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PG&E Comments on 2017 Draft IEPR

Additional submitted attachment is included below.

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**POSTED ELECTRONICALLY TO
DOCKET 17-IEPR-01**California Energy Commission
Dockets Office, MS-4
Docket No. 17-IEPR-01
1516 Ninth Street
Sacramento, CA 95814-5512Re: Docket 17-IEPR-01: Pacific Gas and Electric Company Comments on the Draft 2017 Integrated Energy Policy Report

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the Draft 2017 Integrated Energy Policy Report (IEPR) (Draft Report or Draft). The IEPR is the leading energy policy report for the State of California and informs energy policy discussions among elected officials, public agencies, stakeholders, and the public. PG&E broadly supports the findings and recommendations of the 2017 Draft Report and appreciates the California Energy Commission's (CEC) continued focus on climate resiliency and the State's greenhouse gas emission reduction goals. PG&E provides detailed comments, organized to mirror the structure of the Draft Report, including the following key points:

- Carbon reduction goals should also consider affordability;
- Renewable Portfolio Standard (RPS) goals need to be considered on an individual-LSE basis;
- Demand response (DR) should be differentiated as a tool to enable other behind-the-retail-meter distributed energy resources (DERs);
- The proposed concept of a Gas Imbalance Market is highly problematic; and,
- The State should continue to provide flexible opportunities and incentives to support the development of renewable natural gas.

PG&E looks forward to continuing to work with staff until the adoption of 2017 IEPR.

I. Primary Policy Drivers are Appropriately Focused on Carbon Reduction, and Should Consider Affordability

PG&E applauds the CEC's work on developing a well-written and thoughtful IEPR that successfully addresses this year's focus on greenhouse gas (GHG) emissions in the electricity and transportation sectors.¹ However, PG&E recommends that the broad climate theme be coupled with efforts to achieve GHG reductions affordably. The report touches on cost-effective planning in discussions of the Integrated Resource Plan (IRP),² however, the report characterizes the IRPs as complementary to existing cost

¹ California Energy Commission Staff. 2017. 2017 Integrated Energy Policy Report. California Energy Commission. Publication Number: CEC-100-2017-001-CMD, 14.

² *Id.* at 25.

controls in energy efficiency (EE) and renewable energy (RE) policies. While EE has a statutory requirement to be cost-effective, behind-the-meter renewable energy policies do not have this requirement and have historically required customers to pay for the above-market costs. This issue is particularly relevant for the state's net energy metering (NEM) policy which the California Public Utility Commission's (CPUC) recent IRP analysis found to be significantly more expensive than utility-scale options that achieve the same emissions reductions.³ PG&E therefore recommends making affordability a central theme of the IEPR and its recommendations to reduce GHG emissions.

PG&E also agrees with the CEC's characterization of the challenges of executing on environmental goals in the midst of a changing market structure,⁴ well encapsulated by the following statement: "This raises important questions about how will roles traditionally filled by the IOUs be met, including who will make the investments needed in energy infrastructure, energy efficiency, research and development, and energy services for low-income consumers. While markets and technology innovations evolve quickly, regulatory mechanisms do not. Policy makers and regulators need to think ahead about how to ensure that California's efforts are effective in this changing market."⁵ Accordingly, PG&E supports the recommendation that the CPUC and the CEC should continue to address policy issues associated with the decentralization of the electricity sector.

II. Implementing the Clean Energy and Pollution Reduction Act

PG&E recognizes the importance of Senate Bill (SB) 350 (De León, Chapter 547, Statutes of 2015) and supports the CEC's continued hard work and leadership to advance and implement the Bill's numerous clean energy and pollution reduction recommendations and directives. Among SB 350's many facets, PG&E provides specific feedback on select elements below.

A. Renewable Portfolio Standard Clarifications

PG&E is proud of its efforts to achieve the Renewable Portfolio Standard (RPS) targets and the progress across all load-serving entities in meeting these aggressive state targets. However, it is incorrect and misleading for the CEC to claim that publicly-owned utilities (POUs) have successfully met this target.⁶ Although the POUs achieved, on a collective basis, 20.6% RPS in Compliance Period 1, 16 POUs did not meet the target on an individual basis. Given that the RPS obligation is placed on each individual load serving entity, including all POUs, investor-owned utilities (IOUs), Community Choice Aggregation (CCAs), and electric service providers (ESPs), statements to the effect that collectively the POUs met the target are misplaced. If the State is going to successfully meet the RPS goals as directed by SB 350, transparency on the progress of each party toward the target is crucial and such broad statements mask the true progress toward the goal. The progress made by those POUs who met and exceeded their RPS obligations should not preclude the remaining POUs from doing their part to help the state meet its goals. Accordingly, PG&E recommends the statement about collective POU RPS achievement be stricken.

Additionally, on page 61, language refers incorrectly to "retail sellers" as the parties responsible for RPS compliance. PG&E requests that the second paragraph on page 61 be modified to say "Among the

³ High rooftop solar levels would cost utility customers over \$1 billion/year more than a combination of the low rooftop case and utility-scale option making up the difference; CPUC, see Administrative Law Judge's Ruling Seeking Comment on Proposed Reference System Plan and Related Commission Policy Actions, Attachment A: Proposed Reference System Plan, slide 186, <http://cpuc.ca.gov/irp/proposedrsp/>

⁴ CEC Staff, *supra* at 30-32.

⁵ *Id.* at 7.

⁶ *Id.* at 66.

provisions, SB 350 increased the RPS target to 50 percent by 2030 for all ~~retail-sellers~~ **load-serving entities**, including investor-owned utilities (IOUs), electricity service providers, CCAs, and publicly owned utilities.” This revision reflects the correct statutory language on who must comply with the RPS.

B. Doubling of Energy Efficiency Clarifications

PG&E generally agrees with the high-level recommendations for SB 350 energy efficiency doubling goals presented in the Draft Report and presents the following clarifications and suggestions:

i. Enhance the Workforce Training Recommendation

The recommendation to “Enhance workforce training” should make clear that the contractor requirements of customer-funded resource programs are best achieved by existing governmental agencies setting appropriate standards for participation. This includes agencies such as the CEC for Building Standards, the California State Licensing Board, and the California Architects Board, among others.

