DOCKETED	
Docket Number:	18-IEPR-01
Project Title:	2018 Integrated Energy Policy Report Update
TN #:	225767
Document Title:	Pacific Gas and Electric Co. Comments - 2018 Draft IEPR
Description:	N/A
Filer:	System
Organization:	Pacific Gas and Electric Company/Valerie Winn
Submitter Role:	Public
Submission Date:	11/2/2018 1:18:28 PM
Docketed Date:	11/2/2018

Comment Received From: Valerie Winn
Submitted On: 11/2/2018
Docket Number: 18-IEPR-01

Pacific Gas and Electric Co_2018 Draft IEPR

Additional submitted attachment is included below.

Pacific Gas and Electric Company

Valerie Winn
Chief
CEC Regulatory Relations

77 Beale Street, B23A
San Francisco, CA 94105

(415) 973-3839
Valerie.Winn@pge.com

November 2, 2018

POSTED ELECTRONICALLY TO DOCKET 18-IEPR-01

California Energy Commission
Dockets Office, MS-4
Docket No. 18-IEPR-01
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket 18-IEPR-01: Pacific Gas and Electric Company Comments on the Draft 2018 Integrated Energy Policy Report

Pacific Gas and Electric Company (PG&E) appreciates the opportunity to provide comments on the Draft 2018 Integrated Energy Policy Report (Draft IEPR). PG&E appreciates the California Energy Commission's (CEC) focused efforts on building understanding of these complex energy issues and encouraging solutions to advance California's clean energy future. PG&E provides the following comments and recommendations on these topics.

- The CEC's recommendations on building decarbonization strategies should be expanded to include recommendations to address the challenges building decarbonization may create.
- To ensure the proper mix of energy efficiency with other resources in the Integrated Resource Plans, more accurate hourly data and other advancements must be captured in the evaluation tools.
- Renewable integration requires continued inter-agency collaboration and study.
- Updates and refinements are needed to the Demand Response sections.
- Climate adaptation and resilience recommendations are valuable steps in making California more climate resilient.
- Southern California Reliability Planning must include Pacific Gas and Electric Company.
- Demand forecast results and models should be timely shared with stakeholders.

A. Building Decarbonization Strategies Should be Broadened to Include Strategies to Mitigate Potential Challenges

Chapter 1 of the Draft IEPR focuses on building decarbonization and the numerous workstreams needed to achieve this vision. Building decarbonization is an important and necessary component of the overall strategy for achieving California's overarching policy goal of achieving carbon neutrality no later than 2045. As California explores whole-building and appliance electrification as a potential building decarbonization strategy, policymakers must also consider strategies to

mitigate potential challenges. PG&E provides its thoughts on some of the proposed strategies, and suggests the CEC include recommendations to address some of the challenges noted below.

PG&E appreciates that the Draft IEPR encourages the establishment of a statewide funding source for building decarbonization, such as cap and trade, or private partnerships. Overcoming barriers to wide-scale building decarbonization will be costly and complex, especially at the outset; appropriate funding will help drive down costs and enhance customer adoption so that emissions reduction benefits can be achieved. Upfront, varied financing alternatives will enable needed market shifts, particularly as integrated solutions are most effective to building carbonization success.

The Draft IEPR also recognizes that grid flexibility requires ramping that is provided by gas generators today. Given the known variance in renewable generation, combined with the duck curve peaks, an important role for gas generation, including renewable natural gas (RNG), will remain.

Natural gas will also continue to play an important role in meeting the energy needs of homes and businesses in our communities well into the future. RNG offers California the opportunity to reduce emissions resulting from current and any future remaining natural gas usage in homes and buildings. RNG can provide greenhouse gas (GHG) reductions today without needing to wait for significant infrastructure development, major policy changes, or technology adoption by customers. Depending upon the source, the use of RNG can even result in net negative emissions.

In addition, the use of more traditional sources of RNG offers the state an opportunity to reduce methane emissions from dairies, wastewater treatment plants, and landfills. PG&E is also exploring innovative ways to reduce the GHGs associated with our gas system with new technologies using forest and agriculture waste to produce RNG through gasification and excess renewable electricity to produce renewable hydrogen through power-to-gas systems. These emerging technologies can improve forest health and reduce wildfire risk, all while supporting the integration of renewable electricity envisioned by Senate Bill (SB) 100.

