

PG&E Comments:

Forward Looking Vision: Advanced DERs & Demand Flexibility Management

June 11, 2021

At the CPUC's May 25th workshop the California Public Utilities Commission (CPUC)'s Energy Division Staff presented their unified, universal, dynamic, economic (UNIDE) signal as a pathway for demand side flexibility. This included:

1. Communication of rates to customers and third-party service providers, while accommodating rate designs from utilities and Community Choice Aggregators (CCAs);
2. Dynamic rates (opt-in) based on real time (hourly or sub-hourly), locational marginal cost of electricity;
3. Rate reforms (opt-in) related to real time generation and distribution capacity cost recovery;
4. Compensation for distributed energy resource (DER) exports;
5. Differing rate designs such as subscription rates; and
6. Innovative new approaches such as transactive energy.

PG&E appreciates the Energy Division's innovative efforts to move towards a holistic approach to demand side flexibility. PG&E strongly supports the state's effort to decarbonize and reduce greenhouse gas (GHG) emissions, meeting the outcomes and timeline of SB 100.¹ PG&E is strongly committed to continue exploring advanced time-varying rates and incentive structures coupled with appropriate technology automation that could benefit our customers. PG&E agrees with the need for innovation with demand-side solutions and respectfully submits the following comments on the workshop intended to strengthen the proposal and future possible rulemaking. PG&E suggests that next steps for the proposal include workshops culminating in a final scoping report to support a possible rulemaking.

PG&E recommends that a series of future workshops be convened on this subject for fact finding and stakeholder alignment. These workshops would include the following topics, centered around the themes of scoping, planning, operations, and data access and cyber security:

¹ "[T]he Public Utilities Commission, State Energy Resources Conservation and Development Commission, and State Air Resources Board should plan for 100 percent of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045." (SB No. 100, (2017-2018 Reg. Sess.) § 1(b).)

A. SCOPING

1. **Future workshops should align stakeholders on the problem that UNIDE uniquely seeks to solve as compared to existing load management approaches.**² Future workshops should thoroughly investigate and list the problems UNIDE seeks to solve and why this approach, versus other approaches, or a combination of other approaches, is the best way to solve those problems. A workshop mapping exercise with stakeholders should enumerate the challenges, the current load management approaches, and the gaps between the two while taking into consideration any improvements being proposed in existing proceedings. Workshops should address how UNIDE addresses problems not already addressed in existing and ongoing proceedings, including but not limited to, the General Rate Case II (GRC II) including Real Time Pricing proposals, the Commercial Electric Vehicle dynamic pricing proceeding, the Demand Response proceeding, the Decarbonization proceeding, and the Resource Adequacy (RA) proceeding.

Debate in the workshop on whether UNIDE was the appropriate solution to current DER market integration challenges underscores the need for this evaluation. For example, during the May 25, 2021 workshop, SunRun clarified that this proposal and approach was not what was requested when the Joint Solar/Storage Parties raised challenges of market integration in Track 4 of the RA proceeding.³ If UNIDE, or elements of UNIDE, uniquely addresses problems not addressed elsewhere, the workshop report should highlight what elements are prudent to address in a future rulemaking.

2. **The workshops should further refine and develop a set of shared and specific objectives and principles of UNIDE beyond those addressed in the May 25, 2021 workshop.**⁴ PG&E offers the following as a starting point for discussion:
 - UNIDE should promote electricity design that incents safe, affordable, reliable, and clean use of electricity.
 - Any dynamic or real time rate proposal should align with the CPUC's adopted ratemaking principles,⁵ which may need to be updated or expanded in light of

² Other load management approaches include but are not limited to rate riders (e.g., Smart Rate and PDP), supply side DR Programs [e.g., Capacity Bidding Program (CBP), SmartAC, Base Interruptible Program (BIP)], Energy Efficiency (EE) (e.g., EE Pay for Performance), Bilateral Contracts (e.g., a Resource Adequacy (RA) only contract from a DR resource), and pilots (e.g., the DRAM Pilot or the Emergency Load Reduction Pilot).

³ Workshop Slides. "Forward Looking Vision: Advanced DERs & Demand Flexibility Management" Alope Gupta. May 25, 2021. Slide 10.

⁴ Energy Division listed the policy objective of UNIDE to be to, "Improve demand-side resource management...Through more effective demand response (DR) and retail rate structures, That leverage opportunities enabled by long term electrification and DER deployment, To better address grid issues associated with the growth of renewables, electrification, and DER adoption, and support California's clean energy goals." Alope Gupta. Proposed Roadmap for DER & Flexible Load Management." Slide 3.

