's Vice President of Federal Affairs and Policy and Chief Sustainability Officer leads PG&E's efforts to address greenhouse gas emissions in the company's operations.

CC1.2

Do you provide incentives for the management of climate change issues, including the attainment of targets?

Yes

CC1.2a

Please provide further details on the incentives provided for the management of climate change issues

Who is entitled to benefit from these incentives?	The type of incentives	Incentivized performance indicator	Comment
Other: Management employees	Monetary reward	Emissions reduction target Energy reduction target	Management employees at all levels with responsibilities over environmental matters are eligible for pay raises and monetary rewards based on their performance against their individual operating plans. These may consider achievement towards the company's key metrics and targets that relate to climate change, such as the amount of renewable energy delivered to customers and employees' success in advancing climate change policy in line with PG&E's policy goals.
All employees	Recognition (non-monetary)	Behavior change related indicator Other: Behaviour change related indicator	All employees may receive non-monetary recognition based on their management of climate change issues. For example, PG&E's Richard A. Clarke Award honors an individual and a team who have demonstrated environmental leadership. The winners receive a \$1,000 or \$5,000 charitable contribution to an environmental non-profit organization of their choice.
All employees	Monetary reward	Efficiency target	PG&E has annual customer energy efficiency targets that tie to company earnings, which impacts the variable compensation for all employees. The incentives are authorized under California's decoupled regulatory structure.
All employees	Monetary reward	Emissions reduction project	The variable compensation of all employees is impacted by PG&E's annual target to complete planned gas in-line inspections and pipeline retrofit projects that reduce methane emissions.

Further Information

Page: CC2. Strategy

CC2.1

Please select the option that best describes your risk management procedures with regard to climate change risks and opportunities

Integrated into multi-disciplinary company wide risk management processes

CC2.1a

Please provide further details on your risk management procedures with regard to climate change risks and opportunities

Frequency of monitoring	To whom are results reported?	Geographical areas considered	How far into the future are risks considered?	Comment
Six-monthly or more frequently	Board or individual/sub-set of the Board or committee appointed by the Board	Northern and Central California (all operations)	> 6 years	The PG&E Corporation Board of Directors and Chief Risk and Audit Officer have oversight responsibility for risk management at PG&E. Enterprise-wide Risk and Compliance teams, led by our Chief Risk and Audit Officer, guide the risk management process, including incorporating management of risks related to climate change into our integrated planning process. Each line of business has a risk manager and regular Risk and Committee Meetings chaired by the senior-most officer. PG&E's senior executives annually assess our plans to manage risk and compliance, setting the foundation for structured strategy and resource allocation discussions. On an ongoing basis, we proactively track and evaluate climate risks and have a process in place to prioritize infrastructure investments. Risks are reported to shareholders, the public, and other stakeholders through PG&E's Annual Form 10-K and Corporate Responsibility and Sustainability Report, and to regulators via annual reporting requirements.

CC2.1b**Please describe how your risk and opportunity identification processes are applied at both company and asset level**

i. Company-level: Risk management responsibilities are allocated to business units within PG&E, with oversight from the Chief Risk and Audit Officer and PG&E Corporation Board of Directors. Each line of business has a dedicated risk manager and regular Risk and Compliance Committee Meetings chaired by the senior-most officer. The manager establishes an inventory of business-specific risks known as a risk register, and refreshes the register annually with input from subject matter experts, reporting new risks and changes to existing risks. At each Risk and Compliance Committee meeting, officers review risk evaluations, approve risk response strategies and monitor the progress of risk management activities. Additionally, PG&E's external Sustainability Advisory Council informs the company's long-term strategy, providing input on emerging risks and opportunities related to climate change.

ii. Asset-level: Since 2008, PG&E has been investigating the potential physical risks of climate change to our system and has identified a number of potential risks, including flooding from storm events, sea level rise, land subsidence, heat waves, changes in precipitation patterns and wildfire danger. PG&E has established an internal Climate Resilience Officer Committee to coordinate work across enterprise risk management; internal culture, integration and planning; and external engagement. To address near-term risks, PG&E has robust emergency response plans and procedures. For longer-term risks, PG&E has a process to prioritize infrastructure investments. In PG&E's risk management program, the company is conducting a holistic assessment of risks to PG&E assets from different natural hazards. This structured process identifies potential impacts and enables business units to evaluate risks to facilities and develop necessary adaptation strategies. Using climate science as a foundation, the Climate Resilience Officer Committee is overseeing a multi-year research plan to close gaps.

CC2.1c**How do you prioritize the risks and opportunities identified?**

On an annual basis, PG&E incorporates risk into the company's integrated planning process. Each line of business has a dedicated risk manager and regular Risk and Compliance Committee Meetings chaired by the senior-most officer of the line of business. The risk manager is responsible for establishing an inventory of line of business-specific risks (including those related to climate change) known as a risk register, and refreshing the risk register annually with input from subject matter experts. This facilitates reporting of new risks and changes to existing risks. At each Risk and Compliance Committee meeting, officers review risk evaluations, approve risk response strategies, and monitor the progress of risk management activities within their organization. These groups determine priorities based on the likelihood and severity of risks and opportunities impacting the business and our customers, and the magnitude of impacts.

In the spring of each year, PG&E completes a Risk and Compliance Session with all senior officers of the company. This is an opportunity for the company to demonstrate year-over-year improvements in risk management and establish goals for further improvements. Failure to adapt to climate change is one of PG&E's enterprise risks. This discussion is the beginning of the company's integrated planning process and is used to form the foundation of our annual strategy and resource discussions later in the year.

Additionally, to further strengthen PG&E's corporate sustainability reporting and focus, and to inform the company's overall corporate strategy, PG&E published a "materiality" assessment. The assessment identified key priority issues for the long-term sustainability of PG&E as a company and involved in-depth conversations with company leaders and key external stakeholders.

CC2.1d

Please explain why you do not have a process in place for assessing and managing risks and opportunities from climate change, and whether you plan to introduce such a process in future

Main reason for not having a process	Do you plan to introduce a process?	Comment
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CC2.2

Is climate change integrated into your business strategy?

Yes

CC2.2a

Please describe the process of how climate change is integrated into your business strategy and any outcomes of this process

i. Climate change is integrated into PG&E's business strategy in several ways: (1) Reducing our carbon footprint by increasing supplies of clean and renewable energy, reducing energy use in facilities, reducing methane and other emissions in operations, investing in lower-emission vehicles, and building a more sustainable supply chain; (2) Helping customers achieve energy savings and GHG reductions through leading programs for energy efficiency, demand response, and solar installation, and (3) Helping communities better understand, plan for and respond to climate change risks through partnerships.

PG&E's business strategy is shaped by California's clean energy goals. For example, AB 32 requires the state to reduce GHG emissions to 1990 levels by 2020 and SB 32 requires 40% below 1990 levels by 2030. The state requires PG&E to deliver 50% renewable energy by 2030, and the CPUC authorizes our energy efficiency programs with ambitious customer energy savings goals. Additionally, PG&E's earnings are separated from the amount of gas and electricity we sell through "decoupling," which allows us to focus on pursuing customer energy efficiency, and PG&E follows the state's "loading order," which prioritizes meeting energy demands through demand reduction, renewable energy, and clean and efficient fossil generation.

ii. For example, PG&E recognizes that our resilience to climate change is tied to the resilience of the communities we serve. To help address this interdependency, PG&E recently launched the Better Together Resilient Communities grant program through which PG&E will invest \$1 million over five years in shareholder-funded grants to support local initiatives to build greater climate resilience throughout Northern and Central California.

Additionally, in step with California's evolving energy policy, PG&E announced a joint proposal with labor and leading environmental organizations that would

increase investment in energy efficiency, renewables and storage beyond current state mandates while phasing out PG&E's production of nuclear power in California by 2025. The joint proposal includes PG&E's commitment to a 55% renewable energy target in 2031 and to obtain 2,000 GWh from energy efficiency installed by 2025, measured as the sum of the first year gross GWh from energy efficiency installed in 2018-2024.

iii. Aspects of climate change that influence PG&E's business strategy include: regulatory risks, physical risks, and reputational risks. For example, the need to adapt to climate change to protect our assets and maintain service reliability has driven an increased focus on understanding potential vulnerabilities and solutions, which, in turn, is guiding our investments in facility improvements and operations to enhance short- and long-term resilience.

Additionally, PG&E published the results of a third-party led materiality assessment, which identified priorities for the long-term sustainability of our business. Developed through a structured process that included interviews with internal and external stakeholders, the assessment identified numerous material issues related to climate change, including PG&E's GHG emissions, renewable energy, and climate change resilience. PG&E's Corporate Sustainability team spearheaded the project with the Corporate Strategy team and the results have informed PG&E's business strategy.

iv. In the short-term, climate change has influenced PG&E's business strategy in numerous ways:

- Strengthening emergency response plans and procedures to address near-term risks from extreme weather
- Attaining key metrics, including gas pipeline inspections and retrofits; customer energy efficiency; compliance with GHG and renewable energy requirements, and energy, water, and waste reduction
- Using state-of-the-art detection technology to find and eliminate methane leaks in our natural gas distribution system, as well as pipeline retrofits
- Adding energy storage, building upon our hydro pumped storage capabilities, to integrate intermittent renewable resources
- Smart Grid demonstration programs as we increase levels of distributed energy resources
- Investment in hybrid, electric and other alternative fuel vehicles
- Customer communications to promote energy choices such as energy efficiency, demand response, solar and renewable energy
- Empowering customers with real-time energy usage information, tools leveraging SmartMeters and supporting local community resilience
- Supporting appropriate state and federal climate change legislation and regulation, including advocacy for low-emission alternative vehicles

v. Key components of our long-term strategy include our multi-year, risk-assessment process to prioritize infrastructure investments for longer-term climate change risks. We also remain committed to the state's clean energy goals, including the Renewable Portfolio Standard and SB 32 implementation – and meeting these commitments in a cost-effective manner. For example, PG&E supported SB 350, which increases the state's Renewable Portfolio Standard to 50% by 2030, and doubles state energy efficiency goals.

vi. PG&E's strategy provides an advantage over competitors because it: 1) allows us to make informed decisions about our infrastructure investments in the near term that will save money, strengthen service reliability, and reduce the risk of asset failures over the long term, 2) empowers us to anticipate, understand and better respond to our customers' needs, 3) challenges us to develop new, innovative, and cost-effective programs, 4) prepares us to contribute to a low-carbon economy and gives the company experience integrating intermittent renewable resources through the developing smart grid, and 5) bolsters our ability to attract and retain talent.

vii. PG&E's most substantial business decisions relating to climate change include the negotiation and joint proposal to retire Diablo Canyon Nuclear Power Plant and designation of the failure to adapt to climate change as an enterprise risk.

viii. The Paris Agreement reinforced PG&E's commitment to our business strategy. PG&E's CEO joined a California delegation in Paris led by Governor Brown, sharing how the state has made clean energy investments while also expanding the economy. PG&E continues to publicly support the Paris Agreement together with other leading companies, including signing on to the "We Are Still In" letter—joining U.S. governors, mayors, businesses, investors, and colleges and universities to support the continued commitment of the U.S. to ambitious action on climate change.

ix. PG&E routinely conducts strategic business planning efforts, which include extensive scenario analysis of our electricity and natural gas systems; customer demand for energy; adoption of new technologies; and state and federal policies and regulations. We are evaluating processes available to integrate a 2C scenario into our existing forward-looking scenario analyses.

CC2.2b

Please explain why climate change is not integrated into your business strategy

CC2.2c

Does your company use an internal price on carbon?

Yes

CC2.2d

Please provide details and examples of how your company uses an internal price on carbon

PG&E is a covered entity in California's Cap-and-Trade Program under the state's AB 32 legislation, which provides a transparent market-based price of carbon. The program covers 85% of the state's emissions, including emissions from PG&E's fossil-fuel power plants, the combustion of natural gas delivered to customers, natural gas compressor stations, and electricity imported into California. Under the program, PG&E must purchase the compliance instruments needed to meet its own physical or contractual greenhouse gas compliance obligations through allowance auctions or in the secondary market. The cost of these instruments is reflected in the cost of electricity procured, which flows through to our electricity customers' bills. The impact on their bills is generally reflective of the volume and carbon intensity of the electricity consumed. PG&E is allocated some free compliance instruments, which are consigned for sale at auction. The revenue from the sale of these instruments is returned to customers through an on-bill Climate Credit.

CC2.3

Do you engage in activities that could either directly or indirectly influence public policy on climate change through any of the following? (tick all that apply)

- Direct engagement with policy makers
- Trade associations
- Funding research organizations

CC2.3a

On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Clean energy generation	Support	In August 2015, the U.S. EPA published final regulations under sections 111(b) and 111(d) of the Clean Air Act, known as the “Carbon Pollution Standards” and the “Clean Power Plan,” respectively. Following the publication of the final regulations, several states and parties challenged the Clean Power Plan. PG&E joined other utilities and parties to intervene in that case in support of the Clean Power Plan.	PG&E and other utilities intervened to support the Clean Power Plan. However, the Supreme Court has issued a stay on implementation of that regulation.
Clean energy generation	Support	Through the Joint Utility Group, PG&E submitted comments in support of the Clean Power Plan’s flexible framework to reduce electricity sector CO2 emissions. PG&E also engaged with policy makers to discuss Western Electricity Coordinating Council (WECC) state coordination on compliance and our analysis of the market impacts of different compliance scenarios.	EPA’s final Clean Power Plan rule was issued in August 2015. However, the Supreme Court has issued a stay on implementation of that regulation.
Cap and trade	Support	Through the Gas Utility Group, PG&E worked with California’s natural gas suppliers to advocate at the California Air Resources Board for post-2020 allowance allocation and consignment methodologies that would protect consumers from significant increases in overall natural gas costs.	Continued allowance allocation to natural gas suppliers using a more moderate cap adjustment factor
Cap and trade	Support	Through the Joint Utility Group, PG&E collaborated with the state’s investor-and publicly-owned utilities to advocate at the California Air Resources Board for post-2020 allowance allocation based on customer cost burden to protect customers from higher overall electricity costs.	Continued allowance allocation to electric distribution utilities based on customer cost burden
Other: Low Carbon Fuel Standard	Support	Through the California Electric Transportation Coalition, California Natural Gas Vehicle Coalition, other stakeholders, and directly, PG&E supported the post-2020 continuation of the Low Carbon Fuel Standard (LCFS) as part of negotiations for the passage of SB 32. PG&E also engaged with Air Resources Board staff on regulatory amendments to the LCFS program.	Continue the LCFS post-2020 with meaningful but achievable targets
Other: GHG Emissions	Support with minor	PG&E engaged with policy makers and various stakeholders on SB 32 which codified the statewide GHG limit of at least 40% below the 1990 levels. Working	Continued support of cost-containment measures and market mechanisms to

Focus of legislation	Corporate Position	Details of engagement	Proposed legislative solution
Reductions	exceptions	with other utilities, PG&E has been supportive of its implementation through the Air Resources Board.	achieve the goal

CC2.3b

Are you on the Board of any trade associations or provide funding beyond membership?

