DOCKETED	
Docket Number:	21-IEPR-01
Project Title:	General Scope
TN #:	236857
Document Title:	PG&E Comments - PG&E Comments on 2021 IEPR Scoping Order
Description:	N/A
Filer:	System
Organization:	PG&E
Submitter Role:	Public
Submission Date:	2/19/2021 4:35:57 PM
Docketed Date:	2/19/2021

Comment Received From: PG&E
Submitted On: 2/19/2021
Docket Number: 21-IEPR-01

PG&E Comments on 2021 IEPR Scoping Order

Additional submitted attachment is included below.

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February 19, 2021

Commissioner Andrew McAllister
California Energy Commission
Integrated Energy Policy Report, IEPR, Scoping Order for 2021
Docket Number 21-IEPR-01
1516 9th Street
Sacramento, CA 95814

Re: Pacific Gas and Electric Company Comments on the Draft Scoping Order for the 2021 Integrated Energy Policy Report (IEPR) (Docket Number 21-IEPR-01)

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide feedback on the 2021 IEPR Scoping Order released on February 5, 2021.

PG&E supports the collection of information of various aspects of the energy demand forecast and understands that the purpose of the scoping order is to improve the California Energy Commission's (CEC) energy supply and demand forecast and state decarbonization efforts.

PG&E appreciates the CEC's explicit consideration of key trends that will impact, and perhaps disrupt, California's energy policy and planning efforts in coming years. California's ambitious decarbonization goals are critical efforts that require enhanced study and planning as proposed in this Scoping Order. It is equally critical to account for impacts to the energy system resulting from climate-change-driven natural hazards that are the new normal in California. PG&E is heartened by the CEC's intent to move the planning horizon for load forecasting to 15 years and consider the effects climate change may have on future natural gas and electric demand.

The energy demand scenario analysis planned as part of the 2021 IEPR is a similarly necessary and exciting innovation that speaks to California's dynamic energy future. PG&E underscores that effective energy sector planning from this point forward must account not only for expected policy and market change but also the impacts of climate change in California, or these exercises run the risk of planning for a future that exists only on paper. Finally, when considering the impacts of climate change on the energy system, PG&E encourages the CEC to consider the guidance issued to the investor-owned utilities (IOUs) by the California Public Utilities Commission (CPUC) regarding appropriate assumptions for climate change adaptation planning.

In the background section of the Scoping Order (page 3), the CEC proposes two enhancements to the energy demand forecast. PG&E offers the following comments to this section:

- *Extend the forecast timeframe to 15 years to coincide with several state goals that are planned for 2035.*

As stated above, PG&E supports the extension of the forecast timeframe to 15 years. This extended range will capture more of the acceleration of activity in building electrification, clean energy transportation, and decarbonization of sectors that will be difficult to electrify such as industrial and large commercial. The 15-year outlook will also help to track the substantial impact of these measures on electricity and natural gas demand by 2035. At the same time, forecasts beyond that time frame, especially for gas, require specific scenario assumptions to be meaningful. Very long-term forecasts face a "chicken and egg" problem where forecasts depend on policy scenarios, but policies are shaped by forecasts. Such forecasts, if used at all, need to be accompanied by clear statements of the regulatory and environmental context assumed at the state, federal, and perhaps even global levels.

- *Improve methodologies to better quantify and predict the likelihood, severity, and duration of future extreme heat events.*

PG&E notes that the CPUC has instructed California's energy utilities to use specific climate models and scenarios for planning for medium and long-term climate impacts, and PG&E encourages the CEC to use similar parameters for understanding and forecasting the likelihood of future extreme heat events. CPUC Decision 19-10-054 of the Order Instituting Rulemaking (R.18-04-019) on climate adaptation for utilities establishes the criteria for data or models that energy utilities may develop to understand medium- and long-term climate impacts. This would apply to temperature projections. CPUC Decision D. 19-10-054 identifies the most recent California statewide climate change assessment as a source for climate scenarios and projections when analyzing climate impacts, including temperature projections. PG&E encourages the CEC to align its own analysis with these standards. Currently, California's fourth climate change assessment contains the most up-to-date information on climate risk for the state, and future global climate models and related California-specific studies may bring to light new information that should be used in this and other studies. In line with the CPUC Decision (D. 19-10-054), future temperature projections should be based on the business-as-usual representative concentration pathways 8.5 scenario, in which greenhouse gas (GHG) emissions continue a business-as-usual trajectory.

