Public Safety Power Shutoff Workstream Report

EPIC POLICY + INNOVATION COORDINATION GROUP

FEBRUARY 2021

This report was completed by The Accelerate Group, a consultant to the California Public Utilities Commission and the Project Coordinator for the EPIC Policy + Innovation Coordination Group. The information herein was collected and summarized by the Project Coordinator, with input from members of the EPIC Policy + Innovation Coordination Group, and does not reflect an official position of the California Public Utilities Commission.

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EXECUTIVE SUMMARY

The overall goal of the EPIC Policy + Innovation Coordination Group's Public Safety Power Shutoff Workstream was to find ways to minimize social and economic disruption of the Public Safety Power Shutoffs for the most critical public services and the most vulnerable communities. While utilities are submitting wildfire mitigation plans, and are accountable for de-energization programs, there are difficulties in identifying critical local infrastructure and understanding the impacts of power shutoffs on critical public services and vulnerable populations. Further, there are lessons that could be learned from previous grid modernization investments that have been made, or that could be made, to mitigate and prepare for a future of growing and more impactful wildfire and other public safety high-impact threats.

More than 135 different individuals participated in the two 90-minute workstream meetings in November and December 2020, including California Public Utilities Commission and California Energy Commission staff and Commissioners; research, development, and deployment (RD&D) project leaders; utilities; technology solution providers; and researchers.

Key Learnings

Learning #1: Creating standardized pathways for community energy and microgrid projects will enable more projects to be successful.

Advanced Energy Community projects discussed that regulatory hurdles are some of the largest obstacles to project development, and said standardizing permitting requirements, interconnection processes, and the public engagement process, with greater transparency in each, could lead to more and quicker development and deployment.

Learning #2: Communities should design community-focused energy projects that address their core objectives and recognize their unique needs.

For community-focused energy projects, there is unlikely to be a single, replicable project model that works in all communities across the state. Having a clear understanding of the objectives and a process to weigh these decisions when faced with development realities, will help communities develop stronger plans that are more likely to move forward.

Learning #3: A value and payment for resilience can improve the business case for microgrids and lead to quicker deployment.

Consistently, workstream presenters emphasized that the high cost and difficulty of financing advanced energy community microgrids limited the opportunity to deploy microgrids on a larger scale. Per the presenters, the value of resiliency for customers is often not recognized and is absent for resiliency provided to the broader community.

Learning #4: Communities and developers need access to local grid and customer data to be able to design community energy solutions and multi-site microgrids.

Panelists noted that designing energy projects at a community scale often requires data on customer load profiles and existing grid assets that is not readily available, even to local governments or in confidential forms, to those seeking to design projects.

Learning #5: There are effective no- and low-cost planning and analysis tools that can be used by communities today to design community-focused energy and microgrid projects.

Communities can start planning today using tools such as NREL's URBANopt tool, ICA maps, and UCLA's Energy Atlas tool.

Learning #6: Allowing multi-customer microgrids to use existing distribution lines or cross rights-of-way will enable low-cost and quicker deployment.

Currently, motivated customers who wish to share power during grid outages between adjacent facilities, or among customers on a designated segment of a utility distribution circuit, are unable to develop such multi-customer microgrid projects, due to the absence of rules that enable them to use existing utility wires or share power across rights-of-way.

Learning #7: Clearly defined operational responsibilities can help enable multi-customer microgrid solutions.

Panelists discussed that even if regulatory barriers are addressed for multi-customer microgrids, projects will need to put in significant work to decide who controls different microgrid assets spread across multiple customers and operators, and how that control happens.

Learning #8: Higher DER penetration can be achieved with substation control and automation.

Presenters discussed how distributed control and energy storage can help support microgrids and resiliency projects that are contemplating distributed energy resource (DER) penetration levels on circuits of higher than 30%, and in some cases higher than 50%, in normal operating conditions, without violating system constraints.

Learning #9: Understanding existing utility asset health and risk levels can reduce frequency and duration of PSPS events.

As distribution system operators work to reduce public safety power shutoff (PSPS) event frequencies and durations, there is an increased focus on using enhanced data and analytics to make quicker and more accurate decisions on when to call a PSPS event. Recent wildfire activity has shown that reliance on past models and performance, or relative comparisons, is no longer sufficient for proactive decision-making.