Any efforts to improve installation practices through more rigorous standards and training requirements should be led by non-financially interested actors, such as governmental agencies that establish the legal requirements for performing such work (e.g., California State Licensing Board).

For example, a qualification and standard for participation in PG&E's HVAC Quality Installation/Quality Maintenance program is that participating technicians be journeymen with more than five years of experience or apprentices currently enrolled in or completing an apprenticeship program. Additional workforce requirements may be built into the design of potential programs, but these requirements should be evaluated on a program-by-program basis and consider whether the requirements are appropriate to meet program goals in a cost-effective manner.

ii. Enhance the Recommendation to Pursue Additional Energy Savings from the Agricultural and Industrial Sectors

Suggested enhancement:

Work with the CPUC, utilities, other state and local agencies, and stakeholders to identify and pursue additional energy savings from the agricultural and industrial sectors. **This effort should carefully consider existing and potential new methods for establishing clear baselines and free ridership determinations in these sectors such that programs and projects will yield cost effective net incremental savings.** [...]

Energy efficiency rebate projects and programs in the industrial, food processing, and agricultural sectors are often hindered by controversy associated with baseline selection and free-ridership. In short, there is neither clarity nor consensus on what measures customers in these sectors would implement absent energy efficiency programs. The CEC should update the food processor, industrial, and agricultural recommendations to note that establishing standard practice baselines and overcoming challenges associated with evaluated free-ridership in those sectors are keys to success in this sector in addition to identifying technology needs.

iii. Modify the Building Envelope Retrofit Solution Recommendation.

Suggested modification:

Improve the efficiency and comfort of existing homes with building envelope retrofit solution incentives. ~~Apply the high efficiency lightbulb incentive model to building envelope retrofits.~~ These incentives could be coordinated with FlexAlert marketing to offer consumers a meaningful way to permanently improve the efficiency of their home, improving the predictability of communitywide energy savings compared to relying solely on behavior changes in real-time.

The building envelope retrofit solution recommendation should be updated to remove the comparison to the high-efficiency lightbulb incentive model. This is an inappropriate comparison, given screw-in lightbulbs and building envelope retrofits could not be any more different. One is easily achieved by any individual in fewer than three minutes, while the other requires professionals or highly capable consumers with significant training and effort to install properly.

PG&E agrees that improving building envelope efficiency is an important component of achieving an overall doubling of energy efficiency. PG&E currently offers incentives for the installation of building envelope improvements through Energy Upgrade California (deemed and advanced) and there are additional building envelope incentives currently slated to be offered in PG&E's new Residential Pay for Performance Program.

III. Increasing the Resiliency of the Electricity Sector

Chapter 3 of the Draft Report covers an expansive array of subjects pertaining to the resiliency of the electric sector. PG&E provides comment on two of those elements of particular importance to efforts currently underway in California.

A. Regional Grid Expansion

PG&E appreciates the Energy Commission's continued support and recognition of the benefits of tighter regional integration between the California Independent System Operator (CAISO) and neighboring balancing area authorities across the West. Currently, the Western Energy Imbalance Market (EIM) continues to expand and provide tangible benefits to PG&E's customers in the form of reduced real-time procurement costs and a reduction in curtailments that would otherwise occur due to solar overgeneration conditions. The EIM is a successful first step in building trust and cooperation among regional partners.

PG&E shares the CEC's belief that much larger benefits will be achieved if and when CAISO is allowed to evolve and transition its structure into a true multi-state regional ISO entity. Efforts toward regionalization have recently stalled over the important threshold question of governance. Ultimately, the creation of new multi-state governance institutions requires trust and goodwill among the players.

PG&E would like to commend Chair Weisenmiller for his leadership and tireless outreach in the regionalization effort. PG&E recommends that the Energy Commission continue to look for opportunities to partner with other sister public agencies, public officials, and regulators around the region to increase the level of trust and cooperation necessary for regionalization to move forward and to explore opportunities for mutual benefit from greater integration.

B. Electric Vehicle Charging

The recommendation on standardized charging equipment should be modified as follows:

Standardize electric vehicle charging equipment to enable resource dispatch. The Energy Commission should work with the CPUC, the CAISO, California Air Resources Board (CARB), and interested stakeholders including charging equipment and vehicle manufacturers to help ~~standardize~~ **lower the cost of grid-integrated charging equipment to better integrate electric vehicles with the grid.**⁷

Standardized communication hardware is not necessarily needed for all use cases. For example, a fleet does not need smart chargers if its system is connected to management software.

IV. Accelerating the Use of DERs

A. Distributed Energy Resources

Chapter 4 appropriately captures the complexity that distributed energy resources (DERs) add to electricity planning and operations and summarizes the important analysis in this area that the CAISO has already completed. Continued collaboration across all agencies and proceedings that touch DERs is crucial and the More than Smart effort has provided a collaborative forum for addressing operational electric transmission and distribution issues.

However, additional effort should be made to distinguish demand response initiatives. While demand response (DR) is one of several DERs identified in the Draft, PG&E stresses that DR is different from other DER end-uses (e.g., energy storage devices or electric vehicles) in the sense that it is a tool for enabling these other behind-the-retail-meter DERs to be dispatched when needed by the grid.

PG&E envisions using DR “...as an enabling platform that transforms end-use loads into grid-responsive loads, rather than tied to specific end-uses.”⁸ For these purposes, DR is in a period of transition. This transition was explored in depth as part of the DR Potential Study undertaken by the Lawrence Berkeley National Laboratory (LNBL), cited in the Draft IEPR.⁹ This study, while analytically rigorous, was, in PG&E’s view, intended to foster discussion in order to spur debate about the future of DR rather than as an input to current planning activities or for making determinations about the success or failure of DR and should be cited with caution.