Yes

CC2.3c

Please enter the details of those trade associations that are likely to take a position on climate change legislation

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
Alliance to Save Energy	Consistent	The Alliance states that climate change is already making the United States warmer, and much greater temperature increases are expected in the coming decades. Along with increasing temperatures, precipitation patterns are shifting, extreme weather events such as storms and droughts are increasing, and sea levels are rising. These changes in weather patterns affect both energy demand, especially with increased peak electricity use for air conditioning, and energy supply, with reduced reliability and efficiency. Weather changes due to climate change also have closely related effects on water demand and supply. Energy efficiency is one of the most important tools for avoiding climate change by reducing use of fossil fuels. However, energy efficiency and related demand management measures also can address some of the energy sector's vulnerabilities to climate change impacts.	Serving on the board
Edison Electric	Mixed	The Institute states that global climate change presents one of the biggest	Serving on the executive committee

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
Institute		<p>energy and environmental policy challenges this country has ever faced. EEI member companies are committed to addressing the challenge of climate change and support an 80% reduction in GHG emissions by 2050. Regarding the Clean Power Plan, EEI states that it is essential to include effective reliability and consumer-protection measures that help to avoid harm to U.S. industry and the economy. In Congress, EEI supported the American Clean Energy and Security Act in 2009. In addition, the EEI Foundation established an institute focused on advancing the adoption of innovative and efficient technologies among electric utilities and their technology partners that will transform the power grid.</p>	
American Gas Association	Consistent	<p>Excerpted from President and CEO of the American Gas Association (AGA) in response to President Obama's Climate Action Plan: "Working alongside renewables and energy efficiency, our domestic abundance of natural gas provides an incredible opportunity to deliver the essential energy that will help drive economic growth while protecting the environment. Natural gas utilities are committed to actions that, in the words of the President, 'save families money, make our businesses more competitive and reduce greenhouse gas emissions.'" AGA has constructively engaged on the Clean Power Plan and has also worked cooperatively with environmental groups on measuring methane emissions associated with natural gas distribution systems.</p>	Serving on the board
Nuclear Energy Institute	Consistent	<p>The Institute states that climate change is increasingly important as federal, state, and local policymakers consider energy supply and GHG mitigation. Given those concerns and the need for base load electricity production, policymakers and energy industry leaders are evaluating an expanded role for nuclear power.</p>	Serving on the executive committee
Business Council for Sustainable Energy (BCSE)	Consistent	<p>The Council believes the optimal policy for regulating greenhouse gas emissions is for Congress to enact comprehensive market-based legislation that allows for flexibility and cost-effective emissions reductions, including carbon offsets. In addition, BCSE highlights several areas where existing authorities are in place where the federal government to take action. For example, the BCSE calls for the EPA to consider—where legally appropriate—the role that existing clean energy technologies and fuels can play in achieving the goals of Clean Air Act regulation. With respect to the</p>	Serve on the clean air policy group

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
		development of GHG NSPS for fossil fuel fired power plants, including emissions guidelines under Clean Air Act Section 111(d), the BCSE has urged U.S. EPA to use an output-based approach to setting emissions standards and to provide clear guidance to the states regarding how climate and clean energy programs might show equivalency with federal emissions guidelines.	
California Chamber of Commerce	Mixed	The California Chamber of Commerce will continue working to ensure that compliance costs are minimized through measures that effectively reduce GHGs while allowing for continued economic growth. Regulations must be seen through the lens of the economy and must minimize costs and maximize benefits for California. In order to ensure GHG reductions are achieved while maintaining the competitiveness of California businesses and the health of the economy, it is critical that the state agencies promulgating climate change policies (i.e. the California Air Resources Board (ARB) and California Public Utilities Commission) periodically review all GHG programs as implemented to ensure GHG emissions are reduced in an economically efficient and environmentally sound manner.	Serving on the board
California Council for Environmental and Economic Balance (CCEEB)	Consistent	The Climate Change Project was launched in 2008 to assist with the design and implementation of AB 32 and other climate change policies. Key priorities include: designing a regulatory structure that effectively balances command-and-control regulations with market-based measures; creating accurate and comprehensive emission inventories and clear and consistent reporting protocols; and ensuring California's framework is consistent with local, national, and international efforts.	PG&E actively participates in CCEEB's Climate Change Project and its work to develop and advocate for policy positions on pending climate change legislation and regulations. PG&E also serves on the board.
Silicon Valley Leadership Group	Consistent	The Silicon Valley Leadership Group (SVLG) continues to be actively involved in helping ensure the implementation of AB 32 rewards efficiency, protects innovation, and provides flexibility to seek out and implement the lowest-cost solutions, while also meeting our GHG reduction goals. In addition, the group is increasingly active in federal-level advocacy for smart energy and climate policies, as well as local climate change resilience.	PG&E is represented on the board
California Electric Transportation Vehicle Coalition	Consistent	CalETC promotes economic growth, clean air, fuel diversity and energy independence, and combating climate change through the use of electric transportation. CalETC is committed to the successful introduction and large-scale deployment of all forms of electric transportation including plug-	PG&E serves as the president of the CalETC board. In 2016, PG&E and CalETC continued to advocate for low-carbon transportation programs.

Trade association	Is your position on climate change consistent with theirs?	Please explain the trade association's position	How have you, or are you attempting to, influence the position?
		in electric vehicles, transit buses, port electrification, off-road electric vehicles, and equipment and rail.	
Business Roundtable	Consistent	The Business Roundtable states the following: Because the consequences of global warming for society and ecosystems are potentially serious and far-reaching, Business Roundtable believes that steps to address the risks of such warming are prudent and supports collective actions that will lead to the reduction of greenhouse gas emissions on a global basis.	Participating as a member
International Emissions Trade Association	Consistent	IETA strongly supports emissions trading as an instrument to combat climate change and believes that mechanisms to link different carbon markets will be critical to the development of a global trading regime. They support the design and implementation of efficient carbon markets globally.	PG&E serves as the co-chair of the California work group
Center for Climate Energy Solutions	Consistent	C2ES partners with policymakers and diverse stakeholders to reduce emissions, expand clean energy, mobilize climate finance, strengthen climate resilience, and build a foundation for national and international climate policy efforts.	Participating as a member, signed letter to President Trump encouraging U.S. to remain in Paris climate accord

CC2.3d

Do you publicly disclose a list of all the research organizations that you fund?

No

CC2.3e

Please provide details of the other engagement activities that you undertake

CC2.3f

What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

Since 2006, PG&E's Climate Change Policy Framework has ensured that our activities are consistent with PG&E's climate change strategy. The framework outlines commitments and values to establish responsible policies and programs to address global climate change. Specifically, PG&E supports and prefers national regulatory action, but is currently focused on state, regional and local action that is based on market mechanisms to achieve economy-wide emission reductions efficiently, economically, and in a way that encourages the next generation of energy technologies and minimizes impacts to the U.S. economy.

PG&E's approach to climate change policy is managed by a cross-functional team comprised of representatives from across the company. The team meets regularly and actively coordinates with PG&E's officers to share developments at the state and national levels and seek approval on policy positions.

PG&E's Climate Policy Principles state the following: We seek to make PG&E a valuable partner in reducing GHG emissions in California and other jurisdictions through advancing innovation; facilitating technology deployment, adoption and integration; and providing affordable, low-carbon energy solutions to our customers. To do this, we will advocate for policies that:

- Employ a broad, multi-sector approach to emissions reduction
- Extend the current AB 32 cap-and-trade program beyond 2020 and, ultimately, create a linked North American multi-sector cap-and-trade program that provides the majority of abatement needed to reach science-based 2030 and 2050 GHG reduction goals for California and the larger linked program area
- Transition away from the use of "complementary policies" (or technology mandates) as the primary vehicle to reduce GHG emissions to one in which complementary policies are used only to improve the cost-effectiveness of the GHG reducing technologies needed to reach 2050 GHG reduction goals
- Facilitate broad acceptance of the use of offsets and carbon sinks as a valuable tool in mitigating GHG emissions, improving local air quality, and enhancing the resiliency and adaptability of natural ecosystems and communities
- Promote GHG reductions at the regional and national level, with California positioned as a key policy innovator, technology exporter and "proving ground" that supports the broader decarbonization of the U.S. economy
- Help our customers become more climate resilient and reduce their own GHG footprint affordably through solutions that include energy efficiency and demand response, renewable energy, storage, and low carbon transportation fuels and fueling infrastructure

CC2.3g

Please explain why you do not engage with policy makers

Further Information

Page: CC3. Targets and Initiatives

CC3.1

Did you have an emissions reduction or renewable energy consumption or production target that was active (ongoing or reached completion) in the reporting year?

Absolute target
Intensity target
Renewable energy consumption and/or production target

CC3.1a

Please provide details of your absolute target

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment
Abs1	Scope 1+2 (market-based)	1%	1.2%	2015	30478	2016	No, and we do not anticipate setting one in the next 2 years	PG&E had a goal to reduce energy use by 2.0% in (kBTU) per square foot at PG&E offices, service yards, critical facilities, conference centers, light industrial and specialized facilities in 2016 from a 2015 baseline, which was equivalent to avoiding the emission of approximately 250 metric tons of CO2. PG&E also has a five-year goal to achieve top decile performance relative to a benchmark of utility peers.
Abs2	Scope 1+2 (market-based)+3 (downstream)			1990		2020	Yes, but this target has not been approved as science-based by the Science Based Targets initiative	PG&E's target is to comply with the Global Warming Solutions Act of 2006 (AB 32), which mandates the reduction of California's GHG emissions to the 1990 level of 431 million metric tons of CO2e by 2020. Under AB 32, PG&E and other "covered entities" that emit significant amounts of GHG emissions in California are included in a Cap-and-Trade program for GHG emissions. The regulation became effective on January 1, 2012, and the program began

ID	Scope	% of emissions in scope	% reduction from base year	Base year	Base year emissions covered by target (metric tonnes CO2e)	Target year	Is this a science-based target?	Comment
								implementation on January 1, 2013. The Cap-and-Trade program is one of many measures being implemented under AB 32 to meet the 2020 GHG emission reduction goal. PG&E is also working with its regulators, stakeholders, and other businesses to encourage more focus on other aspects of AB 32 such as ensuring reductions are cost effective and facilitating the development of regional, national, and international GHG reduction programs. More than 70% of PG&E's total Scope 1, 2, and 3 emissions were covered by this target in 2016. However, PG&E is prohibited from disclosing any non-public information concerning allowance auction participation, which could include expected emissions trends. With the passage of SB 32 in September of 2016, which requires the state to reduce GHG emissions 40% below 1990 levels by 2030, PG&E's new target is to comply with both AB 32 and SB 32.
Abs4	Scope 3: Use of sold products			2015		2016	No, and we do not anticipate setting one in the next 2 years	PG&E had a customer energy efficiency savings goal for 2016 of 1,236 GWh, which was equivalent to avoiding the emission of approximately 1.2 million metric tons of CO2e. PG&E also has a five-year goal to achieve 4,400 GWh in energy savings.
Abs5	Scope 3: Use of sold products			2015		2016	No, and we do not anticipate setting one in the next 2 years	PG&E had a customer energy efficiency savings goal for 2016 of 18.4 million therms, which was equivalent to avoiding the emission of approximately 130,000 metric tons of CO2e. PG&E also has a five-year goal to achieve 90 million therms in energy savings.

Please provide details of your intensity target

ID	Scope	% of emissions in scope	% reduction from base year	Metric	Base year	Normalized base year emissions covered by target	Target year	Is this a science-based target?	Comment
Int1	Scope 1	1.2%	90%	Other: Pounds SF6 per average system nameplate capacity of gas insulated switchgear devices (pounds)	2011	6	2020	No, as there is currently no established science-based targets methodology in this sector	California requires owners of gas insulated switchgear devices to continually reduce the SF6 emission rates of their equipment by 1% per year from 2011 to 2020, achieving a 1% emission rate in 2020 and beyond. PG&E is on track to meet this goal with a 1.03% emission rate in 2016.
Int2	Scope 3: Waste generated in operations	0.0%		Other: Metric tonnes CO2e of waste sent to landfill per unit waste recycled, composted, and landfilled	2015		2016	No, as there is currently no established science-based targets methodology in this sector	PG&E's goal is to maintain a waste diversion rate of 80%; we achieved an 80% rate in 2016. Emissions are calculated using the U.S. EPA WARM model, although it calculates lifecycle emissions and not necessarily annual reductions in emissions. Emissions in 2016 represent tons of waste sent to landfill (1,943 MT CO2e) and were quantified by iReuse, a waste management consultant.

CC3.1c

Please also indicate what change in absolute emissions this intensity target reflects

ID	Direction of change anticipated in absolute Scope 1+2 emissions at target completion?	% change anticipated in absolute Scope 1+2 emissions	Direction of change anticipated in absolute Scope 3 emissions at target completion?	% change anticipated in absolute Scope 3 emissions	Comment
Int1	Decrease	90	No change	0	SF6 emissions are expected to decrease as the leak rate (as calculated by the California ARB's methodology) decreases. However, PG&E has already achieved a leak rate of approximately 1%, five years ahead of schedule.
Int2	No change	0	Decrease	1.3	Overall waste emissions are expected to decrease over the long term as PG&E strives towards a higher diversion rate.

CC3.1d

Please provide details of your renewable energy consumption and/or production target

ID	Energy types covered by target	Base year	Base year energy for energy type covered (MWh)	% renewable energy in base year	Target year	% renewable energy in target year	Comment
RE1	Electricity production	2010	12338311	15.9%	2020	33%	PG&E's Renewable Portfolio Standard target, measured as eligible renewable generation as a percentage of bundled retail sales, is 33% by 2020, with interim compliance period goals, and 50% by 2030. (For the base year, PG&E delivered 12,338,311 MWh of eligible renewable electricity in 2010.) PG&E also set a voluntary goal of achieving 55% renewable energy by 2031 as part of the joint proposal for PG&E's Diablo

ID	Energy types covered by target	Base year	Base year energy for energy type covered (MWh)	% renewable energy in base year	Target year	% renewable energy in target year	Comment
							Canyon Power Plant.
RE2	Electricity consumption	2015	145000	29.5%	2016	100%	PG&E has enrolled all of its operations service centers—nearly 100 facilities—in our new Solar Choice program. The service centers are 100% percent powered by solar energy from new small to mid-sized solar projects in PG&E’s service area. The program is open to customers, and designed to broaden access to solar power for customers unable to install rooftop solar panels.

CC3.1e

For all of your targets, please provide details on the progress made in the reporting year

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
Abs1	100%	100%	In 2016, PG&E reduced energy use by 1.2%, or 4,893 MMBTUs, at 180 facilities including offices and service yards, slightly below our annual 2.0% target. We achieved this reduction through upgrades, such as installing interior and exterior LED lighting and adopting energy efficient designs during major remodel projects. PG&E’s Step Up and Power Down initiative, an employee behavior-driven energy savings campaign, also contributed to our gains. PG&E also has a five-year goal to achieve top decile performance relative to a benchmark of utility peers.
Abs2			The regulations for California’s Cap-and-Trade program took effect on January 1, 2012 and the first two year compliance period began on January 1, 2013. The program expanded to include transportation fuels, including PG&E’s business as a natural gas supplier, on January 1, 2015. PG&E is a covered entity for all compliance periods (2013-2020).
Abs3	100%	100%	PG&E had a customer energy efficiency savings goal for 2016 of 1,236 GWh, which would be equivalent to avoiding the emission of approximately 1.2 million metric tons of CO ₂ e. PG&E exceeded this goal with 1,406 GWh savings.