- *In addition to the forecast, beginning with 2021 IEPR, CEC will further the development of demand scenario analyses to help address the growing magnitude of uncertainty in long-term energy planning due to economy-wide decarbonization efforts*.

PG&E supports the CEC effort to perform scenario analysis to help address the growing magnitude of uncertainty in long-term energy planning due to economy-wide decarbonization efforts and changing operating conditions resulting from climate change. This effort will assist in coordination with the proposed development of exploratory transportation demand scenarios to assess the energy impacts of state goals, proposed policies, and other potential market changes. The transformation of the transportation sector will have enormous impacts not only on the form of energy that will fuel the transportation sector but also on how energy will be distributed and delivered to end uses. Scenario analyses will further provide clarity on potential expansion of existing policy and new policy levers to accomplish electric system decarbonization. The scenario analyses proposed by the CEC will help capture the future states of the world that explicitly forecast energy and associated delivery systems and provide a better understanding of not only the GHG and reliability aspects of future systems, but also overall costs that need to be borne by customers.

Four major topics in the CEC Scoping Order

The CEC proposes four major topics in the Scoping Order (starting on page 4). The four topics include energy reliability; the evolving role of gas pipeline; building decarbonization and energy efficiency; and energy demand. PG&E provides the following comments on each proposed topic of the 2021 IEPR.

1- Electric Reliability Over the Next Five Years

PG&E provides the following comments on the proposed *areas of discussion* within the energy reliability topic:

- *In coordination with CPUC, California Independent System Operator (CAISO) and other statewide Balancing Authorities (BAAs), the 2021 IEPR will discuss opportunities to improve electric reliability in California ISO territory as well as California as a whole with specific focus over the next five years.*

  PG&E supports the proposed Scoping Order's focus on electric reliability over the next five years. With the planned retirements of once-through cooling resources[1] in Southern California (2800 MW) and of the Diablo Canyon power plant (2300 MW) in Northern California, the CAISO system will need new resources to maintain reliability.

  In addition, as reported in the Root Cause Analysis Report[2], *"in transitioning to a reliable, clean, and affordable resource mix, resource planning targets have not kept pace to ensure sufficient resources that can be relied upon to meet demand in the early evening hours."* Therefore, new resources will be required to replace the retirements as well as to ensure sufficient energy resources are available to meet the changing demand of the system with an increased mix of variable resources.

  PG&E considers that the current scope of work included in the electric reliability section of the CEC Scoping Order is reasonable. In addition to the current scope, PG&E suggest the following additions to maximize the benefits:

  - Calibration of hourly load forecast shapes (managed net load and load modifiers): Since the CPUC and the CAISO use the CEC IEPR forecast (peak and hourly shapes) for reliability planning, the 2021 IEPR forecast will play a key role in ensuring that adequate new capacity is being planned to meet demand (capacity and energy). The scope of the 2021 IEPR demand forecast includes efforts to "*improve methodologies to better quantify and predict the likelihood, severity, and duration of future extreme heat events.*" PG&E asks the scope to be expanded to include a calibration of hourly shapes (managed net load and load modifiers) using recent year (2018-2020) historical data and other updates necessary to the hourly shapes based on the improved methodologies for predicting the likelihood for extreme heat events.

  - Summary of resource adequacy planning metrics used by load serving entities (LSEs) and resulting reserve margins in California: A summary of resource planning targets and the available reserve margins will provide useful insights in how LSEs are planning to meet reliability and whether there are opportunities within California to maximize benefits from resource diversity.