To address new models of DR, which is an emphasis of the LNBL Study, (i.e., Shift, Shimmy) the CPUC has called for the creation of a working group to develop load shift DR.¹⁰ Similarly, the CAISO’s ESDER Phase 3 Issue Paper¹¹ is also focusing on the development of a “Load Shift” product. Given these ongoing efforts, certain conclusions, such as the limited value of “shed” DR, or overall conclusions about “California having a serious demand response underperformance problem” along with “the underperformance of demand response as a grid-relevant resource is a policy failure in California,” are overreaching, premature, and not fully explained or supported in the Draft.¹² On the other hand, the Draft

⁷ *Id.* at 121.

⁸ PG&E’s Application 17-01-012 (2018-2022), February 17, 2017, p. 1-19.

⁹ CPUC Website for DR Potential Study: <http://www.cpuc.ca.gov/General.aspx?id=10622>

¹⁰ CPUC Decision 17-10-017.

¹¹ CAISO ESDER Phase 3 Issue Paper, September 29, 2017, <http://www.caiso.com/Documents/IssuePaper-EnergyStorageandDistributedEnergyResourcesPhase3.pdf>

¹² CEC Staff, *supra* at 126.

IEPR rightfully identifies important issues that need to be addressed, including the recognition that load-modifying DR (i.e., not integrated into the CAISO market) provides value even if it doesn't count for Resource Adequacy at this time. To this end, CPUC Decision 17-10-017 also established a separate working group to address CAISO market integration issues. Both working groups are targeting Final Reports in the 2019 timeframe. PG&E further elaborates on these important issues under the "Detailed Discussion" portion of this section.

As an over-arching theme, the IEPR should recognize that DR involves significant uncertainties that make long-term planning extremely difficult at this time. The breadth of CCA expansion has been and continues to be significant. PG&E already has 1 million customers under CCA service and expects to have nearly half of its customer base under CCA service by early 2019. Projections have put statewide load transitioning to CCAs at 80%.¹³ Coupled with the implementation of Competitive Neutrality Cost Causation (CNCC),¹⁴ whereby IOUs can no longer offer DR programs where a "similar" offering is provided by a CCA/ESP, the ability of IOUs to offer DR programs to unbundled customers will be significantly constrained. This is a reality that must be considered in long-term policy planning. Accordingly, DR goals and/or targets that are intended to be developed should, at a minimum, consider the load loss IOUs have experienced and will continue to face in the foreseeable future.

Detailed Discussions

i. Pg. 125: "Shed" DR

Issue: The DR Potential Study's initial conclusion that "shed" DR is of "limited" value.

PG&E Response: PG&E previously stated in comments to the CPUC¹⁵ on the DR Potential Study that "shed" DR provides value at the system and local levels. At the system level, there was a lack of stress testing by the DR Potential Study to understand the value of extreme events (i.e., "black swan") that can threaten the entire system. Consequently, this undervalues the benefits of system shed especially in the context of increased uncertainties with renewable intermittency/integration and climate change. Even LBNL agreed that this was a topic worthy of further investigation.¹⁶ Since, the roles of shed, shift, shimmy, and shape are being considered in multiple areas, it would be premature to draw definitive conclusions at this time about shed DR. PG&E recommends this conclusion be modified to reflect that additional study is recommended in this area.

ii. Pg. 126: DR's Underperformance and Broader DR Policy Failure in California

Issue: Statements concluding that California has a "serious demand response underperformance problem" and that "underperformance of demand response as a grid-relevant resource is a policy failure in California."

PG&E Response: These statements, extreme in nature, do not fairly characterize the DR landscape. As PG&E pointed out in its comments to the August 8, 2017 workshop, funding for

¹³ Ex parte notice of PG&E in A.16-06-003, filed January 27, 2017, and ex parte notice of SCE in R.03-10-003, filed January 27, 2017.

¹⁴ CPUC Website for DR Potential Study: <http://www.cpuc.ca.gov/General.aspx?id=10622>

¹⁵ PG&E Comments on the DR Potential Study, Phase 2, January 27, 2017 at p. 2.

¹⁶ LBNL in its response to party comments indicated that this was a "Legitimate" concern that warranted "further study." See Party Comments Matrix dated March 20, 2017, at p. 6.

IOU DR programs has been relatively flat for several DR cycles.¹⁷ As discussed in those comments, the Base Interruptible Program (BIP) has been capped with restrictions placed on marketing. Furthermore, non-residential SmartAC (AC cycling) participation is closed to new enrollments and there have been marketing limitations imposed on the Capacity Bidding Program (CBP). Additionally, while there has been some attrition in participation of IOU-operated DR programs, some of this is attributable to participants moving to third-party Demand Response Providers.

PG&E emphasizes that, as part of the CPUC's strategy to enable a third-party DR market, including the development of Rule 24, the DRAM pilot, and "Click-Through," the CPUC has limited the IOUs' ability to expand their DR programs. While DR has historically been a reliability and peak-shaving product, its role is transitioning to address broader grid and societal needs. This changing role of DR, its ability to serve as a flexible platform, and the entities that can provide DR, should be part of a comprehensive assessment of the success or failure of DR as a program. Many program assessments, including the DRAM pilot, are long overdue;¹⁸ therefore, broad conclusions about the DR market performance are premature. Finally, the requirement that DR programs be integrated into the CAISO's market (May 1, 2017 for RDRR and January 1, 2018 for PDR) has entailed significant effort and resources on the part of the IOUs. In some cases, offerings had to be eliminated due to lack of compatibility with market integration.¹⁹

For these reasons, PG&E requests that the referenced statements be deleted or modified to reflect that changing requirements in the DR space may have affected the results from existing programs. A comprehensive assessment of the roles and requirements for past, present, and projected DR programs should be completed.

iii. Pg. 127: Value of Load Modifying Resource (LMR) Demand Response

Issue: The Draft IEPR indicates that one way to incentivize LMR DR is to enable it to receive local Resource Adequacy (RA) credit.