⁵ Rate and Incentive principles are from the CPUC's Residential Rate Reform OIR. Rate Design Principles. http://prccappiiswc002/Docs/ResidentialRatesOIR/Final-Decisions/CPUC/2015/ResidentialRatesOIR_Final-Dec_CPUC_20150703_D-15-07-001_341469.pdf

decarbonization and electrification efforts. The current adopted rate making principles include:

1. Low-income and Medical Baseline customers should have access to enough electricity to ensure basic needs (such as health and comfort) are met at an affordable cost;
 2. Rates should be based on marginal cost;
 3. Rates should be based on cost-causation principles;
 4. Rates should encourage conservation and energy efficiency;
 5. Rates should encourage reduction of both coincident and non-coincident peak demand;
 6. Rates should be stable and understandable and provide customer choice;
 7. Rates should generally avoid cross-subsidies, unless the cross-subsidies appropriately support explicit state policy goals;
 8. Incentives should be explicit and transparent;
 9. Rates should encourage economically efficient decision-making;
 10. Transitions to new rate structures should emphasize customer education and outreach that enhances customer understanding and acceptance of new rates, and minimizes and appropriately considers the bill impacts associated with such transitions.
- Rate proposals should align with Modern Rate Architecture principles,⁶ which are that rate design should:
 1. Identify and set clear prices for the utilities' product, which is the delivery of electricity and services such as billing, customer service, and emergency response;
 2. Recognize the costs and benefits of public policy mandates that are included in the IOU's revenue requirements (e.g., Renewables Portfolio Standard, low-income and disadvantaged community programs and energy-efficiency and self-generation incentives);
 3. Charge customers appropriately at prices that are clear and understandable for the products and services they buy and for the policy mandates; and
 4. Provide customers with transparent credits to compensate them for any benefits they might provide.

3. **The workshops should scope what research exists versus research that should be done to enable UNIDE to be successful with different customer groups and should consider prioritizing the roadmap to address customer groups most likely to adopt dynamic rates and contribute the most quickly to achieving UNIDE's objectives.** Dynamic pricing and automated response are substantial changes from how the vast majority of customers currently interact with their energy usage. In addition, different customer groups have different levels of

⁶ Modern Rate Architecture is provided in PG&E's prepared testimony in its 2018 Rate Design Window application, Application (A.)17-12-0113 and in the article "A Modern Rate Architecture for California's Future," which appeared in the November 1, 2018 issue of Public Utilities Fortnightly.

sophistication and interest in how to manage their energy usage, and potential to adopt automation technology. Workshops should develop a scope for rate design and a target implementation timeline that appropriately addresses specific customer classes, and segments of customer classes. For example, vulnerable customers (CARE, FERA, Medical Baseline, Seniors) should be addressed as a separate customer group(s) within the residential customer class. There may also be value in considering other groups of customers with differing levels of potential to adopt dynamic rates within customer classes or that cross over customer classes, such as the large commercial and industrial customers, electric vehicle customers, net energy metering customers, and community choice aggregation customers. A successful statewide deployment of UNIDE will depend on customer adoption and a positive customer experience, which needs to be considered at these appropriate customer segment levels. The workshop should address the following for each defined segment:

- What do customers want? For example, do customers (or customer segments) prefer a charge (i.e., a rate plan) versus an incentive, or some combination of the two?
 - What is current customer understanding between different rate design and load management options?
 - What are customers' abilities to control their usage through technology and technology saturation, both existing today as well as likely to be available in the foreseeable future (5-10 years)? Understanding what these technologies are and how customers use them is critical for appropriate program planning and rate design that customers will be readily able to benefit from.
 - What are customer risk tolerances, in light of Texas' February 2021 severe winter storm outages and associated real time price shocks? What are the customer preferences for bill volatility as compared to other attributes such as expected bill savings?
 - What is the intended role for third party providers or aggregators supporting the customer to manage usage? What are the benefits and risks of such an approach?
 - What equity issues should policy makers be cognizant of with different rate design and load management options?
 - How receptive are customers to automated controls and how willing are they to pay for and use these services (and what are the barriers to adoption)?
4. **The workshops should level-set stakeholders on existing work related to real time pricing.** For example, in advance of submitting its GRC Phase II Real Time Rate Pilot for Commercial and Industrial Customers, PG&E sponsored research to understand the state of RTP offered by regulated utilities in the U.S. through an Electric Power Research Institute (EPRI) Benchmarking study. The EPRI Benchmarking Study represents a comprehensive review of the universe of RTP plans that have been offered by regulated utilities across the U.S. In addition, the EPRI Benchmarking Study provides a framework and taxonomy for dynamic pricing and RTP. At a high level this benchmarking study found:
- There are 55 currently-active RTP rate schedules offered by regulated utilities in the U.S. (51 with open enrollment; 4 with closed enrollment).