Depending upon the source, additional RNG development and procurement activities could also provide economic opportunities in rural and disadvantaged communities. Accordingly, the CEC should include a recommendation to explore the role of RNG in promoting building decarbonization strategies.

Smart appliances can also help integrate new loads and renewable generation. PG&E supports market enablers to reduce the knowledge, cost, and installation hurdles in making smart appliances more ubiquitous.

Rate design will also be an important element in influencing the adoption of building decarbonization technologies. Stable, affordable electric rates will help make electrification choices more appealing and cost competitive for consumers. It is crucial to keep rates affordable and to avoiding cost shifting through this process.

Power quality must also be considered as decarbonization efforts advance. This is important for customers and decarbonization can provide new product solutions and offerings to address ongoing power quality customer needs that go beyond the scope of Rule 2.

Disadvantaged Community (DAC) data sources and metrics should be modified to reflect utility input/feedback, and an equity indictor for "reliability" should be added for these communities. These definitions should be examined in the application context of distributed energy resources (DERs) targeted to "microgrids", ensuring there is agreed upon alignment of data being used and metrics the utility is being measured against. The definition of Microgrids should have relevance to the role the utility serves, where the metric should apply to microgrids that are using utility owned distribution infrastructure (in front of meter) rather than private entities infrastructure (behind the meter).

Finally, potential declines in natural gas throughput due to building electrification activities, combined with the need for continued investments to ensure the safety and reliability of California's natural gas delivery systems, could pose challenges to long-term affordability for energy customers and utility financial health. The CEC should explore these issues further and consider potential mitigations.

B. More Accurate Hourly Data and Other Advancements Must Be Captured to Ensure the Proper Mix of Energy Efficiency with other Resources in Integrated Resource Planning

PG&E appreciates the vision for energy efficiency (EE) described in Chapter 2, including the need to align EE with time periods of intense GHG emissions. Updated peak hours (4 – 9 pm, effective 2020) that define EE MW savings goals have recently been adopted by the CPUC.[1] Currently, this time period is defined as 2 – 5 pm, which obligates the program administrators to deliver a high fraction of portfolio kWh savings during periods of relatively low GHG intensity[2] to meet savings goals. EE can better deliver GHG reductions and more cost-effective savings by inclusion of load shifting strategies, advanced controls systems, and incorporation of demand response technologies that ensure savings are delivered at the right times of day and seasons of year. However, to effectively focus EE programs on these strategies, methods are needed to better capture time and locational avoided cost information and to incorporate new savings load shapes into calculations of cost effectiveness, including load shifting load shapes derived from NMEC measurements. Without these advancements, the potential of modern EE programs to deliver enhanced value will not be captured. As the California Public Utilities Commission (CPUC) plans for incorporating EE into the Integrated Resource Planning process,[3] these considerations will become central to ensure the proper mix of EE with other resources.

PG&E also appreciates the acknowledgement that the focus of EE portfolios is shifting from capturing low-hanging fruit to more holistic programs that address stranded potential and achieve

[1] Resolution E-4952, Oct. 12, 2018.

[2] See Table 4 of Chapter 2 of the Draft IEPR

[3] *Staff Proposal for Incorporating Energy Efficiency into the SB 350 Integrated Resource Planning Process*, released on 9/25/2018

