

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

ENERGY DIVISION

RESOLUTION E-4863

August 10, 2017

R E S O L U T I O N

Resolution E-4863. Pacific Gas and Electric Company (PG&E) seeks approval of six new Electric Program Investment Charge (EPIC) projects via Tier 3 Advice Letter AL 5015-E, as permitted by D.15-09-005.

PROPOSED OUTCOME:

- Approve Project 2.34 (Predictive Risk Identification with Radio Frequency Added to Line Sensors); Project 2.36 (Dynamic Rate Design Tool).
- Allow PG&E's withdrawal of Project 2.31.
- Reject Project 2.32 (Electric Load Management for Ridesharing Electrification); Project 2.33 (Service Issue Identification Leveraging Momentary Outage Information); Project 2.35 (Call Center Staffing Optimization).

SAFETY CONSIDERATIONS:

- Resolution approves safety technology demonstration project that has the potential to improve the reliability of PG&E's electric system, which may improve public safety by reducing the frequency and duration of outages.

ESTIMATED COST:

- Resolution will not lead to additional ratepayer cost. Resolution approves two new demonstration projects costing no more than \$3.875 million. The entire sum of this amount will be drawn from PG&E's previously-authorized 2015-2017 EPIC budget.

By Advice Letter 5015-E, Filed on February 7, 2017.

SUMMARY

On February 7, 2017, PG&E filed a Tier 3 advice letter (AL) pursuant to Ordering Paragraph (OP) 1 of Commission Decision (D.) 15-09-005, seeking Commission approval of six new EPIC projects between triennial EPIC applications.

This Resolution approves two proposed projects and denies three. PG&E independently withdrew its request for approval of Project 2.31, and this Resolution does not consider the merits of that project. The Commission approves projects 2.31, 2.34, and 2.36 because they are high-value opportunity projects that meet the minimum requirements for new EPIC projects between EPIC application cycles. The Commission denies Projects 2.32 and 2.33 because they failed to meet the requisite showings for new projects that arise between EPIC triennial reviews.

The Commission denies Project 2.35 because it does not map to the electricity system. PG&E is authorized to implement the projects approved herein with previously-authorized EPIC funds from its 2015-2017 EPIC Investment Plan, A.14-04-034 (EPIC 2 plan). The funding for these new projects comes from funding originally allocated to ten PG&E EPIC 2 projects indefinitely on hold.

BACKGROUND

The Commission instituted Rulemaking (R.)11-10-003 to address funding and program issues related to public interest research, development, and demonstration projects.

In Phase 1 of R.11-10-003, D.11-12-035 established EPIC to fund public interest investments in applied research, development, technology demonstration and deployment, market support, and market facilitation of clean energy technologies and approaches for the benefit of electricity ratepayers of PG&E, Southern California Edison Company, and San Diego Gas & Electric Company (SDG&E), collectively the three large electric investor-owned utilities (IOUs).

In Phase 2 of R.11-10-003, D.12-05-037 directed the California Energy Commission and the three large electric IOUs (collectively, “the administrators”)

to present their investment plans for the triennial program periods for joint consideration by the Commission. The Commission holds ultimate authority over the EPIC program, and administrators may only use EPIC funds to implement research, demonstration and deployment (RD&D) work that is authorized by the Commission.

In the first triennial EPIC proceeding, D.13-11-035 capped the collection of EPIC funds at \$162 million annually and approved the first triennial investment plans (EPIC 1 plans) for the collection years 2012-2014. In 2015, D.15-04-020, within the Application (A.) 14-04-034 proceeding, approved 2015-2017 EPIC investment plans (EPIC 2 plans). Both decisions also resolved issues in connection with the implementation of the investment plans and program rules.

Most relevant to the instant filing, Phase II of A.14-04-034 specifically focused on the issue of whether EPIC administrators should have the flexibility to fund “new” investments—Strategic Initiatives for the CEC or projects for the IOUs—not included in their previously approved plans between triennial application cycles. This question of administrator flexibility had been raised by multiple parties, especially the administrators, in A.14-04-034. In D.15-04-020, the Commission decided to defer any decision on the issue to a second phase of the proceeding.

In Phase II, Energy Division (ED) staff held a workshop on the issue, and parties filed comments and reply comments.

Ultimately, D.15-09-005 authorized the use of a Tier 3 AL process to request approval of such new projects, subject to specific requirements. In its decision, the Commission recognized that “tight deadlines imposed by entities such as federal government agencies” and other temporal pressures could impose constraints on some new EPIC projects that would justify the creation of a process for proposing new projects between application cycles.¹

¹ D.15-09-005, Findings of Fact 6-7.

D.12-05-037 had established that the triennial application proceeds would be the primary venue for the consideration of any new R&D proposals.² D.15-09-005 explains,

The Commission approves a set of projects in the triennial EPIC applications after a thorough review. Any significant or contested modifications to the EPIC programs (beyond flexibility provided for in EPIC decisions) should also be reviewed by the Commission to ensure that Administrators continue to maintain an appropriate portfolio of projects as anticipated in the triennial review process. We conclude that an expedited process for new EPIC projects is reasonable, as long as due process rights (including full Commission review) are provided.”³

D.15-09-005 also discussed the Commission’s intent for this new AL process to be used in limited, necessary circumstances:

“[T]his process is established to promote the possibility for administrator responsiveness to high-value opportunities that align with the EPIC program’s goals but not its triennial timeline. We expect this process to be used sparingly and as an addition to the administrator’s planning options rather than a replacement for the formal application process. The investment plans and accompanying formal proceedings remain the primary venue for proposing main portfolio investments and overall program direction.”⁴

Additionally, although parties had recommended the use of a Tier 1 or Tier 2 Advice Letter process, the Commission maintained that the review of proposed new EPIC projects involving new and/or modified expenditures of funds cannot be considered “ministerial” and therefore a Tier 3 AL requiring a Commission Resolution was required.⁵ The Tier 3 AL process created by D.15-09-005 was a

² D.12-05-037, Findings of Fact 10.

³ D.15-09-005, p.14.

⁴ D.15-09-005, p.17.

⁵ D.15-09-005, Conclusion of Law 2.

culmination of the Commission's balance of expedience with thorough substantive review and procedural due process of all interested parties.

D.15-09-005 established the requirements that would apply to ALs filed pursuant to its authority with input from stakeholders, adopting parties' proposed requirements and adding its own concerning fiscal impact and project urgency (requirements d) and e), respectively).

OP 3 requires that any AL filed pursuant to D.15-09-005 demonstrate:

- a. The new project is within the scope of EPIC investment areas approved;
- b. The funding for the new project does not cause the overall EPIC funding to exceed the total funds authorized;
- c. The advice letter or business letter filing contains the same level of detailed description and support for the project as the Commission has approved for other projects;
- d. Whether and to what extent funding for the new project will result in any changes in funding for other approved projects, specifying exact changes to all affected project budgets;
- e. Why the proposal should be considered immediately and not simply included in the next cycle for EPIC funding consideration by the Commission; and
- f. All other requirements applicable to EPIC projects under the currently effective EPIC triennial plan continue to apply to the new project.⁶

Timeline and Procedural Background

On February 7, 2017, PG&E filed Advice Letter 5015-E (AL 5015-E) seeking Commission approval of six EPIC projects to add to its 2015-2017 EPIC portfolio. The projects are:

⁶ D.15-09-005, Ordering Paragraph 3.