- Most active RTP programs offered by regulated utilities in the U.S. are optional and involve large Commercial and Industrial (C&I) customers. Two are specifically for Residential and two (both offered by SCE) are for Agricultural customers.
- Eligibility is typically related to a megawatt (MW) size threshold, based on minimum demand or monthly peak demand, and often limited to those with larger electric loads.
- Most RTP rates have differing objectives than load shift. Often the impetus for offering a RTP is: 1) Provider of Last Resort service in a fully competitive retail energy market, 2) Economic development incentive to encourage customers to expand load, 3) Encourage peak demand reduction and associated environmental and system benefits; 4) Option for customers to save money on their bills,
- The most common type of RTP program features hourly pricing based on regional wholesale energy market postings (RTOs/ISOs), with a day ahead notification and no intra-territory spatial differentiation.
- The results of load shift are inconclusive, and results cannot be extrapolated to the CAISO market.

5. **The workshops should focus on existing technology deployment, saturation, and standards.** PG&E recommends as a starting point that the CEC and LBNL present on their existing work on this topic. PG&E recommends the CEC present on two of their studies on technology deployment and saturation. This includes the CEC’s June 2020 publication of the 2019 Residential Appliance Saturation Study (RASS),⁷ a comprehensive study of residential sector energy use. This also includes the March 2021 publication of the CEC’s Commercial End-Use Survey (CEUS),⁸ a comprehensive study of commercial sector energy use. PG&E also recommends that LBNL present the results of their DR Load Potential Study in the past few years, which include how different DER technologies may impact the potential of DR programs and dynamic rates.

PG&E recommends that the CPUC address standards for technology and communication. This can include the CEC’s Flexible Demand Appliance Standard and timing as well as the communication protocols for sending signals such as Open ADR. In addition, the workshop should explore DERs manufacturers’ interest in supporting UNIDE and transactive energy.

6. **The workshops should include perspectives from various entities in how they plan to engage with the various phases of UNIDE in order to develop a comprehensive stakeholder assessment of adoption.** Perspectives should include those of the state agencies (CPUC, CEC, CAISO), the load serving entities (especially the Community Choice Aggregators), the distribution utilities, third party aggregators, technology providers, manufacturers, customer class representatives, and other interest groups, etc.

⁷ California Energy Commission. Residential Appliance Saturation Study. <https://www.energy.ca.gov/data-reports/surveys/2019-residential-appliance-saturation-study>

⁸ California Energy Commission. Commercial End-Use Survey. <https://www.energy.ca.gov/data-reports/surveys/california-commercial-end-use-survey>

7. **The workshops should address dual participation rules.** Similar to PG&E’s proposal in its March 29, 2021 Commercial Electric-Vehicle Day-Ahead Hourly Real Time Pricing Pilot Supplemental Testimony Chapter 1 on Dual Participation,⁹ PG&E recommends that the broader context of dual participation should be addressed through workshops hosted by the CPUC – and in this context with UNIDE. For example, what other load management approaches¹⁰ should be able to also participate in UNIDE? How would participation in UNIDE impact baselines used in other programs? How would incentives and/or savings be calculated for multiple programs? Any discussion of dual participation should consider and be aligned with work on dual participation in other proceedings.

B) PLANNING

8. **The workshops should focus on reliability and planning in conjunction with the CEC and CAISO.** Accurate forecasts are critical to reliability. Workshops should scope a process for how the CEC will develop modeling for the CPUC’s UNIDE proposal and how the CAISO will be included from a planning and operational perspective, and how load impacts from UNIDE will be incorporated into the California Energy Commission’s Integrated Energy Policy Report and/or Integrated Resource Plan proceedings. This is critical as the models and assumptions regarding customer behavior are significant factors in a utility’s cost decisions and CAISO grid reliability as California found with the capacity shortfall events in 2020.¹¹ The financial consequences of unforeseen events are substantial, and our forecasts are only as good as our data and assumptions for load response. In a world where climate and grid conditions are rapidly changing, accurate forecasting is imperative. Developing confidence in the price response of various customer types and technologies will be important to ensuring that forecasting can be done accurately with scaled dynamic pricing programs. PG&E agrees that load flexibility plays an important role in meeting capacity, however, load flexibility should not be an option or (short-term) opt-out product if it is to be counted on in capacity planning and operations.

C) OPERATIONS

9. **The workshops should include a scoping of DER export issues.** The UNIDE proposal’s Step 4 includes a transition to bi-directional prices which allows users to consume and export at the

⁹ (A.) 20-10-011. PG&E. Commercial Electric-Vehicle Day Ahead Hourly Real Time Pricing Pilot Supplemental Testimony Chapter 1, Attachment A, Dual Participation, Served March 29, 2021.