PG&E Response: PG&E agrees with the CEC that LMR DR has a role to play in supporting the grid and should receive value on par with CAISO market integrated resources that can count for Resource Adequacy (RA). Due to CAISO market integration; there are certain participants that are now stranded/islanded as a result of existing participation rules (e.g., 1 LSE – 1 DRP; and the minimum kW participation thresholds). PG&E views these resources as being comparable to Critical Peak Pricing (CPP) programs (i.e., SmartRate and PDP), which currently receive value in the CEC's load forecast utilized for the yearly RA cycle. Specifically, these resources reduce the overall load forecast thereby reducing the amount of RA that must be obtained. Accordingly,

¹⁷ PG&E Comments to CEC workshop, August 22, 2017 at p. 6, http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-12/TN220852_20170822T151418_Pacific_Gas_and_Electric_Comments_PGE_Comments_Regarding_August.pdf

¹⁸ Decision 16-09-056 specified that DRAM would be evaluated by the CPUC with a June 1, 2018 Resolution determining whether to move from a pilot to a permanent program. http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-12/TN220852_20170822T151418_Pacific_Gas_and_Electric_Comments_PGE_Comments_Regarding_August.pdf

¹⁹ An example is the CBP Day-Off option which could not be supported based on more granular metering data requirements that aren't available.

PG&E recommends that the CEC work with the CPUC to ensure that LMR DR resources besides CPP are incorporated into the CEC's load forecast as part of the RA cycle. Furthermore, it isn't clear why the Draft IEPR singles out "local" over "system" RA. In general, PG&E views LMR DR as having the ability to meet both local and system RA. Therefore, PG&E recommends not distinguishing between local and system RA in this case.

B. Microgrids

Community resilience, as discussed in the Draft, embodies a number of principles that are core to PG&E including public safety and the ability to respond in states of emergency. In light of a growing list of climate-related challenges, we look forward to continuing work with customers and communities to identify ways in which microgrid arrangements can work in concert with the broader system.

PG&E is participating in the multi-agency microgrid commercialization roadmap effort referenced in Chapter 4, and looks forward to providing additional comments in that forum.

Detailed Discussions

i. Pg. 123: "Microgrids are one of the most effective methods to help integrate DER on the grid."

Issue: Statement concluding that microgrids are among the, "...most effective methods," to integrate DER on the grid.

PG&E Response: Is evidence available to support this claim? If not, it is premature to include this statement. Further, islanding capability—which sets microgrids apart from other non-microgrid collections of DERs—is primarily a potential customer resilience benefit, which requires added cost to design, install and operate in both grid-tied mode and in islanded mode during emergency conditions.

ii. Pg. 133, Table 11: "Top 10 California Microgrids in the Navigant Research Q2 Microgrid Tracker"

Issue: Table 11 includes, "Hunters Point Community Microgrid," with reference to 50MW of generation capacity.

PG&E Response: PG&E is unaware of a microgrid of this description in Hunters Point that meets either the CEC²⁰ or DOE²¹ definition of a microgrid. Therefore, PG&E recommends removing this project from consideration in this context.

²⁰ "A group of interconnected loads and distributed energy resources (DER) within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. Additionally, a microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode. Finally, microgrids can also manage customer critical resources and provide the customers, utilities and grid system operators different levels of critical services and support as needed." (CEC GFO 17-302)

²¹ "A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid. A microgrid can connect and disconnect from the grid to enable it to operate in both grid-connected or island-mode." (DOE Microgrid Exchange Group. Available online: <https://building-microgrid.lbl.gov/microgrid-definitions>.)

V. Strategic Transmission Plan and Landscape-Scale Planning

PG&E appreciates the continued efforts of the CEC to advance useful data platforms to assist with landscape-scale transmission planning. However, given recommendations in Chapter 5 regarding efforts to “interconnect in- and out-of-state transmission pathways identified in RETI 2.0...” and “help alleviate the Desert Area Constraint Identified in RETI 2.0” it should be reiterated that the RETI report itself acknowledges its informational, non-regulatory, non-binding status.²² Specific transmission needs must be addressed through regulatory transmission planning venues such as the CAISO’s annual TPP. PG&E respectfully requests that language to this effect be added to the chapter.

VI. Electricity and Natural Gas Demand Forecast

PG&E provided extensive comments on the electricity and natural gas demand forecasts in August 2017. It does not appear that any of PG&E’s comments have yet been incorporated into Chapter 6. Accordingly PG&E incorporates its prior comments here by reference, and provides additional updates below.²³

A. Electric Vehicle (EV) Forecast

The CEC held a workshop on updated EV scenarios on October 9, 2017 and has revised its forecasts. PG&E finds these updates to be more reasonable but information on which scenarios will be used in the “low/mid/high” scenarios has not been included in the draft IEPR. PG&E expects that the revised forecast scheduled for release in November will contain this important information.

B. CCA Forecast

As noted in PG&E’s August comments, the Draft IEPR and the Preliminary CED Electricity Forecast do not capture the impacts of CCAs in PG&E’s service territory. There were six active CCAs providing service in PG&E’s service area as of May 2017 but the Draft IEPR Forecast released in August 2017 shows only two. Moreover, five additional CCAs have filed implementation plans with the CPUC for service in 2018 and many more are in various stages of development. The forecast that PG&E submitted to the CEC for this IEPR cycle reflects existing CCAs as well as a probabilistic estimate of future CCAs. This lack of CCA forecasting significantly impacts PG&E’s bundled customers as the CEC’s CED forecast is used as the reference case in long-term planning proceedings (Long Term Procurement Plan, IRP, Bundled Procurement Plan) and short-term planning proceedings (Year-Ahead Resource Adequacy). In the absence of accurate forecasts of CCA formations, the CEC should recognize and acknowledge that PG&E may need to procure more than it needs for its bundled customers and if the non-bypassable charges like Power Charge Indifference Adjustment (PCIA) are not effective in maintaining indifference, bundled customers’ rates will be adversely impacted. In addition, given the evolving state of retail choice, the CEC should work with all IOUs and CCAs to update forecasts when new CCAs form between IEPR cycles.

