



Regulatory Affairs
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May 1, 2023

Simon Baker and Pete Skala
Energy Division Directors
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102-3298

**RE: COMPLIANCE FILING OF SAN DIEGO GAS & ELECTRIC COMPANY'S
(U 902 E) 2022 ELECTRIC PROGRAM INVESTMENT CHARGE ANNUAL
REPORT**

Dear Mr. Baker:

San Diego Gas & Electric Company (SDG&E) hereby submits its 2022 Annual Report for its Electric Program Investment Charge (EPIC) Program (Report),¹ provided as Attachment A hereto. In addition, SDG&E provides the excel file titled "SDG&E 2022 EPIC Project Status Report Attachment B" in accordance with Decision (D.) 13-11-025 as Attachment B.² All EPIC-1 and EPIC-2 comprehensive final project reports were delivered with prior annual reports and are posted on SDG&E's website at www.sdge.com/epic. Six comprehensive final project reports for the EPIC-3 Cycle were completed in 2021 and posted to the SDG&E website. Project 7, Module 3 of the EPIC-3 Cycle is ongoing and is expected to be completed toward the first quarter of 2024.

¹ Per the EPIC annual reporting requirement in Decision (D.) 12-05-037, Ordering Paragraph 16 p. 105, the requirement lasted through February 2020, and therefore has sunset. Based on consultation with Energy Division staff, and for the sake of program transparency, SDG&E has agreed to voluntarily submit the annual report, and staff has agreed to submission of the annual report by April 30.

This document provides an overview of SDG&E’s EPIC activities and program information during the 2022 calendar year.

SDG&E and its fellow EPIC Administrators are voluntarily submitting an annual report “detailing program activities.”³ There are no comprehensive final reports to include with this annual report as the remaining EPIC-3 project, Project 7, Module 3, is ongoing.⁴ Annual reports are designed “to facilitate consistent reporting by the [EPIC] Administrators on their investment plans and project results.”⁵ In accordance with D.12-05-037, SDG&E serves this Report on “all parties in the most recent EPIC proceeding, and all parties to the most recent general rate cases for [SDG&E, PG&E, and SCE], and each successful and unsuccessful applicant for an EPIC funding award” during the 2022 calendar year.⁶

Sincerely,

/s/ SDG&E Regulatory Affairs

cc: SDG&E Central Files

³ The EPIC Administrators “must include with their [EPIC] annual report a final report on every project completed during the previous year.” D.13-11-025 at 136, Ordering Paragraph 14.

⁴ D.12-05-037 at 8

⁵ D.13-11-025 at 4-5, 62.

⁶ *Id.* at Ordering Paragraph 16.

ATTACHMENT A

SDG&E™ 2022 EPIC Annual Report

San Diego Gas & Electric Company

2022 EPIC Annual Report

May 1, 2023



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I. PREAMBLE

The submission of the Annual Report for the 2022 calendar year is voluntary, as Decision 12-05-037 discontinued the Annual Report requirement beyond 2020. In accordance with guidance from the CPUC staff, this report is being submitted on May 1, 2023, in the interest of promoting transparency and fostering a spirit of good faith.

II. EXECUTIVE SUMMARY

San Diego Gas & Electric Company (SDG&E) hereby voluntarily submits its 2022 EPIC Annual Report (Report). This Report provides an overview of SDG&E's EPIC activities during the 2022 calendar year. SDG&E is providing additional information about SDG&E's EPIC activities in an excel file titled, "SDG&E 2022 EPIC Project Status Report" as Attachment B.

SDG&E proposed and received approval for five projects that demonstrate system integration solutions in its first triennial application for the years 2012-2014 (EPIC-1).⁷ In addition, SDG&E proposed and received approval for six projects that demonstrate grid modernization and technology integration solutions in its second triennial application for years 2015-2017 (EPIC-2).⁸ SDG&E proposed and received approval for seven projects in multiple policy areas in its third triennial application for years 2018-2020 (EPIC-3).⁹ This report provides an update on SDG&E's 2022 progress and year-end status for the ongoing project work under EPIC-3 Project 7, Module 3.

