

2023 California Adaptation Forum

# Mitigating Public Safety Power Shutoffs: An Energy Resiliency Planning Framework

Wednesday, August 2nd | 1 - 2 pm  
*Sonoma Ballroom 1*



## Gridworks Team



**Claire Halbrook (she/her)**  
Director



**Sarina Soor (she/they)**  
Senior Project Manager

Decarbonization of our economy is within reach, and more important than ever.

We are a non-profit that convenes, educates, and empowers stakeholders working to decarbonize our economy.



# Objectives & Agenda

## Objectives:

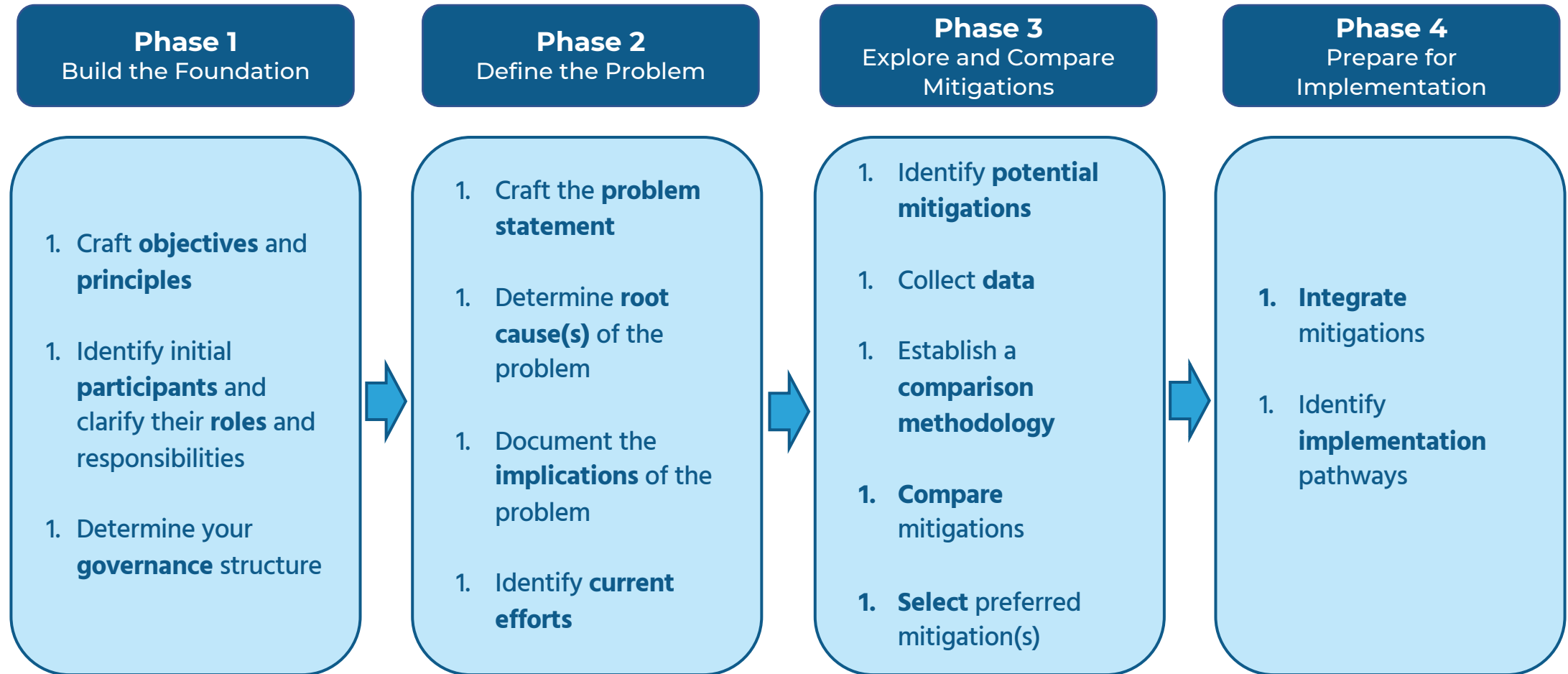
- Introduce Energy Resiliency Problem-Solving Framework
- Participants apply the framework to an energy resiliency challenge
- Participants leave with an actionable tool to use in their work