1. Project 2.31, Aggregated Behind-The-Meter Storage Market / Retail Optimization (*Investment area: Renewables and Distributed Energy Resources Integration*)

The purpose of Project 2.31 is to demonstrate how aggregated behind-the-meter energy storage systems that are operated by a third party dispatcher may address wholesale market needs, while also operating as a customer resource to reduce customers' retail electric bills. According to AL 5015-E, the lessons learned from this project could inform future procurement decisions in various CPUC proceedings.⁷ PG&E articulated in AL 5015-E that this project should be considered immediately because "waiting an additional year will delay the ability to use the knowledge gained from this project on customers' behalf."⁸ Furthermore, PG&E requested the Commission to waive EPIC's competitive procurement criteria because PG&E had conducted a prior competitive procurement of a similar storage project.⁹

2. Project 2.32, Electric Load Management for Ridesharing Electrification (*Investment area: Renewables and Distributed Energy Resources Integration*)

The purpose of Project 2.32 is to understand and demonstrate grid impacts from electric vehicle charging used for ridesharing fleet applications, assess the ability to manage the resulting electric load using active demand management, explore the load shape for the developing use case of rideshare electric vehicles (EVs) that use Direct Charge Fast Charging, and demonstrate the extent to which load can be shaped through active demand management. At full deployment, this project is anticipated to shift EV rideshare charging load to potentially develop new commercial

⁷ Decision Adopting Energy Storage Procurement Framework and Design Program (D.13-10-040) in R.10-12-007; Decision Addressing Competitive Solicitation Framework and Utility Regulatory Incentive Pilot (D.16-12-036) in R.14-10-003; Order Instituting Rulemaking Regarding Policies, Procedures and Rules for Development of Distribution Resources Plans Pursuant to Public Utilities Code Section 769 (R.14-08-013). Advice 5015-E, at Attachment A.

⁸ *Id.*

⁹ *Id.*

EV rates, demand response programs, or other programs. PG&E asserts in AL 5015-E that if TNCs determine electrification is a benefit to them and their stakeholders, early execution of this project would allow PG&E to support electrification efforts of Transportation Network Companies (TNCs).¹⁰ Furthermore, if electrification of TNCs progresses, the lessons from this project could inform PG&E's load management decisions in the near term.¹¹

3. Project 2.33, Service Issue Identification Leveraging Momentary Outage Information (*Investment area: Grid Modernization and Optimization*)

The purpose of Project 2.33 is to demonstrate an approach to proactively identify potential service issue problems related to locations with frequent momentary outages, which may be caused by imminent failures of conductors, insulators, transformers and/or vegetation contact. By building upon PG&E's outage detection functionality by using repeated sub-second momentary outage information with advanced data analytics, this project may enable PG&E to derive additional value from the data made available from the SmartMeter™ investment and respond more quickly to outages and/or schedule repair work in advance.¹² PG&E asserts that this project should be considered immediately because earlier testing of this technology would lead to earlier results, and potentially improved customer experience, shorter outage times, and reduced cost to customers.¹³

4. Project 2.34, Predictive Risk Identification with Radio Frequency (RF) Added to Line Sensors (*Investment area: Grid Modernization and Optimization*)

The purpose of Project 2.34 is to demonstrate an approach to integrate real-time radio frequency (RF) monitoring technologies into Line Sensor

¹⁰ See Advice Letter 5015-E, Attachment A.

¹¹ See *id.*

¹² *Id.*

¹³ *Id.*

devices to potentially improve outage prediction and identify areas for grid reliability improvement. According to PG&E, fully deployed, this technology could potentially reduce operation and maintenance of cost of inspecting and patrolling lines. Further, this technology could improve energy reliability by predicting outages before they occur. PG&E claims in AL 5015-E that this project should be considered immediately because earlier execution of this project would help PG&E shape this technology earlier.

5. Project 2.35, Call Center Staffing Optimization (*Investment area: Customer Service and Enablement*)

The purpose of Project 2.35 is to create and demonstrate an algorithm to optimize call center staffing to better match call volumes through predictive modeling, incorporating data from historical volumes correlated with data such as general news, PG&E announcements, regulatory proceedings, ate schedule seasons, weather information, restoration times, and/or other data sources. PG&E asserts that improving call volume forecasts could support improvement in customer service levels and customer satisfaction by helping to reduce instances of understaffing. PG&E supports this project's immediate consideration because it believes that sooner this project starts, the sooner the potential benefits can be realized for the operational efficiencies expected to be gained. Furthermore, PG&E believes that this project is especially timely because of upcoming rate changes, which would likely impact the call center's call volume.

6. Project 2.36, Dynamic Rate Design Tool (*Investment area: Customer Service and Enablement*)

The purpose of Project 2.36 is to develop and demonstrate an exponentially more dynamic rate design tool approach to model customer bill, rate change impacts on revenue requirements, and tariff design impacts of next generation billing determinants and distributed energy resources (DERs). At full deployment, PG&E anticipates that this project could improve speed and flexibility in the rate design process, and potentially even help automate the development of new dynamic scenarios

for rate considerations. PG&E supports the immediate consideration of this project because it asserts that this tool can address the increasing need to know locational net benefits or other currently non-existent billing determinants.

PG&E stated within the AL that new proposed projects do not result in any adverse expected changes in EPIC 2 funding, and that the funding for the new proposed projects would not cause the overall EPIC funding to exceed the total funds authorized in the applicable and effective EPIC triennial plan.¹⁴

The costs of PG&E’s six proposed projects span the following range¹⁵:

Table 1 – Estimated New Project Costs

Project Title	Estimated Funding (lower bound)	Estimated Funding (upper bound)
Project 2.31 – Aggregated Behind-the-Meter Storage Market/Retail Optimization*	\$2.25 million	\$2.75 million
Project 2.32 – Electric Load Management for Ridesharing Electrification	\$1.125 million	\$1.375 million
Project 2.33 – Service Issue Identification Leveraging Momentary Outage Information	\$0.660 million	\$0.815 million
Project 2.34 – Predictive Risk Identification with Radio Frequency (RF) Added to Line Sensors	\$1.62 million	\$1.98 million
Project 2.35 – Call Center Staffing Optimization	\$0.655 million	\$0.810 million
Project 2.36 – Dynamic Rate Design Tool	\$1.695 million	\$1.895 million
Total:	\$8.005 million	\$9.625 million

*On July 31, 2017, in comments to this Resolution, PG&E withdrew its request for approval of Project 2.31.

¹⁴ Advice Letter 5015-E, p.3.

¹⁵ Advice Letter 5015-E, Attachment A.

PROTEST AND SUPPORT

On February 24, 2017, the San Francisco Department of the Environment, Lyft, General Motors, and Renewables 100 Policy Institute jointly submitted to Energy Division a letter of support for Project 2.32, Electric Load Management for Ridesharing Electrification. In their letter, they reminded the Commission the importance of understanding the potential impacts of the load profile of the new EV charging use case in developing new load management programs and/or rates that encourage optimal charging behavior but also serve the practical needs of TNC drivers.

On March 2, Southern California Edison Company submitted to Energy Division a letter of support for Advice 5015-E, urging a transparent, efficient and effective process to ensure that demonstrations incorporate changes in policy and/or advances in technology.

Also on March 2, 2017, after requesting and receiving an extension to the AL protest period, the Office of Ratepayer Advocates (ORA) protested AL 5015-E, arguing that (1) the AL did not meet D.15-09-005's requirement regarding the need for immediate consideration; and (2) PG&E's request to waive EPIC criteria for competitive procurement for EPIC 2.31 is unsupported.

On its first point, ORA argues that PG&E's general reason for immediate consideration, that an earlier start of proposed projects would lead to earlier benefits, is overly broad and is not consistent with the Commission's "narrow exceptions . . . established to allow the EPIC Administrators to file Tier 3 advice letters."¹⁶ Further, ORA claims that the six new EPIC project proposals within the AL are not justified by "unexpected opportunities that necessitate expedited review and approval."¹⁷

¹⁶ Protest of the Office of Ratepayer Advocates (ORA) of PG&E Advice Letter 5015-E, Request for Approval of New Electric Program Investment Charge (EPIC) Projects between Triennial EPIC Applications, p.9.

¹⁷ *Id.*, p.6.