A. Overview of Programs/Plan Highlights

In Application (A.) 12-11-002, SDG&E requested Commission approval of five programs that demonstrate advanced distribution system integration solutions. In November 2013, SDG&E's Application and First Triennial EPIC Plan was approved in full, with minor modifications, by the Commission in D.13-11-025.¹⁰

In A.14-05-004, SDG&E requested Commission approval of its Second Triennial EPIC Plan which included five programs that have the potential to help modernize the utility power system to improve customer benefits, as well as a sixth project for SDG&E participation in industry research development & deployment (RD&D) consortia. In April 2015, SDG&E's Application and Second Triennial EPIC Plan was approved in full, with minor modifications, by the Commission in D.15-04-020.

In A.17-05-009, SDG&E requested Commission approval of its Third Triennial EPIC Application which included seven project areas addressing topics in grid modernization, such as safety, advanced operation solutions, and resiliency.

⁷ SDG&E's Application (A.12-11-002) for EPIC-1, approved in D.13-11-025, issued November 19, 2013.

⁸ SDG&E's Application (A.14-05-004) for EPIC-2, approved in D.15-04-020, issued April 15, 2015.

⁹ SDG&E's Application (A.17-05-009) for EPIC-3, approved in D.18-10-052, issued November 2, 2018.

¹⁰ D.13-11-025 at 63 and 136.

D.18-10-052 approved the project areas that were included in the application but only released 2/3 of the funds, pending approval of a Research Administration Plan (RAP), which occurred in 2020. The RAP application, A.19-04-026, was a joint filing of IOU Administrators and was approved in D.20-02-003, releasing the remaining funds.¹¹ The EPIC-3 funds were applied to four project areas in A.19-04-026.

In A.22-10-002, SDG&E requested Commission approval of its application for the Fourth EPIC cycle. Beginning in EPIC-4, the cycles will change from a three-year basis to a five-year basis. The application consisted of two strategic objectives, each with a corresponding strategic initiative, in October of 2022. As of this writing, the application is still under Commission review.

B. Status of EPIC-1 and EPIC-2 Projects

All EPIC-1 and EPIC-2 projects were completed by the close of 2018, as reported in the 2019 Annual Report. All final reports for the EPIC-1 and EPIC-2 Cycles were provided with prior annual reports and are posted on the SDG&E EPIC public website.

C. Status of EPIC-3 Projects

All EPIC-3 projects, except Project 7, were completed by the close of 2021. Current funding information for SDG&E's EPIC-3 Cycle is provided in Table 1.

¹¹ The IOUs' Joint Application (A.19-040-26), approved in D.20-02-003, issued February 10, 2020.

Table 1. SDG&E’s EPIC-3 (2018-2022) Portfolio as of December 31, 2022

EPIC-3 Projects (2018--2022)				
EPIC-3 Projects	Incurred¹² Costs (\$ thousands)	Encumbered¹³ Costs (\$ thousands)	Commitments¹⁴ (\$ thousands)	Project Status
3. Application of Advanced Metering Infrastructure (AMI) Data to Advanced Utility System Operations	1,527	1,527	1,527	Complete
4. Safety Training Simulators with Augmented Visualization	1,944	1,944	1,944	Complete
5. Unmanned Aircraft Systems (UAS) with Advanced Image Processing for Electric Utility Inspection and Operations	709	709	709	Complete
7. Demonstration of Multiple-Purpose Mobile Battery for Port of San Diego and Other Applications	2,716	4,672	4,672	In Progress
SDG&E Program Administration	744	916	916	In Progress
Total	\$7,640	\$9,768	\$9,768	

¹² As used in this Report, incurred costs mean actual booked expenditures.

¹³ As used in this Report, encumbered costs are funds that are specified for contracts (D.13-11-025 at 101; Ordering Paragraph 45) or for in-house work necessary in collaboration with a contractor (D.13-11-025 at 53). They differ from commitments in that commitments are the identification of blocks of funds to be assigned to projects, whereas encumbrances specify how the commitments will be used in the projects.