Time	Duration	Agenda Item
1:00 - 1:05pm	5 min	Welcome
1:05 - 1:20pm	15 min	Problem-solving Framework Presentation
1:20 - 1:25pm	5 min	Q&A
1:25 - 2:00pm	35 min	Interactive Activity

*Have questions on the North Coast Resiliency Initiative (NCRI)? Find Claire and Sarina after the session to chat more!  
And check out the full project report on the CPUC's NCRI webpage [here](#).*

# 4-Step Problem-solving Framework

# 4-Step Framework for Addressing Energy Resiliency Challenges

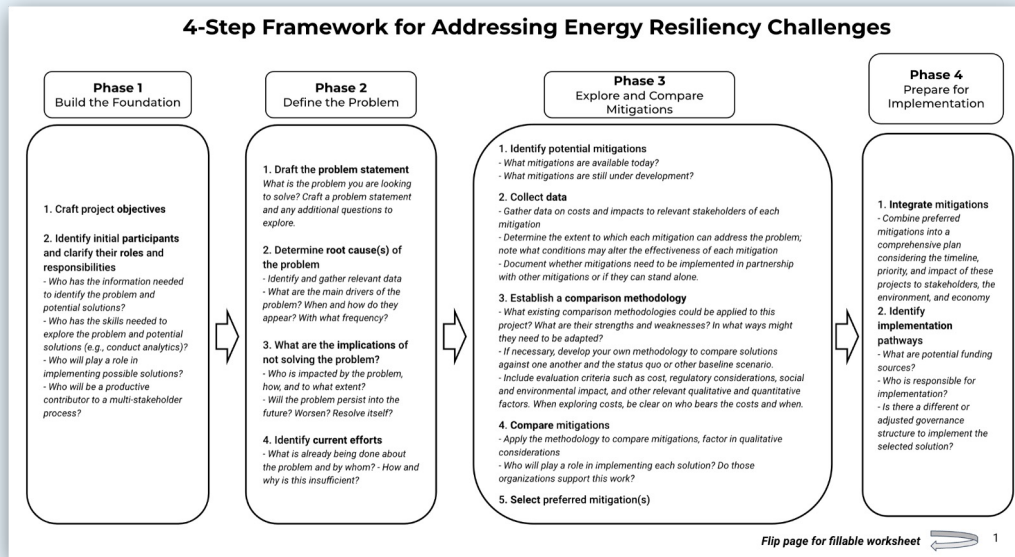


Source: Gridworks, 2023

# 4-Step Problem-Solving Framework Worksheet

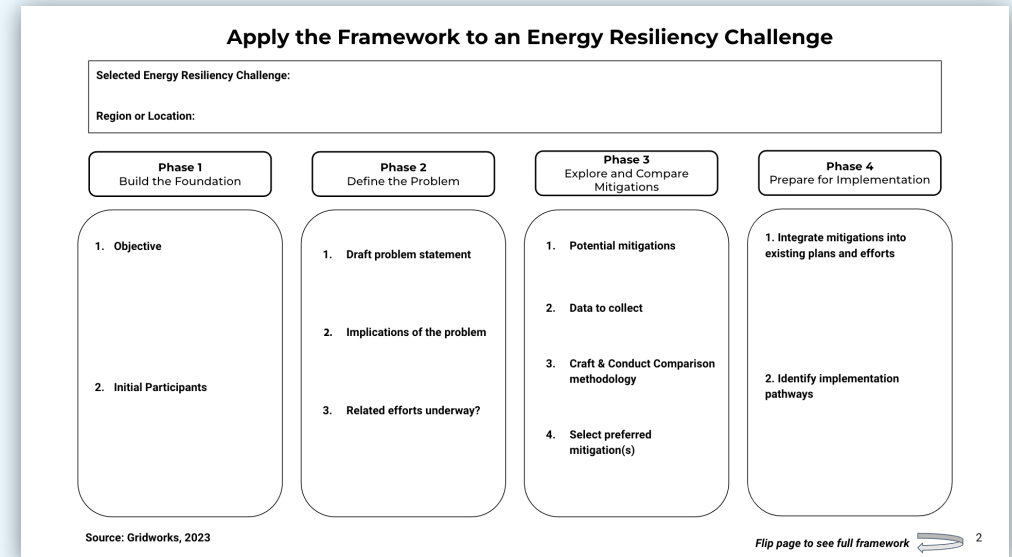
