

PUBLIC UTILITIES COMMISSION
505 Van Ness Avenue
San Francisco CA 94102-3298



Pacific Gas & Electric Company
ELC (Corp ID 39)
Status of Advice Letter 6043E
As of July 16, 2021

Subject: Request for Approval of New Electric Program Investment Charge (EPIC) Projects between
Triennial EPIC Applications

Division Assigned: Energy

Date Filed: 12-30-2020

Date to Calendar: 01-01-2021

Authorizing Documents: D1509005

Disposition:

Signed

Effective Date:

07-15-2021

Resolution Required: Yes

Resolution Number: E-5151

Commission Meeting Date: None

CPUC Contact Information:

edtariffunit@cpuc.ca.gov

AL Certificate Contact Information:

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PUBLIC UTILITIES COMMISSION
505 Van Ness Avenue
San Francisco CA 94102-3298



To: Energy Company Filing Advice Letter

From: Energy Division PAL Coordinator

Subject: Your Advice Letter Filing

The Energy Division of the California Public Utilities Commission has processed your recent Advice Letter (AL) filing and is returning an AL status certificate for your records.

The AL status certificate indicates:

- Advice Letter Number
- Name of Filer
- CPUC Corporate ID number of Filer
- Subject of Filing
- Date Filed
- Disposition of Filing (Accepted, Rejected, Withdrawn, etc.)
- Effective Date of Filing
- Other Miscellaneous Information (e.g., Resolution, if applicable, etc.)

The Energy Division has made no changes to your copy of the Advice Letter Filing; please review your Advice Letter Filing with the information contained in the AL status certificate, and update your Advice Letter and tariff records accordingly.

All inquiries to the California Public Utilities Commission on the status of your Advice Letter Filing will be answered by Energy Division staff based on the information contained in the Energy Division's PAL database from which the AL status certificate is generated. If you have any questions on this matter please contact the:

Energy Division's Tariff Unit by e-mail to
edtariffunit@cpuc.ca.gov



December 30, 2020

Advice 6043-E

(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: Request for Approval of New Electric Program Investment Charge (EPIC) Projects between Triennial EPIC Applications

Purpose

In compliance with Ordering Paragraph (OP) 1 of California Public Utilities Commission (CPUC or Commission) Decision (D.) 15-09-005, Pacific Gas and Electric Company (PG&E) seeks Commission approval of five new EPIC projects identified subsequent to the approval of PG&E's EPIC 3 investment plan application on October 25, 2018.

Background

Rulemaking (R.) 11-10-003 was instituted to address funding and program issues related to utility research, development, and demonstration projects. D.11-12-035, in Phase 1 of R.11-10-003, established the EPIC Program to fund public interest investments in applied research and development, technology demonstration and deployment, and market facilitation of clean energy technologies and approaches for the benefit of electricity customers of PG&E, San Diego Gas & Electric Company (SDG&E), and Southern California Edison Company (SCE).

The Commission conducts a public proceeding every three years (known as the triennial review) to consider EPIC investment plans to test safety, reliability, and clean energy technologies and approaches, pursuant to a schedule set in D.12-05-037. That Decision directed the California Energy Commission (CEC) and the three Investor-Owned Utilities (IOU), as Administrators of the program, to present their investment plans for the triennial program periods for joint consideration by the Commission. The CEC's investment plan included Strategic Objectives made up of Strategic Initiatives, and the IOUs' investment plans included projects under four Investment Areas.

D.13-11-025 capped the collection of EPIC funds at \$162 million annually and approved the first triennial investment plans for the collection years 2012-2014. D.15-04-020 approved 2015-2017 EPIC budgets. D.15-09-005 authorized EPIC Administrators to file Tier 3 advice letters (or equivalent business letters for the CEC) to request approval of new EPIC projects between triennial funding cycles.

In A.17-04-028, PG&E requested consideration of a more streamlined, expedited Tier 2 advice letter approval process for new projects initiated between EPIC plan approvals.