¹⁴ As used in this Report, commitment means assigned for anticipated work on a project, including anticipated contractual commitments, equipment purchases, software licenses, associated technical work by the SDG&E project team, and other expenses directly associated with the project work.

D. Status Summary of EPIC Projects

1. EPIC-1 and EPIC-2 Projects

All EPIC-1 and EPIC-2 projects were completed by the end of 2018. Summaries of those projects can be found in SDG&E's prior annual reports on SDG&E's EPIC website. The comprehensive final reports for those projects can also be found on that website. The site address is www.sdge.com/epic.

2. EPIC-3 Project

EPIC-3 Project 3, 4 and 5 were completed by the end of 2021. The following is a brief summary of EPIC-3, Project 7, Module 3, the last project of the cycle. A more detailed description of the activity in this project appears in the main body of this annual report.

Project 7: Demonstration of Multi-Purpose Mobile Battery

- The objective of SDG&E's EPIC-3 Project 7 is to perform a pre-commercial demonstration of mobile battery energy storage systems (MBESS) and examine the value proposition from using MBESS across multiple sites and use cases. An MBESS is a battery energy storage system on wheels that can provide multiple use cases based on a single MBESS application or a combination of several applications (stacking of applications) to provide grid support and reliability/resiliency solutions for utility projects at different sites. This project is divided into three work modules to align with different mobile batteries, use cases and application situations. Modules 1 and 2 were completed and documented in comprehensive final reports filed with the CPUC at the end of 2021 and posted on the EPIC public website.
- **Module 3**
Module 3 is designed to include trials of Institute of Electrical and Electronics Engineering (IEEE) 2030.5 to assess the extent to which it will improve the value proposition for use of MBESS and stationary DER. IEEE 2030.5 is the default communication method established by the Smart Inverter Working Group. This demonstration serves to highlight the benefits and challenges associated with this communication profile. As a primary test case, the project team seeks to leverage 2030.5 as a means of controlling the MBESS to provide a demonstration of alleviating circuit Operational Flexibility (OpFlex) constraints under specific scenarios (e.g., planned abnormal distribution switch states).

With funds remaining in EPIC-3, Project 7, Module 3 was allocated additional funding allowing for demonstrations of a second phase of use cases for the MBESS. Module 3 will also seek to demonstrate these additional use cases and metrics for testing, application and benefit realization of the MBESS in chosen applications.

Overall, the project evaluated the effectiveness and value proposition of implementing a mobile battery (or multiple mobile batteries) to showcase the benefits when rotated between applications and identify the desirable applications and strategies for commercial adoption.

Main Body
of
2022 SDG&E EPIC Annual Report

I. INTRODUCTION AND OVERVIEW

A. Background on the EPIC Program

The EPIC program was established by the California Public Utilities Commission (alternatively referred to as “The Commission” or “CPUC”) in D.11-12-035 to provide public interest investments in applied research and development, technology demonstration and deployment, market support, and market facilitation of clean energy technologies and approaches for the benefit of ratepayers of California investor-owned utilities (IOUs). D.12-05-037 established the purposes and governance structure for the EPIC program and D.13-11-025 clarified many of the program’s regulatory requirements.

The EPIC program is designed to provide funding for electric utility research, development, and demonstration (RD&D). Specific funding allotments are made to four EPIC Program Administrators, including SDG&E.¹⁵ The EPIC program was intended to run through 2020 and is comprised of three triennial program cycles (*i.e.*, EPIC-1, EPIC-2, EPIC-3). It has been extended into 2022 due to delays in decisions on the EPIC-3 program applications. The EPIC-4 cycle has been approved to run for five years. As mentioned above, SDG&E’s EPIC 4 application is still under Commission review.

B. EPIC Program Components

The IOUs, including SDG&E, may only administer EPIC projects in the area of pre-commercial technology demonstration and deployment (TD&D). Post-commercial demonstrations and deployments are not permitted under the program. Utility participation in the early stages of the research and development process, *i.e.*, basic research and applied research for new utility-related technology, is also not permitted.