## Side 1 - Full Framework

Reference to use during & after this workshop

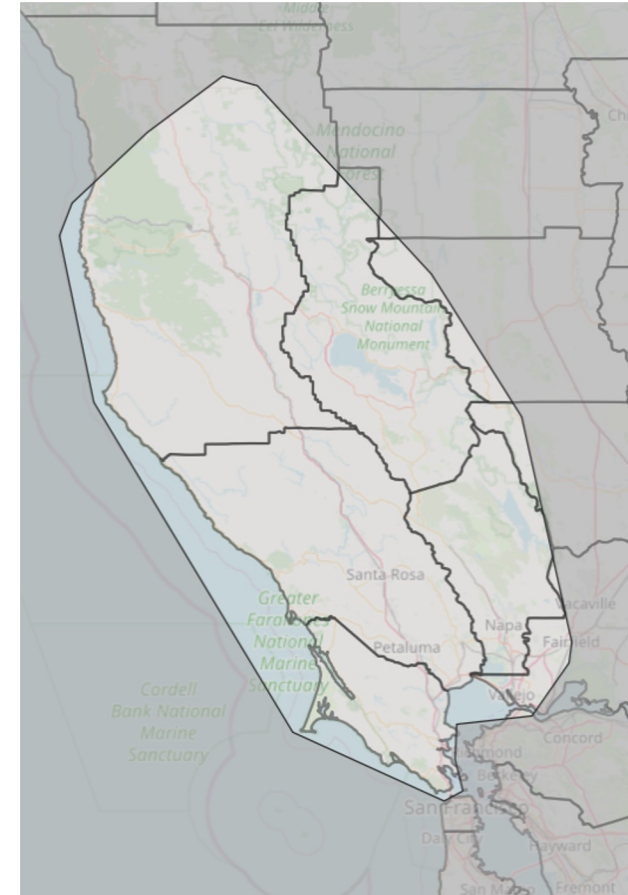


## Side 2 - Fillable Framework

Apply your own energy resilience challenge

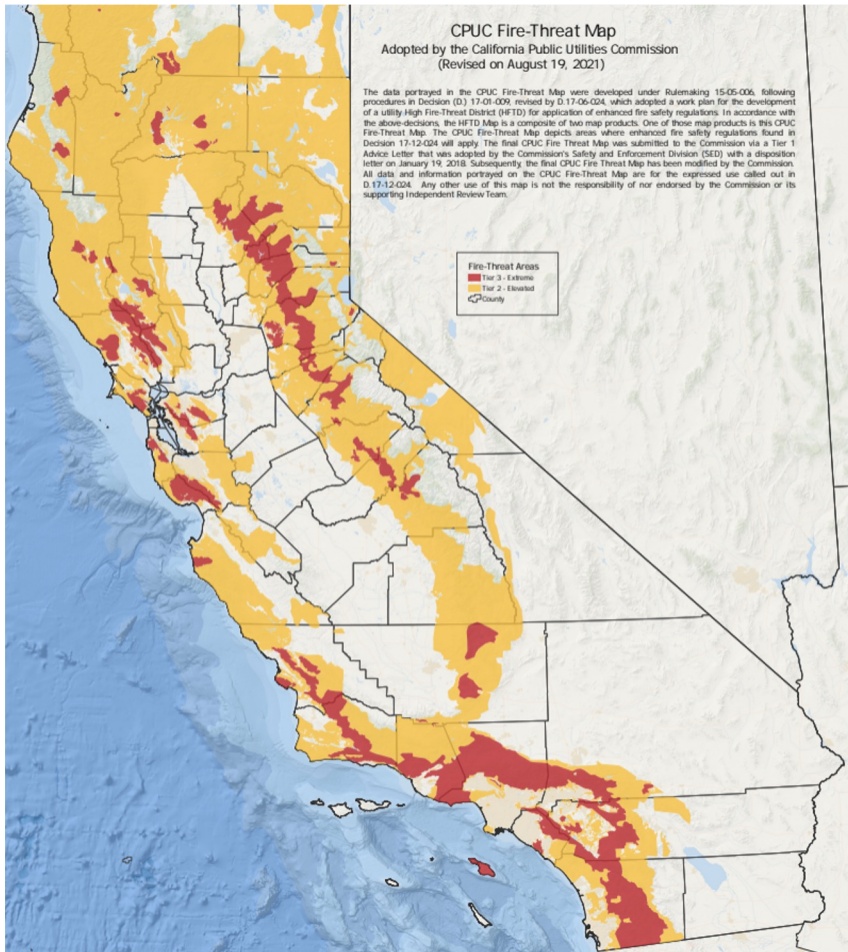


# Example: The North Coast Resiliency Initiative (NCRI)





# Before We Dive In – Some Key Terms



- **Public Safety Power Shutoff (PSPS):** When a utility turns off the power during dry, high-wind periods because the electrical lines have a risk of sparking catastrophic wildfires.
- **Key Terms: High Fire Threat Districts (HFTDs):** Areas where there is a higher risk for power line fires igniting and spreading