[1] https://www.waterboards.ca.gov/water_issues/programs/ocean/cwa316/docs/consum.pdf
[2] Final Root Cause Analysis Report: http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf

2- Evolving Role of Pipeline Gas: Trends and Outlook

PG&E offers the following comments on the key proposed *topics of focus* within the evolving role of pipeline gas:

- *Assess the outlook for gas use in California both in the 10-year and 25-year planning horizons across key sectors through development and refinements to gas demand forecasts and scenarios, to accurately reflect the impacts of decarbonization policies and goals of the state.*

  Over the next 10-25 years, refinement in the accuracy of localized gas demand forecasts will be a key component in planning for the transformation of the gas system. Localized demand forecasting, rather than system-level forecasting, will aid in better planning at a local level and allow gas utilities to more efficiently plan different parts of the gas system. Understanding where load decline is most likely to occur, for example, can help inform the type and scope of gas system projects required to safely meet customer needs.

  As gas system throughput declines, the cost of the existing gas system will be spread among fewer customers and across less load. The shift is likely to put upward pressure on gas rates, creating an affordability challenge for some remaining customers who are unwilling or unable to depart from the gas system. Reducing the cost of the existing system, including by targeting some gas facilities for decommissioning as an alternative to maintenance or replacement, could help to mitigate some of this challenge. Local forecasts, rather than system forecasts, could assist efforts to identify where planned retirement might be feasible and align with affordability goals.

  In addition, there are opportunities for remaining portions of the gas system to play a key role in transporting clean renewable gas (renewable natural gas (RNG) and hydrogen) to segments of the transportation and industrial sectors, and large commercial customers that may find it difficult to electrify. Also, power-to-gas (hydrogen energy storage) will leverage the gas system to store energy for longer periods and discharge energy for longer duration than current battery technology allows. This technology could take advantage of excess renewable generation during spring and summer to store for other periods when renewable generation is not able to meet energy demands.

  Therefore, better localized demand forecasting will be beneficial to help plan for each of these two scenarios (reduction in demand to core customers; increase in demand to other sectors).

  PG&E also urges the CEC to consider how climate change will impact the use of natural gas in California, which is relevant to both the 10- and 25-year planning horizons. Expected changes in ambient temperature may have significant impacts on the timing and amount of gas usage.

- *In coordination with CPUC, begin the discussion and development of necessary analytical assessments to inform how the state can potentially reduce, repurpose, and transform its pipeline gas infrastructure as the demand for fossil gas declines. Key areas of focus include gas prices, gas system costs, impacts on rates, and electric and gas system reliability*.

  PG&E agrees that the analytical tools can help to assess how the utilities can reduce, repurpose, and transform pipeline gas infrastructure. Predictive analytical tools themselves are insufficient to drive gas system decisions but may be able to generate candidates for further engineering and feasibility analysis.

- *Explore the role of renewable gas, hydrogen, and other zero-carbon alternatives such as engineered carbon removal (ECR) in a low carbon future, to replace and/or complement the use of fossil gas with focus on:*

identification of the most suitable applications; availability and pricing; and opportunities to repurpose existing infrastructure to integrate the usage of renewable gas, hydrogen, and ECR.

PG&E views renewable gases (such as RNG and Hydrogen) playing a critical role in a decarbonized future. The carbon intensity of the gas system will decline over time as more renewable gas is safely blended. In addition, the gas system will provide an important delivery system for transporting renewable gas to other sectors (such as industrial, large commercial, and transportation) that will be challenging to electrify.

In the longer term, hydrogen will likely play a critical role in several areas. First, blending hydrogen into the natural gas pipeline will provide key decarbonization benefits by displacing fossil natural gas. PG&E wants to ensure that blending hydrogen into the system can be done safely and with system integrity top of mind. Second, the gas system can be used as a long-term and long-duration energy storage mechanism by taking excess renewable energy and converting water to hydrogen via electrolysis. Finally, hydrogen will be a component in the heavy-duty transportation market, with the existing (or modified) portions of the gas system being utilized as a delivery mechanism for the fuel; especially where co-location of fueling stations near hydrogen production facilities might not be feasible.

In the short-to intermediate-term, RNG can be utilized as a transportation fuel to help bridge the gap to California's longer-term, zero-emission-vehicle standards.