D.18-01-008 authorized IOU collections from the ratepayers for 2018-2020 EPIC Cycle. D.18-10-052 approved the third triennial investment plan period of 2018-2020 (EPIC 3) and ordered the utilities to jointly develop and file a Research Administration Plan (RAP) application that identified improvements the utilities would make in response to the recommendations made in the independent EPIC program evaluation. The Commission directed utility administrators not to spend, commit or encumber one-third of their respective EPIC program budgets until the Commission approved their joint (RAP) application. On April 23, 2019, the utilities filed their joint RAP application, and on February 10, 2020, the Commission issued D.20-02-003 approving the RAP application and authorizing the utilities to encumber, commit, and spend the remaining one third of their EPIC 3 budgets.

In response to A.17-04-028, D.18-10-052 also reiterated that the Tier 3 advice letter process adopted in D.15-09-005 for new EPIC projects between triennial EPIC applications and for material changes to existing approved projects should not be changed.

Request

In its EPIC 3 investment plan application in 2017, PG&E submitted a broad set of projects, including several with a direct focus on safety and resiliency. While PG&E's active set of EPIC 3 projects is demonstrating several key capabilities to further these objectives, the events following the filing of the EPIC 3 investment plan, the recent reevaluation of on-hold projects from PG&E's approved EPIC 3 Investment Plan, and the broad solicitation of new project ideas from PG&E's lines of business has illustrated the need for additional technology demonstration projects to further safety and resiliency.

PG&E requests CPUC approval of the following five new EPIC projects for its EPIC 3 triennial plan—amounting to an estimated total of \$10,500,000. PG&E's previously approved 2018-2020 EPIC triennial budget was \$49,771,845, and of this amount a total of \$36,343,532 has been committed to existing projects from PG&E's EPIC 3 investment plan. Of the remaining uncommitted \$13,428,313, approximately \$10,500,000 will be committed to the five new projects in this advice letter, and rest will be held in reserve to address future needs of the EPIC 3 project portfolio. The allocation of funds to the five projects below will not impact the budgets already set for PG&E's current set of projects. Budget estimates for the five new projects proposed here will be further refined upon CPUC approval and the development of detailed business plans prior to project initiation. PG&E is not seeking additional funding beyond its current EPIC 3 budget.

Project Summary Table

Name	Summary
44. Advanced Transformer Protection	Demonstrate and evaluate the use of negative sequence transformer differential protection to provide high sensitivity fault detection and prevent transformer winding failures.
45. Automated Fire Detection from Wildfire Alert Cameras	Demonstrate an automated fire detection model using machine learning, computer vision, or artificial intelligence (AI) techniques that accurately detects fires based on visual and infrared (IR) camera data streams; optimize for automated fire detection alerts.
46. Advanced Electric Inspection Tools – Wood Poles	Demonstrate and evaluate the use of a nondestructive examination method (Radiography Testing) to detect flaws and prevent potential failures on electric distribution wood poles.
47. Operational Vegetation Management Efficiency Through Novel Onsite Equipment	Demonstrate new technologies and onsite processes that can materially lower vegetation management costs by a) small scale mobile torrefaction, and b) wood baling technologies.
48. Stored Energy Transactions Enablement Platform (SETEP)	Demonstrate a software platform that can conduct energy transactions online for customers with DERs to leverage exported energy.

Selection of these five projects started with a broad solicitation of project ideas with Subject Matter Experts (SMEs) across PG&E's line of business, focusing on distributed energy resource (DER) integration, grid modernization & optimization, customer services & products and cross-cutting strategies & technologies. Simultaneously, the remaining on-hold projects from PG&E's approved EPIC 3 Investment Plan were reevaluated, to determine whether they still addressed contemporary issues worthy for demonstration. As a result of these two activities, seventy proposals were developed and collected in a common one-slide proposal template. Each project's one-slide proposal described its objectives, description/scope, concern/gap addressed, path to operationalization of the technology if the project is successful, potential benefits, novelty, estimated budget, urgency, and opportunities for alternate grants or alternative funding sources. PG&E's EPIC Program Management Organization (PMO) conducted an initial round of screening and consolidated projects addressing similar gaps through breakout meetings with SMEs. The resulting seventeen projects were further refined and then reviewed by a committee of directors representing several Lines of Business, in two review sessions. The director committee had a chance to ask clarifying questions of project presenters before scoring each project against a pre-defined set of criteria. As a result of this stage, twelve projects, including eleven new projects, one project already approved by D.18-10-052 were selected to move forward and were presented in an online public workshop on June 19th. Feedback was collected from stakeholders during and after the workshop. These twelve projects were also reviewed with the other EPIC administrators and Electric Power Research Institute (EPRI) for additional technical feedback, collaboration possibilities and unnecessary duplication. Upon further refinement, a final set of five projects was selected to be included in Attachment A.