rapidly, i.e. destructive power line fires. Stricter fire-safety regulations apply to HFTDs. Tier 2 HFTDs are considered “higher risk” and Tier 3 HFTDs (extreme risk)
- **Transmission Lines:** transmission lines are higher-voltage lines transmitting power across the state. They connect to substations which then deliver electricity to homes and businesses via distribution lines.

# NCRI as an Example - Step 1: Build the Foundation

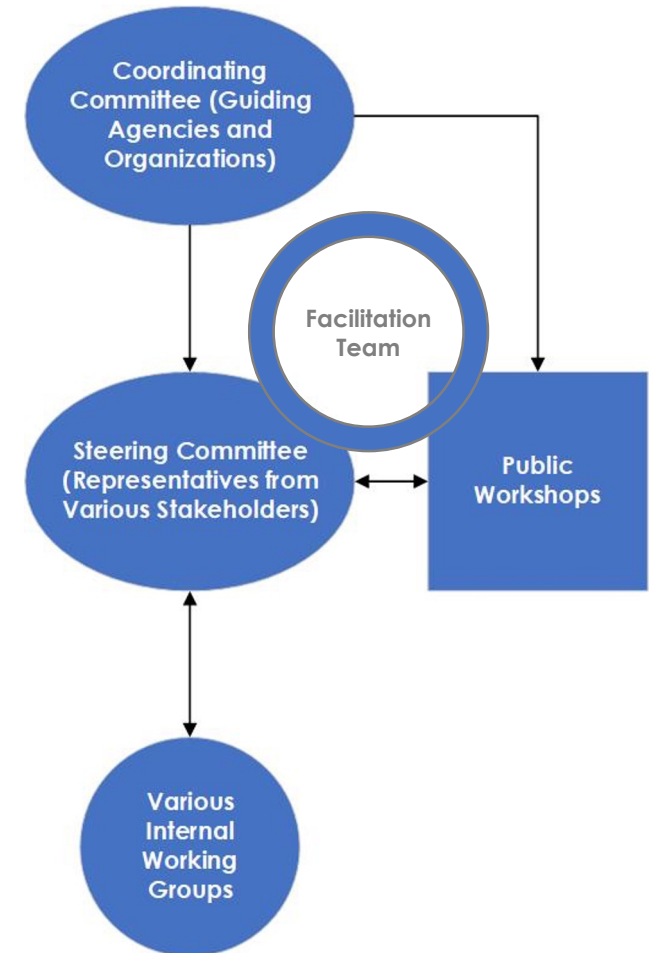
## Initiative Objective

Determine the causes of and craft mitigations for, electrical outages that impact customers along California's North Coast during wildfire season.