Key Opportunities for Coordination and Collaboration

- Upcoming work in and around the CPUC Microgrid Rulemaking R19-09-009 could become a prime venue for discussion on how to value and assign costs for resiliency as part of compensation to projects providing resiliency support.

- Utilities, communities, and regulators should come together to develop standardized processes for enabling streamlined access to load and grid data to enable communities to better plan and develop advanced energy communities and microgrids, while maintaining privacy protections.

- Upcoming workshops around microgrid implementation, including by the recently-approved Resiliency and Microgrids Working Group as part of D.21-01-018, could also better define the set of operational responsibilities among microgrid operators, DER asset owners/operator, and utilities in multi-customer microgrids, including standard methods for communication to DER assets of load and grid capabilities within an islanded microgrid, clarifications around the control of DER assets by distribution system operators, protocols for deciding when and how to island a microgrid and to reconnect the microgrid to the main grid, and the treatment of non-participant customers that may be included in a line segment.

BACKGROUND

What is the Policy + Innovation Coordination Group?

The California Public Utilities Commission (CPUC) oversees and monitors the implementation of the ratepayer-funded Electric Program Investment Charge (EPIC) research, development, and deployment program. For current EPIC funds from investment periods 1, 2, and 3, there are four program administrators: the California Energy Commission (CEC), Pacific Gas and Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDG&E).

In Decision 18-10-052, the CPUC established the Policy + Innovation Coordination Group (PICG)—comprised of a Project Coordinator, the four Administrators, and the CPUC—to increase the alignment of EPIC investments and program execution with CPUC and California energy policy needs.

Selection of the Workstream

In August 2020, the California Public Utilities Commission (CPUC) launched four Partnership Areas where RD&D projects funded through the CPUC's EPIC Program could accelerate innovation and create a positive feedback loop between the State's electricity RD&D efforts and emerging energy policy challenges: equity, transportation electrification, wildfire mitigation, and public safety power shutoffs. The Partnership Areas were identified as critical and timely for decision-making for 2020.

To facilitate productive input, the Policy + Innovation Coordination Group established workstreams for each Partnership Area to allow RD&D project leaders and stakeholders to share their direct experience in RD&D projects, identify policy obstacles to new and emerging technology adoption, help inform Commission proceedings and other policy deliberations, and create new collaborations to accelerate energy innovation.

Goals of the Workstream

The overall goal of the Public Safety Power Shutoff Workstream was to find ways to minimize social and economic disruption of the Public Safety Power Shutoffs for the most critical public services and the most vulnerable communities. While utilities are submitting wildfire mitigation plans, and are accountable for de-energization programs, there are difficulties in identifying critical local infrastructure and understanding the impacts of power shutoffs on critical public services and vulnerable populations. Further, there are lessons that could be learned from previous grid modernization investments that have been made, or that could be made, to mitigate and prepare for a future of growing and more impactful wildfire and other public safety high-impact threats.

Workstream Schedule

Public Safety Power Shutoff Workstream Meeting #1:
Community-Focused Planning Solutions
November 16, 2020

Public Safety Power Shutoff Meeting #1 focused on Advanced Energy Community EPIC projects that can provide insights and lessons learned around community planning, community resiliency, and energy assurance.

Public Safety Power Shutoff Workstream Meeting #2:
Lessons learned from Grid Modernization Efforts
December 16, 2020

Public Safety Power Shutoff Meeting #2 focused on projects that can demonstrate how utility investments in situational awareness, remote sensing, data analytics, and feeder isolation and automation can minimize the number and duration of customer outages. The meeting also focused on gaining lessons learned from projects that can help increase the capacity of renewable energy penetration on a distribution grid in order to support community-based solutions that can be used for resiliency during PSPS or other emergency events.