Attachment A includes additional details on the five projects, including a description of the technology or strategy to be demonstrated, the issue to be addressed, the potential

benefits at full deployment, and the project-specific reason each proposed project should be considered immediately.

In compliance with OP 3 of D.15-09-005 and as presented in Attachment A, PG&E confirms the following:

- a. Each project is within the scope of EPIC investment areas approved for funding in PG&E's EPIC 3 triennial plan, including: Grid Modernization and Optimization, Cross-Cutting / Foundational Strategies, and Renewables and Distributed Energy Resource (DER) Integration, (as identified in Attachment A);
- b. The funding for the new proposed projects does not cause the overall EPIC funding to exceed the total funds authorized in the applicable and effective EPIC triennial plan;
- c. This advice letter (as shown in Attachment A) contains at least the same level of detailed description and support for the projects as the Commission has approved for other projects included in the applicable and effective EPIC triennial plan;
- d. The new projects do not result in any adverse expected changes in funding for other approved projects;
- e. This proposal should be considered immediately and not simply included in the uncertain next cycle for EPIC funding consideration by the Commission for the key overall reasons noted below:
 - In recent years, California has experienced strong storm and wind events, highly variable precipitation patterns, as well as an unprecedented expansion in high-fire threat areas. This has resulted in an increased frequency of wildfires and the devastation that those fires have brought to California communities. To meet this challenge, the electric grid needs to be hardened and made more flexible and adaptable to changing conditions. While PG&E has intensified its focus on demonstrating technologies that further resiliency and reduce wildfire risk through its existing EPIC III projects, additional needs and opportunities for demonstration projects have arisen since PG&E filed its EPIC 3 Investment Plan on April 28, 2017.
 - Several of the projects proposed in this Advice Letter are aligned with supporting critical resiliency, safety and wildfire risk reduction objectives.
 - Given the Commission's decision in D.20-08-042 on August 27, 2020 to defer the consideration of IOU EPIC program renewal, it is unclear whether or when there will be a subsequent IOU investment plan or opportunity to conduct TD&D projects beyond the EPIC 3 cycle. Even if the IOUs will ultimately retain a direct administrative role in the program, D.20-08-042 will

result in at least a two-year gap in PG&E's ability to pursue these important projects if they are deferred from consideration in EPIC 3.

- f. All other requirements applicable to EPIC projects under PG&E's EPIC 3 triennial plan continue to apply to the new projects.

Protests

*****Due to the COVID-19 pandemic and the shelter at home orders, PG&E is currently unable to receive protests or comments to this advice letter via U.S. mail or fax. Please submit protests or comments to this advice letter to EDTariffUnit@cpuc.ca.gov and PGETariffs@pge.com*****

Anyone wishing to protest this submittal may do so by letter sent via U.S. mail, facsimile or E-mail, no later than **January 19, 2021** which is 20 days after the date of this submittal. Protests must be submitted to:

CPUC Energy Division
ED Tariff Unit
505 Van Ness Avenue, 4th Floor
San Francisco, California 94102

Facsimile: (415) 703-2200
E-mail: EDTariffUnit@cpuc.ca.gov

Copies of protests also should be mailed to the attention of the Director, Energy Division, Room 4004, at the address shown above.

The protest shall also be sent to PG&E either via E-mail or U.S. mail (and by facsimile, if possible) at the address shown below on the same date it is mailed or delivered to the Commission:

Erik Jacobson
Director, Regulatory Relations
c/o Megan Lawson
Pacific Gas and Electric Company
77 Beale Street, Mail Code B13U
P.O. Box 770000
San Francisco, California 94177

Facsimile: (415) 973-3582
E-mail: PGETariffs@pge.com

Any person (including individuals, groups, or organizations) may protest or respond to an advice letter (General Order 96-B, Section 7.4). The protest shall contain the following information: specification of the advice letter protested; grounds for the protest; supporting

factual information or legal argument; name, telephone number, postal address, and (where appropriate) e-mail address of the protestant; and statement that the protest was sent to the utility no later than the day on which the protest was submitted to the reviewing Industry Division (General Order 96-B, Section 3.11).