long term energy savings. New Pay-for-Performance programs (P4P) that measure energy savings at the meter can play a unique roll along these lines. The Draft IEPR discusses the opportunity posed by P4P programs and Advanced Metering Infrastructure (AMI) data analytics. Citing a recent LBNL study, the Draft IPER also identifies the prospect of enhanced savings via customer targeting, "It is possible to use interval meter data to identify homes that could benefit most from an air-conditioning retrofit."[4] PG&E would like to take this opportunity to highlight additional recent customer targeting research and implementation of associated methods in the EE portfolio, which may be of interest to the CEC in drafting the 2018 IEPR. In partnership with Convergence Data Analytics, PG&E has completed two recent reports[5] [6] in which AMI data at the individual customer level was used to develop and test targeting strategies to identify customers with a high propensity to achieve savings at the meter. The first of these studies utilized data from recent past PG&E programs to develop optimal customer targeting methods for residential building shell and HVAC programs. These strategies are now being employed within PG&E's Residential P4P Program. Similarly, the second study developed customer targeting strategies for EE programs serving small and medium business customers. In both studies, specific patterns in customers' usage data were identified that were strongly predictive of metered energy savings. Employing targeting strategies can help deliver EE to the customers who will benefit most and drive the highest savings while improving cost effectiveness and PG&E will look to continue developing and deploying optimal approaches going forward.

Finally, PG&E looks forward to collaboration as the CEC begins development of the Statewide Energy Efficiency Savings Action Plan referenced in the Chapter 2 Recommendations.

In addition to these comments, PG&E recommends numerous updates to language in Chapter 2, as outlined below:

- @p. 50: "By the end of 2020, IOUs will be required to have at least 60 percent of their energy efficiency portfolio budgets designed and implemented by third parties."
    - *CPUC Decision 18-01-004 changes this requirement to the end of 2022, not 2020 as originally specified in Decision 16-08-019.*

- @p. 51: "Nonutility-funded activities include advancing building and appliance codes, financing programs, behavioral and market transformation, as well as increased public awareness and targeted marketing efforts."
    - *Utilities fund all of these activities as well. Recommend changing the term "nonutility-funded" or not specifying differences between utility-funded and nonutility-funded.*

[4] Draft IEPR, p. 59

[5] Whitepaper - *Customer Targeting for Residential Energy Efficiency Programs: Enhancing Electricity Savings at the Meter*, A.M. Scheer, S. Borgeson et al. (2017).

[6] Whitepaper and Full Report - *Energy Efficiency Program Targeting: Using AMI Data Analysis to Improve At-the-Meter Savings for Small and Medium Businesses*, S. Borgeson, A.M. Scheer, R. Kasman et al. (2018).

- @p. 55: "Furthermore, third parties must administer 60 percent of energy efficiency programs through a solicitation by 2020."
    - *More accurate to say: "Furthermore, third parties must propose, design, and implement 60 percent of energy efficiency programs by 2022." References are both CPUC Decisions 16-08-019 and 18-01-004.*

- @p.58: "Pacific Gas and Electric (PG&E) is launching a trial pay-for-performance program that pays incentives based on the actual savings captured, as opposed to deemed savings, which are estimated through engineering calculations or laboratory tests and are unreliable."
    - *Strike "...and are unreliable" – they are estimates, which are not as accurate as actual savings. That doesn't necessarily make them unreliable.*

C. Renewable integration Requires Continued Inter-Agency Collaboration and Study

The Draft IEPR properly captures the key issues on how increasing levels of renewables can be integrated into electric systems. Continued inter-agency collaboration is needed to develop and to implement the necessary solutions to reliably operate the electric grid. Numerous operational challenges and a changing market place are occurring today. These include 1) increasing operational challenges (e.g., 3 hour ramps, min. net loads, increasing renewable curtailments); 2) retirements of flexible gas generators and resource adequacy market design changes; 3) the need for regional coordination / market expansion; 4) the need for renewable resources to increase their capability to provide operational flexibility (inverter standards, curtailment, etc.); 5) the use of energy storage to enhance system flexibility and storage renewable overgeneration; and 6) enhancing flexible loads (time of use (TOU) rates, demand response, electric vehicles (EVs)).

The passage of SB100 also poses significant new renewable integration challenges to California. These challenges must be thoroughly studied in a coordinated effort by the state's energy agencies to ensure safety and reliability of the grid and the prevention of unreasonable rate and bill impacts to electric customers. PG&E encourages more investigation into how the electric system can meet year-round energy needs under SB100's ambitious goals. For example, the state needs to study how to measure and ensure system reliability under a range of potential future weather conditions that will impact renewable energy output, including the role of long-duration storage such as pumped hydro or power-to-gas/hydrogen. This analysis may require the development of new methodologies or metrics for assessing system reliability in addition to those used today.