On its second point, ORA argues that Project 2.31 fails to comport with the narrow exceptions for waiver of the EPIC’s competitive procurement criteria. Specifically, it asserts that PG&E failed to show that Project 2.31’s proposed technology and strategy were unique and available only from a single vendor; PG&E failed to show a long-standing relationship with any particular counterparty that would have resulted in discounted services; and PG&E failed to justify how a “not cost-effective” project in the Energy Storage Program would be not “more expensive than necessary” in the EPIC program.¹⁸

On March 9, 2017, PG&E filed a reply to ORA’s protest, defending its proposals for the new projects. In its reply, PG&E adds additional details about each proposed project, summarized below, and cites the following as reasons for requesting expedited approval for the six projects: the changing market; California’s accelerated energy and environmental policy goals; and the need for EPIC leads to be nimble and flexible to help drive better technology demonstrations for the benefit of customers.¹⁹ On the issue of waiver of the competitive procurement requirement for Project 2.31, PG&E maintains that prior competitive procurement in the Energy Storage RFO satisfies EPIC’s competitive procurement requirement, and that a second competitive procurement for Project 2.31 would prevent the realization of some project benefits.

Table 2 – PG&E Reply to ORA Protest

PG&E Reply to ORA Protest	
Project 2.31 – Aggregated Behind-The-Meter Storage Market / Retail Optimization	This project will help inform PG&E’s valuation of current and future storage, DER procurement: (1) Energy Storage RFO—agreements will be filed by 12/1/17; (2) DER proceeding requires a solicitation for DERs later in 2017; (3) IDER proceeding requires a solicitation for DER later in 2017.

¹⁸ *Id.*, p.10-11.

¹⁹ Pacific Gas and Electric Company’s Reply to the ORA Protest of Advice Letter 5015-E, p.2.

	<p>This project will produce data that would allow PG&E to validate valuation assumptions prior to the execution of DER transactions, resulting in the best possible understanding of future ratepayer value.</p>
<p>Project 2.31 Request to Waive EPIC Criteria</p>	<p>EPIC competitive procurement is unnecessary the project was already subject to competitive procurement in the Energy Storage RFO. PG&E is just re-purposing the project for EPIC purposes by focusing more on learnings at a lower total cost.</p> <p>If PG&E were required to conduct a second competitive procurement for Project 2.31, the procurement would not be completed in time to allow completion of the project to assist with the contracting under PG&E’s 2016 Energy Storage RFO, and the planning for PG&E’s future Energy Storage RFOs and integration of storage projects onto PG&E’s grid.</p>
<p>Project 2.32— Electric Load Management for Ridesharing Electrification</p>	<p>In the latter half of 2016, Lyft announced the “Express Drive Program,” a partnership between General Motors and Lyft to expand a short-term car rental program to drivers, including the deployment of GM Bolts (an all-electric vehicle). In February 2017, Lyft began offering for rent the GM Bolt to Bay Area rideshare drivers.</p> <p>By pursuing this project now, it will enable PG&E to support and encourage electrification approaches of TNCs, and anticipate the grid impacts associated with growing EV use case.</p>
<p>Project 2.33— Service Issue Identification Leveraging Momentary Outage Information</p>	<p>[Project 2.33] will leverage the Smart Grid Fault Detection and Location (FDL) pilot and build off of the learnings from it.</p> <p>It is imperative to maximize the value of the results and the significant lessons learned through previous work in a timely manner by exploring the potential for predictive fault analytics through monetary outage data information</p>
<p>Project 2.34— Predictive</p>	<p>[Project 2.34] does not duplicate PG&E’s Smart Grid Pilot Line Sensor project, but takes the next logical step in expanding and</p>

<p>Risk Identification with Radio Frequency (RF) Added to Line Sensors</p>	<p>evaluating further uses and enhancements to line sensor technology.</p> <p>The Line Sensor pilot succeeded, and demonstrated the value of this technology’s ability to reduce customer outage time. PG&E now has the opportunity to maximize that deployment of Line Sensors even further by driving demonstration of this RF approach.</p> <p>Waiting until the third triennial cycle increases the chances that PG&E may need to explore replacing installed sensors if this RF technology addition proves to have significant added value based on the results of the EPIC project.</p>
<p>Project 2.35— Call Center Staffing Optimization</p>	<p>With implementation of both major rate design reforms and CCA expansion, there is likely to be increased calls to the PG&E call centers.</p>
<p>Project 2.36— Dynamic Rate Design Tool</p>	<p>[Project 2.36] is critical to the utility’s ability to forecast the impact of local rate changes over time and various usage and/or DER adoption profiles</p> <p>In order to properly model the rate impact of continued and potentially escalated DER adoption rates, a tool with the hypothetical scenario capabilities outlined in [Project 2.26] is required.</p> <ul style="list-style-type: none"> • PG&E’s current tools and process are currently only capable of forecasting approved rates; they’re not designed for experimentation and/or testing. <p>[Project 2.36] may assist PG&E and other stakeholders in the upcoming 2018 Rate Design Window, which will require more detailed information on bill impacts associated with an increased number of rate design proposals</p>

On July 31, 2017, PG&E withdrew its request for the approval of Project 2.31, citing the vendor's decision to not move forward with the project. Consequently, this Resolution does not weigh the individual merit of Project 2.31 for approval.

DISCUSSION

Staff reviewed the AL and related filings, and conducted extensive internal review of the proposals according to D.15-09-005 and other EPIC requirements. The specific requirements articulated in D.15-09-005, OP 3 represent the core criteria the AL must meet.

Requirement a), Scope of EPIC Investment Areas

New projects between EPIC Triennial Reviews must be within the scope of EPIC investment areas approved for funding in the Administrator's applicable and effective EPIC triennial plan.

PG&E's investment framework includes four discrete technology demonstration and deployment (TD&D) categories: Renewables and Distributed Energy Resource Integration, Grid Modernization and Optimization, Customer Service and Enablement, and Cross-Cutting/Functional Strategies and Technologies.²⁰ Each category has unique objectives and challenges that PG&E's projects target. PG&E's six new projects in AL 5015-E fell into three TD&D categories: Renewables and Distributed Energy Resource (DER) Integration, Grid Modernization and Optimization, Customer Service and Enablement. As such, the Commission is satisfied that PG&E's proposed projects meet the investment area scoping requirement, pursuant to OP 3a.

Requirement b) Budgetary Impact on Overall Funding;

New projects between EPIC Triennial Reviews must stay within the triennial EPIC funding budget.²¹ PG&E makes a number of claims related to this requirement. In AL 5015-E, PG&E claims that "internal prioritization" of projects within the approved EPIC 2 investment plan would leave sufficient funding for

²⁰ D.15-04-020, at 17.

²¹ D.15-09-005, Ordering Paragraph 3b.

the newly proposed projects.²² Additionally, PG&E listed fourteen on-hold EPIC 2 projects.²³ From these statements, the Commission understands that the funding for the new proposed projects will come from the on-hold projects. On April 19, 2017, PG&E updated the number of on-hold projects from fourteen to ten, and clarified that these projects would be *permanently* on-hold.²⁴ PG&E's statement that ten EPIC 2 projects will not go forward and their budgets will fund the newly proposed projects is a key showing, and we incorporate it here within Appendix A. Just as administrators "have the flexibility to decide not to fund a project that is included in their authorized investment plans," they have the flexibility to fund a project that has been on-hold.²⁵ However, PG&E's statement that these projects would not move forward is key to the Commission's approval herein. The Commission further notes that PG&E's provided rationale for the halting of the ten EPIC 2 projects is reasonable and justifiable.

For new projects to stay within the triennial EPIC funding budget, their costs cannot exceed available EPIC funds. Although PG&E claims that the new proposed projects will not result in any adverse expected changes in funding for other approved projects, discrepancies between project costs and program budget create the possibility of a contrary scenario. Per PG&E's 2016 Annual Report, filed after AL 5015-E on February 29, 2017, EPIC 2 has \$8.1 million - \$15.6 million in uncommitted/ unencumbered funds.²⁶ These funds are "monies that are not identified in solicitation plans or obligated to a particular project."²⁷ At maximum, the total sum of the six proposed projects could cost \$9.625

²² Advice Letter 5015-E, p.3.