Effective Date

Pursuant to General Order (GO) 96-B, Rule 5.3, (and **OP 1 of D15-09-005**), this advice letter is submitted with a Tier 3 designation. PG&E requests that this **Tier 3** advice submittal become effective upon Commission approval.

Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list and the parties on the service list for 14-05-003. Address changes to the General Order 96-B service list should be directed to PG&E at email address PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter submittals can also be accessed electronically at: <http://www.pge.com/tariffs/>.

_____/S/

Erik Jacobson
Director, Regulatory Relations

Attachments

cc: Service List 14-05-003

- Mesrobian, Amy E, Supervisor, Emerging Procurement Strategies | Energy Division, CPUC, Amy.Mesrobian@cpuc.ca.gov
- Beck, Fredric , Energy Division, CPUC, Fredric.Beck@cpuc.ca.gov
- Chang, Jack, Energy Division, CPUC, Jack.Chang@cpuc.ca.gov



ADVICE LETTER SUMMARY

ENERGY UTILITY



MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No.: Pacific Gas and Electric Company (ID U 39 E)

Utility type:

☒ ELC ☐ GAS ☐ WATER
☐ PLC ☐ HEAT

Contact Person: Stuart Rubio

Phone #: (415) 973-4587

E-mail: PGETariffs@pge.com

E-mail Disposition Notice to: SHR8@pge.com

EXPLANATION OF UTILITY TYPE

ELC = Electric GAS = Gas WATER = Water
PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #: 6043-E

Tier Designation: 3

Subject of AL: Request for Approval of New Electric Program Investment Charge (EPIC) Projects between Triennial EPIC Applications

Keywords (choose from CPUC listing): Compliance

AL Type: ☐ Monthly ☐ Quarterly ☐ Annual ☒ One-Time ☐ Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #: D.15-09-005

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL: N/A

Confidential treatment requested? ☐ Yes ☒ No

If yes, specification of confidential information:

Confidential information will be made available to appropriate parties who execute a nondisclosure agreement. Name and contact information to request nondisclosure agreement/ access to confidential information:

Resolution required? ☒ Yes ☐ No

Requested effective date:

No. of tariff sheets: 0

Estimated system annual revenue effect (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: N/A

Service affected and changes proposed¹: N/A

Pending advice letters that revise the same tariff sheets: N/A

¹Discuss in AL if more space is needed.

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102
Email: EDTariffUnit@cpuc.ca.gov

Name: Erik Jacobson, c/o Megan Lawson
Title: Director, Regulatory Relations
Utility Name: Pacific Gas and Electric Company
Address: 77 Beale Street, Mail Code B13U
City: San Francisco, CA 94177
State: California Zip: 94177
Telephone (xxx) xxx-xxxx: (415)973-2093
Facsimile (xxx) xxx-xxxx: (415)973-3582
Email: PGETariffs@pge.com

Name:
Title:
Utility Name:
Address:
City:
State: District of Columbia Zip:
Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email:

Clear Form

Attachment A
Project Descriptions

Attachment A – Project Descriptions

Below are the descriptions of the proposed projects, including the description of the technology or strategy to be demonstrated, the issue to be addressed, the potential benefits at full deployment, and the reason the proposed project should be considered immediately. Each project has been described with the same level of detailed description and support for the projects as the Commission has approved previously, with two additions: 1) the reasons the proposed project should be considered immediately; and 2) a concept level funding amount for each project.

Table 1 summarizes how each of the five new proposed projects align with the Investment Areas. The table organizes the projects by investment area and identifies the primary benefits that PG&E believes the projects may demonstrate to increase safety, promote greater reliability and/or improve affordability. Each of these planned projects has undergone initial benchmarking to avoid duplication. Additionally, consultation and collaboration has been conducted with stakeholders for each project, through coordination with the EPIC Administrators and others in the Research, Development and Demonstration (RD&D) community including EPRI, as well as a public workshop on June 19, 2020. These efforts were conducted in order to leverage the benefits of similar projects, solicit input on scoping to improve project outcomes and to maximize potentially complementary efforts.