ID	% complete (time)	% complete (emissions or renewable energy)	Comment
			PG&E also has a five-year goal to achieve 4,400 GWh in energy savings.
Abs4	100%	100%	PG&E had a customer energy efficiency savings goal for 2016 of 18.4 million therms, which would be equivalent to avoiding the emission of approximately 130,000 metric tons of CO ₂ e. PG&E exceeded this goal with 23.6 million therms in savings. PG&E also has a five-year goal to achieve 90 million therms in energy savings.
Int1	50%	99%	In 2016, PG&E's SF ₆ emission rate was 1.03%, significantly lower than our target of 6% and nearly achieving the 1% emission rate target for 2020.
Int2	100%	100%	In 2016, PG&E achieved an 80% waste diversion rate in our final quarter, measuring all non-hazardous municipal waste at 115 sites, meeting our annual goal of 80%. Key steps to divert waste from the landfill included targeting our highest volume sites, ensuring yard bins were the right size, optimizing pick-up frequency, and engaging employees in a friendly waste competition. PG&E also has a five-year goal to achieve top decile performance relative to a benchmark of utility peers.
RE1	60%	99%	PG&E is on track to meet the state's renewable energy goal of 33% by 2020 and 50% by 2030. PG&E is six years into the ten year 33% target and has completed both the Renewable Portfolio Standard Compliance Period 1 (2011-2013) and Compliance Period 2 (2014-2016). PG&E delivered 32.8% eligible renewables in 2016, compared to a 2016 target of 25%. As of 2016, PG&E had delivered 29.7% in Compliance Period 2 vs. the Compliance Period 2 target of 23.3%.

CC3.1f

Please explain (i) why you do not have a target; and (ii) forecast how your emissions will change over the next five years

CC3.2

Do you classify any of your existing goods and/or services as low carbon products or do they enable a third party to avoid GHG emissions?

Yes

CC3.2a

Please provide details of your products and/or services that you classify as low carbon products or that enable a third party to avoid GHG emissions

Level of aggregation	Description of product/Group of products	Are you reporting low carbon product/s or avoided emissions?	Taxonomy, project or methodology used to classify product/s as low carbon or to calculate avoided emissions	% revenue from low carbon product/s in the reporting year	% R&D in low carbon product/s in the reporting year	Comment
Company-wide	PG&E delivers some of the nation's cleanest energy. Nearly 33% of PG&E's electricity comes from California-eligible renewables, and nearly 70% comes from greenhouse gas-free resources.	Low carbon product	Other: California Renewable Portfolio Standard			
Product	PG&E's Solar Choice program allows customers to purchase up to 100% of their power from solar energy, locally sourced in Northern and Central California.	Low carbon product	Other: Green-e Energy certification	0%	Less than or equal to 10%	PG&E's Solar Choice program began enrollment in 2016.
Group of products	PG&E offers customers a comprehensive portfolio of energy efficiency options.	Avoided emissions	Other: California Public Utilities Commission approved Energy Efficiency program			
Group of products	PG&E offers customers a comprehensive portfolio of demand response options to reduce consumer electricity use at periods of high demand.	Avoided emissions	Other: California Public Utilities Commission approved Demand Response program			

CC3.3

Did you have emissions reduction initiatives that were active within the reporting year (this can include those in the planning and/or implementation phases)

Yes

CC3.3a

Please identify the total number of projects at each stage of development, and for those in the implementation stages, the estimated CO2e savings

Stage of development	Number of projects	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	203	1846
Implementation commenced*	197	3083
Implemented*	216	182593
Not to be implemented	0	0

CC3.3b

For those initiatives implemented in the reporting year, please provide details in the table below

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
Process	As reported through our participation in	99365	Scope 1	Voluntary	772545				

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
emissions reductions	the U.S. EPA's Natural Gas STAR Program, PG&E avoided the release of 247 mmcf of natural gas in 2016. These savings were achieved through cross compression/drafting and upgrades to gas pipelines and other infrastructure.								
Energy efficiency: Building services	In 2016, PG&E reduced energy use by 1.2%, or 4,893 MMBTUs, at 180 facilities including offices and service yards, slightly below our annual 2.0% target. We achieved this reduction through upgrades, such as installing interior and exterior LED exterior lighting and adopting energy efficient designs during major remodel projects.	131	Scope 2 (market-based)	Voluntary	394730	21425667	4-10 years	16-20 years	
Other	In 2016, we improved recycling, composting, and waste reduction efforts at 115 locations, achieving an 80% diversion rate—meeting our target of 80%. Waste emissions are calculated using the U.S. EPA WARM model, although it calculates lifecycle emissions and not necessarily annual reductions in emissions.	65794	Scope 3	Voluntary		0	1-3 years		
Other	PG&E reduced its emissions in 2016 across 98 environmental remediation sites through the use of alternative fuels; high-tier, lower-emitting remediation/construction equipment; reductions in business travel and	5696	Scope 3	Voluntary					

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
	mobilizations to remediation sites; sustainable remediation techniques; and increased material reuse and/or recycling of waste. Cumulatively since 2010, We have achieved over 77,900 metric tonnes of cumulative CO2e emission reductions.								
Fugitive emissions reductions	PG&E has reduced Scope 1 SF6 emissions by implementing SF6 tracking, early detection measures for circuit breakers, and an active breaker replacement program. We continue to implement tighter controls and tracking measures to enhance our successful program in compliance with ARB's regulation for reducing SF6 emission rates. PG&E's SF6 emission rate dropped to 1.03% in 2016.	1607	Scope 1	Mandatory					
Transportation: fleet	As part of our commitment to reduce our operational footprint, we continue to incorporate innovative new vehicles into our fleet. Of our nearly 10,000 on-road vehicles, we achieved our target with over 30% alternative fueled and high efficiency vehicles powered by compressed natural gas (CNG), electricity, or other alternatives as of 2017. To support the growing number of electric vehicles in our fleet, PG&E has installed more than 600 electric vehicle charging points at 90 PG&E	10000	Scope 1	Voluntary	3800000				

Activity type	Description of activity	Estimated annual CO2e savings (metric tonnes CO2e)	Scope	Voluntary/ Mandatory	Annual monetary savings (unit currency - as specified in CC0.4)	Investment required (unit currency - as specified in CC0.4)	Payback period	Estimated lifetime of the initiative	Comment
	locations. PG&E accrues emission reductions through the life of the vehicles; the average life of PG&E's light- and heavy-duty vehicles is 8 to 10 years.								

CC3.3c

What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	PG&E uses an integrated planning process to link our business strategy with resource planning. Grounded in benchmarking and continuous improvement, the process keeps us focused on our key objectives and will ultimately help us deliver results for many years to come. This process is informed, in part, by an external Sustainability Advisory Council, which regularly engages with PG&E leaders to identify new areas of opportunity, inspire collaboration with new partners, and help elevate issues within and outside the company. As part of PG&E's integrated planning process, AB 32—in concert with California's Renewable Portfolio Standard, customer energy efficiency goals, and emerging U.S. EPA regulations—serves as a catalyst for PG&E to assess costs and opportunities for low-carbon investments. AB 32 requires the state to reduce GHGs to 1990 levels by 2020 and includes a Cap-and-Trade Program among other program measures. California's Renewable Portfolio Standard (RPS), which requires 33% renewable energy by the end of 2020 and 50% by 2030, drives investment in GHG emission reduction activities such as low- and zero-GHG electricity purchases and installations. SB 32 codified an aggressive economy-wide GHG reduction goal of 40% below the 1990 level by 2030. Compliance with SB 1368, which prohibits any load-serving entity in California such as PG&E from entering into a long-term financial commitment for conventional electricity generation unless it complies with a GHG emission performance standard, also drives investment in lower emissions

Method	Comment
	generation.
Dedicated budget for energy efficiency	The budget for PG&E's customer energy efficiency programs to save 1,236 GWh, 226 MW, and 18.4 million therms in 2016 was about \$484 million—the largest investment in energy efficiency by any U.S. utility. These programs saved about 1.4 million metric tons of CO2 in 2016.
Dedicated budget for other emissions reduction activities	PG&E has a dedicated budget to reduce our Scope 1 SF6 emissions.
Dedicated budget for other emissions reduction activities	PG&E has a dedicated budget to improve our fleet's energy efficiency and to incorporate innovative new, low-emissions vehicles into our fleet.

CC3.3d

If you do not have any emissions reduction initiatives, please explain why not

Further Information

CC3.1b Scope 3 Waste Generated in Operations accounts for 0.004% of emissions in scope.

Page: CC4. Communication

CC4.1

Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s)

Publication	Status	Page/Section reference	Attach the document	Comment
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Publication	Status	Page/Section reference	Attach the document	Comment
In mainstream reports (including an integrated report) but have not used the CDSB Framework	Complete	Pages 22-24, 36	https://www.cdp.net/sites/2017/78/14678/Climate Change 2017/Shared Documents/Attachments/CC4.1/PGE_2016 10k.pdf	PG&E 2016 10K
In voluntary communications	Underway - previous year attached	Pages 124-130	https://www.cdp.net/sites/2017/78/14678/Climate Change 2017/Shared Documents/Attachments/CC4.1/PGE_CRSR_2016.pdf	Corporate Responsibility and Sustainability Report
In voluntary communications	Underway - previous year attached	Entire document	https://www.cdp.net/sites/2017/78/14678/Climate Change 2017/Shared Documents/Attachments/CC4.1/2015 PGE Detail Emissions_Report.xlsx	Emission report to The Climate Registry
In voluntary communications	Complete	Entire document	https://www.cdp.net/sites/2017/78/14678/Climate Change 2017/Shared Documents/Attachments/CC4.1/PGE_climate_resilience_report.pdf	PG&E Climate Change Vulnerability Assessment and Resilience Strategies Report

Further Information

Module: Risks and Opportunities

Page: CC5. Climate Change Risks

CC5.1

Have you identified any inherent climate change risks that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

Risks driven by changes in regulation

Risks driven by changes in physical climate parameters

Risks driven by changes in other climate-related developments

CC5.1a

Please describe your inherent risks that are driven by changes in regulation

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Renewable energy regulation	California's Renewable Portfolio Standard (RPS) requires PG&E to increase our renewable energy to 33% of total retail sales by the end of 2020, and 50% by 2030. PG&E was required to deliver an average of 23.3% of its electricity from RPS-eligible resources over the 2014 to 2016 period and ~30% on average over the 2017 to 2020 period. By the end of 2016, PG&E achieved 32.8%, exceeding the state's interim	Increased operational cost	1 to 3 years	Direct	Very unlikely	Medium-high	PG&E's cost of compliance risk for not meeting California's RPS is \$50 per MWh up to \$25 million per year.	PG&E uses a variety of approaches to achieve California's ambitious renewable energy goals, including competitive solicitations to procure renewable energy from third-parties and owning renewables projects ourselves. The majority of PG&E's renewable resources come from contracts with third-party renewable energy companies. As of January 2017,	Total 2016 renewable energy procurement costs were ~\$2.5 billion.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	target. PG&E faces the regulatory risk of non-compliance, which invokes financial penalties.							PG&E had 7,300 MW of active contracts, in addition to 471 MW of active utility-owned generation. In 2016, PG&E executed 18 renewable contracts totaling 161 MW. In 2016 PG&E engaged with the state to develop policy solutions to address the drought-related elevated levels of tree mortality and signed two biomass contracts. In 2017, PG&E will continue to have RPS-eligible renewables come online.	
Renewable energy regulation	In 2015, California adopted Senate Bill 350, which requires that the amount of electricity generated and sold to retail customers	Increased operational cost	>6 years	Direct	Very likely	Medium-high	The potential financial implications include costs involved in ensuring compliance with this target. We	PG&E supported SB 350 and is actively participating with regulators at the state level and other	Management costs stem from any incremental full-time equivalent positions created to

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	per year from eligible renewable energy resources be increased to 50% by December 31, 2030. There is a risk of increased procurement and integration costs to reach the 50% target.						expect to recover these costs in rates. The California Public Utilities Commission will assess the penalties for noncompliance with the renewable energy target.	stakeholders to ensure that the regulation is cost-effective and achievable. PG&E also announced a joint proposal with labor and leading environmental organizations that would increase investment in energy efficiency and renewables beyond current state mandates while phasing out PG&E's production of nuclear power in California by 2025. The joint proposal includes PG&E's voluntary commitment to a 55% renewable energy target in 2031.	administer the program and comply with program requirements. The cost would be less than 1% of operating revenue, which was more than \$17 billion in 2016.
Cap and trade schemes	In 2011, the California Air Resources Board (ARB) adopted Cap-and-Trade regulations. As of 2015, both	Increased operational cost	1 to 3 years	Direct	Likely	High	The California Air Resources Board's (ARB's) Cap and Trade regulation addresses financial implications of non-compliance.	On an ongoing basis, PG&E participates in the ARB's process to amend the Cap-and-Trade Program and	Management costs stem from any incremental full-time equivalent positions created to