²³ *Id.*, Attachment B.

²⁴ See Appendix A.

²⁵ D.15-04-020, p.29.

²⁶ 2015 Annual Electric Program Investment Charge Report of Pacific Gas and Electric Company, *available at* <http://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M162/K005/162005752.PDF>.

²⁷ Pacific Gas and Electric Company's Reply to the ORA Protest of Advice Letter 5015-E, p.2.

million²⁸, an amount that exceeds \$8.1 million, the lower bound scenario of total uncommitted/unencumbered funds per PG&E's Annual Report. Therefore, the estimated cost of all six proposed projects could plausibly exceed the amount of uncommitted/unencumbered funds which would impact active projects and lead to tradeoff decisions among projects that we currently cannot anticipate.

In the present Resolution, the Commission finds no adverse impact from the above budget concern because the total cost of approved projects cannot exceed PG&E's lowest estimation of uncommitted/unencumbered EPIC 2 funds.

The Commission understands that PG&E intends to fund the new projects using money left over from EPIC 2 projects presently on-hold, thereby creating no additional cost to ratepayers. PG&E informed staff, and we formally require herein, that these funds alone will finance any new approved projects, and currently in-flight projects will not be financially affected by the new projects. Ultimately, following PG&E's withdrawal of Project 2.31, this Resolution approves two projects that do not exceed the lower bound amount of uncommitted/unencumbered funds. Therefore, the Commission is not concerned that the funding for the new project will cause the overall EPIC funding to exceed the total funds authorized for EPIC 2.

Requirement c), Detailed Description and Support for New Projects

All Tier 3 ALs proposing new projects between EPIC Triennial Reviews must contain the "same level of detailed description and support for the project as the Commission has approved for other projects included in the applicable and effective EPIC triennial plan."²⁹

As modified herein and in the Appendix, PG&E described and supported its new proposed projects as fully as it did its projects in its 2015-2017 EPIC Triennial Plan.

²⁸ See Table 1.

²⁹ D.15-09-005, Ordering Paragraph 3(c).

Requirement d), Specification of Budget Impacts

Requirement d) states that ALs must show “[w]hether and to what extent funding for the new project will result in any changes in funding for other approved projects, specifying exact changes to all affected project budgets.”

AL 5015-E provides minimal information about the budgetary impacts that the new projects may have on existing projects. The central directive within requirement d) compels an administrator to demonstrate the exact impact of approving a new project using money previously earmarked for other projects. This information allows the Commission to determine the relative value or opportunity cost of new investments. AL 5015-E provides an estimation of total cost³⁰ and cost per project³¹, but it fails to explain “to what extent funding for the new project will result in any changes in funding for other approved projects,” per requirement d). AL 5015-E does not include any information related to changes in funding to other projects,³² nor does it provide any other budget-related details, besides an estimated budget of proposed projects. Despite proposing to re-allocate 16-18% of its total EPIC 2 budget to new projects, PG&E insufficiently states without any further explanation that no adverse impact will result from the projects within AL 5015-E.

Furthermore, AL 5015-E, by itself, does not assure the Commission that the new projects would not adversely affect the budgets of existing projects. AL 5015-E identifies fourteen on-hold projects that could be reactivated, contingent upon PG&E’s “internal prioritization process.”³³ PG&E claims that this internal prioritization of the EPIC 2 investment plan would free up sufficient funding to cover all project proposed in the AL.³⁴ However, the possibility that some or all of the fourteen on-hold projects could re-activate nullifies PG&E’s guarantee of sufficient funding. If PG&E plans to draw funding for its new projects from

³⁰ \$7.9M - \$9.6M. PG&E AL 5015-E, p.2.

³¹ See Table 1.

³² Advice Letter 5015-E, p.2-3.

³³ *Id.*, Attachment B.

³⁴ Advice Letter 5015-E, p.3.

preapproved on-hold projects, the only way to absolutely prevent adverse budgetary impact to existing projects is to ensure that the on-hold projects are *permanently* on-hold. If projects are permanently on-hold, or canceled, their project budgets cannot be adversely affected because the projects do not require further funding.

To further investigate the budget impacts of AL 5015-E, ED staff requested PG&E to file a supplement to AL 5015-E to formally incorporate information PG&E had provided in its response to ORA's protest and elsewhere. Further, ED staff requested the supplement contain additional detail: "specifying exact changes to all affected project budgets. If there is no impact, this should be demonstrated/shown, not simply stated without any specific support. What is the budget trade-off that the AL represents?" PG&E declined ED's supplement request, stating that AL 5015-E provided the information required by D.15-09-005.³⁵ However, PG&E assured staff that *ten*³⁶ currently on-hold EPIC 2 projects would not move forward, "as they are currently not in the best interest of [PG&E's] customers, the technology has proven to not be ready to demonstrate at this time, and/or [PG&E has] been able to gather the key learnings through other projects."³⁷

The scarcity of detail in AL 5015-E relevant to requirement d) belies the magnitude of this fund shift proposal. As mentioned above, in instances where PG&E plans to fund new projects with left-over funds from on-hold projects, the Commission can only assume the absence of adverse budgetary impact where on-hold projects are *permanently* on-hold. While this Resolution cannot rescind the Commission's approval of PG&E's EPIC 2 portfolio in D.15-04-020, PG&E has unlimited fund shifting authority within approved projects to move certain projects forward while holding others back. PG&E's permanent holding of ten EPIC 2 projects is significant because this ensures that new projects will not adversely affect ongoing projects' budgets.

³⁵ E-mail from PG&E, April 19, 2017, on file with Commission.

³⁶ See Appendix A

³⁷ E-mail from PG&E, April 19, 2017, on file with Commission.

In the present Resolution, the Commission acknowledges that PG&E plans to fund the new proposed projects with holdover funds from ten EPIC 2 projects that will not move forward. To resolve any ambiguity, we modify AL 5015-E by including the statement regarding the projects that will not go forward within Appendix A.

Requirement e), Immediacy

All Tier 3 ALs proposing new projects between EPIC Triennial Reviews must explain why the proposal should be considered immediately and not simply included in the next cycle for EPIC funding consideration by the Commission. This requirement is a key limiting principle within the AL process, pursuant to D.15-09-005. PG&E's comments on the Draft Resolution protested this point. We reiterate it. In simple terms, a compelling justification for doing a project immediately is the reason this AL process exists. The Tier 3 AL process for EPIC projects between triennial cycles was created to address the concern that some projects would lose value or not take place at all if not pursued immediately. Correspondingly, in reviewing such projects, immediacy is a vital determinative factor.

The Commission intended the Tier 3 AL process to review infrequent, high-value opportunities in alignment with the EPIC program's goals but not its timeline.³⁸ A blanket justification, such as PG&E's, that the Commission should consider projects now because waiting will delay the ability to use knowledge from them, is insufficient.³⁹ Earlier execution of projects leading to earlier learnings is an obvious supposition, inherent of almost any demonstration project, as pointed out by ORA.⁴⁰ This justification alone does not overcome the Commission's standard of review for requirement e).

³⁸ D.15-09-005, p.17.

³⁹ Advice Letter 5015-E, p.3.

⁴⁰ Protest of the Office of Ratepayer Advocates (ORA) of PG&E Advice Letter 5015-E, Request for Approval of New Electric Program Investment Charge (EPIC) Projects between Triennial EPIC Applications, p.6.