Presentations & Panelists

Presenter / Panelist	Organization
Andrew Barbeau	EPIC Policy + Innovation Coordination Group
Vipul Gore	Gridscape Solutions Inc.
Jack Brouwer	University of California, Irvine
Marna Schwarz	City of Berkeley
Bob O'Hagan and Frank Wasko	Clean Coalition
Nikky Avila	PG&E
Prajwal Gautam	Southern California Edison
Dr. Ghazal Razeghi	University of California, Irvine
Nisha Menon	San Diego Gas & Electric
Robert Flamenbaum	San Diego Gas & Electric

PUBLIC SAFETY POWER SHUTOFF MEETING #1

Public Safety Power Shutoff Meeting #1 was focused on community-focused planning solutions to mitigate PSPS impacts, and understanding lessons learned from community-focused Advanced Energy Community planning efforts around community resiliency and energy assurance. Presenters at the first workstream meeting were asked to address some, or all, of the following core questions:

- What are the best ways to identify electric power assets in a community?
- What electric power data are valuable for community planning and how do you get them?
- What considerations are most important for developing Advanced Energy Community plans?
- How do different outage durations affect different critical needs in communities?
- Is every community and every block different when it comes to resiliency and energy assurance? Or is there a way to create a standard approach and structure to providing community solutions?

Panelists

- **Introduction, and what to expect**
  Andrew Barbeau, PICG Project Coordinator
- **Urban Microgrids for Grid Resiliency and Disaster Readiness (EPC-17-052)**
  Vipul Gore, Gridscape Solutions Inc.
- **Oak View Microgrid (EPC-17-045)**
  Jack Brouwer, UC Irvine
- **Berkeley Energy Assurance Transformation (BEAT) Project (EPC-15-065)**
  Marna Schwartz, City of Berkeley
- **Peninsula Advanced Energy Community (EPC-15-056)**
  Bob O'Hagan and Frank Wasko, Clean Coalition

Attendees

There were 99 attendees at the first Public Safety Power Shutoff Workstream meeting. Attendees included government entities, utilities, industry members, Community Choice Aggregators, non-governmental organizations, researchers, and individuals. Twenty (20) members of CPUC staff, and six (6) members of California Energy Commission participated.

Learnings

Learning #1: Creating standardized pathways for community energy and microgrid projects will enable more projects to be successful.

In 2016, the California Energy Commission launched its Advanced Energy Community effort, awarding 13 projects grants to do 18 months of planning to develop a community-focused energy initiative. This distributed planning process identified several barriers and obstacles standing in the way of communities seeking to develop innovative community-focused energy efforts. Communities looking to improve reliability and resiliency during Public Safety Power Shutoffs and other emergency events are looking for solutions that can be developed rapidly.

The Advanced Energy Community projects were often designed as distributed energy installations, consisting of several distributed resources including solar, battery storage, and EVs. Where the projects contemplated developing an island-able microgrid, that also involved technical consideration of microgrid controllers, switchgear, circuit and line improvements, and more infrastructure across a number of sites and locations.

Due to the complexity of these community-focused energy projects, and in particular their objectives to include multiple customer locations and public right-of-way, several regulatory steps and approvals from authorities holding jurisdiction (AHJs) are needed in order to successfully develop, interconnect, and operate any of these projects. These steps include electrical and building permitting, utility interconnection and interconnection cost, utility easements and right-of-way (ROW) easements, local government ordinances, contractual arrangements between private parties, lease and financing arrangements, and more.

Panelists from multiple Advanced Energy Community EPIC projects discussed the difficulty they have faced in dealing with inconsistent and varying regulatory requirements. These projects expressed these inconsistencies as challenges to deploying these blocks efficiently and effectively. Panelist Vipul Gore, of Gridscape Solutions, highlighted that a roof-installed residential solar system can take as little as one week to interconnect, while a community-based microgrid may take several years. The panelists presented a number of ways in which standardized processes could lead to more and quicker development and deployment:

- Standardize permitting requirements across AHJs to expedite the process. Use a proof of concept in one AHJ to alleviate concerns with other AHJs. Replicate the approval checklist used for solar and battery and make this available online for developers.
- Standardize and streamline the interconnection process for community-linked distributed resources or multi-site microgrids across all utilities in the state. Provide a transparent interconnection process and/or checklist for developers which includes the required documents developers must submit, the costs to interconnect, review periods, and estimated timelines. EPIC projects expressed the importance of transparency in both the process to interconnect and the costs associated with interconnecting these community microgrids.
- Standardization in the public engagement process. Community-based solutions require cooperation and buy-in from several stakeholders including building and infrastructure owners, tenants, utilities, Community Choice Aggregators, local governments, planning agencies, and community groups. The public process to review and approve these types of community-based projects should be consistent and transparent.