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>electricity and suppliers of natural gas are covered under the regulation. There is a risk that the design and implementation of the regulation will expose PG&E and our customers to unreasonably high costs. There is also a risk to PG&E of non-compliance with one or more elements of this complex regulation. In addition, the CPUC, who regulates the manner in which allowance revenues are returned to customers, has not yet issued a final decision on how PG&E shall recover its Cap-and-Trade compliance costs in natural gas rates, and how allowance revenues should</p>						<p>Penalties are four times the amount of allowances that an entity is short at the end of each compliance period, plus daily penalties if the 4 to 1 surrender requirement is not met within a certain time frame and \$10,000 per day per violation.</p>	<p>advocates for program design features that help mitigate costs to customers, such as allocating allowances to utilities for the benefit of their customers, access to a robust supply of high quality offsets, linkage to other jurisdictions, and an allowance price containment reserve, as well as many other provisions, including a price ceiling on allowances. PG&E has also conducted independent modeling to better understand Cap-and-Trade market fundamentals under different scenarios given California's ambitious 2030 GHG reduction target.</p>	<p>administer the program and comply with program requirements. The cost would be less than 1% of operating revenue, which was more than \$17 billion in 2016.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	be returned to benefit customers. Therefore, there is also financial risk to PG&E, as we incur compliance costs that we cannot yet recover from customers.								
Emission reporting obligations	As required by AB 32, PG&E submits annual reports to the ARB covering the GHG emissions from our major electricity generating facilities, major natural gas compressor stations, major underground storage, supply of natural gas to customers, distribution gas system, natural gas distribution system, and electricity imported into California. All of which are verified for material compliance and conformance with	Increased operational cost	Up to 1 year	Direct	Unlikely	High	The Cap-and-Trade regulation stipulates that failure to comply with ARB's GHG reporting requirements could result in civil penalties of \$10,000, and forfeiture of an entity's free allocation of allowances, which could result in over \$470 million in GHG emissions allowances (credits).	PG&E's GHG reporting management team implements a robust methodology and quality review process with multiple lines of business to collect, compile, calculate, and independently verify numerous mandatory GHG emissions reports. Data is captured in an information management system. System-generated reports meet regulatory reporting requirements and are used as the single source for	Management costs stem from any incremental full-time equivalent positions created to comply with program requirements. The cost would be less than 1% of operating revenue, which was more than \$17 billion in 2016.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>applicable ARB regulations. Additionally, SF6 leaks from electric transmission and distribution equipment are also reported to ARB. PG&E faces regulatory risk from inaccurate reporting, and non-compliance could result in significant financial penalties, which could increase PG&E's operating expenses. All of PG&E's facilities are located in California.</p>							<p>reporting to on-line regulatory reporting systems. PG&E uses this method to assure reporting consistency.</p>	
Uncertainty surrounding new regulation	<p>In 2016, the California Air Resources Board (ARB) continued to revise the draft strategy on short-lived climate pollutants (SLCPs). This paper describes policies to meet 2020 and 2030 emission reduction targets</p>	Increased operational cost	1 to 3 years	Direct	Likely	Low-medium	<p>The potential financial implications could include costs involved in ensuring facilities are compliant with new regulations, and costs involved in supporting the use of more renewable natural gas. While it is</p>	<p>PG&E has participated actively with regulators at the state and federal level and with other stakeholders to ensure that regulations to reduce GHG emissions are cost-effective and</p>	<p>These costs stem from any incremental full-time equivalent positions created, the costs of which to date have been less than 1% of operating revenue, which was more than \$17 billion in</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	for methane and other SLCPs. This includes policies that affect PG&E, including minimizing pipeline emissions (leaks and venting) and increasing renewable natural gas, among others. ARB proposed regulation for GHG standards for Crude Oil and Natural Gas Facilities in 2016. There is considerable uncertainty regarding whether these reductions will be achievable.						premature to forecast costs, we expect to recover these costs in rates.	take our voluntary or early actions into account, where applicable. PG&E also maintains a cross-functional team to identify and coordinate our activities around methane emission reporting and reduction. The team coordinates closely with our trade associations and other gas utilities to conduct research and share best practices.	2016.
Uncertainty surrounding new regulation	Uncertainty around state and federal GHG regulations may result in increased costs to PG&E customers. At the state level, the passage of SB 32 codified an aggressive economy-wide GHG reduction	Increased operational cost	1 to 3 years	Direct	Likely	High	The potential financial implications could include costs involved in ensuring existing facilities are compliant with incremental mandates that increase portfolio costs and limit	PG&E has participated actively with regulators at the state and federal level and with other concerned stakeholders to ensure that regulations to reduce GHG emissions are	Management costs stem from any incremental full-time equivalent positions created, which to date have been less than 1% of operating revenue, which was more than

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>goal of 40% below the 1990 level by 2030. However, legislative authority is needed to continue the Cap-and-Trade Program post-2020. With the new federal administration, there is significant uncertainty with regard to federal action on climate change. The new administration intends to suspend, revise or rescind the Clean Power Plan and has withdrawn from international efforts to combat climate change. The new administration has also taken action to review, revise or rescind climate-related regulatory and funding activities. An unclear schedule and simultaneous changes in policy at the state and</p>						<p>flexibility. Potential changes to allowance allocation in the Cap-and-Trade program could have financial impacts on our customers and operations. While it is premature to forecast costs, we will potentially be able to recover these costs in rates.</p>	<p>cost-effective and take our voluntary or early actions into account, where applicable. Changing GHG regulation risk has been identified as a cross-cutting enterprise risk that is reviewed by PG&E's officers.</p>	<p>\$17 billion in 2016.</p>

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	federal level present a high level of uncertainty.								
Uncertainty surrounding new regulation	In August 2015, U.S. EPA issued the final Clean Power Plan rule applicable to CO2 emissions from existing power plants under section 111(d) of the Clean Air Act, which would have direct impacts on PG&E's owned natural gas power plants as well as power markets in California and throughout the west. The new administration intends to suspend, revise or rescind the Clean Power Plan.	Increased operational cost	1 to 3 years	Direct	Unlikely	Low	The potential financial implications could include costs involved in ensuring facilities are compliant (retrofits) and costs associated with regional compliance to 111(d) across the WECC, manifested as wholesale electricity prices. Until states adopt 111(d) Implementation Plans, it is premature to forecast costs. We expect, however, to recover compliance costs in rates.	PG&E has encouraged U.S. EPA to allow states to meet new federal GHG performance standards by crafting their own programs, if such programs can demonstrate that they will achieve emission reductions equal to or greater than would be achieved by the application of EPA's standards. PG&E is also supportive of the option to join multi-state compliance plans and have a regional program to meet 111(d) goals.	These costs stem from any incremental full-time equivalent positions created, the costs of which to date have been less than 1% of operating revenue, which was more than \$17 billion in 2016.
Uncertainty surrounding new regulation	In August 2015, U.S. EPA issued final Carbon Pollution Standards	Increased capital cost	1 to 3 years	Direct	Likely	Low	The potential financial implications could include costs	With regard to future power plants or other facilities that	The costs associated with ensuring that future facilities

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>under section 111(b) of the Clean Air Act to control CO2 emissions from new, modified and reconstructed fossil fuel-fired power plants. While these regulations do not apply to PG&E's power plants currently in operation or under construction, it is possible that the final regulations may affect the design, construction, operation and cost of future fossil fuel-fired power plants. The new administration has since indicated that it intends to review, and, if appropriate, initiate proceedings to suspend, revise or rescind this regulation.</p>						involved in ensuring facilities are compliant (retrofits). While it is premature to forecast costs, we expect to recover these costs in rates.	PG&E owns, we work to ensure that any facilities built in-state meet both the state's and the EPA's rigorous standards. PG&E's efforts to build a clean energy portfolio include developing new, highly efficient and flexible natural gas-fueled plants owned and operated by PG&E.	meet EPA regulations cannot yet be determined, but may be subsumed within the cost of meeting state regulations.
Other regulatory drivers	PG&E's facilities in the nine-county San Francisco Bay	Increased operational cost	Up to 1 year	Direct	Virtually certain	Low	The fee is 9 cents per metric ton.		

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>Area became subject to a GHG emissions fee imposed by the Bay Area Air Quality Management District in 2009. PG&E facilities that are required to submit an air quality permit to operate (such as fossil-fueled power plants, natural gas compressor stations, and smaller sources such as emergency generators) have a fee added to their permit bill.</p>								

CC5.1b

Please describe your inherent risks that are driven by changes in physical climate parameters

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Change in temperature extremes	PG&E faces the risk of increased electricity demand and loads from more extreme and prolonged hot weather events. Climate models suggest that parts of PG&E's service area—particularly in California's Central Valley—are likely to see increasing numbers of days over 100 degrees Fahrenheit. Higher temperatures, including warmer daytime maximums and night time minimums, for prolonged periods, may also mean that certain electrical assets may fail, become less efficient or less reliable, and may need to be modified or replaced. Higher	Increased operational cost	>6 years	Direct	Likely	Medium	The July 2006 California heat-wave was estimated to have a \$150-300 million direct impact on PG&E due to infrastructure repair costs and the increased price of electricity due to peak demand. While this was a singular event, science suggests these events will occur more frequently, which could result in potential financial implications equal to or greater than \$150-300 million.	For heat events, PG&E's demand-response programs (e.g., SmartRate, Peak Day Pricing, SmartAC) can mitigate peak demand. The voluntary SmartRate program provides residential customers with lower rates June 1- September 30 and higher rates during 2 pm – 7 pm during SmartDays. Customers are notified of a SmartDay by 2 pm the day before so customers can plan to shift or reduce electricity usage the following day. Smart Meter data can also be applied in near real-time for demand-side management during events. PG&E	PG&E's expenditures for demand response programs in 2016 were more than \$77 million.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>electrical loads increase stress and management of electricity on the transmission system. There is also the risk of increased customer outages during extreme heat wave events.</p>							<p>meteorologists implemented a heat storm model that provides the utility advance forecasts of heat storm intensity in terms of outage estimates for each division and heat wave duration. These forecast models are providing state-of-the-art guidance to emergency response teams resulting in enhanced public safety, reduced power restoration times, and increased system reliability. Proactive outreach and "cooling centers" for the public help mitigate impacts. Longer-term management strategies include infrastructure improvements that increase resiliency of critical systems and improve</p>	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								system reliability. Distributed generation and increased energy storage and management, including the use of electrical vehicles tied to the grid, could help alleviate peak loads.	
Change in mean (average) temperature	PG&E faces the risk of increased electricity demand and load if average temperatures increase at the rate global climate models currently predict. Higher electrical loads increase stress and management of electricity on the transmission system. There is also the potential for lower customer natural gas demand.	Increased operational cost	>6 years	Direct	Very likely	Medium-high	The CEC's 2013 Integrated Energy Policy Report provides potential load growth scenarios due to average temperature increases predicted by climate models. Using mid and high demand scenarios, the consumption impact for PG&E in 2024 ranges from 482 to 609 GWh.	To manage higher demand, PG&E is continuing our efforts to improve customer energy efficiency and demand response programs.	In 2016, PG&E had an energy efficiency budget of about \$484 million—the largest investment in energy efficiency by any U.S. utility; this does not include more than \$164 million for programs serving low-income customers. The company's significant investments in energy efficiency are funded with a budget collected from customers via public purpose program

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
									charges embedded in gas and electric rates, and is therefore revenue-neutral to PG&E.
Change in precipitation pattern	PG&E faces the risk of reduced hydroelectric output. (PG&E owns and operates one of the nation's largest investor-owned hydroelectric system, which relies on nearly 100 reservoirs located primarily in the higher elevations of California's Sierra Nevada and Southern Cascade mountain ranges.) There is a risk of increased wildfire frequency and intensity due to extreme drought. There is also increased risk to infrastructure	Increased operational cost	>6 years	Direct	Very likely	Medium-high	Annual cost of impacts of climate change on hydroelectric production would vary greatly by year. In 2017, the Pacific Institute released an assessment of the costs to California of lost hydroelectricity during the five years of drought from 2012 to 2016. The report found that the five years of drought led to an increase in electricity costs of more than \$2.45 billion and the additional combustion of fossil fuels for electric generation also led to a 10% increase in the release of carbon	Development and calibration of new distributed runoff forecasting models are enabling PG&E to improve planning and better manage increased variability and extremes. Possible storage projects that would help mitigate the expected snowpack decline could potentially include the development of pump storage projects, new reservoir capacity, and additional capacity from other energy sources.	Management costs are projected to be less than 1% of operating revenue, which was more than \$17 billion in 2016.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	from land subsidence that occurs as a result of increased groundwater extraction during extreme drought conditions.						dioxide from California power plants.		
Sea level rise	PG&E faces the risk of higher inundation and flooding potential at coastal and low elevation facilities due to sea level rise when combined with high tides, storm runoff, and storm surges. There is the risk of levee erosion or failure, putting assets at risk. PG&E also faces the risk of damage to substations and other gas and electric infrastructure.	Increased capital cost	>6 years	Direct	Likely	Medium-high	PG&E partnered with researchers at the UC Berkeley Center for Catastrophic Risk Management on a study to better understand how our gas transmission infrastructure may be impacted under the future risk of sea level rise coupled with a storm surge event. Based on a preliminary review of a worst case scenario of 1.4 meters of sea level rise coupled with a 100 year storm event, PG&E estimated the cost of mitigation efforts would be between \$4 million and \$7	PG&E engineers are evaluating low elevation electric and gas facilities to determine site specific sea level rise risks. Where risks are identified, temporary mitigation measures can be initiated while permanent engineered adaptations are planned.	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							million annually.		
Induced changes in natural resources	PG&E faces the risk of increased wildfire frequency and intensity within this century. Wildfires could pose a threat to customers as well as PG&E assets such as electric transmission and distribution lines, gas infrastructure and hydroelectric assets -- also creating the need for emergency response from PG&E crews. There is an additional risk of increased customer outages and increased risk of erosion and landslides in affected areas, putting assets at risk.	Increased operational cost	>6 years	Direct	Likely	Medium		Seasonal wildland fire frequencies are expected to increase throughout PG&E's service area. Vegetation management has reduced the risk of fire to PG&E energy facilities. Additionally, collaborative emergency response plans incorporating regional wildland fire resources are designed to mitigate impacts.	
Change in precipitation extremes and droughts	Storm events can significantly impact PG&E's operations, create the need for	Increased operational cost	>6 years	Direct	Likely	Medium	In April, 2015, the Bay Area Council Economic Institute published "Surviving the	PG&E meteorologists have implemented a storm model that provides the utility	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	emergency response from PG&E crews and require investments in infrastructure to make the system more resilient. There is an additional risk of infrastructure damage, customer outages and operational costs due to weather factors such as flooding, high winds and heavy snow.						Storm," a report that finds that a Superstorm and the associated flooding could have a \$10.4 billion impact on the Bay Area economy. Included in the report is PG&E's estimate that disruption to our Bay Area substations could result in an economic impact of up to \$125 million. This estimate represents the associated outage cost—or loss of value—to PG&E customers, not the cost of replacing or repairing equipment.	advance forecasts of wind, rain, lightning, and heavy snow event intensities in terms of outage estimates for each local PG&E Division and storm timing. PG&E also maintains a drought task force, and climate resilience working group that monitors drought from a climate change perspective.	

CC5.1c

Please describe your inherent risks that are driven by changes in other climate-related developments

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Uncertainty in market signals	PG&E is reliant on its customers to achieve its CPUC-approved customer energy efficiency goals. If customers do not take sufficient advantage of PG&E's energy efficiency programs, PG&E runs the risk of missing the programs' ambitious goals and not earning the shareholder incentive authorized by the CPUC. In 2017, PG&E has set a goal to achieve 1,144 GWh and 18.6 million therms in customer energy savings.	Increased operational cost	Up to 1 year	Direct	Unlikely	Medium	If PG&E does not meet its targets, we will not earn the shareholder incentive authorized by the CPUC. PG&E has earned between \$20-25 million per year based on historical averages. In 2016, this incentive was approximately \$16.3 million and is one of the ways PG&E earns a financial return under California's decoupled regulatory structure.	As part of our focus on our customers, we are taking important steps to design and deliver energy efficiency programs and services in a more integrated manner, and on delivering tailored energy solutions that meet different customers' needs. We are proactively giving residential customers Home Energy Reports, which provide information about their energy use, along with personalized tips on how they can save energy. For large business customers, we are using energy management tools that enable us to have strategic discussions and recommend the best mix of our products and services. PG&E's Step Up Power Down initiative mobilizes cities, businesses, and residential	In 2016, PG&E had an energy efficiency budget of about \$484 million—the largest investment in energy efficiency by any U.S. utility; this does not include more than \$164 million for programs serving low-income customers. The company's significant investments in energy efficiency are funded with a budget collected from customers via public purpose program charges embedded in gas and electric rates, and is therefore revenue-neutral to PG&E.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								customers to reduce their electricity use through engaging behavioral campaigns.	
Changing consumer behavior	Changes in customer attitudes can lead to greater variability in the demand for electricity and difficulty predicting load.	Increased operational cost	Up to 1 year	Direct	Very likely	Low	As customers switch to new technologies such as rooftop solar and electric vehicles, demand for power over the course of the day changes, making it difficult to rely on past models of customer behavior.	To manage fluctuating demand, PG&E has a demand response program to reduce consumer electricity use at periods of high demand, as well as customer programs for distributed generation and electric vehicles.	
Reputation	PG&E faces reputational risks associated with how our customers perceive our policies, actions, and plans to address climate change.	Other: Reduction in corporate goodwill	Up to 1 year	Direct	Very likely	Low	The financial impacts of reputational risk associated with how our customers perceive our policies, actions, and plans to address climate change could include increased expenses related to programs that	PG&E manages this reputational risk by complying with relevant laws and regulations and seeking opportunities to go beyond compliance, sharing our plans and progress in a transparent manner, and proactively engaging with stakeholders to stay abreast of climate change issues facing	Management costs stem from any incremental full-time equivalent positions created, which to date have been less than 1% of operating revenue, which was more than \$17 billion in 2016.