The Commission acknowledges that PG&E views the AL process as a means to create efficiencies and makes the most of their budget. The Commission is sympathetic to these efforts to maximize benefits that will ultimately be passed to California ratepayers. However, while the Commission desires EPIC to be dynamic, effective and responsive to high-value research and development opportunities, the review of new projects between EPIC cycles should be infrequent and reserved for rare projects that demonstrate exigency, likely due to external factors.⁴¹

Lastly, although repurposing unused funds for new projects may be an effective use of EPIC dollars to maximize research advancement, this is not the only means by which to benefit California ratepayers. PG&E alludes to this consideration in its reply, stating “proposed projects, should not await another year for approval, especially when funds are available within the currently approved portfolio budget.”⁴² This indicates that PG&E is at least in part motivated to pursue these projects in order to prevent the rollover of existing EPIC funds.

In fact, the Commission has explicitly established rules for the rollover of unspent funds to provide ratepayers the benefit of reduced costs. In D.13-11-025, the Commission orders unused funds in the first two triennial cycles to be rolled over to the following cycle.⁴³ The decision further states that “[a]ny funds that have not been committed or encumbered by the end of the third triennial investment plan cycle, including accumulated interest, must be returned to ratepayers if legally permitted to do so.”⁴⁴ These EPIC program rules provide for the rollover of unused funds to reduce future collections and allow ratepayers to benefit from program efficiencies in the form of refunds. We make clear that using available funds and thus reducing any rollover is not an outcome that the AL process was explicitly created to support, nor is it an unqualified benefit in

⁴¹ See D.15-09-005, p.14.

⁴² PG&E Reply to the ORA Protest of Advice Letter 5015-E, p3.

⁴³ D.13-11-025, p.104.

⁴⁴ D.13-11-025, p.101.

our view. Balancing the potential benefit of new projects with the benefit of reduced costs informs our review herein.

With the above context in mind, the Commission reviews PG&E's proposed projects to determine whether they each met requirement e), "Why the proposal should be considered immediately and not simply included in the next cycle for EPIC funding consideration by the Commission." Projects 2.34, 2.35 and 2.36 meet the requirement, while Projects 2.32 and 2.33 do not.

PG&E explains in its Reply to ORA's Protest that Project 2.32, Electric Load Management for Ridesharing Electrification, will enable PG&E to support and encourage electrification approaches of TNCs, and anticipate grid impacts associated with growing electric vehicle use case. PG&E asserts that this research will support a recent partnership between Lyft and GM and encourage TNC electrification. PG&E states in its AL,

If PG&E acts now, there is a unique opportunity to both support fuel switching that reduces GHG emissions, while also learning about the potential to manage this load type with ridesharing programs from the onset. If TNCs determine electrification is a benefit to them and their stakeholders, this EV load pattern use case could be quickly adopted in a shorter period of time. The lessons learned from this project may inform PG&E's load management decisions in the near term if electrification of TNCs progresses; therefore, waiting an additional year will delay the ability to use the knowledge gained in this pilot on behalf of California customers.⁴⁵

In short, the justifications for this project provided in the AL are essentially that the technology demonstration results would manifest sooner, if pursued sooner. The project may be valuable, but this fact misses the purpose of D.15-09-005's Tier 3 AL process. D.15-09-005 does not create a process for any and all potentially valuable projects to be proposed outside the EPIC application proceedings. It requires proposals to show why they cannot wait until the next application, which in this case, was due less than three months after PG&E filed

⁴⁵ PG&E AL 5015-E, p10.

AL 5015-E. PG&E provided no specific rationale for the urgency of this project. It also failed to identify a specific and compelling cost of foregoing an early implementation of this project.

As defined by D.15-09-005, the limited AL process is not a venue for any and all potentially valuable projects to gain EPIC funding. The AL process created under D.15-09-005 screens for immediacy and exigency, and requires a demonstrable justification for why a project must be considered immediately outside the regular application process. PG&E did not explain in its filings the importance of PG&E's support of Lyft and GM's partnership now, and not in three months' time via the EPIC 3 process. Overall, the lack of immediacy prevents Commission approval of project 2.32.

Although PG&E explains potential substantive benefits of Project 2.33, Service Issue Identification Leveraging Momentary Outage Information, it fails to show the immediacy of this project. As we discussed above, a broad and general justification that earlier initiation would lead to earlier project results does not satisfy the Commission in regards to this requirement. Having a general "imperative to maximize the value of the [results and lessons from previous work] in a timely manner" could apply to any and all EPIC projects, or TD&D projects generally.⁴⁶ Therefore, we also do not approve project 2.33.

PG&E illuminates concerns that delaying Project 2.34, Predictive Risk Identification with Radio Frequency (RF) Added to Line Sensors, until the third triennial cycle could potentially lead to high future costs of replacing installed sensors without radio frequency technology. According to PG&E, a conservative estimation of 300 triplets installed per year would yield a replacement cost of at least \$2 million per year.⁴⁷ To manage the risk of these costs, the Commission finds it prudent to approve this project to achieve earlier learnings. Furthermore, PG&E's assertion that line sensor "[p]roduct offerings can benefit greatly from

⁴⁶ Pacific Gas and Electric Company's Reply to the ORA Protest of Advice Letter 5015-E, p.5.

⁴⁷ See Appendix B. Pacific Gas and Electric Company, EPIC Investment Plan 2015-2017, Application 14-05-003, Data Response.

the integration of more and better-quality system health monitoring and tools for troubleshooting” is also persuasive.⁴⁸ PG&E has a unique opportunity before it to enhance the deployment of line sensors and maximize their value proposition. The Commission finds sufficient immediacy here.

Through Project 2.35, Call Center Staffing Optimization, PG&E proposes the development of an algorithm that incorporates a more granular understanding of factors impacting call volume. PG&E asserts that upgrading call volume forecasts could improve customer service and customer satisfaction by helping to reduce instances of understaffing. Furthermore, PG&E stresses that responsiveness to staffing needs is especially important given next year’s launch of default residential time-of-use (TOU) rates. The Commission acknowledges that the 2019 transition to a TOU rate plan will garner inquiries from residential electric customers and may even impact call volume, as PG&E claims. Thus, the Commission finds that this project’s aid of a smoother transition to TOU rates provides a sufficient immediacy nexus.

PG&E anticipates that Project 2.36, Dynamic Rate Design Tool, will demonstrate an exponentially more dynamic rate design tool approach for modeling customer bills, utility revenue requirement impacts, and impact from next generation billing determinants and DERs. The Commission agrees with PG&E that added capacity to the rate design process through this project will have useful applications, especially in this time of increasing DER integration. Furthermore, the Commission finds that this project would benefit from expedited consideration because of its support for PG&E’s EPIC 3 projects currently under Commission assessment. In its review of PG&E’s request to approve Project 2.36, the Commission relied on PG&E’s Data Response, provided on May 8, 2017. We modify AL 5015-E by including it in Appendix B. In its Data Response, PG&E explained that Project 2.36 could provide a more accurate modeling of potential tariff designs. This, in turn, would create a positive feedback loop to EPIC 3 projects like 3.30 Connected Device Real-Time Pricing-Based Control and 3.31 Real-Time DER Price Signals. According to PG&E, this project could also provide better understanding of customer bill and revenue requirement impacts, which would assist EPIC 3.02 Virtual DER Markets for Capacity and Other attributes,

⁴⁸ PG&E Advice Letter 4990-E Line Sensor Final Report, p. 32.

3.28 Real-Time Load-Based Charging, and 3.29 Advanced Customer Bill Scenario Calculator. Given the expected benefits to upcoming EPIC 3 projects, the case for scheduling this project before the approval of EPIC 3 projects is valid. The commission finds sufficient immediacy here.

Requirement f), Other Requirements Applicable to EPIC Projects

New EPIC projects between triennial EPIC reviews must satisfy “[a]ll requirements applicable to EPIC projects under the currently effective EPIC triennial plan.”⁴⁹ This includes electricity ratepayer benefits,⁵⁰ including greater reliability, lower costs and increased safety, a mapping of the planned investments to the electricity system value chain,⁵¹ policy justifications,⁵² avoidance of duplication of other research, development and demonstration efforts,⁵³ and reasonable probability of providing benefits to ratepayers.⁵⁴ The Commission is satisfied that all but one of PG&E’s proposed projects meet these requirements.