C. EPIC Program Regulatory Process

Pursuant to D.12-05-037, SDG&E was required to submit an application seeking Commission approval of an EPIC plan every three years. SDG&E submitted its First Triennial EPIC Plan for the years 2012-2014 (A.12-11-002) on November 1, 2012 (EPIC-1) and received full Commission approval of its EPIC-1 Plan in D.13-11-025. No hearings were held. SDG&E submitted its Second Triennial EPIC Plan for the years 2015-2017 (A.14-05-004) on May 1, 2014 (EPIC-2) and received Commission approval of its EPIC-2 Plan in D.15-04-020. No hearings were held. SDG&E submitted its Third Triennial EPIC Plan for the years 2018-2020 (A.17-05-009) on May 1, 2017 (EPIC-3). The Commission approved SDG&E’s EPIC-3 Application in D.18-10-052, issued on November 2, 2018, with partial release of the funds, pending approval of a Research Administration Plan (RAP) which occurred in 2020. The RAP application A.19-04-026 was a joint filing of the IOU Administrators and was approved in D.20-02-003. The

¹⁵ The EPIC administrators are the California Energy Commission (CEC), SDG&E, Southern California Edison Company (SCE) and Pacific Gas and Electric Company (PG&E).

EPIC-3 funds were applied to four project areas in the approved application. D.20-08-042 renewed EPIC for ten years through December 31, 2030, authorizing two five-year investment plant cycles (referred to, respectively, as EPIC-4 and EPIC-5). D.21-11-028 directed the IOUs to file investment plan applications for EPIC-4 on October 1, 2022. SDG&E submitted its Fourth Quinquennial EPIC Plan for years 2021-2025 (A.22-10-002) on October 3, 2022 (EPIC-4) and Commission approval is still pending.

The submission of the Annual Report for the 2022 calendar year is voluntary, as Decision 12-05-037 discontinued the Annual Report requirement beyond 2020. In accordance with guidance from the CPUC staff, this report is being submitted on April 30, 2023, in the interest of promoting transparency and fostering a spirit of good faith.

D. Coordination among EPIC Administrators

The four EPIC Administrators have regular teleconferences and face-to-face meetings as needed to coordinate EPIC activities.

E. Transparent and Public Process

SDG&E is committed to conducting competitive procurements for those parts of the project work that require contracted services or major purchases of equipment or software. A summary of executed contracts for EPIC-3 Project 7, Module 3 is provided in Table 2 below.

Table 2. EPIC-3 Project 7, Module 3 Contracts Summary

Cycle	Project Name	Contractor	Contract Effective Date
EPIC-3	Demonstration of Multiple-Purpose Mobile Battery for Port of San Diego and Other Applications	Kitu Systems, Inc.	Contract for Task Work 10-31-22
EPIC-3	Demonstration of Multiple-Purpose Mobile Battery for Port of San Diego and Other Applications	Quanta Technology LLC	Contract for Task Work 12-9-22

SDG&E and the other EPIC Administrators are required to host at least two stakeholder meetings annually to discuss their EPIC programs, proposals, and progress.¹⁶ Due to the COVID-19 pandemic, the annual EPIC Symposium was held as a virtual event on October 4, 2022.

SDG&E established and maintains an EPIC website accessible to the public: www.sdge.com/epic. This website provides EPIC program information and updates, as well as SDG&E's EPIC annual reports and comprehensive final project reports. It is also used to announce contractor bid opportunities.

¹⁶ D.12-05-037 at 74.

II. SDG&E’S EPIC BUDGET AND RELATED COSTS

A. SDG&E Authorized Budget and Incurred Costs for EPIC-3 (2018-2022)

Table 3 below, sets forth SDG&E’s Commission-authorized EPIC budget incurred costs for EPIC-3 as of December 31, 2022.

**Table 3. SDG&E Budget and Incurred Costs for EPIC-3
as of December 31, 2022 (in \$ thousands)**

	EPIC Triennial 3 (2022)	
	Technology Demonstration & Deployment	Program Administrative
SDG&E Commission- Authorized Budget ¹⁷	8,852	916
SDG&E Incurred Costs ¹⁸ as of December 31, 2022	6,895	744

¹⁷ D.18-10-052 for EPIC-3

¹⁸ Incurred costs mean actual booked expenditures.