## Project Participants and Governance Structure

- Project Participants:
  - State energy regulators and planners
  - Local government representatives
  - Electric utility
  - Facilitator

It's important to make these groups inclusive of the perspectives, subject-matter expertise, and decision-making authority needed, but also manageable in size.

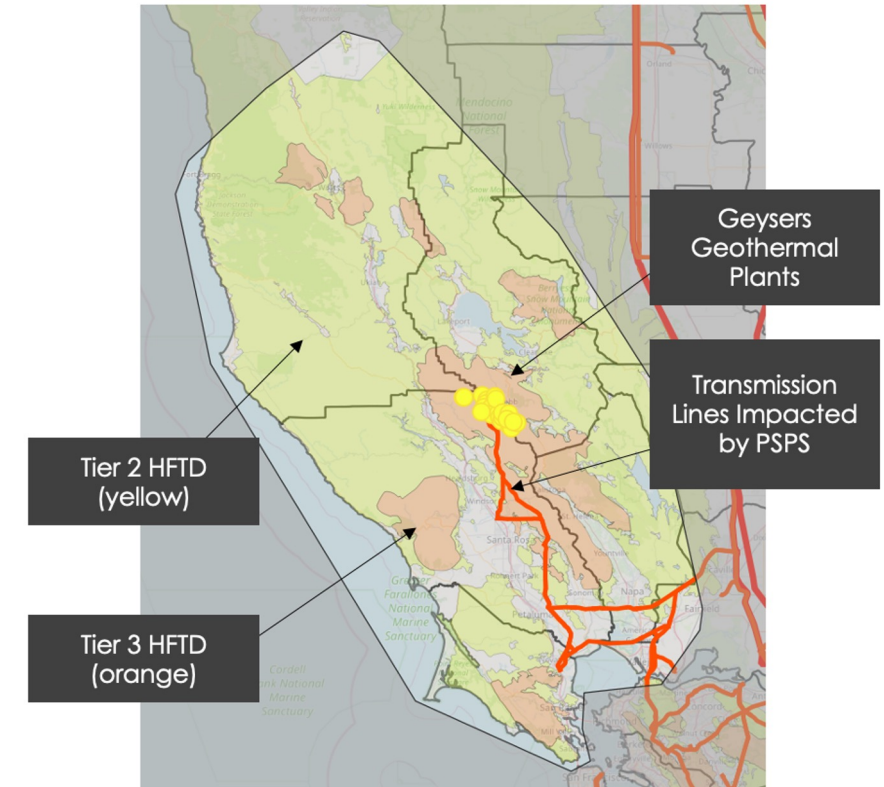


# Using the NCRI as an Example - Step 2: Define the Problem & Root Causes

## 2 Root Causes of Transmission-level Outages in the North Coast

Different factors can drive the need to de-energize a transmission line during a PSPS events. These **differences alter the suite of available mitigations and their effectiveness.**

- Some transmission lines are de-energized because they **pass directly through an area experiencing weather conditions** that drive the need for a PSPS event.
- Some transmission lines **become at risk of overloading** (and damage) during PSPS events when they are required to take on the load typically served through other directly impacted transmission lines, requiring load drop.



## Using the NCRI as an Example - Step 3: Explore and Compare Mitigations

### Transmission Line “Hardening”

- Harden transmission lines so they no longer need to be deenergized
- Includes hardening of individual structures (i.e. addressing maintenance tags) and hardening of entire lines (i.e. undergrounding)

### Local Energy Resources

- Using new or existing local energy resources to meet local demand
- Local resources have the same effect on the regional grid as load drop
- Considering storage, solar + storage, etc.