PG&E maps Project 2.35, Call Center Staffing Optimization, within the grid operations/market design segment of the electricity system design value chain. The Commission disagrees with this categorization, and finds that Project 2.35 does not fall within any component the electricity system value chain. The Commission’s conclusion follows Project 2.35’s focus on addressing a non-electric system or infrastructure need. The algorithm that PG&E seeks to create under Project 2.35 reduces understaffing and overstaffing at call centers, and improves customer experience, but does nothing to strengthen or improve the electric system. An efficiency-creating algorithm like this one does not fall into any of the applicable electricity value chain elements: grid operations/market

⁴⁹ D.15-09-005, Ordering Paragraph 3(f).

⁵⁰ D.12-05-037, Ordering Paragraph 2.

⁵¹ *Id.*, Ordering Paragraph 12(a).

⁵² *Id.*, Ordering Paragraph 12(b)(ii).

⁵³ Pub. Util. Code §740.1(d).

⁵⁴ Pub. Util. Code §740.1(a).

design; generation; transmission; distribution; demand-side management. Project 2.35 fails requirement f).

COMMENTS

Public Utilities Code section 311(g)(1) provides that this Resolution must be served on all parties and subject to at least 30 days public review and comment prior to a vote of the Commission. Section 311(g)(2) provides that this 30-day period may be reduced or waived upon the stipulation of all parties in the proceeding.

The 30-day comment period for the draft of this Resolution was neither waived nor reduced. Accordingly, this draft Resolution was mailed for comments, and on July 31, 2017, PG&E and ORA submitted comments.

In its comments, PG&E withdraws Project 2.31. The Commission has revised the Resolution to reflect this change. PG&E's withdrawal of Project 2.31 moots ORA's proposed changes relating to Project 2.31.

In its comments, PG&E objects to the Draft Resolution's finding that immediacy is a significant limiting principle of the five-factor test established in D.15-09-005. The revised Resolution clarifies the discussion related to this requirement. PG&E asserts that the purpose was "not to restrict new projects from being added."⁵⁵ This is not necessarily true. D.15-09-005 created specific requirements and mandated a Tier 3 substantive review process to ensure that only projects that met that standard of review would gain approval.

PG&E indicates in its comments that the requirements in place are not "in line with" its flexibility needs.⁵⁶ Litigating the merits of the five-factor test delineated by D.15-09-005 and considering alternative standards of review for projects between EPIC application cycles is beyond the scope of this Resolution.

⁵⁵ PG&E Comments on Draft Resolution E-4863, at 1.

⁵⁶ *Id.*, at 2.

PG&E also requests that the Commission approve projects 2.32, 2.33, and 2.35 on the basis that their “potential value” outweighs any failure of immediacy. Similarly, PG&E discusses some projects’ benefits for disadvantaged communities. Although empowerment of disadvantaged communities is an outcome that the Commission supports generally, this policy goal does not nullify or replace the standard of review established by D.15-09-005. Per D.15-09-005, projects between EPIC cycles must satisfy the five-factor standard of review. Projects must meet these requirements to be approved.

In its comments, PG&E alternatively requests Commission consideration of the three rejected projects for inclusion within PG&E’s EPIC 2018-2020 Investment Plan Application A.17-04-028 (EPIC 3). Commission is open to considering these projects as part of the regular EPIC application process. However, procedurally, PG&E should formally modify its EPIC 3 application if it wishes to change the constitution of its application.

In its Comments, PG&E requests clarification that “the EPIC program criteria does not require that the projects themselves not move forward if funding is available.” This Resolution was modified to clarify this point.

The Draft Resolution rejected Project 2.32 partially on the basis of potential overlap with a SDG&E project. In its Comments, PG&E articulates the distinction between Project 2.32 and SDG&E’s SB 350 project, providing new detail. The Commission appreciates the additional information, as well as PG&E’s evident coordination and communication with SDG&E to prevent the risk of project duplication. The revised Resolution was modified to remove the project’s rejection on this basis. Nevertheless, the Commission’s rejection of this project stands, due to the project’s lack of immediacy.

PG&E defends its position that Project 2.35 maps to the electric system value chain as a “Grid Operations / Market Design” asset, and asserts that Project 2.35 would have grid planning benefits. PG&E’s contention in comments that Project 2.35 benefits grid operations and reliability is not persuasive. All information available to the Commission indicates that this project is a call center staffing

optimization effort.⁵⁷ This is supported by the project title, but also by PG&E's own statements of the "Concern, Gap, or Problem to Be Addressed."⁵⁸ Furthermore, the link that PG&E attempts to draw between call data and grid reliability is not strong enough to map this project onto the electricity system value chain. The revised Resolution still rejects Project 2.35.

In its Comments, ORA recommends a revision of Order 6 to correctly reflect the analysis and findings set forth in the rest of the Draft Resolution. The Commission agrees with this recommendation, and has revised this Resolution to accurately convey that Projects 2.32, 2.33, and 2.35 are rejected.

FINDINGS

1. D.11-12-035 established the Electric Program Investment Charge (EPIC) program to fund public interest investments in applied research, development, technology demonstration and deployment, market support, and market facilitation of clean energy technologies and approaches for the benefit of electricity ratepayers of the three large investor-owned utilities (IOUs).
2. The Commission holds ultimate authority over the EPIC program, and authorizes the EPIC administrators, the California Energy Commission and IOUs, to use EPIC funds to implement RD&D work in triennial cycles.
3. D.15-09-005 authorized the use of a Tier 3 Advice Letter process to request approval of new strategic initiatives or projects between triennial application cycles. Any advice letter filed pursuant to D.15-09-005 must demonstrate:
 - a. The new project is within the scope of EPIC investment areas approved;
 - b. The funding for the new project does not cause the overall EPIC funding to exceed the total funds authorized;

⁵⁷ See Advice 5015-E, at Attachment A.

⁵⁸ *Id.*

- c. The advice letter or business letter filing contains the same level of detailed description and support for the project as the Commission has approved for other projects;
 - d. Whether and to what extent funding for the new project will result in any changes in funding for other approved projects, specifying exact changes to all affected project budgets;
 - e. Why the proposal should be considered immediately and not simply included in the next cycle for EPIC funding consideration by the Commission; and
 - f. All other requirements applicable to EPIC projects under the currently effective EPIC triennial plan continue to apply to the new project.
4. On February 7, 2017, Pacific Gas and Electric Company (PG&E) filed Advice Letter (AL) 5015-E seeking Commission approval of six EPIC projects to add to its 2015-2017 EPIC portfolio.
 5. On March 2, 2017, Office of Ratepayer Advocates (ORA) timely protested AL 5015-E.
 6. On March 9, 2017, PG&E responded to ORA's protest.
 7. On April 27, 2017, Energy Division staff filed a data request with PG&E regarding three proposed projects, 2.31, 2.34, and 2.36. PG&E responded to the data request on May 8, 2017.
 8. All proposed projects fell within the scope of EPIC investment areas approved for funding in PG&E's applicable and effective EPIC triennial plan.
 9. As of PG&E's filing of its 2016 Annual Report, EPIC 2 has \$8.2 to \$15.6 million in uncommitted/unencumbered funds.
 10. The estimated combined cost of the six new projects proposed in Advice 5015-E is \$8.005 to \$9.625 million.
 11. The total cost of the new projects could conceivably exceed the total amount of uncommitted/unencumbered EPIC 2 funds.
 12. On July 31, 2017, through comments, PG&E formally withdrew its request for approval of Project 2.31.