As renewable integration issues increase in their complexity as the state moves towards meeting its 2030 (and beyond) clean energy goals, PG&E encourages expanded collaboration across agencies. For example, meeting the electric sector's contribution to the state's GHG reduction goals requires the collaboration of the California Air Resources Board (CARB) to set economy-wide GHG policies and electric sector GHG targets, the CPUC to administer its IRP optimization process for its jurisdictional load serving entities (LSE), the California Independent System Operator (CAISO) to study the resulting portfolios and their impact on system and local reliability, and the CEC to administer its IRP process for the publicly-owned utilities (POU) and to produce IEPR load forecasts the drive planning across the other agencies. Additionally,

SB100 requires a joint report to the California legislature on the challenges associated with reaching SB100's goals and the cost and reliability challenges contained therein. While there has been significant collaboration to date on key issues, there is the need for further alignment as the state continues to implement its ambitious clean energy policies.

One area where deeper collaboration could be beneficial today is on the electric sector IRP process. The CEC and CPUC are not currently aligned on their methodologies of LSE/POU-level GHG accounting or their IRP timing, GHG targets, or planning assumptions. The CAISO needs to play a central role in validating how to maintain system reliability under growing renewable targets and GHG targets contemplated by the other agencies. PG&E recommends alignment across the policies to ensure that, as new initiatives are developed, the parties responsible for emitting greenhouse gases are appropriately tasked with the responsibility to reduce them.

D. Demand Response and DRAM Discussions Merit Refinement

PG&E appreciates the inclusion of demand response in the Draft IEPR and offers specific suggestions to refine the discussion and correct misstatements. For example, the section header beginning on page 103 of the Draft IEPR report for the "Demand Response Auction Mechanism" (DRAM) should be revised to reflect the section's more comprehensive discussion of "Demand Response" as the narrative combines several aspects of non-DRAM investor-owned utility (IOU) demand response (DR) programs and DRAM. This includes the discussions of the Supply Side Working Group, which is focused on resolving barriers to CAISO integration across IOU DR programs and DRAM, and the Load Shift Working Group, which is more generally developing new models of DR.[7]

Similarly, the discussion on cost recovery after community choice aggregators (CCAs) implement similar DR programs only applies to IOU DR programs.[8] DRAM is exempt from this cost causation principle.[9] In addition, PG&E offers a correction to the discussion of an application filed on May 1, 2018, totaling 595 MW, that is stated to be under CPUC review.[10] The IOUs submitted Tier 1 advice letters on that date, seeking Commission approval of the 2019 DRAM purchase agreements, which totaled 166.5 MW across the three IOUs. These advice letters were also approved via disposition letters issued on September 12, 2018.[11]

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[7] 2018 Draft IEPR Report, p. 104.

[8] 2018 Draft IEPR Report, p. 104, states, "This decision expressly allows CCAs and direct access providers to file with the CPUC to determine if their demand response programs are similar to those of the IOUs, meaning that competing utilities must cease cost recovery for customers signed up in the third-party programs."

[9] D.17-10-017, p. 31, states, "This Decision confirms that the Demand Response Auction Mechanism, if adopted as a permanent mechanism, is not eligible for the Competitive Neutrality Cost Causation Principle implementation because the auction mechanism is a procurement mechanism designed to allow third party direct participation into the CAISO market; it is not a demand response program."

[10] 2018 Draft IEPR Report, p. 104, incorrectly states, "Applications totaling 595 MW were submitted on May 1, 2018; contracts for 166.5 MW are under CPUC review."