²² http://docketpublic.energy.ca.gov/PublicDocuments/15-RETI-02/TN215218_20170110T144711_Pacific_Gas__Electric_Comments_PGE_Comments_on_RETI_20_Final_Dr.pdf

²³ http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-03/TN220826_20170817T142130_Valerie_Winn_Comments_PGE_Demand_Forecast.pdf

C. Peak Forecast

PG&E notes that there have been no updates to the peak forecast since its August 2017 comments and understands that the CEC has not adopted a “peak shift” model as is currently used by PG&E, so it is challenging to compare results. Further, the CEC has not completed its weather-normalization analysis to define the short-term peaks at the IOU system level. This modeling is crucially important in that the CPUC uses these estimates to set year-ahead Resource Adequacy requirements. PG&E would like to see that these results of this analysis are reasonable for use in setting these procurement targets. PG&E expects to continue discussions on these topics in the Demand Analysis Working Group and will provide further comment once the CEC produces results from the short-term peak forecast and the Revised CED in late November and early December 2017.

D. Response to Recommendations

The CEC quotes that legalized cannabis could increase statewide system load by 5%. Industry experts and stakeholders at a February 28, 2017 CPUC workshop discussed that there could be some impacts on statewide energy consumption due to cannabis legalization. However, panelists also emphasized a large degree of forecast uncertainty. This change to California’s economy certainly warrants additional investigation but it should not command significant staff time given other priorities and improvements needed in the load forecast. Accordingly, PG&E supports examining the projected effects of this industry, but recommends a lower priority be assigned to this topic.

Recommendations to develop hourly forecasting models and reasonable scenarios for transportation electrification impacts have a fundamentally greater impact on forecasts. PG&E recommends this area be a focus going forward.

E. Natural Gas Forecast

As requested in prior comments, PG&E would like to see clarification on the heating degree days (HDD) assumptions within the model to better understand what is behind the increase in gas demand during the forecast period.²⁴ Given that California has been experiencing warmer weather conditions and if the Cooling and Heating Degree Days section on page 322 (Figure 87) is an indication of what California will be experiencing in the future, this will be valuable forecasting data to understand more fully. PG&E supports a recommendation to have the DAWG consider this at a future meeting.

VII. Natural Gas Outlook

PG&E generally supports the findings and recommendations in the Natural Gas Trends and Outlook chapter. Numerous recommendations will require close partnership with the investor-owned utilities operating natural gas pipelines as well as other stakeholders and a collaborative process will be essential to ensuring the continued safe, reliable, and affordable operation of the natural gas system.

PG&E offers the following comments on the text of Chapter 8.

1. On page 226: Ruby Pipeline should be added to those listed in the last paragraph of page 226 given it provides substantial supplies to California.

²⁴ http://docketpublic.energy.ca.gov/PublicDocuments/17-IEPR-03/TN220826_20170817T142130_Valerie_Winn_Comments_PGE_Demand_Forecast.pdf

2. On page 229: Additional clarity is needed to compare the Draft IEPR reference case forecast (Figure 67) to the mid demand case prices shown in the 2017 Draft Natural Gas Market Trends and Outlook. These two forecasts present very different price forecasts. See the table below developed using data from each of the reports.

	Draft IEPR Reference case (Figure 67) 2016\$/Mcf			Draft Natural Gas Market Trends and Outlook (Figure 17) 2016\$/Mcf		
	2020	2025	2030	2020	2025	2030
Henry Hub	~4.5	~5.2	~5.7	~3.7	~4.0	~4.5
Topock	~4.5	~5.2	~5.7	~3.5	~3.6	~3.75
Malin	~4.2	~4.6	~5.1	~3.5	~3.6	~3.75

Furthermore, PG&E notes that the CEC forecast prices for Henry Hub (HH) are higher than most industry forecasts. The CEC’s mid-demand case is approximately 2016\$ 3.60/MMBtu compared to industry-based forecasts below 2016\$ 3.00/MMBtu for 2020 and below 2016\$ 4.00/MMBtu for 2030.

3. On page 231: There is an inconsistency in the units of California natural gas proved reserves. In the text, the reserves are described in MCF; however, the accompanying graph displays units in BCF; the units in the text should be changed to reflect “BCF”.

4. On page 232: Figure 70, entitled U.S. Energy Demand by Fuel, does not include a descriptor of the orange line in the graph legend. The legend should be updated to include a description of what the orange line represents.

5. On page 237: The statement about the issuance of operational flow orders (OFO) fails to capture the supplies from natural gas storage to augment pipeline supplies. The limits of the **combination** of storage and pipeline supplies and pipeline inventory can result in the issuance of OFOs – not just whether loads exceed pipeline supply receipt capacity. Accordingly, PG&E recommends the language be modified as shown below.

“On peak demand days, however, natural gas demand may exceed **the combination of storage and pipeline supplies** ~~receipt (intake)~~ capacity at various locations throughout the state which may result in the issuance of operational flow orders by the gas utilities and the interruption of natural gas flows to some end-use sectors in California.”

6. On page 238: The statement below does not reflect that utilities already forecast the impact of load on pipeline inventory on an hourly basis and issue OFO notices accordingly. Notably, OFOs are a tool to manage supplies and loads, and typically do not indicate a gas utility’s ability to manage the system is being tested.

“However, at lower levels of disaggregation, weekly and hourly variation in demand may better focus the potential problem. Unexpected changes in weather and temperature can result in hourly variations in natural gas demand. These variations can strain the natural gas system and test the gas utilities’ ability to manage it. Unexpected changes in demand could result in the issuance of high and/or low OFOs.”

Also, CAISO’s use of gas nomograms, currently operational for Southern California and a proposal to be adopted CAISO-wide, including EIM participants, can incorporate gas constraints as gas nomograms in the hourly electric dispatch system to price and potentially shift generation accordingly.