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							increase awareness of and satisfaction in these areas. For example, PG&E supports market based approaches to reduce GHG emissions including the use of carbon offsets. Some of our customers may not support the use of carbon offsets.	PG&E and our customers and being a constructive voice in developing solutions. For example, to foster collaboration with the communities we serve, PG&E launched a new Better Together Resilient Communities Grant program that will provide \$1 million over five years to support local climate resilience initiatives. In 2017, PG&E will award two individual \$100,000 grants—\$200,000 in total—through a competitive process. PG&E requested grant proposals that will build healthy and resilient forests and watersheds to help communities prevent and prepare for increasing wildfire risk.	
Uncertainty in market signals	Private rooftop solar is an important and	Reduced demand for goods/services	1 to 3 years	Direct	Very likely	Medium		PG&E's business model will need to adapt to increasing	

Risk driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	growing source of energy, which PG&E has long supported. PG&E's business model will need to adapt to increasing adoption of distributed energy generation resources among our customer base.							adoption of distributed energy resources among our customer base. While distributed energy resources will reduce energy demand, they will also present opportunities by requiring new grid technologies and systems/processes to integrate higher levels of distributed generation.	

CC5.1d

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1e

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC5.1f

Please explain why you do not consider your company to be exposed to inherent risks driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Page: CC6. Climate Change Opportunities

CC6.1

Have you identified any inherent climate change opportunities that have the potential to generate a substantive change in your business operations, revenue or expenditure? Tick all that apply

- Opportunities driven by changes in regulation
- Opportunities driven by changes in physical climate parameters
- Opportunities driven by changes in other climate-related developments

CC6.1a

Please describe your inherent opportunities that are driven by changes in regulation

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Product efficiency regulations and standards	PG&E is required by the California Public Utilities Commission to achieve energy efficiency savings targets. In 2017, PG&E has set a goal to achieve 1,144 GWh and 18.6 million therms in customer energy savings. PG&E has a strong track record of meeting or exceeding these goals, and can earn a financial incentive for achieving the CPUC-approved customer energy efficiency targets.	Increased demand for existing products/services	Up to 1 year	Direct	Likely	Medium	PG&E can earn a financial incentive for achieving the CPUC-approved customer energy efficiency targets. PG&E has earned between \$20-25 million per year based on historical averages. In 2016, PG&E was awarded \$16.3 million.	As part of our focus on our customers, we are taking important steps to design and deliver energy efficiency programs and services in a more integrated manner, and on delivering tailored energy solutions that meet different customers' needs. We are proactively giving residential customers Home Energy Reports, which provide information about their energy use, along with personalized tips on how they can save energy. For large business customers, we	In 2016, PG&E had an energy efficiency budget of about \$484 million—the largest investment in energy efficiency by any U.S. utility; this does not include more than \$164 million for programs serving low-income customers. The company's significant investments in energy efficiency are funded with a budget collected from customers via public purpose program charges embedded in gas and electric rates, and is therefore

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								are using energy management tools that enable us to have strategic discussions and recommend the best mix of our products and services. PG&E's Step Up Power Down initiative mobilizes cities, businesses, and residential customers to reduce their electricity use through engaging behavioral campaigns.	revenue-neutral to PG&E.
International agreements	Reduced climate impacts can help PG&E maintain service reliability, reduce operating costs, and protect PG&E's	Reduced operational costs	>6 years	Direct	Likely	Low		PG&E Corporation's Chairman and CEO joined California's delegation to Paris for the international climate talks, helping tell the	

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>assets. With the new federal administration, there is significant uncertainty with regard to what further actions may occur regarding climate change at the federal level. The new administration has withdrawn from international efforts to combat climate change.</p>							<p>story of how California and its energy companies have become models for reducing greenhouse gas emissions while improving quality of life and expanding the economy. PG&E continues to publicly support the Paris Agreement together with other leading companies, including signing on to the "We Are Still In" letter—joining U.S. governors, mayors, businesses, investors, and colleges and universities to support the continued</p>	

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								commitment of the U.S. to ambitious action on climate change.	
Cap and trade schemes	PG&E has consistently supported the California Air Resources Board's (ARB) efforts to broaden the Cap-and-Trade market to jurisdictions beyond California. PG&E supported linkage with Québec as a critical first step in broadening California's cap-and-trade market through linking with other jurisdictions, and supports ongoing efforts to link with Ontario. Larger more diverse	Reduced operational costs	1 to 3 years	Direct	More likely than not	Medium	If the California Cap-and-Trade program links with other jurisdictions, then additional compliance instruments at a lower cost may become available and enable PG&E to reduce its cost of compliance with the program.	PG&E is supporting the California Air Resources Board (ARB)'s efforts to broaden the Cap-and-Trade market to jurisdictions beyond California, including with Ontario. PG&E engages with other states, trade associations such as IETA, and programs like the Regional Greenhouse Gas Initiative (RGGI) on approaches to promote market-based programs.	These costs are integrated into our business model. They are likely to be less than 1% of operating revenue, which was more than \$17 billion in 2016.

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>markets enhance the prospects for efficient market outcomes, eventually leading to lower-cost emission reduction opportunities. PG&E also supports the memorandum of understanding signed with the Pacific Coast Collaborative (including Oregon, Washington, and British Colombia) and the California Governor's stated intention of pursuing partnership opportunities with Mexico. PG&E also supports a multi-state approach to meet the compliance</p>								

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	goals under the EPA Clean Power Plan rule, which could be accomplished through a multi-state cap-and-trade program.								
Fuel/energy taxes and regulations	As a supplier of a low-carbon fuel, California's Low Carbon Fuel Standard (LCFS) allows PG&E to generate and sell LCFS credits on behalf of our electric and natural gas vehicle customers.	Increased demand for existing products/services	1 to 3 years	Direct	Likely	Medium	The LCFS drives additional abatement in the transportation sector beyond the Cap-and-Trade program, which enables PG&E to reduce its cost of compliance with the program.	PG&E constructively engages with the California Air Resources Board (ARB) on matters relating to the LCFS, including for example the re-adoption of the program in 2015 and the upcoming post-2020 program design process.	These costs are integrated into our business model. They are likely to be less than 1% of operating revenue, which was more than \$17 billion in 2016.
Emission reporting obligations	Beginning in 2003, PG&E was among the earliest companies to voluntarily quantify and report GHG	Reduced operational costs	Up to 1 year	Direct	Virtually certain	Low		PG&E's GHG reporting management team implements a robust methodology and quality	These costs are integrated into our business model. They are likely to be less than 1% of operating

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	emissions from the electricity we deliver to our customers. All of PG&E's prior reporting experience provides an opportunity for the company to be in a better position to meet reporting requirements at the federal, state, regional, and local level. In addition, PG&E better understands our carbon footprint and can share that information publicly.							review process with multiple lines of business to collect, compile, calculate, and independently verify PG&E's voluntary GHG emissions report.	revenue, which was more than \$17 billion in 2016.

CC6.1b

Please describe your inherent opportunities that are driven by changes in physical climate parameters

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other physical climate opportunities	Regional action and collaboration to strengthen the resilience of natural systems to climate change is a key opportunity for businesses, governments, and residents with assets in areas exposed to climate impacts. Collaboration to restore wetlands and protect against flooding and sea level rise can help protect PG&E's infrastructure located in the San Francisco Bay area.	Reduced operational costs	>6 years	Direct	Likely	Medium	"Yes on Measure AA for a Clean and Healthy Bay" will raise \$500 million over 20 years to fund critical conservation and flood protection projects, including the restoration of 15,000 acres of wetlands and creation of 25 miles of new Bay trails.	PG&E joined several environmental leaders in the San Francisco Bay Area in support of a successful ballot measure (Yes on Measure AA for a Clean and Healthy Bay) for environmental restoration, pollution reduction and critical flood protection around the San Francisco Bay.	PG&E made a \$250,000 shareholder-funded commitment in 2016 to the People for a Clean and Healthy Bay Coalition in support of the measure.
Other physical climate opportunities	An increase in mean temperature, sea level rise, and changes in precipitation patterns may require PG&E to make infrastructure changes, which could increase	Investment opportunities	>6 years	Direct	Likely	Low-medium	With CPUC regulatory approval, PG&E has the opportunity to earn a return on our investment in infrastructure. While it is premature to forecast climate change-related	As part of PG&E's risk management program, a cross-functional team is conducting a holistic assessment of the risks to PG&E assets from different natural hazards, such as sea level rise. This	Management costs stem from any incremental full-time equivalent positions created, which to date have been less than 1% of operating revenue, which was more than

Opportunity driver	Description	Potential impact	Timeframe	Direct/Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>capital projects. For example, PG&E evaluated its substations within the nine San Francisco Bay Area counties and identified 24 Bay Area substations at risk of flooding based on the 100-year flood zone. With CPUC regulatory approval, PG&E has the opportunity to earn a return on investments in infrastructure improvements.</p>						<p>infrastructure investments, PG&E's authorized enterprise-wide after-tax return on utility rate base is 7.0%. PG&E's earnings from operations were \$1.9 billion in 2016, which is primarily equity return on investments in infrastructure.</p>	<p>structured process is helping to identify potential impacts to PG&E assets and enabling potentially affected business units to evaluate climate-change-related risks to facilities and develop the necessary adaptation strategies. PG&E has elevated structures at several of its substations to reduce the risk of flooding, including the San Mateo 115kV GIS Building, Napa Substation Building and Switchgear, and Richmond R Building and Switchgear. PG&E regularly reviews the most relevant scientific literature, and this research is integrated into this process.</p>	<p>\$17 billion in 2016.</p>

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Other physical climate opportunities	To assist local governments in meeting the challenge of extreme weather, sea level rise, and other climate impacts, PG&E launched a new Better Together Resilient Communities grant program. These grants will help support the community and foster collaboration between PG&E, local governments, and other stakeholders.	Wider social benefits	3 to 6 years	Indirect (Client)	Virtually certain	Medium	Investments in climate resilience have been shown to save significant money in disaster response and loss of assets in the future. FEMA and the U.S. National Business Institute of Building Science estimate that for every dollar invested in resilience, the U.S. saves \$4 dollars in reduced long-term damages.	Beginning in 2017, PG&E will administer a competitive grant process. A panel of community and sustainability leaders, including members of PG&E's Sustainability Advisory Council, will serve an advisory role with the program. Grants will be assessed according to replicability, the extent to which the grant proposal reflects a multi-organizational partnership, focus on disadvantaged communities, and measurable impact.	PG&E will invest \$1 million over five years – or \$200,000 per year – in shareholder funding to support local planning efforts to help better prepare for, withstand, and recover from extreme events and other risks related to climate change.

CC6.1c

Please describe your inherent opportunities that are driven by changes in other climate-related developments

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
Reputation	PG&E makes charitable contributions to a range of non-profit organizations whose programs reduce GHGs, improve air quality, and educate students and others about how they can make a difference. One example is PG&E's Better Together Solar Habitat Program, a partnership between PG&E and Habitat for Humanity International to fund the full cost of solar electric systems on every Habitat-built home in northern and central California. The first-of-its-kind partnership brings solar energy to families with limited incomes, furthering PG&E's	Wider social benefits	Up to 1 year	Direct	Virtually certain	Low	An economic impact study conducted by PG&E found that every dollar of PG&E's charitable contributions resulted in another 90 cents of economic activity in the economy – meaning PG&E's investments nearly doubled in economic impact. PG&E's Better Together Solar Habitat Program will save customers more than \$9 million over the lifetime of the solar panels, and each panel will help avoid 132,000 pounds of CO2 from entering the environment. In terms of reputational benefit, the potential	PG&E has partnered with Habitat for Humanity to cover the cost of installing solar panels for every new Habitat home built in PG&E's service area. PG&E employees have also volunteered over 12,000 hours on Habitat home sites, both contributing to the construction process and installing solar panels. In 2016, PG&E committed an additional \$1 million to support the installation of rooftop solar on nearly 100 homes with 17 different Habitat for Humanity local affiliates throughout	Since 2005, PG&E has invested more than \$11.6 million in shareholder-funded community investments in the program. Over that timeframe, the program has saved customers an average of \$500 per year on their energy bills.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	commitment to provide affordable, renewable energy in the communities it serves.						financial implication will likely be low.	Northern and Central California.	
Other drivers	PG&E participates in a number of voluntary agreements, such as the U.S. EPA's Natural Gas Star, the Natural Gas Star Methane Challenge to reduce methane leaks, and the SF6 Emission Reduction Partnership for Electric Power Systems programs. The opportunity is that PG&E will be well-positioned to meet mandated GHG reductions from these sources. Because of PG&E's voluntary efforts to reduce SF6, PG&E was well-	Reduced operational costs	Up to 1 year	Direct	Virtually certain	Low-medium	Because PG&E participates in a number of voluntary agreements to reduce GHG emissions, we stand to face lower compliance costs if GHG emission reductions are mandated. In addition, some of these voluntary actions have resulted in significant cost savings to the company, or have benefited the company by creating a supply of products that the company might need in the	PG&E's voluntary ClimateSmart program encouraged the development and testing of Climate Action Reserve (CAR) offset project protocols, which led to an increase in supply of CAR offsets. In addition, four of CAR's protocols have been adopted by the ARB for use in its cap-and-trade program. As of May 2016, the ClimateSmart program had invested \$12.9 million in retiring 1.44 million	The cost of PG&E's participation in voluntary programs stems largely from any incremental full-time equivalent positions created, which to date have been less than 1% of operating revenue, which was more than \$17 billion in 2016.

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	positioned to comply with the California Air Resources Board's regulation for reducing SF6 emission rates.						future. In 2016, PG&E saved over \$770,000 through initiatives to avoid releases of natural gas from our pipelines.	metric tons of offsets. By requiring the use of CAR offsets for the ClimateSmart program, the program helped spur CAR offset protocol development, while providing the company with valuable experience in developing and contracting for these products.	
Other drivers	Clean Transportation: PG&E customers lead the nation in electric vehicle adoption, with 1 in 5 of the nation's EVs registered within our service area. PG&E is focused on working with customers and stakeholders to facilitate a smooth transition to this next generation of clean vehicles.	New products/business services	1 to 3 years	Direct	Very likely	Low-medium	\$150 million (approved and proposed investment in EV infrastructure over next three years)	PG&E is investing in infrastructure to accelerate growth of EVs. PG&E is deploying up to 7,500 charging stations at workplaces and multi-family dwellings in its service area, increasing access to EVs through charging infrastructure.	