3- Building Decarbonization and Energy Efficiency

PG&E offers the following comments on the proposed *discussion* within the building decarbonization topics:

- *Residential and commercial building decarbonization strategies, as well as strategies to decarbonize industrial and agricultural sectors.*

  PG&E recommends that the CEC include any assessment of fuel substitution potential in energy efficiency (EE) that is expected to be included in the 2021 EE Potential and Goals Study. PG&E urges the CEC to underscore the value of all-electric buildings in programs and targets, and to advance strategies that prioritize all-electric outcomes that avoid the need to incur gas system costs not aligned with California's policy goals.

- *An update on targets towards a statewide doubling of energy efficiency, as required by SB 350.*

  As progress towards a statewide doubling of energy efficiency is updated, PG&E recommends an informative discussion of the need to include GHG reduction and reliability attributes associated with achieved energy efficiency levels. The potential contribution of energy efficiency to decarbonization and electric system reliability is increasingly dependent on the time when energy efficiency is achieved. With increased solar resources in the generation portfolio, energy efficiency during certain times of the year and the day may have little or no contribution to GHG reduction. Such information and discussions may lead to standards and incentive programs that would improve these two other dimensions typically at the cost of reducing pure energy efficiency.

- *Analysis of equity considerations related to decarbonization to support equitable decarbonization measures.*

  PG&E recommends that equity be considered holistically, and that analyses take a broad view of what it means to ensure equitable access to the benefits of decarbonized buildings. One key example is ensuring that the shift to decarbonized buildings does not create an equity challenge as the cost of the existing gas system

is shifted to those customers unwilling or unable to reduce or eliminate their gas use. Even with intentional efforts and robust programs, it will take time for all vulnerable customers to shift away from gas. In order to not leave anyone behind during this transition period, PG&E recommends that the CEC include equity plans to mitigate the impact of the cost shift and minimize the energy bill impact of departing gas load.

- *Strategies to increase innovative financing approaches – removing the upfront costs barriers – for the comprehensive retrofits of existing buildings that support California's decarbonization goals, including expanded financing opportunities for renters and low-income Californians, to be done in collaboration with CPUC initiatives (for example, CPUC Rulemaking 20-08-022).*

  PG&E supports financing approaches to support the deployment of decarbonization technologies and is engaged with stakeholders. PG&E notes that even with innovative financing approaches, many customer projects will need subsidization to ensure that the repayment does not become a burden for customers.

- *The Building Energy Efficiency Standards 2022 Update and future updates.*

  PG&E suggests the 2021 IEPR address the following topics as part of the building energy efficiency standards:

  - Existing Building Performance Standards: California's pathway to achieving deep decarbonization must address existing buildings. An estimated two-thirds of today's buildings will still exist in 2050. Washington, D.C., New York City, Washington State, and St. Louis have established the nation's first existing building performance standards (EBPSs). EBPSs utilize benchmarking data to set standard performance targets for different building types. The strategy was included in the Energy Commission's draft 2019 *Energy Efficiency Action Plan*, where it stated a goal to "develop a new program to require retrofits in poorly-scored buildings under the benchmarking and disclosure program, similar to recently approved program in New York City (Local Law 97 of 2019)." The 2021 IEPR process can help to further develop this strategy for California. The IEPR approach should reflect the value of all-electric buildings.

  - Embodied energy and locational efficiency: California has made great strides on reducing energy and carbon associated with "operational" energy. However, a second major component is the "embodied energy" or "embodied carbon" which comes from the materials manufacturing and construction phases of the building project. To achieve carbon neutrality, California should start exploring strategies in the 2021 IEPR to incorporate embodied energy and carbon, and locational efficiency into decisions related to building code development.

  - Low global warming potential (GWP) refrigerants: Most air conditioning, refrigeration, and heat pump technologies utilize hydrochlorofluorocarbons or hydrofluorocarbons (HFCs) as refrigerants. These gases have GWPs that are thousands of times higher than carbon dioxide. Without concerted effort by policymakers and the building industry, these potent gases could account for 9-19% of climate pollution by 2050. While low-GWP technologies exist, they face market adoption barriers and require updated safety and building standards. PG&E suggests that the 2021 IEPR include discussions on code updates and agency coordination (e.g., CARB, CEC, CPUC) required for an energy efficient and low-GWP future.