Additionally, weekly and hourly variation in demand can be mitigated with existing tools available to PG&E's intrastate transportation customers using the gas tariff G-BAL that allows all market participants to flexibly balance supply and demand. PG&E's customers have expressed a preference for this mechanism and it is working well along with a liquid marketplace using actively traded instruments on Intercontinental Exchange (ICE), the bilateral market, and on NYMEX ClearPort.

7. On pages 238-9: PG&E recommends that the sentence "Normally, field operators inject natural gas into storage formations between April and November and withdraw between December and March." Be replaced with "Storage inventories typically increase during the injection season, April through October and decrease between November and March when peak loads and higher prices occur. Daily net withdrawals or injections can occur throughout the year in response to price volatility and/or supply requirements." This recommended sentence more appropriately reflects how storage is used.

8. On page 239, Table 18: A footnote or asterisk should be added noting the limitation in Aliso Canyon storage inventory. Otherwise, the table overstates the available storage capacity.

9. On page 246: PG&E disagrees with the statement: "Staff estimates in the future as Mexico draws more natural gas from the Permian Basin, California will shift its demand toward gas produced in other resource basins, including the San Juan Basin, located in the Four Corners area of the Southwest." Permian production growth could increase sufficiently to supply both the increase in Mexican exports and California load while production from the San Juan basin could continue to decline. PG&E recommends the CEC explore this scenario.²⁵

10. On page 248: PG&E disagrees with the statement "The gas leak at Aliso Canyon caused SoCalGas to reconfigure its supply portfolio. However, in its daily monitoring of natural gas spot market prices, staff has not detected any changes in the price differentials between Northern and Southern California due to the Aliso Canyon gas leak."

Daily spikes in the SoCalGas Citygate price that are not concurrent with spikes in the PG&E Citygate price have occurred more frequently than prior to the storage withdrawal constraints associated with the Aliso Canyon leak. PG&E recommends the sentence beginning "However..." be deleted or modified to reflect the increased frequency in the non-concurrent daily price spikes.

11. On pages 248-9: There is a section on the October 9, 2017 workshop discussion on natural gas imbalance markets. PG&E recommends the section be modified to include a number of key details that must factor into any conversation on this proposal including:

- The pricing of gas balancing that already occurs in both Northern and Southern California with intraday trading and the varying PG&E and SoCalGas Citygate prices.
- The value of storage assets for arbitrage in combination with full access to pipeline supply capacity
- The cost implications of the balancing proposal, for both the storage assets that would need to be controlled and the sub-optimal commodity purchases
- The differences between existing tariffs for SoCalGas and PG&E
- Independent storage provider assets in Northern California
- The use and efficiencies of CAISO's gas nomogram tool"

²⁵ <http://blog.ihs.com/the-permian-and-natural-gas-the-developing-constraint-and-producer-options>

EDF's proposal also included recommendations that the Gas Imbalance Market and the Market Operator should maintain summer gas storage inventory levels at between 70% and 80% of working gas levels. PG&E notes that requirements for storage to be maintained at these levels decreases the intrinsic value of gas storage by removing the opportunity to arbitrage seasonal price differences. Additionally, another recommendation to institute winter gas storage refills when inventory drops below 60% (or other prudent level) and demand drops such that interstate capacity is available to refill to 70% (or other prudent level), would also increase costs to customers and further decrease the economic viability of the storage, including the independent storage providers (ISP) in the PG&E service area. Consequently, this would leave customers with stranded costs that reduce the affordability of the gas transmission and storage system in PG&E's service area. Such recommendations should be disregarded because they do not reflect several key attributes of storage.

Accordingly, PG&E recommends the EDF proposal be disregarded and alternatives, if needed, considered after a knowledge of existing systems and market mechanisms is obtained.

12. On page 251: PG&E agrees with the recommendations that stakeholders should "Continue to evaluate changes in the natural gas and electricity interface" and "develop strategies to upgrade the state's aging natural gas infrastructure." Furthermore, PG&E recommends that the Energy Commission acknowledge CAISO's use of gas nomograms and current gas system balancing and pricing mechanisms prior to determining what, if any, additional coordination should exist between the gas and electric systems. As the changes in the natural gas/electricity interface are considered going forward, strategies must also include the potential for substantial future decline of gas throughput due to California's greenhouse gas reduction goals. Any natural gas market strategies should be developed in conjunction with the California gas utilities so that the knowledge of existing tariffs, markets and balancing tools are fully understood.

Page 233 – Figure 71 U.S. Natural Gas Demand by Sector: green and turquoise lines are not described in the graph legend.

VIII. Renewable Gas

PG&E appreciates the holistic view of renewable gas taken by the CEC within the IEPR and agrees that natural gas plays a critical role in California's climate change initiatives and in meeting the State's 2030 and 2050 greenhouse gas reduction goals. PG&E participates in several voluntary and regulatory activities that support emission reductions such as the Environmental Protection Agency's (EPA) Gas STAR Program.²⁶ More recently, PG&E was a founding member of the EPA's Methane Challenge Program. Several of the best practices outlined within the CPUC's rulemaking to implement Senate Bill 1383 are activities that PG&E already performs to maintain a safe and reliable pipeline system.

Safety continues to be a primary focus for PG&E. A co-benefit of improving the safety of our pipeline system is reduced methane leakage. In addition to leak mitigation efforts, PG&E is also supportive of decarbonizing the pipeline system and displacing conventional fossil fuels with renewable natural gas. Information on safety activities should be incorporated into the safety discussion on page 271 of the Draft Report to provide a balanced perspective.

²⁶ The Natural Gas STAR Program provides a framework for partner companies with U.S. oil and gas operations to implement methane reducing technologies and practices and document their voluntary emission reduction activities.