Table 1. New Projects Proposed to PG&E's EPIC 3 Project Portfolio

Investment Area: Grid Modernization and Optimization [Technology Demonstration & Deployment]			
Project	Safety	Reliability	Affordability
44. Advanced Transformer Protection	✓	✓	
Investment Area: Cross-Cutting Strategies and Technologies [Technology Demonstration & Deployment]			
Project	Safety	Reliability	Affordability
45. Automated Fire Detection from Wildfire Alert Cameras	✓		
46. Advanced Electric Inspection Tools – Wood Poles	✓	✓	✓
47. Operational Vegetation Management Efficiency Through Novel Onsite Equipment	✓		✓
Investment Area: Renewables and DER Integration [Technology Demonstration & Deployment]			
Project	Safety	Reliability	Affordability
48. Stored Energy Transactions Enablement Platform (SETEP)			✓

Project Title: Advanced Transformer Protection

Project #: 44

Investment Area: Grid Modernization and Optimization

Estimated Funding: \$2M

Description of Technology or Strategy to Be Demonstrated

This project will demonstrate and evaluate the use of negative-sequence transformer differential protection to provide high sensitivity fault detection and prevent catastrophic failures in substation and distribution transformers.

The first phase of the project would entail the development of computer models to calculate protective relay settings. The second phase would entail the construction of a test bed that would test proposed settings and demonstrate the operation of the protective relay. The third phase would entail installing the relay on real transformers and demonstrating the protection operation under real fault conditions in a controlled laboratory environment. If proven successful, this functionality could be enabled for transformers in the field.

Applicable Electricity Value Chain Elements	
<input checked="" type="checkbox"/> Grid Operations / Market Design	<input checked="" type="checkbox"/> Distribution
<input type="checkbox"/> Generation	<input type="checkbox"/> Demand-side management
<input type="checkbox"/> Transmission	

Concern, Gap, or Problem to Be Addressed

Internal winding faults are one of the most common causes of transformer failure. Catastrophic failures often start as low magnitude turn-to-turn faults that were left undetected and that later developed into a more severe fault. PG&E protective devices have microprocessor-based relays. However, due to lack of calculation and testing data from the market, devices are not set beyond their factory default settings which do not have enough sensitivity to detect inter-turn faults. This poses a risk to public and utility worker safety. This project aims to test and apply a novel protective relay that claims to possess enough sensitivity for inter-turn fault detection to enable the full potential of microprocessor-based relays.

Potential Benefits at Full Deployment

This project has potential to increase public safety through prevention of catastrophic failures of transformers which are critical assets for maintaining continuity of power to customers. Catastrophic failures of transformers are also a source of Boiling Liquid Expanding Vapor Explosion (BLEVE) that are a risk to public and utility worker safety. This project will aim to reduce this risk through the application of the latest advancements in protection technology.

Reason Proposal Should Be Considered Immediately

This project should be considered immediately to avoid detectable and preventable causes of transformer explosions and ignitions.

Given D.20-08-042 it is unclear whether or when there will be a subsequent IOU investment plan or opportunity to conduct TD&D projects. Even if the IOUs will ultimately retain a direct administrative role in the program, D.20-08-042 will result in at

least a two-year gap in PG&E's ability to pursue these important projects if they are deferred from consideration in EPIC 3.

Project Title: Automated Fire Detection from Wildfire Alert Cameras

Project #: 45

Investment Area: Cross-Cutting Strategies and Technologies

Estimated Funding: \$2.9M

Description of Technology or Strategy to Be Demonstrated

PG&E, other major CA utilities, and local and federal agencies are installing hundreds of wildfire alert cameras. Data and images from these cameras are publicly available via <http://www.alertwildfire.org/>. This project will demonstrate an automated fire detection model using machine learning, computer vision, or artificial intelligence techniques that can more accurately detect fires based on visual and infrared (IR) camera data streams than current methodologies such as satellite data. The model that is demonstrated will be optimized for automation such that near real-time fire detection alerts can be disseminated if smoke and/or an IR fire signature is detected.