Learning #2: Communities should design community-focused energy projects that address their core objectives and recognize their unique needs.

For community-focused energy projects, there is unlikely to be a single, replicable project model that works in all communities across the state. Several of the EPIC project presenters, including Frank Wasco and Vipul Gore, described that through a goal-setting process, communities can understand what type of approach works best for them. Having a clear understanding of the objectives, according to panelists, and a process to weigh these decisions when faced with development realities, will help communities develop stronger plans that are more likely to move forward.

- Community-focused energy projects typically are envisioned to increase reliability, resiliency, and economic opportunity in communities, or to reach community sustainability goals. Communities may decide that certain facilities, or loads within facilities, are of the highest importance for supporting community resiliency, while other communities may not assign the same priority to that type of facility in their community.

- Local capabilities are also important variables to take into account. Frank Wasco recognized that the overall load profiles may be similar for like-type facilities across communities, but individual resources and sizes will vary across these communities.
- Communities also face unique environmental conditions such as being in a high fire threat district or being in an area where opportunities for solar energy production are lower.
- Local needs should also drive decision-making, including socio-economic needs, community needs in the face of prolonged PSPS events, economic development needs, public health and safety needs, and other needs prioritized by local communities.
- Finally, each community may have different financial drivers and capabilities - some may prioritize energy and cost savings, while others want to focus on resiliency and are willing and able to invest in it.

The variability of community needs and objectives means that there is likely not a standard design for community-focused advanced energy projects or microgrid projects. However, sharing lessons learned among communities can still help inform design decisions.

Learning #3: A value and payment for resilience can improve the business case for microgrids and lead to quicker deployment.

Workstream presenters consistently emphasized that the high cost and difficulty financing advanced energy community microgrids limited the opportunity to deploy microgrids on a larger scale. Presenters suggested that a near-term regulatory solution, which could be included as part of ongoing microgrid proceedings, was to create a value and associated incentive payment for resiliency for these systems to support their development. Per the presenters, the value of resiliency for customers is often not recognized, and the resiliency benefits some microgrid sites provide to the broader community are uncompensated.

Additionally, the upfront cost of infrastructure upgrades at the point of connection to enable a microgrid can often be significant, and rules requiring those costs to be paid in a supplemental up-front payment to the utility can be a burden to microgrid projects. Marna Schwartz and Frank Wasco noted there are very high capital expenditures required to upgrade utility lines, install master meters, and install switching equipment. Further, Vipul Gore mentioned that due to the long timeline to develop these systems, the price of the system materials can fluctuate significantly, leading to uncertainty in project development.

Having a method to account for those costs over time like traditional grid upgrades, rather than up front, will also enable quick deployment of microgrids, according to the presenters.

Learning #4: Communities and developers need access to local grid and customer data to be able to design community energy solutions and multi-site microgrids.

Communities and developers looking to develop projects to boost energy assurance, community resiliency, local environmental impacts, economic development, and other objectives need to have insight into several types of private or confidential information in order to effectively design the site, size, infrastructure, and financeability of the projects. Those data include utility grid infrastructure data, the location and number of customers on a given distribution line, customer demand and usage profiles, and existing energy asset data.

Panelist Marna Schwartz noted how difficult it was to access utility grid infrastructure data for their Berkeley Energy Assurance Transformation (BEAT) project, which was working to assess the feasibility for a microgrid that would connect multiple buildings in downtown Berkeley. The BEAT project sought to gain information about distribution lines, line capacity, circuits, and transformers from the utility. Jack Brouwer, of UC Irvine, further identified the difficulty in receiving critical infrastructure information from the utilities for their Oak View Microgrid design in the Oak View Community of Huntington Beach. However, after a long and arduous process, and several years of engagement, he mentioned, the EPIC project was successful in gaining access to this information.

All EPIC projects mentioned the difficulty in accessing customer energy usage and load profile data, even in an anonymized and aggregated format, for the project site area. Several mentioned that asking customers individually for their utility bills and load data has become the only way to find out this information so that systems can be properly sized and designed. Panelists recommended that utilities should provide a simple and secure method to access at least aggregated and anonymous customer data to enable local communities to model and design systems.

Learning #5: There are effective no- and low-cost planning and analysis tools that can be used by communities today to design community-focused energy and microgrid projects.