[11] https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_5284-E.pdf

Further, PG&E appreciates the discussion of the Energy Division's evaluation of the DRAM pilot and understands that the delay in completing the evaluation concerns third party DR providers; however, the 2018 Draft IEPR Report should more comprehensively discuss that the Commission recently issued a PD denying a 2020 pilot year despite these concerns. This is due to comments by most of the parties in the proceeding that there are vital lessons that need to be learned before the Commission issues another pilot or transitions to a permanent mechanism, including acknowledging that there is a "risk [to] spending ratepayer funds on an approach that may not meet the needs of the Commission or may not do so in a fair, efficient, and effective manner."[12] The PD also argues that the reasons raised by third party DR providers "CPower, EnerNOC, and CESA do not address our responsibility to ratepayers to ensure prudent spending of ratepayer funds."[13]

E. Climate Adaptation and Resilience Recommendations are Valuable Steps in making California More Climate Resilient

PG&E strongly supports the inclusion of climate adaptation and resiliency in the Draft IEPR. Even as California continues to take ambitious action to reduce carbon emissions, Californians are already feeling the impacts of climate change, and the most up-to-date studies show that the state will face more severe wildfires, more frequent and longer droughts, rising sea levels, increased flooding, and more extreme weather events in the future.14

PG&E is becoming more resilient to current and future climate impacts so that it can continue to fulfill its mission of providing safe, clean, affordable and reliable energy to its customers while building the energy network of tomorrow. PG&E's foundational climate resilience work plan was enumerated in its 2017 Risk Assessment and Mitigation Phase (RAMP) filing to the California Public Utilities Commission, and includes a broad range of activities to mitigate against future safety risks as a result of climate change.15 PG&E is also actively engaged in the CPUC's Rulemaking to Consider Strategies and Guidance for Climate Adaptation, through which stakeholders are collaborating with the state on how to further improve the very useful Cal Adapt tool.

The 2018 IEPR Climate Adaptation and Resilience recommendations, if enacted, would all be valuable steps in making the state more climate resilient. California agencies and their associated stakeholders must continue to advance climate adaptation research, knowledge sharing, best practice development, and generally increase capacity to develop effective flexible and adaptive

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[12] Proposed Decision, issued October 25, 2018, in A.17-01-012 et al, p. 76. See also, "We agree that there are many unanswered questions regarding the success and efficacy of the Auction Pilot. Without these answers [from the DRAM evaluation], if we authorized an additional auction in 2019 with little to no change, we risk spending ratepayer funds on an approach that may not meet the needs of the Commission or may not do so in a fair, efficient, and effective manner. […] The reasons presented by CPower, EnerNOC, and CESA do not address our responsibility to ratepayers to ensure prudent spending of ratepayer funds." (p. 77)

[13] Proposed Decision, issued October 25, 2018, in A.17-01-012 et al, p. 77. Similar on p. 78, "the Commission cannot guarantee consistent business opportunities or contract awards for every demand response provider."

[14] State of California. Governor's Office of Planning and Research, California Natural Resources Agency, California Energy Commission. (2018). *California's 4th Climate Change Assessment.*

[15] Pacific Gas & Electric Company. (2017). *2017 Risk Assessment and Mitigation Phase Report (U 39 M).*

approaches to managing the "new normal." PG&E's Electric Program Investment Charge (EPIC) third triennial investment plan includes several projects that align with grid resiliency and wildfire prevention. Predictive analytics work that will leverage various data sources to identify distribution assets at imminent risk of failure and to quantify tree risk, and a project to explore methods to automatically reduce current to safe levels during wires down events are some examples. The CEC's planned 2019 EPIC solicitation to advance climate science related to wildfire and the electricity system is another good example of the kind of action that is needed.

Recognizing that it is appropriate to focus on wildfire in this year's IEPR Climate Adaptation and Resilience chapter given recent events, future IEPRs should address the issue of climate adaptation more broadly, taking into account state and stakeholder actions on other major climate risks like sea-level rise, drought, extreme heat, extreme storms, subsidence, and others that may impact the state's communities and energy system.

F. Southern California Energy Reliability Mitigation Planning Must Include PG&E

Chapter 6 of the Draft IEPR focuses on Southern California Energy Reliability and contains numerous recommendations for action. PG&E requests to be included in future mitigation and long-term gas planning, and supports providing SoCalGas' hub operator the ability to procure gas for operational integrity and agency assistance in expediting permits for vital pipeline maintenance.