The project workflow will be similar to how neural networks for self-driving vehicles are being developed. First, images of known smoke plumes and IR signatures from fires will be sourced from existing alertwildfire images to train and optimize the model. A subset of the image sources will be utilized as a validation dataset to compute precision and recall and other metrics to determine model performance. The model can then be optimized in an iterative process to limit errors of commission and omission. Next, the model will be tested in real-time against alertwildfire imagery.

Applicable Electricity Value Chain Elements	
<input checked="" type="checkbox"/> Grid Operations / Market Design	<input checked="" type="checkbox"/> Distribution
<input type="checkbox"/> Generation	<input type="checkbox"/> Demand-side management
<input checked="" type="checkbox"/> Transmission	

Concern, Gap, or Problem to Be Addressed

This project leverages the rich camera network that is already available and will be enhanced over the next several years to automatically detect fires. At present, the rich data from these cameras are not being used to automatically detect wildfires. With hundreds of cameras now deployed and hundreds more on the way, analysts will not have the capability to manually monitor feeds from each camera. This technology aims to complement other forms of fire detection platforms, such as satellite data, to detect fires as fast as possible.

Potential Benefits at Full Deployment

This project has the potential to increase public safety, by enhancing awareness of emerging incidents to enable rapid response by firefighters and first responders and improving chances of early fire containment. Once a fire is detected by the camera, it can be monitored in real time to determine spread and fire behavior. By avoiding larger incidents due to early detection this project can also potentially reduce carbon emissions from wildfire events.

Reason Proposal Should Be Considered Immediately

This project should be considered immediately to enhance the capability of the wildfire camera network to accelerate the detection and mitigation of wildfires and thereby limit wildfire spread.

Given D.20-08-042 it is unclear whether or when there will be a subsequent IOU investment plan or opportunity to conduct TD&D projects. Even if the IOUs will ultimately retain a direct administrative role in the program, D.20-08-042 will result in at least a two-year gap in PG&E's ability to pursue these important projects if they are deferred from consideration in EPIC 3.

Project Title: Advanced Electric Inspection Tools – Wood Poles

Project #: 46

Investment Area: Cross-Cutting Strategies and Technologies

Estimated Funding: \$1M

Description of Technology or Strategy to Be Demonstrated

This project will demonstrate and evaluate the use of a non-destructive examination method, Radiography Testing (RT), to detect flaws and prevent potential failures on electric distribution wood poles.

RT would be able to help identify the remaining quality and strength of the wood pole by understanding the grain structures and evaluating the residual strength of the pole. RT would also provide information on wood density which allows for the determination of moisture content to evaluate any risk of biodegradation or wood decay.

Applicable Electricity Value Chain Elements	
<input checked="" type="checkbox"/> Grid Operations / Market Design	<input checked="" type="checkbox"/> Distribution
<input type="checkbox"/> Generation	<input type="checkbox"/> Demand-side management
<input checked="" type="checkbox"/> Transmission	

Concern, Gap, or Problem to Be Addressed

Current asset inspection processes primarily rely on what is visible to the human eye. Visual inspection is the first step to pole inspection and is considered the lowest accuracy. Wood pole decay is a common defect and can occur on the inside of the pole which is not visible to the naked eye. Wood poles with internal decay may look perfect externally. However, signs of degradation as well as failure may be detectable using non-destructive examination. The use of non-destructive examination such as RT can supplement traditional inspections such as visual inspection and intrusive inspection techniques. RT is widely used in PG&E gas operations on natural gas pipelines, but its application has not been expanded to electric assets such as wood poles.

Potential Benefits at Full Deployment

This project has the potential to increase public safety by providing another method to identify asset defects before failure. This capability would reduce overall risks associated with asset downtime and improve employee and public safety. This capability would also provide the opportunity to proactively replace equipment, which leads to improved customer reliability and lower costs while providing an additional data stream for holistic

asset risk management. Depending on the outcome of the demonstration, if this supplemental inspection is fully deployed, it can be executed by existing or additional RT equipment to scale inspection operations based on asset strategy priorities and risks.

Reason Proposal Should Be Considered Immediately

This project should be considered immediately to attain non-destructive, accurate, affordable and fast inspection methodologies for the distribution and transmission system poles.