Table 4 below, sets forth SDG&E’s disbursements to the CEC and CPUC for EPIC-1, EPIC-2, and EPIC-3 as of December 31, 2022.

Table 4. SDG&E’s Disbursements to the CEC and CPUC for EPIC-1, EPIC-2 and EPIC-3 as of December 31, 2022 (in \$ thousands)

	EPIC Triennial 1 (2012 – 2014)		EPIC Triennial 2 (2015 – 2017)		EPIC Triennial 3 (2018-2020)	
	RD&D	Program Administrative	RD&D	Program Administrative	RD&D	Program Administrative
SDG&E Disbursements to CEC	16,127	3,024	40,624	2,991	53,986	4,301
SDG&E Disbursements to Commission for Regulatory Oversight	N/A	273	N/A	224	N/A	384

B. Commitments/Encumbrances^{5,6} for TD&D Projects

SDG&E has committed \$8,852K of its TD&D budget for the EPIC-3 cycle to four projects in its approved EPIC-3 application. As of December 31, 2022, SDG&E has committed \$8,852K of EPIC-3 funds for contracted activities and in-house project work on these four projects. As of December 31, 2022, SDG&E has expended \$5,870K on contracted work. SDG&E has spent \$1,025K on internal project work. The total expenditures through December 31, 2022, on EPIC-3 TD&D project work are therefore \$6,895K.

C. Commitments/Encumbrances for Program Administration

As of December 31, 2022, SDG&E has committed \$916K for its EPIC-3 administrative budget.

D. Fund Shifting Above 5% between Program Areas

The utility EPIC Administrators are only allowed to fund EPIC projects in the TD&D program area. SDG&E has done no fund shifting to other program areas.

E. Uncommitted/Unencumbered Program Funds

SDG&E has committed all of its EPIC-3 TD&D funds to the four projects that were launched in 2019, with execution in 2021. Also included in the committed funds is the final Module of Project 7, Module 3 that is still ongoing.

III. SDG&E EPIC-3 PROJECTS

This section provides a detailed description and status report for the active EPIC-3 project.

A. Project 7: Demonstration of Multi-Purpose Mobile Battery

- 1. Investment Plan Period - 2018-2020 (EPIC-3)**
- 2. Assignment to Value - Distribution (primary) and Demand-Side Management (primary)**
- 3. Objective**

The objective of SDG&E's EPIC-3 Project 7 is to perform a pre-commercial demonstration of MBESS and examine the value proposition from using MBESS across multiple sites and use cases. An MBESS is a battery energy storage system on wheels that can provide multiple use cases based on a single MBESS application or a combination of several applications (stacking of applications) to provide grid support and reliability/resiliency solutions for utility projects at different sites. This third module of EPIC 3, Project 7 will include operational flexibility demonstrations using the IEEE communication protocol 2030.5 to

communicate with the MBESS, as well as deployment of the MBESS during planned outages, emergency events, and Public Safety Power Shutoffs (PSPS).

4. Focus

The focus of this project was to conduct a pre-commercial demonstration, showcasing the concept of mobile utilization of a containerized battery energy storage system (BESS) for various use cases and locations. Ultimately, the project sought to determine the effectiveness and value proposition from the stacking of benefits when rotating MBESS between applications and identifying which are preferred and most feasible for commercialization.

5. Scope

While mobile batteries are commercially available on a limited basis, the mobile utilization of the same asset in various use cases and applied at multiple locations is new.

Therefore, the benefits of adopting such technology needed to be demonstrated and evaluated. To better approach the demonstration, this project was devised into three modules with Modules 1 and 2 completed and final reports posted to the SDG&E EPIC website.