13. The total cost of Projects 2.34 and 2.36 will not exceed the total amount of uncommitted/unencumbered EPIC 2 funds.
14. AL 5015-E described and supported new proposed projects as fully as the 2015-2017 EPIC Triennial Plan did.
15. Ten of PG&E's EPIC 2 projects are presently on-hold and will not move forward.
16. Immediacy is a significant limiting principle that determines whether a new project should receive expedited consideration and execution through the Tier 3 Advice Letter process.
17. The Commission intended the Tier 3 AL process to review infrequent, high-value opportunities in alignment with the EPIC program's goals but not its timeline.
18. The EPIC program rolls over any unused funds to future investment cycles to maximize efficiency and reduce EPIC collections from ratepayers.
19. Project 2.32's potential to support electrification approaches of transportation network companies and anticipate grid impacts associated with growing electric vehicle use case does not present sufficient exigency to overcome the immediacy requirement of Tier 3 review.
20. A need to maximize the value of lessons learned from previous research without a specific, external rationale is insufficient to show Project 2.33's immediacy.
21. Replacing 300 triplets of line sensors could cost at least \$2 million. Abating the risk of replacement cost of \$2 million per year for line sensors through Project 2.34 is prudent.
22. Improving call volume forecasts could reduce instances of understaffing. Project 2.35 will enable PG&E to better assist and respond to residential electric customers with inquiries about the 2019 transition to a Time-of-Use rate plan.
23. Early learnings from Project 2.36 could provide useful benefits for EPIC 3 projects.
24. Project 2.35 does not fall within any category of the electricity system value chain.

THEREFORE IT IS ORDERED THAT:

1. Project 2.31: Aggregated Behind-the-Meter Storage Market/Retail Optimization is withdrawn and not considered for approval by the Commission.
2. Project 2.32: Electric Load Management for Ridesharing Electrification is denied.
3. Project 2.33: Service Issue Identification Leveraging Momentary Outage Information is denied.
4. Project 2.34: Predictive Risk Identification with Radio Frequency Added to Line Sensors is approved.
5. Project 2.35: Call Center Staff Optimization is denied.
6. Project 2.36: Dynamic Rate Design Tool is approved.

This Resolution is effective today.

I certify that the foregoing resolution was duly introduced, passed and adopted at a conference of the Public Utilities Commission of the State of California held on August 10, 2017; the following Commissioners voting favorably thereon:

/s/TIMOTHY J. SULLIVAN

TIMOTHY J. SULLIVAN
Executive Director

MICHAEL PICKER
President

CARLA J. PETERMAN
LIANE M. RANDOLPH
MARTHA GUZMAN ACEVES
CLIFFORD RECHTSCHAFFEN
Commissioners

Appendix A

April 19, 2017, PG&E asserts that the following projects listed below currently will not move forward as they are currently not in the best interest of its customers, the technology has proven to not be ready to demonstrate at this time, and/or PG&E have been able to gather the key learnings through other projects.

1. 2.01: Evaluate Storage on the Distribution Grid
2. 2.06: Intelligent Universal Transformer (IUT)
3. 2.08: "Smart" Monitoring and Analysis Tools
4. 2.09: Distributed Series Impedance (DSI)
5. 2.13: Digital Substation / Substation Automation
6. 2.17: Geomagnetic Disturbance (GMD) Evaluation
7. 2.18: Optical Instrument Transformers and Sensors for Protection and Control Systems
8. 2.20: Real-time Energy Usage Feedback to Customers
9. 2.25: Enhanced Smart Grid Communications
10. 2.30: Leverage EPIC Funds to Participate in Industry-wide RD&D Programs

Appendix B

**PACIFIC GAS AND ELECTRIC COMPANY
EPIC Investment Plan 2015-17
Application 14-05-003
Data Response**

PG&E Data Request No.:	ED_006-Q01-03		
PG&E File Name:	EPIC-InvestmentPlan2015-17_DR_ED_006-Q01-05		
Request Date:	April 27, 2017	Requester DR No.:	006
Date Sent:	May 8, 2017	Requesting Party:	Energy Division
PG&E Witness:	Julie Cerio & Roy Kuga	Requester:	David Huang

SUBJECT: PROJECT 2.31

QUESTION 1

How does the current agreement or contract with Stem Energy Northern California LLC (“Stem”) for Project 2.31 differ from the prior proposed contract between PG&E and Stem in the Energy Storage RFO?

- a. What specific changes were made to the previous Energy Storage RFO contract to fit the purpose and goals of Project 2.31?
- b. Has the “re-purposing” Stem’s Energy Storage RFO project to respond to the needs of Project 2.31 changed the technical objectives, expected outcomes, and deliverables of the project? If so, how?

ANSWER 1

There is no current agreement in place for EPIC Project 2.31 Aggregated Behind-The-Meter Storage Market / Retail Optimization. The EPIC project will not finalize and execute an agreement unless the Advice Letter is approved.

- a. As discussed above, there is no contract for EPIC Project 2.31. The proposed project scope, as currently proposed and if approved by the Commission, would impact how the contract would be structured compared to the previous Energy Storage RFO. The proposed EPIC Project 2.31 will demonstrate how an aggregated behind-the-meter energy storage fleet may support multiple uses, such as: 1) customer demand charge management; 2) CAISO resource adequacy requirements; and 3) other wholesale market products and services in the CAISO day ahead and real-time CAISO markets. As previously stated in PG&E's Advice Letter 5015-E and PG&E's reply to the ORA Protest of Advice Letter 5015-E, this project will help PG&E better understand the variable operations and maintenance cost associated with active use of energy storage systems in the CAISO energy market, and will provide insights into bidding strategies that optimize the economics for aggregated, behind-the-meter energy storage systems. For the EPIC 2.31 Project, Stem will provide PG&E with additional real-time grid edge visibility by sharing highly granular battery charging/discharging, voltage, current, and energy data that is collected for each customer premise.

The previous Energy Storage RFO contract between PG&E and Stem included a behind-the-meter capacity project under which PG&E was entitled to 4 MW of the project's Resource Adequacy (RA) capability attributes. This contract was rejected by the Commission, and therefore this contract with Stem no longer exists. The RFO was focused primarily on the sale of RA, under which the data sharing obligations were minimal and the demonstration tests to validate economic valuation assumptions were not in scope of the proposed RFO. In summary, EPIC Project 2.31 will produce significantly enhanced learnings through an agreement that is shorter and smaller and cost ~ 70% less than the original Energy Storage RFO contract.

- b. Yes. While the project design remains similar, the technical objectives, expected outcomes and deliverables of the EPIC project focus on a technical demonstration that enables PG&E to validate valuation assumptions based on real-time customer-sited equipment data, such as highly granular battery charging and discharging, voltage, current, and

energy usage data. The expected outcome of EPIC project 2.31 is either validation or rejection of valuation assumptions of current and future storage and other DER procurement.

QUESTION 2

What is the timeline for the completion of Project 2.31? How soon could the project produce usable learnings?

Answer 2

The timeline to complete this project is approximately one and a half years from project commencement. The project may begin producing usable learnings within six months of CPUC approval of this project.

QUESTION 3

Under what scenario would the cost for Project 2.31 reach the estimated upper limit (\$2.75 million)? Under what scenario would the cost for Project 2.31 stay at the estimated lower limit (\$2.25 million)?

a. What is the principal determinant for PG&E's estimated variation in cost?

Answer 3

The expected maximum cost of the project is \$2.75 million. This reflects the current compensation structure considered with the supplier for this project, as well as PG&E internal technical labor and administrative expenses that are required for the project.

a. PG&E cannot be certain of variation in cost, since the detailed resource plan and contracts have yet to be finalized.

Please produce the following documents in .pdf format:

Question 4

The most recent contract, executed agreement and/or any other comprehensive project scope description pertaining to PG&E's award of Project 2.31 to Stem.

Answer 4

PG&E does not have a contract, executed agreement or comprehensive project scope for the proposed EPIC 2.31 project. PG&E will not finalize and execute this agreement unless the proposed scope is approved by the Commission through this Advice Letter.

Question 5

Any formal documents between PG&E and Stem that coordinate the “re-purposing” of the Energy Storage RFO project for EPIC.