As California moves forward with initiatives to decarbonize the pipeline system, the State will need to develop a framework that allows continued flexibility and innovation while maximizing opportunities for increased renewable energy penetration. PG&E is supportive of the IEPR's focus on GHG reductions as well as cost effectiveness as a viable and important measure to evaluating the future of renewable natural gas (RNG). The significant, unfavorable disparity in price between renewable gas compared to fossil gas, prior to any applicable incentives, must be addressed to improve the viability of projects. Actions such as allowing alternatives to traditional interconnection approaches will improve the economic viability of renewable gas projects. Despite the CPUC's November 9, 2017 Proposed Decision on the implementation of SB 1383 that would, if adopted, reject the trucking of biomethane, PG&E strongly believes trucking biomethane to a central receipt point in scenarios where pipeline interconnection may be cost prohibitive should be considered to expand the market of cost-effective projects.

To further improve the economic viability of renewable gas, the IEPR should promote embracing new technologies for producing, processing, monitoring, and cleaning the biogas to maximize the availability and benefits of RNG. Leveraging the dairy pilots scoped within Senate Bill 1383 to promote and explore new approaches which may then be applied across California will set the State up for a significant contribution towards meeting its GHG goals while improving the economic viability of these important renewable resources.

In the future, the State will need to move far beyond dairies to generate significant production of RNG and further drive down the environmental impacts from short lived climate pollutants. PG&E believes substantial volumes of renewable gas can be developed in and out of state, but it is incumbent upon California to embrace and support existing (landfills, waste water treatment plants) as well as emerging (biomass-to-syngas, power-to-gas) renewable gas technologies. Together, the combination of traditional and new approaches will further improve project viability across the biomethane industry resulting in job creation and retention to further support California's economy.

Once a flexible and supportive policy framework is developed, the State must identify additional funding mechanisms to offset the higher capital cost of RNG projects. While the federal Renewable Fuel Standard (RFS) and state LCFS funding and the incentive programs provide some incentives for RNG projects, additional funding will be needed to incent developers and end users in the transportation sector to establish to invest in this emerging market. Specifically, it is imperative that the State establish and support stable long-term incentive mechanisms to attract the needed capital investments. California policy must learn from the market disruption attributed to the volatility of wind energy tax incentives that hampered the early adaption of this technology and not replicate this mistake in the advancement of renewable gas.

Ensuring that California is on target to meet its short lived climate pollutant reduction strategy relies extensively on reducing these capital investments, creating stability in the market, and also working to engage the transportation sector. Using commercially available technologies that can help accelerate the displacement of fossil fuels and provide health benefits to non-attainment communities through the conversion of the transportation fleets within their corridors should be incorporated in the IEPR strategy.

PG&E commends the CEC and the IEPR's emphasis on near-term opportunities in the transportation sector. PG&E fully supports the acceleration of medium- and heavy-duty trucking and low-NOx engines as this technology is readily available today and can provide immediate clean air benefits to all Californians. The transportation sector has been identified as one of California's largest sources of GHG emissions and focusing on the use of RNG to displace fossil fuels is critical to the State's climate goals. PG&E appreciates the CEC's recommendations to integrate cleaner fuels into State fleets and PG&E is supportive of engaging in conversations to help with these initiatives, especially within disadvantaged

communities. PG&E is also supportive of ongoing conversations with fleets and communities to discuss how clean transportation can benefit their needs while providing larger health and environmental benefits. Additionally, the State should consider leveraging State incentives to offset the cost of production and delivery of renewable natural gas to disadvantaged communities for heating and residential use, and making them competitive to the cost of traditional fossil fuels. PG&E observes that renewable natural gas is below parity when the RFS and LCFS are applied, but these incentives are only available when this low carbon gas is consumed in the transportation sector. State incentives can play a key role in advancing the use of renewable natural gas in other sectors.

PG&E also supports further development of biomass-to-syngas, power-to-gas, and hydrogen. As noted above, focusing on new technologies for clean transportation solutions, can lead to greater renewable penetration and significant environmental benefits. Additional opportunities must be explored to accelerate and expand clean fuel conversion within the marine sector (ports, ships, transport). Further State policy action which stimulates and incentivizes both adaption and development of clean fuel solutions is needed.

Exclusive reliance on electrification solutions foregoes the substantial benefits that can be achieved by these alternative technologies and in markets such as most of the industrial sector, where electrification is not feasible. In addition, this unbalanced approach hinders the efficiency of market solutions thereby raising costs for all Californians. The state needs to promote the most efficient and cost-effective approaches to meeting its GHG targets while considering all alternatives. It must be acknowledged that the renewable electricity goals were met through multiple approaches and technologies rather than only promoting a certain solution at the outset. Similarly, a broad technology approach that is reliant upon market solutions in conjunction with strong and equitable policy support must now be taken towards the reduction of GHG emissions if the state wants to achieve its aggressive goals at the least cost to its citizens. Further State policy action which stimulates and incentivizes both adaption and development of all clean fuel solutions is needed.

The framework outlined in the IEPR positions California to not only lead the nation in climate initiatives, but to identify and develop an integrated approach to meet California's climate goals. The objectives and implementation of this framework must include improved economics and incentive stability for RNG projects allowing for increased market penetration of multiple clean transportation solutions. Doing so will result in significantly improved air quality through fuel conversion which ultimately benefits all Californians and particularly, the State's most disadvantaged communities.

IX. Climate Adaptation and Resiliency

PG&E appreciate the attention paid to climate resiliency in the Draft IEPR and throughout this year's IEPR process. Since the Draft Report has a chapter on electric sector resilience and a chapter covering climate resilience, it would be helpful for the CEC to define the differences. For reference, PG&E defines "climate resilience" as "...the actions to be taken related to our assets, infrastructure, operations, employees and customers to mitigate against potential consequences from climate impacts and adapt to a changing climate and resulting weather patterns."

Throughout this chapter a number of potential climate change impacts are referenced. PG&E would recommend framing the issue with a more consistent and comprehensive list of potential impacts and recommends a number of specific language changes for clarity.

All of the drivers referenced in this chapter should be mentioned in the introduction and on page 304: rising sea levels, major storm events, increasing temperatures and heatwaves, wildfires, drought, and subsidence.