- **Module 3**

6. Benefit Areas

- **Improved Safety:** Public and employee safety are very high priorities for SDG&E. Each project, as a minimum, should comply with existing safety policies and not result in any safety violations or safety incidents. In certain cases, a project can minimize safety risk by either reducing probability of a safety incident, mitigating the severity of an incident, or enabling early detection that allows correction/prevention of unsafe situations.
- **Improved Reliability and Power Quality:** Two goals of power system modernization are to improve the level of reliability and to optimize the quality of power as seen by the customer. Higher reliability means reducing the occurrences of outage and reducing the duration of outages when they do occur. Improved power quality means reducing the disturbances seen in the power itself, such as voltage variation, flicker, and harmonic content in the power waveform.
- **Improved Operational Flexibility and Capacity:** With the ability to store and release energy, operational flexibility constraints are managed through customer agreements to reduce or curtail power during system

maintenance or grid outages. Capacity improvements are made with coordinated dispatchable or scheduled electricity production.

- **Improved Performance of the Power System:** Improved system operations and performance (i.e., system electrical efficiency) will help reduce electrical losses in the system, such as reductions in resistive losses associated with current flow through the conductors and reductions in transformer electrical losses.
- **Lower Greenhouse Gas Emissions:** Advanced infrastructure can help reduce electrical system losses, which in turn will reduce the need for electric generation. Less generation means reduced greenhouse gas emissions (GHG). Additionally, infrastructure such as battery storage can store electricity from renewable or other low-emission sources and offset consumption during periods where higher-emission sources would be required, also reducing GHGs.
- **Lower Operating Costs and More Efficient Use of Ratepayer Dollars:** Ratepayers can see lower costs on their utility bill through peak demand reduction and shifting utility-delivered consumption to lower-cost time periods. Furthermore, reductions in peak load can defer or eliminate certain utility infrastructure investments and avoid electric procurement and generation costs, ultimately mitigating any potential rate increases.
- **Economic Development:** A secure source of low-cost, high-quality, reliable electric power is essential to economic development and to retain and attract businesses in California. The primary purpose of EPIC funding is to support investments in research and development projects that benefit electric utility customers. The utility EPIC activities are limited by the EPIC ordering decisions to precommercial demonstrations of technologies and integration solutions that provide benefits to customers by promoting greater reliability, lower costs, increased safety, and other designated benefits.
- **Ancillary Benefits:** Finally, EPIC-3 Project 7, Module 3 will create new knowledge, lessons learned, and potential recommendations on the incremental benefits achieved and incremental costs incurred by rotating a mobile multipurpose battery into different applications and locations. Incremental benefits can include increased utilization of the asset, flexibility to assist with more than one use case, and ability to react to real-time situations more effectively. Incremental costs can include up-front equipment costs, up-front setup and administrative costs (such as for interconnection and/or certification), transportation costs, and ongoing operations and maintenance costs. The final evaluation will need to consider incremental cost-benefit analysis of the project to assess whether a mobile-multipurpose battery solution with the added variable of using IEEE 2030.5 is cost effective and viable.

7. Use Cases

The project will leverage the IEEE 2030.5 standard protocol as a means of controlling the MBESS to demonstrate alleviation of circuit operational flexibility (OpFlex) constraints under specific scenarios (e.g., planned abnormal distribution switch states). Additional use cases will include the deployment of the MBESS during planned outages, emergency events, and Public Safety Power Shutoffs (PSPS).

- **Operational Flexibility to Manage Constraints During Reconfiguration** - In a location that is constrained by operational flexibility, the MBESS can reduce or curtail power during system maintenance or grid outages that involve the system reconfiguration that caused the operational flexibility constraint. The range of adjustability and limits on the number of events will be determined by mutual consent and included in the interconnection agreement.
- **Capacity by Increased Generation to Meet Requested Production** – Coordinated dispatchable or scheduled electricity production in accordance with solicitation requirements or grid service tariff rules. This will mostly be the discharge of stored energy. Communications must be enabled, which may be less than real time if the discharge is scheduled ahead of time.
- **Constant Voltage Boost** – Increase voltage that has become lower along a feeder due to distance from a substation and the existence of machine loads. This is achieved with constant or periodic production of reactive power.
- **Voltage Reduction** – Reduce voltage in locations that have regular occurrences of high voltage due to reasons beyond the specific MBESS location.
- **Backup Power Source** – Use of the MBESS during planned outages, emergency events, and PSPS.