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
								PG&E has also proposed new programs to enable medium and heavy duty fleets to electrify through charging infrastructure. PG&E is modernizing the electric grid to facilitate electric vehicle charging and to one day allow electric vehicle batteries to become flexible tools in managing supply and demand on the grid, and the utility is working with automakers and charging providers to pilot these technologies.	
Other drivers	PG&E is supporting California's economy by fulfilling other operational	Wider social benefits	Up to 1 year	Direct	Very likely	Low	EDI is a California-based clean technology success story that highlights		

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
	<p>needs. For example, PG&E partnered with locally-based Efficient Drivetrains Incorporated (EDI) to manufacture groundbreaking utility trucks with the capability to export power to the grid. PG&E also partnered with Altec Industries to develop a first-of-its-kind plug-in battery-powered system for bucket trucks. The battery operates the auxiliary systems of these trucks—lights, hydraulic lifts, heating and air conditioning, and tools—while at the job site, avoiding the need to idle the vehicle’s engine.</p>						<p>PG&E’s economic impact within its service area. EDI was founded in 2006 with a small government loan from the state and, with PG&E’s support, has grown into a multi-million dollar company with major original equipment manufacturer (OEM) customers and numerous “industry first” zero emissions vehicle technologies. PG&E’s commitment to purchase hundreds of trucks from Altec Industries will help support about 100 jobs at a manufacturing facility in PG&E’s service</p>		

Opportunity driver	Description	Potential impact	Timeframe	Direct/ Indirect	Likelihood	Magnitude of impact	Estimated financial implications	Management method	Cost of management
							area.		
Other drivers	PG&E continues to pioneer the application of sustainable principles, practices, and technologies across active remediation projects using guidance prepared and piloted with a state agency. Examples of sustainable best management practices include the use of remediation equipment powered by cleaner and alternative fuels, reducing greenhouse gas emissions in local communities.	New products/business services	Up to 1 year	Direct	Very likely	Low			

CC6.1d

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in regulation that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1e

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in physical climate parameters that have the potential to generate a substantive change in your business operations, revenue or expenditure

CC6.1f

Please explain why you do not consider your company to be exposed to inherent opportunities driven by changes in other climate-related developments that have the potential to generate a substantive change in your business operations, revenue or expenditure

Further Information

Module: GHG Emissions Accounting, Energy and Fuel Use, and Trading

Page: CC7. Emissions Methodology

CC7.1

Please provide your base year and base year emissions (Scopes 1 and 2)

Scope	Base year	Base year emissions (metric tonnes CO2e)
Scope 1	Thu 01 Jan 2009 - Thu 31 Dec 2009	3218256
Scope 2 (location-based)	Thu 01 Jan 2009 - Thu 31 Dec 2009	1060153
Scope 2 (market-based)	Thu 01 Jan 2009 - Thu 31 Dec 2009	997983

CC7.2

Please give the name of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

Please select the published methodologies that you use
The Climate Registry: General Reporting Protocol
The Climate Registry: Electric Power Sector (EPS) Protocol
Other

CC7.2a

If you have selected "Other" in CC7.2 please provide details of the standard, protocol or methodology you have used to collect activity data and calculate Scope 1 and Scope 2 emissions

In 2015, the California Public Utilities Commission required all natural gas utilities to report yearly natural gas emissions from all sources pursuant to the Order Instituting Rulemaking to Adopt Rules and Procedures Governing Commission-Related Natural Gas Pipelines and Facilities to Reduce Natural Gas Leakage

Consistent with Senate Bill 1371 (R.15-01-008). PG&E's report was used to determine releases (both intentional and unintentional) from PG&E's natural gas system. The California Climate Action Registry (CCAR) Draft Natural Gas Transmission & Distribution (T&D) Protocol, (April 2009) and the U.S. EPA and California Air Resources Board Subpart W reporting protocols were used to derive estimates for the majority of PG&E's fugitive and process emissions from our natural gas T&D system. For certain emission sources in our natural gas T&D system for which we had more accurate methodologies and available data, PG&E used our own system-specific calculation methodologies to estimate emissions, which in general were more accurate. Emission factors obtained from past measurement studies, such as the 1996 GRI/EPA report, were used to calculate emissions where actual measurement values are not available and there is insufficient data to provide engineering estimates.

CC7.3

Please give the source for the global warming potentials you have used

Gas	Reference
CO2	IPCC Fifth Assessment Report (AR5 - 100 year)
CH4	IPCC Fifth Assessment Report (AR5 - 100 year)
N2O	IPCC Fifth Assessment Report (AR5 - 100 year)
Other: HFC-134a	IPCC Fifth Assessment Report (AR5 - 100 year)
SF6	IPCC Fifth Assessment Report (AR5 - 100 year)

CC7.4

Please give the emissions factors you have applied and their origin; alternatively, please attach an Excel spreadsheet with this data at the bottom of this page

Fuel/Material/Energy	Emission Factor	Unit	Reference
Biodiesels	9.45	Other: kg CO2/gallon	The Climate Registry, General Reporting Protocol, v1.1, Table 13.1

Fuel/Material/Energy	Emission Factor	Unit	Reference
Motor gasoline	8.78	Other: kg CO2/gallon	The Climate Registry, General Reporting Protocol, v1.1, Table 13.1
Jet gasoline	9.75	Other: kg CO2/gallon	The Climate Registry, General Reporting Protocol, v1.1, Table 13.1
Biogas	0.0438	Other: kg CO2/scf	The Climate Registry, General Reporting Protocol, v1.1, Table 12.1
Distillate fuel oil No 2	10.21	Other: kg CO2/gallon	The Climate Registry, General Reporting Protocol, v1.1, Table 12.1
Natural gas	0.05	Other: kg CO2/scf	The Climate Registry, General Reporting Protocol, v1.1, Table 13.1
Liquefied Natural Gas (LNG)	4.46	Other: kg CO2/gallon	The Climate Registry, General Reporting Protocol, v1.1, Table 13.1
Other: Compressed Natural Gas	0.054	Other: kg CO2/scf	The Climate Registry, General Reporting Protocol, v1.1, Table 13.1
Propane	5.59	Other: kg CO2/gallon	The Climate Registry, General Reporting Protocol, v1.1, Table 13.1
Electricity	294	metric tonnes CO2 per MWh	PG&E's 2016 Electric Power Sector Report to The Climate Registry

Further Information

Page: CC8. Emissions Data - (1 Jan 2016 - 31 Dec 2016)

CC8.1

Please select the boundary you are using for your Scope 1 and 2 greenhouse gas inventory

Operational control

CC8.2

Please provide your gross global Scope 1 emissions figures in metric tonnes CO2e

3949920

CC8.3

Please describe your approach to reporting Scope 2 emissions

Scope 2, location-based	Scope 2, market-based	Comment
We are reporting a Scope 2, location-based figure	We are reporting a Scope 2, market-based figure	

CC8.3a

Please provide your gross global Scope 2 emissions figures in metric tonnes CO2e

Scope 2, location-based	Scope 2, market-based (if applicable)	Comment
1243956	704144	PG&E calculates Scope 2 emissions as the portion of our electricity use attributed to purchased electricity. We use an adjustment of our own emission rate (294 pounds CO2/MWh in 2016), which is still undergoing third-party verification.

CC8.4

Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

CC8.4a

Please provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure

Source	Relevance of Scope 1 emissions from this source	Relevance of location-based Scope 2 emissions from this source	Relevance of market-based Scope 2 emissions from this source (if applicable)	Explain why the source is excluded

CC8.5

Please estimate the level of uncertainty of the total gross global Scope 1 and 2 emissions figures that you have supplied and specify the sources of uncertainty in your data gathering, handling and calculations

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
Scope 1	More than 5% but less than or equal to 10%	Other: Published Emission Factors	There is little uncertainty with regard to stationary combustion emissions from utility-owned generation and compressor stations because fuel use at these facilities is metered with utility-grade meters, which must meet strict accuracy standards set by the CPUC. These emissions comprised 65% of PG&E's Scope 1 emissions. However, approximately 31% of PG&E's Scope 1 emissions were fugitive and process emissions from PG&E's natural gas T&D system, which are difficult to accurately quantify. In 2015, the California Public Utilities Commission required all natural gas utilities to report natural gas emissions from all sources pursuant to the Order Instituting Rulemaking to Adopt Rules and Procedures Governing Commission-Related Natural Gas Pipelines and Facilities to Reduce

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
			<p>Natural Gas Leakage Consistent with Senate Bill 1371 (R.15-01-008). PG&E's report was used to determine leakage (both intentional and unintentional) from PG&E's natural gas system. Several emission factors recommended by the CPUC for calculating these natural gas pipeline emissions vary significantly from the estimation methods proscribed by The Climate Registry's Draft Natural Gas Transmission & Distribution Protocol, (April 2009). Both the draft protocol and the CPUC guidance on reporting in compliance with Senate Bill 1371 provide some emission factor estimates with a wide range of uncertainty. In future years, we expect that the CPUC may revise their emission factors to achieve greater accuracy.</p>
Scope 2 (location-based)	More than 50% but less than or equal to 60%	<p>Metering/ Measurement Constraints Other: Published Emission Factors</p>	<p>Electricity used by PG&E facilities comprised about 6% of PG&E's Scope 2 emissions. This electricity is metered through utility-grade meters, which must meet strict accuracy standards set by the CPUC. For location-based emissions, PG&E's electricity use is multiplied by the EPA eGRID regional emission factors for the WECC CAMX California region. There is uncertainty associated with how representative these emission factors are for the actual electricity that was delivered over PG&E's T&D system. PG&E's T&D line losses, which make up approximately 94% of our Scope 2 emissions, are estimated using electricity delivery data, which is generated by utility billing meters, and by the eGRID emission factors. TCR's methodology is to calculate a T&D loss factor as the difference between the electricity put onto the grid by producers and the electricity taken off the grid by consumers to calculate a T&D loss factor. This factor therefore includes the contribution of metering errors, unaccounted for energy, theft, unmetered loads, and other factors. In other words, it is not simply the losses on the line from electrical inefficiencies and the physical characteristics of the lines and the power that flows through them that creates a loss factor, as noted in the protocol. The variability in PG&E's loss factor is due more to the variability in the difference between electricity generated and that consumed due to metering errors, unaccounted for energy, theft, unmetered loads, and other factors, than to changes in the actual physical characteristics of our T&D infrastructure.</p>
Scope 2 (market-based)	More than 2% but less than or equal to 5%	<p>Metering/ Measurement Constraints</p>	<p>Electricity used by PG&E facilities comprised about 5% of PG&E's Scope 2 emissions. This electricity is metered through utility-grade meters, which must meet strict accuracy standards set by the CPUC. For market-based emissions, PG&E's electricity use is multiplied by a PG&E-specific emission rate for its delivered electricity, which is more accurate than the location-based methodology. PG&E's T&D line losses, which make up approximately 95% of our Scope 2 emissions, are estimated using electricity delivery data, which is generated by utility billing meters, and by the eGRID emission factors. There is uncertainty associated with how representative these emission factors are for the actual electricity that was delivered over PG&E's T&D system. In addition, TCR's methodology is to calculate a T&D loss factor as the difference between the electricity put onto the grid by producers and the electricity taken off the grid by consumers to calculate a T&D loss factor. This factor therefore includes the contribution of metering errors, unaccounted for energy, theft, unmetered loads, and</p>

Scope	Uncertainty range	Main sources of uncertainty	Please expand on the uncertainty in your data
			other factors. In other words, it is not simply the losses on the line from electrical inefficiencies and the physical characteristics of the lines and the power that flows through them that creates a loss factor, as noted in the protocol. The variability in PG&E's loss factor is due more to the variability in the difference between electricity generated and that consumed due to metering errors, unaccounted for energy, theft, unmetered loads, and other factors, than to changes in the actual physical characteristics of our T&D infrastructure.

CC8.6

Please indicate the verification/assurance status that applies to your reported Scope 1 emissions

Third party verification or assurance process in place

CC8.6a

Please provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
Annual process	Underway but not complete for	Reasonable assurance	https://www.cdp.net/sites/2017/78/14678/Climate Change 2017/Shared Documents/Attachments/CC8.6a/PGE TCR	Entire document	The Climate Registry's	100

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/section reference	Relevant standard	Proportion of reported Scope 1 emissions verified (%)
	reporting year – previous statement of process attached		verification statement_0001.pdf		General Verification Protocol	

CC8.6b

Please provide further details of the regulatory regime to which you are complying that specifies the use of Continuous Emission Monitoring Systems (CEMS)

Regulation	% of emissions covered by the system	Compliance period	Evidence of submission

CC8.7

Please indicate the verification/assurance status that applies to at least one of your reported Scope 2 emissions figures

Third party verification or assurance process in place

CC8.7a

Please provide further details of the verification/assurance undertaken for your location-based and/or market-based Scope 2 emissions, and attach the relevant statements

Location-based or market-based figure?	Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 2 emissions verified (%)
Location-based	Annual process	Underway but not complete for reporting year – previous statement of process attached	Reasonable assurance	https://www.cdp.net/sites/2017/78/14678/Climate Change 2017/Shared Documents/Attachments/CC8.7a/PGE TCR verification statement_0001.pdf	Entire document	The Climate Registry's General Verification Protocol	100
Market-based	Annual process	Underway but not complete for reporting year – previous statement of process attached	Reasonable assurance	https://www.cdp.net/sites/2017/78/14678/Climate Change 2017/Shared Documents/Attachments/CC8.7a/PGE TCR verification statement_0001.pdf	Entire document	The Climate Registry's General Verification Protocol	100

CC8.8

Please identify if any data points have been verified as part of the third party verification work undertaken, other than the verification of emissions figures reported in CC8.6, CC8.7 and CC14.2

Additional data points verified	Comment
Year on year emissions intensity figure	PG&E reports its carbon dioxide emissions rate annually to The Climate Registry. In 2016, this rate, which is still undergoing third-party verification, was 294 pounds of CO2 per megawatt-hour of delivered electricity, taking into account both PG&E-owned power generation and power purchased from third parties.

CC8.9

Are carbon dioxide emissions from biologically sequestered carbon relevant to your organization?