Answer 5

There are no formal contractual documents between PG&E and Stem that coordinate the “re-purposing” of the Energy Storage RFO project for EPIC.

PACIFIC GAS AND ELECTRIC COMPANY
EPIC Investment Plan 2015-17
Application 14-05-003
Data Response

PG&E Data Request No.:	ED_006-Q01-03		
PG&E File Name:	EPIC-InvestmentPlan2015-17_DR_ED_006-Q01-03		
Request Date:	April 27, 2017	Requester DR No.:	006
Date Sent:	May 8, 2017	Requesting Party:	Energy Division
PG&E Witness:	Julie Cerio & Ahmad Ababneh	Requester:	David Huang

SUBJECT: PROJECT 2.34

QUESTION 1

What is the estimated cost of replacing installed sensors if the radio frequency technology proves to be successful?

ANSWER 1

If the radio frequency technology proves to be successful, the estimated cost for replacing installed sensors depends on the spacing requirement for the RF sensor technology, which is yet to be determined and could vary between 2 to 4 triplets needed per feeder. Furthermore, we do not know the cost per sensor combined with the RF technology at this time, as the EPIC technology demonstration project has not yet begun.

However, based on our work with Line Sensors as described in PG&E's Smart Grid Pilot Final Report (Advice Letter 4990-E)⁵⁹, without the RF sensor technology we can estimate an installed cost per triplet is approximately \$6550. If we estimate a conservative installation amount of 300 triplets in a year, that total replacement cost is at least \$2 million per year.

⁵⁹ https://www.pge.com/tariffs/assets/pdf/adviceletter/ELEC_4990-E.pdf

QUESTION 2

What is the timeline for the completion of Project 2.34? How soon could the project produce usable learnings?

Answer 2

The timeline to complete this project is two to three years from project approval. The project may begin producing usable learnings within a year to two years after CPUC approval of this project, which would then help inform Line Sensor deployment strategies even before the full EPIC project is complete.

QUESTION 3

Under what scenario would the cost for Project 2.34 reach the estimated upper limit (\$1.98 million)? Under what scenario would the cost for Project 2.31 stay at the estimated lower limit (\$1.62 million)?

- a. What is the principal determinant for PG&E's estimated variation in cost?

Answer 3

The expected maximum cost of the project is \$1.98 million. This reflects the current estimated compensation structure considered for a supplier for this project, PG&E internal technical labor, product testing, other items associated with project execution activities, and administrative expenses that are required for the project.

- a. PG&E cannot be certain of variation in cost, since the detailed resource plan and contracts have yet to be finalized.

PACIFIC GAS AND ELECTRIC COMPANY
EPIC Investment Plan 2015-17
Application 14-05-003
Data Response

PG&E Data Request No.:	ED_006-Q01-05		
PG&E File Name:	EPIC-InvestmentPlan2015-17_DR_ED_006-Q01-05		
Request Date:	April 27, 2017	Requester DR No.:	006
Date Sent:	May 8, 2017	Requesting Party:	Energy Division
PG&E Witness:	Julie Cerio & Margot Everett	Requester:	David Huang

SUBJECT: PROJECT 2.36

QUESTION 1

How will this project support upcoming EPIC 3 projects?

- a. Without a dynamic rate design tool, what challenges will future EPIC projects face?

ANSWER 1

Developing the capability to model and test new rate designs may improve the utilities' abilities to establish more cost-based and transparent rates, based on more granular and sophisticated scenario modeling capabilities. This proposed EPIC 2 project would support at least six proposed EPIC 3 projects.

Rate recovery and tariff design are correlated to a number of EPIC 3 proposals. EPIC Project 2.36 *Dynamic Rate Design Tool* could inform the following projects by understanding the customer bill and revenue requirement impact associated with the following elements under consideration in the below projects:

- 3.02 *Virtual DER Markets for Capacity and Other Attributes* –The transparent, dynamic rates developed in EPIC 2.36 can better inform the cost-

effectiveness of DER flexibility, including for participating in the CAISO wholesale market under a dynamic rate scenario.

- *3.28 Real-Time Load-Based Charging* – The dynamic rate scenario tool developed in *EPIC 2.36* could support the optimization of local, load-based charging that will be tested in *EPIC Project 3.28*.
- *3.29 Advanced Customer Bill Scenario Calculator* – The dynamic rate scenario tool developed in *EPIC 2.36* would support the customer facing bill scenario calculator that is intended to provide customers with an improved understanding of how changes in energy usage will affect load curves and bills, while giving them options about various products and services they could consider which would impact their bill.

In some cases, projects may be informing and improving each other in a positive feedback loop such as, but not limited to, projects *3.30 Connected Device Real-Time Pricing-Based Control* and *3.31 Real-Time DER Price Signals* where the effectiveness of real-time rates, not just on-off control signals, could provide the utility insight into the elasticity of customer demand and DER generation.

EPIC Project 2.36 could also inform the *EPIC 3.10 Grid of the Future Scenario Engine* project. The tariff designs developed in *EPIC 2.36* could inform DER economics, adoption rates and geospatial allocation of DER adoption. As such, it may be informative to integrate tariff designs from *EPIC 2.36* into the modeling of DERs in the *EPIC 3.10* project, which will look to build a scenario-driven, grid planning tool, incorporating multiple scenarios for DER deployment.

- a. The approval and successful execution of *EPIC 2.36* will help provide future *EPIC* projects the ability to model potential tariff designs in a more accurate way. The *EPIC 3* projects proposed and discussed in this response can still move forward without *EPIC 2.36*, however the project will help provide a more accurate depiction of potential future rates, the potential impact of new technologies and capabilities, and the scale of their impacts as discussed in this response.

QUESTION 2

How will this project support other CPUC programs?

- a. Without the learnings from this project, what is the effect on other CPUC programs?

Answer 2

In addition to the proceedings and initiatives previously included in PG&E's response to ORA's protest letter to Advice Letter 5015-E, *EPIC Project 2.36* may support the abilities of the Commission to accurately develop a compensation mechanism that reflects the potential locational value from DERs. This concept is core to Distribution Resource Plan (DRP) demonstration projects.

Future tariff designs will likely include elements that could affect (both positively and negatively) the economics of Distributed Energy Resources (DERs). If improving DER return on investments for example, future rates could potentially help programs, such as the Self-Generation Incentive Program (SGIP), achieve higher DER installation rates more cost effectively.

- a. Independently, and when combined with learnings from other EPIC projects, learnings from *EPIC Project 2.36* could inform the feasibility of different tariff designs and billing determinants. This could inform and likely impact utilities' and the Commission's efforts to increase renewables on the grid and reliably integrate DERs, connected devices (e.g. both consuming and generating devices), and those topics covered in response to question 1.

QUESTION 3

When did PG&E begin to develop the idea for this project?

Answer 3

The project idea was considered by PG&E beginning in Q3 2016, and has evolved as PG&E has further assessed the systems and modeling capabilities needed to both implement rate reform and design rates for current and anticipated market, regulatory and legislative changes in California.

QUESTION 4

What is the timeline for the completion of Project 2.36? How soon could the project produce a usable rate design tool?

Answer 4

The Project may begin producing usable learnings within a year and a half after CPUC Approval of this project.

QUESTION 5

Under what scenario would the cost for Project 2.36 reach the estimated upper limit (\$1.895 million)? Under what scenario would the cost for Project 2.31 stay at the estimated lower limit (\$1.605 million)?

- a. What is the principal determinant for PG&E's estimated variation in cost?

Answer 5

The expected maximum cost of the project is \$1.895 million. This reflects the current compensation structure considered for external vendor costs, connection, cybersecurity, and operations of the platform, PG&E internal technical labor and other associated project execution costs, and the administrative expenses that are required for the project.

- a. PG&E cannot be certain of variation in cost, since the detailed resource plan and contracts have yet to be finalized.