### Transmission Line Upgrades

Upgrade transmission lines so they can carry more power into the region

### Operational Changes

Alter how PG&E structures PSPS events to reduce or redistribute outages, including deenergizations for only part of the day, rotating deenergization, targeted deenergization, etc

### **3 Mitigations could reduce likelihood of future impacts by 80%**

Improved modeling and asset conditions on PG&E's electric system are already driving a reduction in the frequency and scope of transmission-level PSPS events along the North Coast.



***Address Open Maintenance Tags***



***Monticello Substation: Transmission Switching***



***Calistoga Substation: Clean Substation Microgrid***

## Using the NCRI as an Example - *Step 4: Prepare for Implementation*



### *Address Open Maintenance Tags*

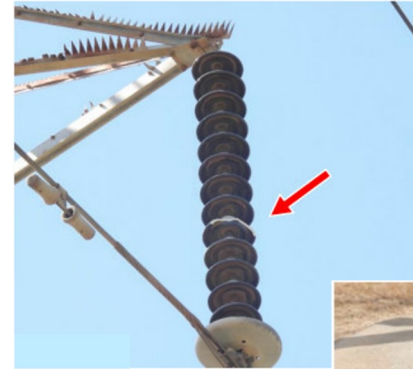
The condition of certain transmission-level structures was causing key transmission lines in the North Coast to be de-energized during PSPS events. Addressing open corrective action or maintenance tags on key transmission lines would reduce the need to de-energize these lines in the future.

Timing: To be completed by end of 2023

Implementer: PG&E

Funding: PG&E Customers (~\$500k)

Approval Process: PG&E Leadership



\*These are not generic photos to demonstrate what kind of conditions could exist.

## Using the NCRI as an Example - Step 4: Prepare for Implementation



### Monticello Substation: Transmission Switching

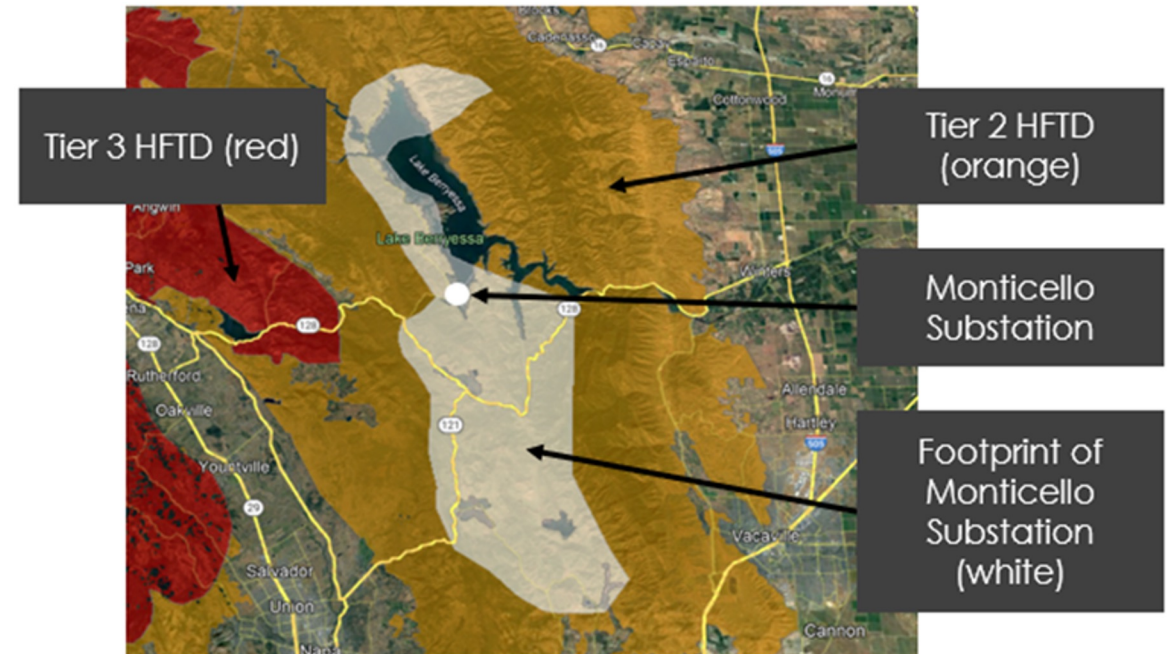
Existing transmission switches will supply energy to the Monticello substation from an alternate transmission line that is not considered in-scope for most anticipated PSPS events.