No

CC8.9a

Please provide the emissions from biologically sequestered carbon relevant to your organization in metric tonnes CO2

Further Information

PG&E has been actively involved in efforts to develop newer and state-specific emission factors to improve reporting accuracy. To better understand our methane emissions associated with natural gas distribution, PG&E partnered with other major gas utilities and Washington State University's Laboratory Atmospheric Research in a nationwide field study. PG&E joined the American Gas Association, Environmental Defense Fund, and other utilities to commission the study to measure methane emissions when gas is routed through local service and distribution main pipelines, as well as gas metering and regulating stations. The outcome of the 2015 Washington State University study is a set of updated emission factors for distribution pipeline and metering and regulating stations fugitive emissions, which are 36% to 70% less than the 1996 EPA inventory and reflects improvements in materials and maintenance practices over the past two decades. In 2017, PG&E is participating in a project with Gas Technology Institute, Semptra Utilities and CARB to establish emission factors for residential meter sets fugitive emissions in California. Newer and state-specific emission factors will contribute towards a more precise emission estimate from the natural gas industry. The Climate Registry's Draft Natural Gas T&D Reporting Protocol (April 2009) details the uncertainty inherent in reporting emissions from process/venting and fugitive emissions from the natural gas T&D sector. It states: "While emissions from stationary and mobile combustion are relatively well understood, process/venting and fugitive emissions entail much greater uncertainty due to the paucity of data and variability between sites and equipment. Therefore, organizations in the natural gas T&D sector face a unique challenge, as a majority of their emissions come from process/venting and fugitive emissions sources. These categories of emission sources are highly unpredictable and uncertain (e.g., whether a pressure release valve or a pipeline connector is actually leaking or not), and the commonly used approaches to calculate entity-wide GHG inventories yield values with high levels of uncertainty. The uncertainty associated with process/venting and fugitive emission factors is not the result of any singular cause, but rather a function of the necessary complexity of individual organizations. Many of the published emission factors used to calculate GHG emissions from the natural gas T&D sector are based on data collected to develop sector-wide emissions characterizations. Therefore, applying industry-averaged factors to organization-specific facilities and equipment with different characteristics (e.g. age, size, design) than the sample equipment and operations that are the basis for the emission factor introduces significant uncertainty to emissions estimates. Appendix B includes an estimate of the uncertainty associated with many of the emission factors used in this protocol. Furthermore, the emission factors reflect not only potentially different conditions, but are the result of surveys taken over a decade ago; emission factors have the potential to be both out-of-date and inconsistently applied."

CC9.1

Do you have Scope 1 emissions sources in more than one country?

No

CC9.1a

Please break down your total gross global Scope 1 emissions by country/region

Country/Region	Scope 1 metric tonnes CO2e

CC9.2

Please indicate which other Scope 1 emissions breakdowns you are able to provide (tick all that apply)

By GHG type
By activity

CC9.2a

Please break down your total gross global Scope 1 emissions by business division

Business division	Scope 1 emissions (metric tonnes CO2e)

CC9.2b

Please break down your total gross global Scope 1 emissions by facility

Facility	Scope 1 emissions (metric tonnes CO2e)	Latitude	Longitude

CC9.2c

Please break down your total gross global Scope 1 emissions by GHG type

GHG type	Scope 1 emissions (metric tonnes CO2e)
CO2	2674535
CH4	1222575
N2O	1508
HFCs	1264
SF6	50045

CC9.2d

Please break down your total gross global Scope 1 emissions by activity

Activity	Scope 1 emissions (metric tonnes CO2e)
Sulfur Hexafluoride (SF6) from PG&E Electrical Equipment	50045
PG&E Facility Natural Gas Use	6722
PG&E Gas Compressor Stations	296163
PG&E Owned Fossil Generation	2263552
Process and Fugitive Emissions from PG&E's Natural Gas System	1222050
PG&E Fleet (transportation emissions)	109201
Other Emissions (e.g. propane use, stationary equipment gas and diesel use)	2187

Further Information

Page: CC10. Scope 2 Emissions Breakdown - (1 Jan 2016 - 31 Dec 2016)

CC10.1

Do you have Scope 2 emissions sources in more than one country?

No

CC10.1a

Please break down your total gross global Scope 2 emissions and energy consumption by country/region

Country/Region	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low carbon electricity, heat, steam or cooling accounted in market-based approach (MWh)
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CC10.2

Please indicate which other Scope 2 emissions breakdowns you are able to provide (tick all that apply)

By activity

CC10.2a

Please break down your total gross global Scope 2 emissions by business division

Business division	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
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CC10.2b

Please break down your total gross global Scope 2 emissions by facility

Facility	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
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CC10.2c

Please break down your total gross global Scope 2 emissions by activity

Activity	Scope 2, location-based (metric tonnes CO2e)	Scope 2, market-based (metric tonnes CO2e)
T&D Line Losses	1163999	672447
PG&E Facility Electricity Use	37636	14908
PG&E Compressor Station Electricity Use	42055	16684

Further Information

Page: CC11. Energy

CC11.1

What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

CC11.2

Please state how much heat, steam, and cooling in MWh your organization has purchased and consumed during the reporting year

Energy type	MWh
Heat	0
Steam	0
Cooling	0

CC11.3

Please state how much fuel in MWh your organization has consumed (for energy purposes) during the reporting year

490996

CC11.3a

Please complete the table by breaking down the total "Fuel" figure entered above by fuel type

Fuels	MWh
Natural gas	47575
Motor gasoline	178779
Distillate fuel oil No 2	247948
Biodiesels	4692
Propane	1414
Jet gasoline	10587

CC11.4

Please provide details of the electricity, heat, steam or cooling amounts that were accounted at a low carbon emission factor in the market-based Scope 2 figure reported in CC8.3a

Basis for applying a low carbon emission factor	MWh consumed associated with low carbon electricity, heat, steam or cooling	Emissions factor (in units of metric tonnes CO2e per MWh)	Comment
Other	13730		PG&E has enrolled all of its operations service centers—nearly 100 facilities—in our new Solar Choice program. The service centers are 100% percent powered by solar energy from new small to mid-sized solar projects in PG&E’s service area. The program is open to customers, and designed to broaden access to solar power for customers unable to install rooftop solar panels.

CC11.5

Please report how much electricity you produce in MWh, and how much electricity you consume in MWh

Total electricity consumed (MWh)	Consumed electricity that is purchased (MWh)	Total electricity produced (MWh)	Total renewable electricity produced (MWh)	Consumed renewable electricity that is produced by company (MWh)	Comment
308929	157554	33525038	1226882	4936	As an electric utility, PG&E generates and purchases electricity to deliver to customers. We also purchase this electricity as a customer. The electricity PG&E delivers was approximately 49% owned generation by MWh in 2016. Consumed electricity figures are calculated as the portions of our electricity use which comes from third-party generators and from our owned generation, respectively.

Further Information

Page: CC12. Emissions Performance

CC12.1

How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to the previous year?

Decreased

CC12.1a

Please identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined) and for each of them specify how your emissions compare to the previous year

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Emissions reduction activities	3.1	Decrease	Total Scope 1 and Scope 2 emission reductions due to emissions reduction activities include PG&E's Energy efficiency, building services: 131 MT CO ₂ e; Natural gas process and fugitive emissions savings: 99,365 MT CO ₂ e; Avoided emissions from waste diversion: 65,794 MT CO ₂ e; Alternative fuel use in fleet vehicles: 10,000 MT CO ₂ e; Avoided emissions from environmental remediation: 5,696 MT CO ₂ e; and SF6: 1,607 MT CO ₂ e. These programs totaled 182,593 MT CO ₂ e in reductions. PG&E's total Scope 1 and Scope 2 emissions in 2015 were 5,891,211 metric tons CO ₂ e. Therefore we arrived at 3.1% through $(182,593/5,891,211)*100= 3.1\%$
Divestment			
Acquisitions			
Mergers			
Change in output	21	Decrease	PG&E produced less electricity from its owned natural gas power plants in 2016 and produced 18% more electricity from its greenhouse gas-free resources, including large hydro and nuclear energy.
Change in methodology			
Change in boundary			

Reason	Emissions value (percentage)	Direction of change	Please explain and include calculation
Change in physical operating conditions			
Unidentified			
Other			

CC12.1b

Is your emissions performance calculations in CC12.1 and CC12.1a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Market-based

CC12.2

Please describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tonnes CO2e per unit currency total revenue

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.00026	metric tonnes CO2e	17667000000	Market-based	25	Decrease	Overall Scope 1 and Scope 2 emissions decreased approximately 21% due to emission reduction activities and reduced electricity

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator: Unit total revenue	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
						generation from company-owned natural gas power plants in 2016. PG&E's revenue increased 5%.

CC12.3

Please provide any additional intensity (normalized) metrics that are appropriate to your business operations

Intensity figure =	Metric numerator (Gross global combined Scope 1 and 2 emissions)	Metric denominator	Metric denominator: Unit total	Scope 2 figure used	% change from previous year	Direction of change from previous year	Reason for change
0.81	metric tonnes CO2e	Other: MWh owned natural gas generation	5718177	Market-based		No change	PG&E's emissions per MWh of owned natural gas generation held steady in 2016. Absolute Scope 1 and 2 emissions decreased 21% and MWh generation from Scope 1 natural gas-fired electricity generation decreased by 22%.

Further Information

Page: CC13. Emissions Trading

CC13.1

Do you participate in any emissions trading schemes?

Yes

CC13.1a

Please complete the following table for each of the emission trading schemes in which you participate

Scheme name	Period for which data is supplied	Allowances allocated	Allowances purchased	Verified emissions in metric tonnes CO2e	Details of ownership
California's Greenhouse Gas Cap and Trade Program	Fri 01 Jan 2016 - Sat 31 Dec 2016	42000000			Other: Under ARB rules, PG&E is prohibited from disclosing any non-public information concerning auction participation. PG&E is required under the regulation to consign all of its allocated electric distribution utility allowances for sale in ARB-run auctions. In 2016, PG&E was required to consign at least 30% of its allocated allowances as a natural gas supplier for sale in ARB-run auctions. This amount will increase by 5% each year through 2020. PG&E has been authorized by the CPUC to procure allowances needed to meet its GHG compliance obligations.

CC13.1b

What is your strategy for complying with the schemes in which you participate or anticipate participating?

PG&E has a compliance obligation under the California Air Resources Board (ARB)'s Cap-and-Trade Program for emissions from:

- Our electric generation units that exceed the inclusion threshold;
- Imported electricity;
- Natural gas compressor stations; and
- Natural gas delivered to customers that are not separately covered by the Cap-and-Trade Program.

Each year, PG&E receives an allowance allocation for the following calendar year. PG&E's obligations with respect to the allocation differ based on whether the allowances are associated with its business as an electric distribution utility (EDU), or its business as a natural gas supplier. Under the Cap-and-Trade program,

allowances are allocated to EDUs at no cost for the benefit of their customers. PG&E is required under the regulation to consign its EDU allowances in ARB-managed auctions. PG&E then purchases the allowances needed to meet its own physical or contractual GHG compliance obligations through these auctions or in the secondary market.

Starting in 2015, allowances are also allocated to natural gas suppliers at no cost for the benefit of their customers. Only a portion of these allowances are required to be consigned to auction with the remainder being used directly for compliance. The ARB requires the consignment minimum to increase by 5% per year.

Compliance entities can also purchase offset credits from certified parties that develop projects that reduce GHG in sectors not regulated under the cap, such as forest management, destruction of ozone depleting substances, and methane capture projects. Compliance entities can then use the ARB-issued offset credits to satisfy up to 8% of their compliance obligations. On specified deadlines, entities must surrender compliance instruments (i.e., allowances and offset credits) in an amount equal to their GHG emissions during the period, to the ARB.

To manage regulatory risks, compliance, and costs, PG&E developed a GHG procurement strategy as part of its Bundled Procurement Plan that was approved by the California Public Utilities Commission. This strategy allows PG&E to employ several procurement mechanisms such as: (a) participation in ARB's quarterly allowance auctions and its Allowance Price Containment Reserve, (b) bilateral transactions via a Request for Offers process, and (c) transacting via exchanges. In December 2014, PG&E received GHG procurement authority to cover PG&E's compliance obligation as a natural gas supplier.

More broadly, PG&E's approach to climate change policy is managed by a cross-functional team comprised of representatives from across the company. The team meets regularly and actively coordinates with PG&E's leadership to share developments at the state and national levels and seek approval on policy positions.

CC13.2

Has your organization originated any project-based carbon credits or purchased any within the reporting period?

Yes

CC13.2a

Please provide details on the project-based carbon credits originated or purchased by your organization in the reporting period

Credit origination or credit purchase	Project type	Project identification	Verified to which standard	Number of credits (metric tonnes CO2e)	Number of credits (metric tonnes CO2e): Risk adjusted volume	Credits canceled	Purpose, e.g. compliance
Credit purchase	Forests	Improved Forest Management: City of Arcata-Barnum Tract Project	CAR (The Climate Action Reserve)	2650	2650	No	Voluntary Offsetting
Credit purchase	Forests	Improved Forest Management: City of Arcata-Lucchesi Tract Project	CAR (The Climate Action Reserve)	1933	1933	No	Voluntary Offsetting
Credit purchase	Forests	Improved Forest Management: City of Arcata-Sunnybrae Tract Project	CAR (The Climate Action Reserve)	1079	1079	No	Voluntary Offsetting
Credit purchase	Landfill gas	Landfill gas capture/combustion: Recology–Hay Road LFG Project	CAR (The Climate Action Reserve)	1800	1800	No	Voluntary Offsetting
Credit purchase	Forests	Improved Forest Management: Sempervirens - Lompico Forest Carbon Project	CAR (The Climate Action Reserve)	885	885	No	Voluntary Offsetting

Further Information

The carbon credits that PG&E purchased as noted in Question 13.2a were purchased in 2016 in continued fulfillment of contracts from 2009. All of the offsets for which we have contracted on behalf of participating customers in the ClimateSmart program have been Climate Action Reserve offsets, which are not risk adjusted.

Page: CC14. Scope 3 Emissions

CC14.1

Please account for your organization's Scope 3 emissions, disclosing and explaining any exclusions

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Purchased goods and services	Relevant, calculated	1000000	In collaboration with UC Berkeley and Climate Earth, PG&E mapped its 72,000+ line item expenditures (2007-2009) to product categories in the Comprehensive Environmental Data Archive for Economic and Environmental Systems Analysis (CEDA 3.0). CEDA uses economic input-output tables and industry-level environmental data to construct a top-down database of environmental impact per dollar of sales from an industry for all 430 sectors of the U.S. economy. This mapping exercise helped PG&E quantify greenhouse gas emissions associated with goods and services procured in our supply chain. This study was based on 2007-2009 procurement data. At this time, PG&E does not plan to conduct this study on a regular basis given the lack of expected variation in results, year over year.	0.00%	
Capital goods	Not relevant, explanation provided				As a supplier of electricity and natural gas, PG&E's capital goods consist primarily of energy infrastructure and purchased electricity and natural gas. The emissions associated with our energy production and natural gas transmission and distribution are accounted for in our Scope 1 and Scope 2 emissions, and there are no other material emissions from our capital goods.
Fuel-and-energy-related activities (not included in	Relevant, calculated	7848441	Reported to TCR in accordance with the Electric Power Sector (EPS) protocol. For energy deliveries, PG&E refers to the Power Source	100.00%	

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
Scope 1 or 2)			Disclosure Report (PSDR), a report that PG&E submits annually to the California Energy Commission. This report details the name, identification numbers, fuel types, and net kWh purchased for every power plant (renewable and non-renewable) from which PG&E purchases electricity. PG&E reports the CO2 emission rates for its owned power plants to the United States Environmental Protection Agency (U.S. EPA) annually. These rates, multiplied by the amount of electricity sourced from each of its owned power plants each year (from the PSDR), total the CO2 emissions from PG&E's owned generation. To determine CO2 emissions for purchased power, PG&E refers to the U.S. EPA eGRID database for CO2 emission rates, and multiplies these by the net MWh sourced by facility.		
Upstream transportation and distribution	Not relevant, explanation provided				PG&E's supply chain primarily consists of upstream purchased electricity and natural gas. Energy use and losses in transporting electricity and natural gas is accounted for in our Scope 1 and Scope 2 emissions, and there are no other material transportation and distribution emissions upstream.
Waste generated in operations	Not relevant, calculated	1943	PG&E measures volumes and weights of waste generated at all facilities, and inputs this data to the US EPA WARM Model Lifecycle GHG comparison. PG&E uses industry standard volume-to-weight conversions to generate	20.00%	