Panelist Jack Brouwer described that his project, the Oak View Microgrid project in Huntington Beach, was able to use the open source URBANopt tool from the National Renewable Energy Laboratory to model and simulate various community microgrid scenarios and make informed decisions about location, grid impacts, and project design, including switching equipment and microgrid controller locations.

- https://github.com/NREL/OpenStudio/releases/tag/v2.5.1
- https://urbanopt.net/#!/login

Frank Wasco mentioned community projects can also use open-source ICA maps, which can provide a high-level view of utility feeders and lines.

Panelists also described that, for larger projects, the Energy Atlas provided by UCLA provides publicly available disaggregated energy data that can be searched for at the zip code level.

- https://energyatlas.ucla.edu/

The California Energy Commission noted that there are additional tools available for microgrids and energy storage made available by EPRI, and funded as part of the EPIC program:

- https://www.der-vet.com/
- https://www.storagevet.com/home/

Learning #6: Allowing multi-customer microgrids to use existing distribution lines or cross rights-of-way will enable low-cost and quicker deployment.

Several of the EPIC projects found through the course of their project that current regulations inhibited their ability to successfully install their multi-site microgrid projects. Vipul Gore highlighted that, currently, adjacent facilities and adjacent microgrids cannot share power. In the case of a proposed microgrid project that relied on sharing load resources and solar capacity from two adjacent parcels, under current regulations the overproduction of one facility would have to be curtailed instead of being able to share the excess with a neighboring facility that did not have the capability for installing sufficient generation on-site. In this case, the neighboring facility would not be able to meet its critical load needs.

Marna Schwartz highlighted that this could be resolved if microgrid customers used distribution lines for multi-customer microgrids when the grid would otherwise be offline. Marna Schwartz raised the regulatory challenge, however, that if not all customers on a distribution circuit were interested in participating in a microgrid project, there would be hard decisions around potentially breaking customers off of those distribution circuits used as part of a microgrid during an outage event, or, alternatively, facing a high cost to install switch gear and infrastructure to separately serve the microgrid customers.

Panelists noted that some communities would be willing to pay for a new distribution line but noted that since the utility must own and operate these lines, the community would in effect be paying for a distribution line just to deed it back to the utility to maintain and operate. The community is then charged for ongoing maintenance.

Another regulation that several of the presenters said typically impedes multi-site microgrid projects are the limitations on crossing rights-of-way (ROWs). Existing safety and utility regulations limit the ability of third-party microgrid developers from crossing public rights-of-way.

Summary of Opportunities for Collaboration and Coordination

The panelists in the research community, local government, and industry agreed that regulators and utilities should collaborate on how to value and assign such costs for resiliency to the broader community so they can compensate projects for providing resiliency support, including developing analysis on the uncompensated benefits some microgrid sites provide to the broader community. Upcoming work in and around the CPUC Microgrid Rulemaking R19-09-009 could become a prime venue for this discussion and let parties identify such values and possible compensation methods.

Several panelists also said regulators, industry, and utilities should collaborate to create standardization and transparency in the interconnection process for Microgrids. While PG&E is proposing a method for community microgrid development within its footprint, more work can be done through working groups to standardize the interconnection process for utilities and communities looking to develop community microgrid projects for all types of microgrids.

The recently-approved Resiliency and Microgrids Working Group, as part of D.21-01-018, creates further opportunity to identify and address policy and regulatory challenges on multi-site and multi-meter microgrid projects

Panelists also emphasized that communities and developers need more access to information to better plan and develop advanced energy communities. As discussed, communities require several layers of data sets, for customer energy use and grid infrastructure, but access to that information is limited due to security and privacy requirements. Utilities, communities, and regulators should come together to develop standardized processes for enabling access to such information in a streamlined and secure way, while maintaining privacy protections.

PUBLIC SAFETY POWER SHUTOFF MEETING #2

Public Safety Power Shutoff Meeting #2 was focused on gathering lessons learned from grid modernization efforts. Presenters at the second workstream meeting were asked to focus on:

- Projects that can demonstrate how utility investments in situational awareness, remote sensing, data analytics, and feeder isolation and automation can minimize the number and duration of customer outages; and
- Lessons learned from projects that help communities increase renewable energy penetration on a distribution grid to support resiliency during PSPS or other emergency events.