8. Deliverables

A comprehensive final report for the third project module, including thorough documentation of the project approach, demonstration results, final benefits estimate, value proposition, and recommendations regarding commercial adoption.

9. Metrics

The project metrics will be tracked through milestones marked by completion of project plan tasks. Specific value metrics for the project will be measured by comparative analysis, utilizing current base practices and historical data (i.e., customer load demand and profile, net energy metering, power quality metering, energy consumption algorithms and calculations, and emissions reporting.), collecting new data through application of the mobile battery system, comparing the data specific to each use case, and analyzing the benefits.

10. Schedule - January 2019 to December 2023

11. EPIC Funds Committed – \$4,672K

12. EPIC Funds Spent as of December 31, 2022 - \$2,716K

Purchase of the mobile batteries and demonstration work was fully executed.

13. Partners (if applicable)

Not applicable.

14. Match Funding (if applicable)

Not applicable.

15. Match Funding Split (if applicable)

Not applicable.

16. Funding Mechanism (if applicable)

SDG&E EPIC funds applied to a combination of internal work and pay-for-performance contracts.

17. Treatment of Intellectual Property (if applicable)

No IP developed.

18. Status Update

For the third module of Project 7, two vendors were contracted via sole source methods to provide hardware and software, engineering and project

management services. The project is in progress, defining the test plan, coordinating communications and conducting functional testing prior to executing the demonstration work.

The findings for this module will be included in its comprehensive final report. The final project report will be posted on the SDG&E EPIC public website at www.sdge.com/epic.

The ultimate outcome from this demonstration work to date is that it is recommended that SDG&E pursue commercial adoption of MBESS. However, there are additional use cases to be evaluated and demonstrated in 2023 to continue evaluating the commercial value proposition of MBESS. This added use case work is included in Module 3 and is the final module of the project.

IV. CONCLUSION

A. Key Results for SDG&E EPIC Program

As of December 31, 2018, SDG&E had completed all technical project work for its 11 Commission-approved EPIC-1 and EPIC-2 projects. No projects were completed in 2020, and no new final project reports were ready for filing with the annual report. In 2021, three EPIC-3 projects were completed, and two modules of a fourth project were completed. Past EPIC comprehensive final project reports are available on the SDG&E EPIC website at www.sdge.com/epic.

Major accomplishments in 2021 and 2022 for the projects and modules that were completed included performing the demonstration work, data analysis, formulation of findings and recommendations regarding commercial adoption, and preparation of the comprehensive final project reports. The PICG was continued, and SDG&E supported and contributed to the EPIC database development and other activities that were organized by the CPUC's PICG coordinator.

B. Next Steps for SDG&E's EPIC Program

Three of the EPIC-3 projects were completed in 2021 and two modules of a fourth project were completed. Additional use cases will be performed in the unfinished project by adding a Module 3 for the purpose. In 2022, there were delays in executing the contracts for services for both vendors. There were additional delays to start working on the project since one contract was dependent on the other. Furthermore, there were supply chain issues that affected the mobile trailer. Module 3 will be performed in 2023, and that will provide closure on the entire EPIC-3 cycle.

An EPIC-4 cycle was ordered by CPUC in late 2021. SDG&E's EPIC-4 application is still pending Commission approval.

ATTACHMENT B

SDG&E 2022 Annual Report Project Status

Spreadsheet (Excel file follows)