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
			tonnages for each weight type in instances where haulers do not provide primary weight data.		
Business travel	Relevant, calculated	3571	These figures represent the emissions associated with flights booked through any of the travel agencies that PG&E employs. These figures do not include emissions from flights booked by employees on personal or company credit cards as those emissions are difficult to track and quantify. Miles traveled are multiplied by emission factors from Department for Environment, Food, and Rural Affairs (DEFRA), Updated: October 5, 2010, Version 1.2.1.	100.00%	
Employee commuting	Relevant, calculated	2016	Employees were surveyed on miles traveled and mode of transport as part of PG&E's General Office LEED survey. Passenger miles traveled were input to the GHG Protocol Mobile Combustion GHG Emission Calculation Tool, v2.3 with custom emission factors for light rail from the U.S. Department of Transportation (0.3 pounds CO2/passenger mile traveled), and San Francisco BART (0.13 pounds CO2/passenger mile traveled).	1.00%	
Upstream leased assets	Not relevant, explanation provided				PG&E has entered into capital lease agreements to purchase energy and capacity with independent power producers that own generation facilities that meet the definition of a QF under federal law. Emissions from these sources are included in PG&E's Scope 3 emissions for electricity delivered to

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
					customers, included above.
Downstream transportation and distribution	Not relevant, explanation provided				PG&E delivers electricity and natural gas directly to customers. There are no downstream operations to account for emissions in this category.
Processing of sold products	Not relevant, explanation provided				PG&E delivers electricity and natural gas directly to customers. Any emissions from the processing of natural gas we deliver are included in Fuel-and-Energy-related activities above.
Use of sold products	Relevant, calculated	37554561	Reported to the California Air Resources Board (ARB) in accordance with the AB 32 Mandatory Reporting Regulation (MRR) and to The Climate Registry. Excludes natural gas used by generating stations to generate electricity delivered to customers (Scope 3 Electricity Purchased for Customers). This category includes CO2e from purchased natural gas that is delivered to customers. The figure represents the emissions from the combustion of natural gas delivered to all entities on PG&E's distribution system, with the exception of gas delivered to other natural gas local distribution companies, as well as gas delivered to PG&E facilities such as power plants, compressor stations, and offices, the emissions of which are reported separately.	0.00%	
End of life treatment of sold products	Not relevant, explanation provided				The use of electricity and natural gas does not have a significant source of emissions related to disposal of the products.
Downstream	Not relevant,				PG&E did not lease assets during the

Sources of Scope 3 emissions	Evaluation status	metric tonnes CO2e	Emissions calculation methodology	Percentage of emissions calculated using data obtained from suppliers or value chain partners	Explanation
leased assets	explanation provided				reporting year.
Franchises	Not relevant, explanation provided				PG&E did not operate any franchises during the reporting year
Investments	Not relevant, explanation provided				PG&E did not have significant emissions due to investments that are not captured in Scopes 1 and 2, or listed elsewhere on this table.
Other (upstream)					
Other (downstream)					

CC14.2

Please indicate the verification/assurance status that applies to your reported Scope 3 emissions

Third party verification or assurance process in place

CC14.2a

Please provide further details of the verification/assurance undertaken, and attach the relevant statements

Verification or assurance cycle in place	Status in the current reporting year	Type of verification or assurance	Attach the statement	Page/Section reference	Relevant standard	Proportion of reported Scope 3 emissions verified (%)
Annual process	Underway but not complete for reporting year – previous statement of process attached	Reasonable assurance	https://www.cdp.net/sites/2017/78/14678/Climate Change 2017/Shared Documents/Attachments/CC14.2a/SCS 2015 Verification Statement for PGE Supplier.pdf	Entire Document	Other: California Mandatory GHG Reporting Regulations (CARB)	75

CC14.3

Are you able to compare your Scope 3 emissions for the reporting year with those for the previous year for any sources?

Yes

CC14.3a

Please identify the reasons for any change in your Scope 3 emissions and for each of them specify how your emissions compare to the previous year

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Fuel- and energy-related activities (not included in	Emissions reduction	34	Decrease	PG&E purchased less electricity from third-party providers in 2016, while increasing its owned generation output from sources including

Sources of Scope 3 emissions	Reason for change	Emissions value (percentage)	Direction of change	Comment
Scopes 1 or 2)	activities			renewable and greenhouse gas-free energy.

CC14.4

Do you engage with any of the elements of your value chain on GHG emissions and climate change strategies? (Tick all that apply)

Yes, our suppliers
Yes, our customers

CC14.4a

Please give details of methods of engagement, your strategy for prioritizing engagements and measures of success

Methods of engagement:

a. Suppliers: PG&E distributes an annual Alliance Sustainability Survey to its top tier suppliers with questions on how they are managing environmental impacts in their operations, including greenhouse gas emissions, energy and water usage, waste, and materials management. Results from the survey are used to generate an Environmental Performance score for each supplier, which is incorporated in recurrent supplier performance scorecard reviews. Each scorecard review is attended by top management from both the supplier and PG&E, driving engagement in the key environmental areas. Additionally, PG&E deepened its focus on supplier capacity building in energy efficiency by initiating the development of an online resource that provides detailed, sector-specific energy efficiency best practice knowledge to suppliers in key sectors. The tool includes self-assessment, measurement, benchmarking, scoring and improvement planning tools. Finally, PG&E recognizes suppliers with outstanding performance in environmental sustainability through a Responsible Supplier of the Year Award.

b. Customers: We work with customers to help them achieve energy savings and greenhouse gas emission reductions through some of the nation's leading programs and incentives for energy efficiency, demand response, and solar installation. These efforts include offering energy efficiency audit and opportunity identification services to commercial customers, financial support to low income residential customers for energy efficiency retrofits, rebates to all parties implementing qualified energy efficiency measures, and helping local governments develop strategies and implementation plans to reduce emissions.

Strategy for prioritizing engagements:

a. Suppliers: We prioritize our strategic suppliers, who represent approximately 60% of the company's spend, for focused attention via the scorecard review process.

We evaluate suppliers against PG&E Supplier Environmental Performance Standards (which incorporate GHG emissions and energy use elements) and use the resulting environmental performance scores to prioritize support. We provide one-on-one coaching with targeted suppliers. Additionally, PG&E undertook a detailed carbon mapping exercise to quantify and rank the greenhouse gas footprint of all products and services procured in our supply chain (excluding contracts for power generation), helping to prioritize sectors with the highest GHG footprint and best opportunity for improvement.

b. Customers: By taking advantage of new technologies to help customers understand, actively manage, and reduce their energy use, we enable them to make more informed decisions. We are increasingly reaching out to customers through a growing variety of channels, including mobile phones, email, web, and social media channels. We provide the vast majority of customers with access to hourly data on their energy use, and a comparison of their use to similar homes in their neighborhoods. Within My Energy (an online portal), customers can see how and when they use energy and find energy saving tips and information on our energy efficiency programs and incentives. PG&E's Business Energy Checkup enables small and medium business customers to find energy-saving ideas and incentives to lower their operating costs. And Share My Data allows customers to share their energy usage data with select third party service providers to determine if energy products and services such as solar installations may be right for them.

Measures of success:

a. Suppliers: We use our Supplier Environmental Performance Standard to generate environmental performance scores for suppliers. Our 2016 target was for at least 70% of top-tier suppliers to achieve a score of three or higher on a five-point scale. We exceeded that goal, with 74% of suppliers meeting the standard. PG&E also utilizes the supplier response rate to the Annual Alliance Sustainability Survey, which, for the sixth year in a row, was 100% in 2016.

b. Customers: We measure a composite score of customer satisfaction, which serves as one of the metrics we use for determining performance-related compensation. In 2016, we achieved a score of 76.1. We also benchmark with customers of best-in-class performing utilities from J.D. Power's Customer Satisfaction Index. This helps us set our goal each year, as we aim to achieve top quartile performance in customer satisfaction.

CC14.4b

To give a sense of scale of this engagement, please give the number of suppliers with whom you are engaging and the proportion of your total spend that they represent

Type of engagement	Number of suppliers	% of total spend (direct and indirect)	Impact of engagement
Active engagement	100	60%	As part of PG&E's Supplier Environmental Performance Standards, top tier suppliers are required to: A) Implement an environmental management system that tracks the following environmental impacts: greenhouse gas emissions (Scope 1 and 2), energy, water, waste and compliance with environmental requirements; B) Set voluntary reduction goals; and C) Publicly report their annual performance against goals. To score suppliers against the Supplier Environmental Performance Standards, as well as to identify areas for improvement, PG&E uses suppliers' responses

Type of engagement	Number of suppliers	% of total spend (direct and indirect)	Impact of engagement
			to an annual Sustainability Survey. Suppliers' scores are discussed in recurrent supplier performance scorecard reviews, in which "environmental performance" is one of 6 metrics covered (others include safety, cost, quality and operations, client satisfaction, and diversity). Senior leadership from various stakeholder groups, including PG&E Supply Chain, line of business, and supplier companies, are present at these meetings. Feedback on suppliers' environmental performance is discussed at the meeting as well as corrective action steps. PG&E's Supplier Sustainability team provides one-on-one coaching to suppliers to identify gaps and help them enhance their environmental performance.

CC14.4c

Please explain why you do not engage with any elements of your value chain on GHG emissions and climate change strategies, and any plans you have to develop an engagement strategy in the future

Further Information

Module: Sign Off

Page: CC15. Sign Off

CC15.1

Please provide the following information for the person that has signed off (approved) your CDP climate change response

Name	Job title	Corresponding job category
Geisha J. Williams	Chief Executive Officer and President of PG&E Corporation	Chief Executive Officer (CEO)

Further Information**Module: Electric utilities****Page: EU0. Reference Dates**

EU0.1

Please enter the dates for the periods for which you will be providing data. The years given as column headings in subsequent tables correspond to the "year ending" dates selected below. It is requested that you report emissions for: (i) the current reporting year; (ii) one other year of historical data (i.e. before the current reporting year); and, (iii) one year of forecasted data (beyond 2021 if possible).

Year ending	Date range
2015	Thu 01 Jan 2015 - Thu 31 Dec 2015
2016	Fri 01 Jan 2016 - Sat 31 Dec 2016

Further Information**Page: EU1. Global Totals by Year**

EU1.1

In each column, please give a total figure for all the countries for which you will be providing data for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emission intensity (metric tonnes CO2e/MWh)
2015	7691	30719	2871840	0.093
2016	7691	33525	2261257	0.067

Further Information

Page: EU2. Individual Country Profiles - United States of America

EU2.1

Please select the energy sources/fuels that you use to generate electricity in this country

- Oil & gas (excluding CCGT)
- CCGT
- Nuclear
- Hydro
- Other renewables
- Other

EU2.1a

Coal - hard

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)

EU2.1b**Lignite**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
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EU2.1c**Oil & gas (excluding CCGT)**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	163	406	186144	0.458
2016	163	368	171695	0.467

EU2.1d**CCGT**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO ₂ e)	Emissions intensity (metric tonnes CO ₂ e/MWh)
2015	1237	6887	2685682	0.390
2016	1237	5345	2087172	0.390

EU2.1e

Nuclear

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
2015	2240	18525
2016	2240	18931

EU2.1f

Waste

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
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EU2.1g

Hydro

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
2015	3896	4568
2016	3896	8554

EU2.1h

Other renewables

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)
2015	152	319
2016	152	322

EU2.1i**Other**

Please complete the following table for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	3	14	6676	0.001
2016	3	5	2390	0.462

EU2.1j**Solid biomass**

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	0	0	0	0
2016	0	0	0	0

EU2.1k

Total thermal including solid biomass

Please complete for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	1400	7293	2871826	0.394
2016	1400	5713	2261257	0.396

EU2.1I**Total figures for this country**

Please enter total figures for this country for the "year ending" periods that you selected in answer to EU0.1

Year ending	Nameplate capacity (MW)	Production (GWh)	Absolute emissions (metric tonnes CO2e)	Emissions intensity (metric tonnes CO2e/MWh)
2015	7691	30719	2871840	0.093
2016	7691	33525	2261257	0.067

Further Information

Page: EU3. Renewable Electricity Sourcing Regulations

EU3.1

In certain countries, e.g. Italy, the UK, the USA, electricity suppliers are required by regulation to incorporate a certain amount of renewable electricity in their energy mix. Is your organization subject to such regulatory requirements?

Yes

EU3.1a

Please provide the scheme name, the regulatory obligation in terms of the percentage of renewable electricity sourced (both current and future obligations) and give your position in relation to meeting the required percentages

Scheme name	Current % obligation	Future % obligation	Date of future obligation	Position in relation to meeting obligations
USA state scheme – California	23%	33%	2020	PG&E was required to deliver an average of 20% of its electricity from Renewable Portfolio Standard-eligible resources over the 2011 to 2013 period. This increased to ~23% on average over the 2014 to 2016 period and ~30% on average over the 2017 to 2020 period. PG&E must then deliver at least 33% of its electricity from RPS-eligible resources each year after 2020 and 30% by 2030. By the end of 2016, 32.8% of the electricity PG&E delivered to its customers came from RPS-eligible resources. The majority of this total came from contracts with third-party renewable energy companies. PG&E is on track to meet its RPS targets in 2020 and 2030.

Further Information

Page: EU4. Renewable Electricity Development

EU4.1

Please give the contribution of renewable electricity to your organization's EBITDA (Earnings Before Interest, Tax, Depreciation and Amortization) in the current reporting year in either monetary terms or as a percentage

Please give:	Monetary figure	%	Comment
Renewable electricity's contribution to EBITDA	48527012		Only PG&E owned solar photovoltaic facilities contribute to EBITDA. PG&E has long-term contracts with third parties for renewable energy to meet RPS obligations, which are passed through to customers without mark-up, and therefore do not show up in EBITDA. Total expenditure on renewable resource procurement in 2016 was \$2.5 billion.

EU4.2

Please give the projected contribution of renewable electricity to your organization's EBITDA at a given point in the future in either monetary terms or as a percentage

Please give:	Monetary figure	%	Year ending	Comment
Renewable electricity's contribution to EBITDA	58119048		2017	Only PG&E owned solar photovoltaic facilities contribute to EBITDA. PG&E has long-term contracts with third parties for renewable energy to meet RPS obligations, which are passed through to customers without mark-up, and therefore do not show up in EBITDA. Total expenditure on renewable resource procurement is expected to be \$2.4 billion in 2017.

EU4.3

Please give the capital expenditure (capex) planned for the development of renewable electricity capacity in monetary terms and as a percentage of total capex planned for power generation in the current capex plan

Please give:	Monetary figure	%	End year of capex plan	Comment
Capex planned for renewable electricity	0	0.00%	2017	PG&E has exceeded its requirement for procuring renewable resources and is on track to meet 33% RPS by 2020. PG&E anticipates fulfilling its future RPS obligations primarily through

Please give:	Monetary figure	%	End year of capex plan	Comment
development				power purchase agreements rather than capital expenditures for PG&E-owned projects.

Further Information

CDP 2017 Climate Change 2017 Information Request