Panelists

- **Introduction, and what to expect**
  Andrew Barbeau, PICG Project Coordinator
- **Location-Specific Options for Reliability and/or Resilience Upgrades (PG&E EPIC 3 - Project 11)**
  Nikky Avila, PG&E
- **Control and Protection for Microgrids and Virtual Power Plants (SCE EPIC 3 – Project 4)**
  Prajwal Gautam, SCE
- **Substation Automation and Optimization of Distribution Circuit Operations (CEC EPC-15-086)**
  Dr. Ghazal Razeghi, University of California, Irvine
- **Data Analytics in Support of Advanced Planning and System Operations/Circuit Risk Index Project**
  Nisha Menon, SDG&E, Robert Flamenbaum, SDG&E

Attendees

Ninety-seven (97) attendees at the second Public Safety Power Shutoff Workstream meeting represented government entities, utilities, industry members, Community Choice Aggregators, non-governmental organizations, and researchers. Twenty (20) members of CPUC staff, and six members of California Energy Commission staff participated.

Learnings

Learning #7: Clearly defined operational responsibilities can help enable multi-customer microgrid solutions.

One of the greatest challenges still to be solved for multi-customer microgrids, according to panelists at the second PSPS Workstream meeting, is determining the roles and responsibilities of different operation actors in a multi-customer microgrid project. These projects are often envisioned as a collaborative effort between individual customers, DER owners and operations, third-party developers, and utilities operating the grid. EPIC projects and ongoing work by workstream participants are helping to add insight into who controls different microgrid assets spread across multiple customers and operators, and how that control occurs.

Presenter Nikky Avila of PG&E, said her team designed their Redwood Coast Airport Renewable Energy Microgrid Project as a replicable model for identifying and optimizing operational responsibility for future microgrids. Within the PG&E design, a DC-coupled 2.2 MW solar PV and 2.2 MW, 4-hour energy storage system will be installed behind a generation circuit breaker and owned by the Community Choice Aggregator – Redwood Coast Energy Authority (RCEA). There are 19 microgrid customers including the Airport's main electricity service line, an EV charging station, and a United States Coast Guard air station. Nikky Avila said that under their model, PG&E is the distribution grid operator at all times, RCEA will control the generation asset and participate in the wholesale market while in standard grid-connected mode, and PG&E will control the generation asset and the entire microgrid system during islanding and transition modes. PG&E is looking to replicate this model with other communities looking to increase resilience options.

With the further development of community and multi-customer microgrids, however, there may not be such simplified models under an EPIC project. Where DERs already exist and can be leveraged as part of a multi-customer microgrid, new collaborative control and protection schemes must allow third parties to manage their DER, while the utility can control and operate its distribution system. Presenters discussed the importance of having distinct operational boundaries between the community grids and distribution operators to assist in scaling microgrid solutions. Presenters shared ways to allocate operational responsibility in future microgrids:

- Show schematics that delineate between the main grid and the microgrid;
- Discuss and clearly demonstrate how distribution system operators will see and coordinate with the microgrid;

- Use control logic that determines islanding procedures through sophisticated testing;
- Use a microgrid controller that has authority and can make decisions about individual customer connections and DER operating conditions.

Learning #8: Higher DER penetration can be achieved with substation control and automation.

Typically, utility integration of DER is pretty straightforward for distribution circuits where DER penetration is less than 15% of customer load. This is due to the low risk of backfeed from solar generation through equipment that was not designed for two-way power flow. As communities look to reduce the disruption due to PSPS events, however, microgrids and resiliency projects are contemplating DER penetration levels of higher than 30%, and in some cases higher than 50%.

Through her research, Dr. Ghazal Razeghi discovered that higher DER penetration can be achieved without infrastructure upgrades, or violating any system constraints, and can provide critical coverage during PSPS events. The project was able to demonstrate, through the control of distributed solar PV assets alone, a solar PV penetration level of 21% on a feeder. When integrating energy storage with a total charge and discharge capacity of 50% of the nameplate capacity of the solar PV (and 2.5 hours of energy), the pilot project was able to achieve a solar PV penetration level of 37.5%. She discussed how battery storage and fuel cell deployment at the substation improves the reliability of the system and supports even greater solar PV adoption in normal use cases.