Attachment B - San Diego Gas Electric Company - 2022 EPIC Project Status Report

Investment Program Period	Program Administrator	Project Name	Project Type	Brief Description of the Project (objective; scope; deliverables; schedule)	Date of the Award	Was project awarded in the immediately prior calendar year?	Assignment to Value Chain	Encumbered Funding Amount (\$000)	Committed Funding Amount (\$000)	Funds Expended to date: Contract/Grant Amount (\$000)	Funds Expended to date: In-house expenditures (\$000)	Funds Expended to date: Total Spent to date (\$000)	Administrative and overhead costs to be incurred for each project	Leveraged Funds	Partners	Match Funding	Match Funding Split	Funding Mechanism
3rd Triennial (2022)	SDG&E	PROJECT 7: Demonstration of Multipurpose Mobile Battery for Port of San Diego and/or Other Applications	Pre-commercial Demonstration	The objective of this project was to undertake a pre-commercial demonstration of a mobile battery system. The project examined the possibilities for using a mobile battery at its home base (tentatively the Port of San Diego ("Port")) and at secondary energy hubs within the service area. The project evaluated stacking of various benefits that can be derived from a mobile battery, when rotated between multiple locations. The project was structured in three work modules involving different mobile battery sizes and applications. Two comprehensive final reports were delivered at the end of 2021 for Modules 1 and 2. The comprehensive final report for Module 3 will be completed toward the end of 2023. Module 3 is designed to include trials of IEE 2030.5 to assess the extent to which it will improve the value proposition for use of the MBESS. IEE 2030.5 is the default communication method established by the Smart Inverter Working Group. This demonstration serves to highlight the benefits and challenges associated with the communication profile. As a primary test case, the project team seeks to leverage 2030.5 as a means of controlling the MBESS to provide a demonstration of alleviating circuit Operational Flexibility (OpFlex) constraints under specific scenarios (i.e. planned abnormal distribution switch states). Module 3 will also include demonstrations of the MBESS deployment during planned outages, emergency events, and Public Safety Power Shutoffs (PSPS).	Module 3: Contract with Kitu Systems executed on October 31, 2022 and contract amendment with Quanta executed on December 9, 2022.	NA	Distribution and Demand-Side Management	4,672	4,672	0	2,716	2,716	N/A	0	0	0	NA	SDG&E EPIC funds applied to a combination of in-house work and pay-for-performance contracts.
3rd Triennial (2018 - 2020) - Current Financial Totals as of December 31, 2022								4,672	4,672	0	2,716	2,716						

Project status information for EPIC-1 and EPIC-2 was included in prior annual reports and is not included above, because the projects were completed in prior years.

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Investment Program Period	Program Administrator	Project Name	Intellectual Property	Identification of the method used to grant awards	If competitively selected, provide the number of bidders passing the initial pass/fail screening for project	If competitively selected, provide the name of selected bidder.	If competitively selected, provide the rank of the selected bidder in the selection process.	If competitively selected, explain why the bidder was not the highest scoring bidder, explain why a lower scoring bidder was selected.	If interagency or sole source agreement, specify date of notification to the Joint Legislative Budget Committee (JLBC) was notified and date of JLBC authorization. (This column is applicable to the CEC only.)	Does the recipient for this award identify as a California-based entity, small business, or businesses owned by women, minorities, or disabled veterans?	How the project leads to technological advancement or breakthroughs to overcome barriers to achieving the state's statutory energy goals (This column is applicable to the CEC only.)
3rd Triennial (2022)	SDG&E	PROJECT 7: Demonstration of Multipurpose Mobile Battery for Port of San Diego and/or Other Applications	No	Sole Source			N/A	N/A	No	N/A	

Project status information for EPIC-1 and EPIC-2 was included in prior annual reports and is not included above, because the projects were completed in prior years.

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Investment Program Period	Program Administrator	Project Name	Applicable Metrics	San Diego Gas & Electric Company 2022 EPIC Project Status Report
3rd Triennial (2022)	SDG&E	PROJECT 7: Demonstration of Multipurpose Mobile Battery for Port of San Diego and/or Other Applications	The project metrics were tracked through milestones marked by completion of project plan tasks. Specific value metrics for the project were measured by comparative analysis, utilizing current base practices and historical data (i.e. customer load demand and profile, net energy metering, power quality metering, energy consumption algorithms and calculations, and emissions reporting.), collecting new data through application of the mobile battery system, comparing the data specific to each use case, and analyzing the benefits.	Module 3 Two contracts were executed in the final quarter of 2022, one with Kitu Services to provide hardware, software and professional services for the implementation of IEEE 2030.5 and another contract with Quanta to provide engineering and project management services. The demonstration work will continue through 2023 with a final project report documenting all work, results and findings scheduled for completion toward the end of 2023.

Project status information for EPIC-1 and EPIC-2 was included in prior annual reports and is not included above, because the projects were completed in prior years.