- *Needed data and analytical tools to enhance assessments and measure the progress of decarbonization of California's building stock.*

The CEC and some municipalities require large commercial and multi-family facilities to report annual data for benchmarking purposes. PG&E, through its whole building benchmarking program (WBBP), supports that reporting via data sharing through the Environmental Protection Agency (EPA)'s Energy Star Portfolio Manager (ESPM) Tool mandated under AB 802, including fossil gas (natural gas) and electric grid usage data. PG&E asks the CEC to clarify if under this 2021 IEPR Scoping Order the CEC intends to use ESPM as a data input and requires additional data via this method or an alternate mechanism, to meet these requirements.

PG&E recommends that if the CEC is also looking at metrics/reports to support decarbonization analysis, then the CEC consider an integrated data and metrics strategy both to leverage existing work and to maximize the efficiency of any data collection/analysis/reporting for building decarbonization. Coordination with the CPUC may also be useful to avoid duplication of effort. Efforts in this area include:

- The existing CEC building benchmarking program, which has created both an existing infrastructure and valuable lessons learned.
- The annual report on aggregated building decarbonization data detailed in CPUC Resolution E-5105.
- The CPUC's CATALENA Project, which is still defining its objectives for a statewide energy usage database, but which has identified the incorporation of parcel data as a valuable, but potentially very costly, option.

PG&E recommends the early incorporation of data governance and data privacy experts from both the IOU and other relevant stakeholders into any data collection, data use, and data publication work associated with building decarbonization. The use cases for building-level information are subject to numerous data privacy rules and regulations, as well as potentially the California Consumer Privacy Act; therefore, it may be important to consider these in parallel with any technical discussions of those use cases.

In addition, PG&E notes that the CPUC is currently considering if any changes should be made to the primary objective(s) of energy efficiency (EE) and, if so, what the new primary objectives and key metrics should be. This could have a fundamental impact on the EE, and PG&E recommends that the CEC incorporate any changes made by the CPUC to EE objectives and/or metrics when developing the 2021 IEPR. Aligning program objectives and assessments with state policy priorities is an essential and urgent task.

4- Energy Demand

PG&E provided comments on energy demand on pages one and two of these comments and reiterates those comments in this section. Please find additional specific comments under the CEC proposed *energy demand scenarios* below:

- *CEC Staff proposes to initiate a process to develop economy-wide energy demand scenarios through a "what if" analysis geared towards policy compliance and aspirational goal setting. Staff will explore new programs, policies, potential market changes, and other demand-side strategies that are (1) needed to meet California's long-term decarbonization goals, and (2) outside the scope of the ten-year energy demand forecast.*

  Depending on what policy recommendations are developed, PG&E asks the CEC if under this 2021 IEPR Scoping Order the CEC intends to use the EPA's Energy Star Portfolio Manager (ESPM) Tool, or if there is a need for additional data or a new delivery mechanism. Additionally, as these new policies are adopted, consideration will have to be given to how the various stakeholder-municipality programs may be impacted as well.

PG&E reiterates that the energy demand scenario analysis planned as part of the Scoping Order is a necessary addition. PG&E emphasizes that effective planning in the energy sector requires policy considerations, market change implications, and the incorporation of the impacts of climate change in California. The proposed scenario analyses will help understand how policies impact energy demand as the state determines strategies to meet the long-term decarbonization goals. Finally, when considering the impacts of climate change on the energy system, PG&E encourages the CEC to consider the guidance issued to the IOUs by the CPUC regarding appropriate assumptions for climate change adaptation planning.

PG&E appreciates the CEC including analysis and information developed in other proceedings at the CEC and by other agencies, and the opportunity to comment on this. Please do not hesitate to contact me if you have any questions.

Sincerely,
Licha Lopez