In outage simulations, the project was able to leverage a 2.8 MW fuel cell (~28% of circuit demand) to ride through outages of up to 24 hours that start in the middle of the day, creating a full feeder microgrid. For outages of more than five hours, however, some load shedding (to focus on critical loads) would still be required.

Learning #9: Understanding existing utility asset health and risk levels can reduce frequency and duration of PSPS events.

As distribution system operators work to reduce PSPS event frequencies and durations, they are using more enhanced data and analytics to make quicker and more accurate decisions on when to call a PSPS event. Historically, operators have relied on a subjective approach to decision-making for system operations, ad-hoc decision-making primarily based on subject matter expertise. Operators have since shifted to a “relative” approach, with proactive decision-making supported by relative assessments and comparisons, according to panelists. Recent wildfire activity has shown, however, that reliance on past models and performance, or even relative comparisons, is no longer sufficient. The goal, according to Nisha Menon and Robert Flamenbaum of SDG&E, is to get to a future state that is "predictive," where proactive decision-making is made based on predictive assessments, using data on existing utility asset conditions, rather than relative comparisons.

A key new element to getting to that future "predictive" state for decision-making around PSPS events, according to Nisha Menon and Robert Flamenbaum, is to understand the current health of the utility's assets in the field. SDG&E presented its new Circuit Risk index, whose concept was sparked from its earlier work in its EPIC 2, Project 2, where it is implementing models to better predict asset failure by leveraging data on prime pole health and loading, conductor wire down rates, a WRRM fire consequence measure, temporary infrastructure and CMP infractions.

The Circuit Risk Index is being developed as an additional element to add to its growing risk assessment platform, WINGS, that already looks at their Fire Potential Index, the Santa Ana Wildfire Threat Index, Red Flag Warning, Vegetation Risk Index, and Wildfire Risk Reduction Model, to build a dynamic forecast of wildfire and PSPS risks.

Summary of Opportunities for Collaboration and Coordination

Upcoming workshops around microgrid implementation could include discussions to better define the set of operational responsibilities among microgrid operators, DER asset owners/operator, and utilities in multi-customer microgrids, including standard methods for communication to DER assets of load and grid capabilities within an islanded microgrid, clarifications around the control of DER assets by distribution system operators, protocols for deciding when and how to island a microgrid and to reconnect the microgrid to the main grid, and the treatment of non-participant customers that may be included in a line segment.

APPENDICES

Public Safety Power Shutoff Workstream Meeting 1:

Video Recording:
https://vimeo.com/480435289

Transcript:
https://epicpartnership.org/resources/PSPS_Workstream_Meeting_1_English_Transcript.pdf

Spanish Translation:
https://epicpartnership.org/resources/PSPS_Workstream_Meeting_1_Spanish_Translation.pdf

Vipul Gore Presentation:
https://epicpartnership.org/resources/Gore_PICG_PSPS_Workstream_Meeting_1.pdf

Jack Brouwer Presentation:
https://epicpartnership.org/resources/Brouwer_PICG_PSPS_Workstream_Meeting_1.pdf

Marna Schwartz Presentation:
https://epicpartnership.org/resources/Schwartz_PICG_PSPS_Workstream_Meeting_1.pdf

Bob O'Hagan, Frank Wasko Presentation:
https://epicpartnership.org/resources/OHagan_Wasko_PICG_PSPS_Workstream_Meeting_1.pdf

Public Safety Power Shutoff Workstream Meeting 2:

Video Recording:
https://vimeo.com/491899136

Transcript:
https://epicpartnership.org/resources/PSPS_Workstream_Meeting_2_English_Transcript.pdf

Spanish Translation:
https://epicpartnership.org/resources/PSPS_Workstream_Meeting_2_Spanish_Transcript.pdf

Nikky Avila Presentation:
https://www.epicpartnership.org/resources/Avila_PICG_PSPS_Workstream_2.pdf

Prajwal Gautam Presentation:
https://www.epicpartnership.org/resources/Gautam_PICG_PSPS_Workstream_2.pdf

Dr. Ghazal Razeghi Presentation:
https://www.epicpartnership.org/resources/Razeghi_PICG_PSPS_Workstream_2.pdf

Nisha Menon, Robert Flamenbaum Presentation:
https://www.epicpartnership.org/resources/Menon_PICG_PSPS_Workstream_2.pdf