Given D.20-08-042 it is unclear whether or when there will be a subsequent IOU investment plan or opportunity to conduct TD&D projects. Even if the IOUs will ultimately retain a direct administrative role in the program, D.20-08-042 will result in at least a two-year gap in PG&E's ability to pursue these important projects if they are deferred from consideration in EPIC 3.

Project Title: Operational Vegetation Management Efficiency Through Novel Onsite Equipment

Project #: 47

Investment Area: Cross-Cutting Strategies and Technologies

Estimated Funding: \$2.9M

Description of Technology or Strategy to Be Demonstrated

This project will demonstrate two high-ranking technology innovations as judged by PG&E and other environmental stakeholders from a recent “woody biomass open innovation challenge” that PG&E hosted; specifically, a) small-scale mobile torrefaction, and b) wood baling. The project may also potentially demonstrate other novel technologies that emerge from the Request for Proposals (RFP) process. Torrefaction and wood baling technologies offer potential to densify woody biomass from vegetation management work and transform that biomass into a value-added lower emission product such as biochar or feedstock for renewable natural gas or hydrogen.

Applicable Electricity Value Chain Elements	
<input checked="" type="checkbox"/> Grid Operations / Market Design	<input checked="" type="checkbox"/> Distribution
<input type="checkbox"/> Generation	<input type="checkbox"/> Demand-side management
<input checked="" type="checkbox"/> Transmission	

Concern, Gap, or Problem to Be Addressed

This project intends to address affordability, safety and clean energy transition. PG&E is planning to spend hundreds of millions for the foreseeable future on Enhanced Vegetation Management (EVM), and lacks sufficient crews to proceed at desired speed. This demonstration would contribute to address affordability and wildfire magnitude reduction by addressing transportation, effective intensification, drying and monetization of otherwise low-value products of vegetation management. The focus of the project is to demonstrate technologies with potential to materially lower significant transportation and delivery costs—either by PG&E or its contractors—rather than specifically demonstrate revenue generation. For the torrefaction approach, determination of the output would include factoring site-specific feedstock and be part of the demonstration.

Potential Benefits at Full Deployment

In terms of economic benefits, transportation represents 25-50% of delivered wood cost; integration of effective densification, drying, and/or monetization of “non-merchantable” wood would have benefits to year-over-year vegetation management contract costs. Wood baling equipment could also enable crew size reduction, freeing scarce labor for more locations. In addition, woody biomass could be a valuable input for California’s clean energy transition if available affordably, including as feedstock for renewable natural gas or hydrogen as a co-product. Lowering costs for forest fuels management could increase the number of projects undertaken in years ahead to restore ecological forest health and reduce catastrophic wildfire damage and consequent GHG emissions and air pollution. Pending successful technology demonstration, a subsequent step would be to identify the market for scaled use of biomass-related output from the most promising solution(s), and/or sale of that output if contractors’ sales can be a means to reduce end wood management costs, subject to any and all related accounting and regulatory constraints.

Reason Proposal Should Be Considered Immediately

Vegetation management efficiency is a bottleneck in California’s efforts in wildfire mitigation. Current techniques utilized have not fundamentally changed over decades to expediate the urgent need of rapid vegetation management.

Given D.20-08-042 it is unclear whether or when there will be a subsequent IOU investment plan or opportunity to conduct TD&D projects. Even if the IOUs will ultimately retain a direct administrative role in the program, D.20-08-042 will result in at least a two-year gap in PG&E’s ability to pursue these important projects if they are deferred from consideration in EPIC 3.

Project Title: Stored Energy Transactions Enablement Platform (SETEP)

Project #: 48

Investment Area: Renewables and DER Integration

Estimated Funding: \$1.7M

Description of Technology or Strategy to Be Demonstrated

This project will demonstrate a software platform that can conduct energy transactions for customers with Distributed Energy Resources (DERs) to leverage exported energy. The project intends to use existing load profiles of different use cases in a simulated environment to create a ledger of transactions to analyze the economic cost shifts in support of future California energy policy in addition to software platform adequacy.