¹⁰ Other load management approaches include but are not limited to rate riders (e.g., Smart Rate and PDP), DR Programs [e.g., Capacity Bidding Program (CBP), SmartAC, Base Interruptible Program (BIP)], Energy Efficiency (EE) (e.g., EE Pay for Performance), Bilateral Contracts (e.g., a Resource Adequacy (RA) only contract from a DR resource), and pilots (e.g., the DRAM Pilot or the Emergency Load Reduction Pilot).

¹¹ A major finding of the Joint Agency report on the root cause of the capacity shortfall events was that planning was one of the three major contributors to reliability issues in August 2020. Source: CAISO, CPUC, CEC. *Final Root Cause Analysis Report Mid-August 2020 Extreme Heat Wave*. January 13, 2021. <http://www.caiso.com/Documents/Final-Root-Cause-Analysis-Mid-August-2020-Extreme-Heat-Wave.pdf>

current UNIDE price. Issues that need to be resolved if UNIDE considers export include but are not limited to:

- If the load is not interconnected or studied assuming export, these resources or load would need to be re-studied assuming export.
- Export raises the need for systems for visibility and control to maintain the safety and reliability of the distribution system. PG&E does not have these tools or systems in place today.

D.) DATA SHARING AND CYBER SECURITY

- 10. The workshops should scope what customer data privacy and access issues need to be included in a possible new rulemaking.** In developing a new paradigm in which third party aggregators can help customers manage their energy use and bills, new rules and capacity beyond what has been established for demand response in Rule 24 and existing rules for Rule 25 may need update.
- 11. The workshops should focus on cyber security scoping.** In recommending a single source for publication and visibility to individual utility dynamic rates, the CPUC should ensure that the data (and the systems) remain secure and accessible only to legitimate users. Centralizing access to such data from a single database raises substantial cybersecurity concerns that must be addressed and resolved. For example, if a customer is maliciously sent to an inaccurate price that causes them to charge or discharge their battery when the distribution system is overloaded, it could cause distribution safety and reliability concerns.

The results of these workshops should result in a report that includes scoping for a possible rulemaking. If UNIDE, or elements of UNIDE, uniquely addresses problems not addressed elsewhere, the workshop report should highlight what elements are prudent to address in a future rulemaking. The scoping for such a rulemaking should at minimum address the following questions and further be informed and updated based on workshop findings:

A. SCOPING:

- What problem are stakeholders working to solve?
- What problems does UNIDE uniquely address that other proceedings do not?
- Does UNIDE address the problem statement, and if so, what are the objectives and principles of UNIDE?
- What are existing best practices across the U.S. as it relates to elements of UNIDE?
- What does research indicate is the best rate design for various customer classes?
- What does research indicate is the status of technology adoption, understanding, and saturation for various customer classes?
- What does research indicate about manufacturers' interest in UNIDE and transactive energy?

- What are the dual participation considerations between UNIDE and other load management approaches? If this is a new rulemaking, what is the implementation pathway between existing crossover proceedings (e.g., GRC PH 2, Demand Response, Integrated Distributed Energy Resources, etc.) and UNIDE?
- What is the timeline for UNIDE? How will it incorporate flexibility to incorporate uncertainty and lessons learned along the way?

B. PLANNING:

- As it relates to planning and reliability, what process will the CEC follow for modeling UNIDE and how will the CAISO include UNIDE from a planning perspective?
- How will the IOU's recovery of costs including in the Distribution Revenue Adjustment Mechanism, Energy Resource Recovery Account and Portfolio Allocation Balancing Accounts be ensured?

C. OPERATIONS:

- How will CCA's participate with the customers that they serve?
- How will UNIDE's export functionality be implemented in light of the lack of tools for visibility and control on the distribution system?

D. DATA ACCESS AND CYBER SECURITY:

- What cyber security and customer privacy and data access issues should be considered with UNIDE?

As California moves toward a zero-carbon future, coordination between utilities and regulators becomes more important, and innovation is critical to ensuring that we meet the state's carbon goals at the lowest cost and in a safe and equitable manner. Load Management is a complex issue and will necessitate a delicate balance between the CPUC's recommendations on rate design, customers, manufacturers, third party aggregators, IOUs and CCAs. Real time pricing, subscription rates, and transactive energy features must be carefully vetted and sensibly implemented to avoid unforeseen consequences on customers or negative impacts to reliability. PG&E appreciates the opportunity to provide these comments and looks forward to continuing to work with staff in this effort and possible rulemaking.