On page 1 of the Executive Summary impacts should be modified to read “If emissions continue on the current path, more destructive impacts are anticipated—such as continued large wildfires, additional sea level rise, reduced snow-pack, increased subsidence, and more frequent heat waves, major storms, and drought.”

On page 304: “Millions or billions of dollars may be needed to prepare for sea level rise, flooding, drought, heat waves, wildfires, subsidence, storms, changing snowpack conditions, and related impacts.”

A reference to this chapter on page 14 should be modified as follows. “The potential effects of climate change in California are many. Rising sea levels threaten coastal settlements, infrastructure, and ecosystems. An increase in extreme heat and a growing risk of regional megadrought threaten the state’s water supply which necessitates increased ground-water pumping and exacerbates ground subsidence. A warming climate portends the spread of pests and diseases that threaten the state’s agriculture, forests, and human health. Larger, more frequent, and more intense fires and storms pose a growing threat to much of ~~part~~ California. Each of these trends is already underway and may become more extreme without a global effort to drastically and quickly reduce carbon pollution.”

Additionally, this chapter does not clearly distinguish between climate change mitigation and climate change resilience (or adaptation). It is important to draw this distinction.

On page 296, in the introduction to the Climate Adaptation and Resiliency chapter, the text should be modified to include the following: “The United Nations Framework Convention on Climate Change (UNFCCC) identifies two responses to climate change: mitigation of climate change by reducing greenhouse-gas emissions and enhancing sinks, and adaptation, or resilience, to the impacts of climate change. The International Panel on Climate Change goes further to say that “effective climate policy aimed at reducing the risks of climate change to natural and human systems involves a portfolio of diverse adaptation and mitigation actions (very high confidence).”²⁷

The characterization of the Risk Assessment and Mitigation Phase (RAMP) filing in the chapter is misleading and should be clarified.

On page 327, the first recommendation does not define the RAMP filing and also implies that it compels utilities to provide resiliency and vulnerability reports which is not the case. Additionally, all documents in a CPUC proceeding that are not otherwise protected and/or marked as confidential information, will be public record regardless of this recommendation.

As such, the first recommendation, “To the extent that gas and electric utilities provide resiliency and vulnerability reports to the CPUC as part of the RAMP filings, the information should be available to local governments” should be removed because local governments can access any public information through the CPUC’s proceeding.

The preceding paragraph on page 327 should be modified to read: “...consider climate change in their filings for some CPUC proceedings. Specifically, as per California Public Utilities Commission (CPUC)

²⁷ <https://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter18.pdf>

Decision 14-12-025, the purpose of the Risk Assessment Mitigation Phase (RAMP) filing is to examine the utility's assessment of its key risks and its proposed programs for mitigating those risks. The RAMP filing precedes the 2020 GRC application and provides quantitative views of top safety risks; identifies the costs associated with controlling these risks; and describes future mitigation plans based on an alternatives analysis and informed by the concept of "risk-spend efficiency," or RSE, proposed by the Safety and Enforcement Division of the CPUC to be included in the risk mitigation decision making process."

Finally, on page 328, the following statement should not only qualify for wildfires but all climate impacts. "Given the impacts of wildfires in California, there is a continued need to coordinate between state and federal agencies to encourage and advance utility relationships with federal, state, and local governments to ensure that infrastructure plans and improvements are consistent with climate adaptation goals. This work should include advancing policies that support utilities and governmental cooperation in sharing regional operations and maintenance plans and coordination to ensure that rights-of-way remain accessible to utilities and safely maintained."

X. Southern California

PG&E offers limited feedback on Chapter 11 of the Draft IEPR, primarily on natural gas related topics.

1. On page 336: The word "is" should be deleted from the statement "The California ISO and LADWP's ability to meet the 1-in-10-year peak summer electric load ~~is~~ depends partially on the amount of withdrawal capability from storage facilities other than Aliso Canyon."
2. On page.337: The CEC may wish to update the following statement to reflect the current inventory at Aliso Canyon: "As of August 1, 2017, Aliso Canyon held roughly 14.9 Bcf of natural gas of a system wide inventory of 54.3 Bcf and has a target of 23.6 Bcf by November 1, 2017."
3. On page 339: The word "residency" should be replaced with "reliability" in the following statement: "The challenge is to encourage inefficient, inflexible natural gas resources to retire and retain those which are needed to help maintain the ~~residency~~ **reliability** of the grid."
4. On page 350: PG&E recommends that the following statement be modified to include California Gas utilities so that their knowledge of existing tariffs, markets and balancing tools are fully considered in the discussions: "Monitor, evaluate, refine, and extend as needed the existing mitigation measures, including tariff and market changes needed to reduce daily imbalances in gas scheduling, for the greater Los Angeles area. The Energy Commission, the CPUC, the California ISO, the **Natural Gas Companies**, and the LADWP should determine the effectiveness of mitigation measures and whether tighter gas balancing rules and the California ISO market changes should be extended or made permanent, or whether any tariff changes are necessary."

XI. Nuclear Data

PG&E supports the CEC's perspectives that, as various proceedings develop, the CEC will need to consider to what extent certain nuclear-related topics are addressed in a future IEPR. Many of these issues may be addressed through the Nuclear Decommissioning Cost Triennial Proceeding (NDCTP). Other activities, like dry cask loading campaigns, are consistent with previously published plans and may not merit additional review at this time, particularly when considering PG&E commitments in the Joint Parties Agreement and NDCTP requirements to continue to evaluate the loading program and timing to minimize the length of time spent fuel is in wet storage during the decommissioning period.

Appendix A appropriately captures the data PG&E provided to the CEC. PG&E does request that one typo on Table 32 be corrected: The capacity of the original spent fuel racks is currently shown as “270/poo” – this should be changed to be “270/pool.”

XII. Conclusion

PG&E appreciates this opportunity to comment on the Draft 2017 Integrated Energy Policy Report and looks forward to continued participation in this process until the Final Report is adopted early next year.

Sincerely,

/s/

Wm. Spencer Olinek