Applicable Electricity Value Chain Elements	
<input checked="" type="checkbox"/> Grid Operations / Market Design	<input type="checkbox"/> Distribution
<input type="checkbox"/> Generation	<input checked="" type="checkbox"/> Demand-side management
<input type="checkbox"/> Transmission	

Concern, Gap, or Problem to Be Addressed

California’s residents have increasingly adopted distributed energy resources. New technical capabilities and DER assets introduce a need to address energy transactions for different configurations. Some of the use cases that this project will explore include but are not limited to simulating energy transactions for a grid-connected communal

battery; campus configuration where multiple buildings can generate, store and transfer energy among themselves; and a platform to facilitate energy transactions where customers can gain monetary value for their exported energy. Data elements to be captured would include but not be limited to the ledger of transactions, volume and time stamp of transactions when generation is optimized, customer bill impacts, buy/sell functions, location and density of transactions, revenue generated by customers, comparison of transactions to average settlement credits, and cost shifts in generation vs. load profile.

Potential Benefits at Full Deployment

This project has the potential to enable greater DER value realization through the transaction of exported energy in support of the grid as well as proving data to inform future California energy policy. If successful, through providing a greater qualitative and quantitative understanding of cost shifts, the project can inform future programs to assist and enable customers in considering microgrid systems, which in turn would offer more resiliency to the customers and the electrical system.

Reason Proposal Should Be Considered Immediately

While this project is the only proposal in this advice letter that does not directly further resiliency, safety or wildfire risk mitigation objectives, it supports longer-term strategic enablement of DER energy transactions.

Given D.20-08-042 it is unclear whether or when there will be a subsequent IOU investment plan or opportunity to conduct TD&D projects. Even if the IOUs will ultimately retain a direct administrative role in the program, D.20-08-042 will result in at least a two-year gap in PG&E's ability to pursue these important projects if they are deferred from consideration in EPIC 3.

**PG&E Gas and Electric
Advice Submittal List
General Order 96-B, Section IV**

AT&T
Albion Power Company

Alta Power Group, LLC
Anderson & Poole

Atlas ReFuel
BART

Barkovich & Yap, Inc.
California Cotton Ginners & Growers Assn
California Energy Commission

California Hub for Energy Efficiency
Financing

California Alternative Energy and
Advanced Transportation Financing
Authority
California Public Utilities Commission
Calpine

Cameron-Daniel, P.C.
Casner, Steve
Cenergy Power
Center for Biological Diversity

Chevron Pipeline and Power
City of Palo Alto

City of San Jose
Clean Power Research
Coast Economic Consulting
Commercial Energy
Crossborder Energy
Crown Road Energy, LLC
Davis Wright Tremaine LLP
Day Carter Murphy

Dept of General Services
Don Pickett & Associates, Inc.
Douglass & Liddell

East Bay Community Energy Ellison
Schneider & Harris LLP Energy
Management Service
Engineers and Scientists of California

GenOn Energy, Inc.
Goodin, MacBride, Squeri, Schlotz &
Ritchie
Green Power Institute
Hanna & Morton
ICF
IGS Energy
International Power Technology
Intestate Gas Services, Inc.
Kelly Group
Ken Bohn Consulting
Keyes & Fox LLP
Leviton Manufacturing Co., Inc.

Los Angeles County Integrated
Waste Management Task Force
MRW & Associates
Manatt Phelps Phillips
Marin Energy Authority
McKenzie & Associates

Modesto Irrigation District
NLine Energy, Inc.
NRG Solar

Office of Ratepayer Advocates
OnGrid Solar
Pacific Gas and Electric Company
Peninsula Clean Energy

Pioneer Community Energy

Redwood Coast Energy Authority
Regulatory & Cogeneration Service, Inc.
SCD Energy Solutions
San Diego Gas & Electric Company

SPURR
San Francisco Water Power and Sewer
Semptra Utilities

Sierra Telephone Company, Inc.
Southern California Edison Company
Southern California Gas Company
Spark Energy
Sun Light & Power
Sunshine Design
Tecogen, Inc.
TerraVerde Renewable Partners
Tiger Natural Gas, Inc.

TransCanada
Utility Cost Management
Utility Power Solutions
Water and Energy Consulting Wellhead
Electric Company
Western Manufactured Housing
Communities Association (WMA)
Yep Energy