First, PG&E would like to note that the impact of shifting thermal electric generation loads to alleviate Southern California gas constraints does not appear to have been included in the scenario analysis used to forecast SoCalGas storage inventories. In recent months, gas loads in the PG&E service territory were at or above last year and the five-year average while loads in SoCalGas have been lower. Such trends indicate that thermal generation in the PG&E service territory has functioned as a means of mitigating SoCalGas constraints. PG&E suggests that the impact of this load shifting be included in future analyses.

Since thermal generation on PG&E's gas system is part of the mitigation efforts, PG&E requests that PG&E, and potentially other gas and electric system operators, be included in efforts to identify and implement mitigation measures and planning for both the current winter and for the longer-term Aliso Canyon outlook, including expanding access to Gill Ranch.

Second, regarding tighter balancing rules, PG&E requests that areas that are not constrained, such as Northern California, continue to be excluded from additional balancing measures. The Northern California gas market currently possesses effective tools that market participants prefer to flexibility balance supply and demand. Given SoCalGas' current constraints, PG&E supports the proposal to give permission to the SoCalGas operational hub to buy gas. Operators of the pipeline system should be provided with tools and flexibility to meet unexpected operational needs on their systems.

Finally, PG&E supports agency efforts to expedite regulatory processes regarding vital pipeline maintenance.

G. Demand Forecast Results and Model Improvements Should be Timely Shared with Stakeholders

PG&E appreciates the CEC's efforts to continue to refine and improve its forecasts on numerous elements of the demand forecast, including photovoltaics, energy storage, community choice aggregation, and electric vehicles. Given the importance of the demand forecast, PG&E recommends that CEC Staff provide its draft Staff report with the demand forecast results well in advance of the December 6 demand forecasting workshop. This will allow stakeholders to have adequate time to review the results, validate assumptions and discuss methodological differences with Staff. In addition, Staff should provide stakeholders a timeline of when their reports and forecast data will be available so that everyone can plan accordingly. PG&E makes these recommendations because, in past years, Staff has provided the updated forecast data without the benefit of the staff report to help stakeholders understand what has changed. If the draft Staff Report cannot be provided in advance of the December 6 workshop, it may be helpful to arrange a conference call to share information and address questions in advance of the workshop.

PG&E also asks that staff continue its collaboration with stakeholders on model improvements. For example, the CEC has been working to update its peak weather normalization process using the hourly load model. These updates have significant impacts in the CPUC's Resource Adequacy (RA) allocation process. As mentioned on p. 212 of the draft IEPR Update, this model was developed in 2017 and was used to update 2018 RA allocations, although this was never discussed as in scope for the 2017 forecast results. While PG&E supports efforts to refine the forecasts, Staff should share such information sooner and build understanding so that there are no surprises.

It may also be helpful to consider how building electrification will be captured in future forecast cycles. PG&E notes that, while the Executive Summary of the IEPR discusses the need to decarbonize building stock to achieve statewide GHG goals, there is no mention of this initiative in the demand forecast section. This should be added.

Finally, the fourth recommendation of Chapter 7 notes that the CEC has recently completed an end-use and DER load profile analysis for the IOU service territories. It would be helpful for the CEC to share this information with the IOUs.

H. Flexibility is Needed to Achieve Clean Transportation Goals

PG&E agrees with many of the findings in the Clean Transportation section of the Draft IEPR. PG&E does recommend, however, that the Draft IEPR be modified to reflect that flexible charging is one means, out of many, to achieve Transportation Electrification goals: Flexible plug-in charging – and vehicle grid integration capabilities more broadly – can be a potentially important component to enabling and advancing transportation electrification. Furthermore, the focus should be on value creation (costs and benefits) and attribution. It is important to keep advancing the work on vehicle grid integration, especially as it relates to quantifying and validating its value (both benefits and costs) to all involved stakeholders. Finally, PG&E suggest adding a recommendation to this section to capture a missing element on integrating electric vehicles with other distributed energy resources. This is an important way to advance flexible

charging and vehicle-grid-integration more broadly and should be consistent and coordinated with relevant efforts addressing other DERs.

PG&E appreciates this opportunity to comment and looks forward to continued participation in this IEPR process.

Sincerely,

/s/

Valerie J. Winn