Timing: Now in place

Implementer: PG&E

Funding: PG&E Customers (negligible cost)

Approval Process: PG&E Leadership



## Using the NCRI as an Example - *Step 4: Prepare for Implementation*



### *Calistoga Substation: Clean Substation Microgrid*

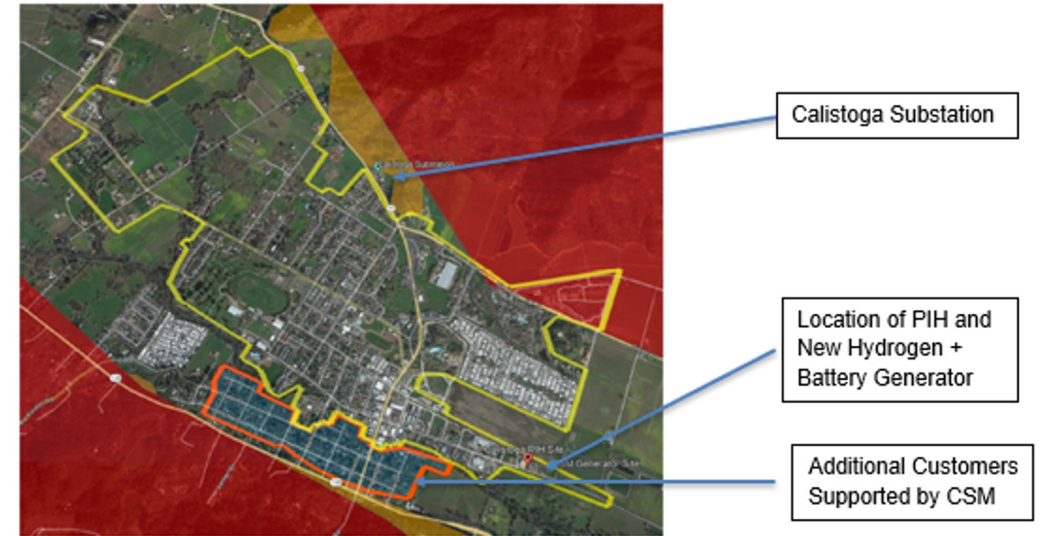
8.5 MWs of batteries and hydrogen fuel cells will keep the power on for ~1,500 customers

Timing: Online date of June 2024

Implementer: PG&E via contract w/Energy Vault

Approval Process: PG&E Advice Letter Approved by CPUC

Funding: PG&E Customers (~\$46 million)





# Your Turn!

Breakout Groups

## Interactive Activity - Breakout Groups (10 min)

1. Say hello to your group members!
2. Brainstorm to **identify an *energy resiliency challenge***
3. Choose a representative to report out your group's idea

## Interactive Activity - Full Group Application (25 min)

1. Each group will pitch their challenge in 1-2 sentences
2. We will take a poll on which challenge to tackle as a full group
3. We will workshop one of the ideas together
4. All participants are encouraged to contribute responses to the prompts



## HOW CAN WE HELP?

CLAIRE HALBROOK | SARINA SOOR

[chalbrook@gridworks.org](mailto:chalbrook@gridworks.org) | [ssoor@gridworks.org](mailto:ssoor@gridworks.org)

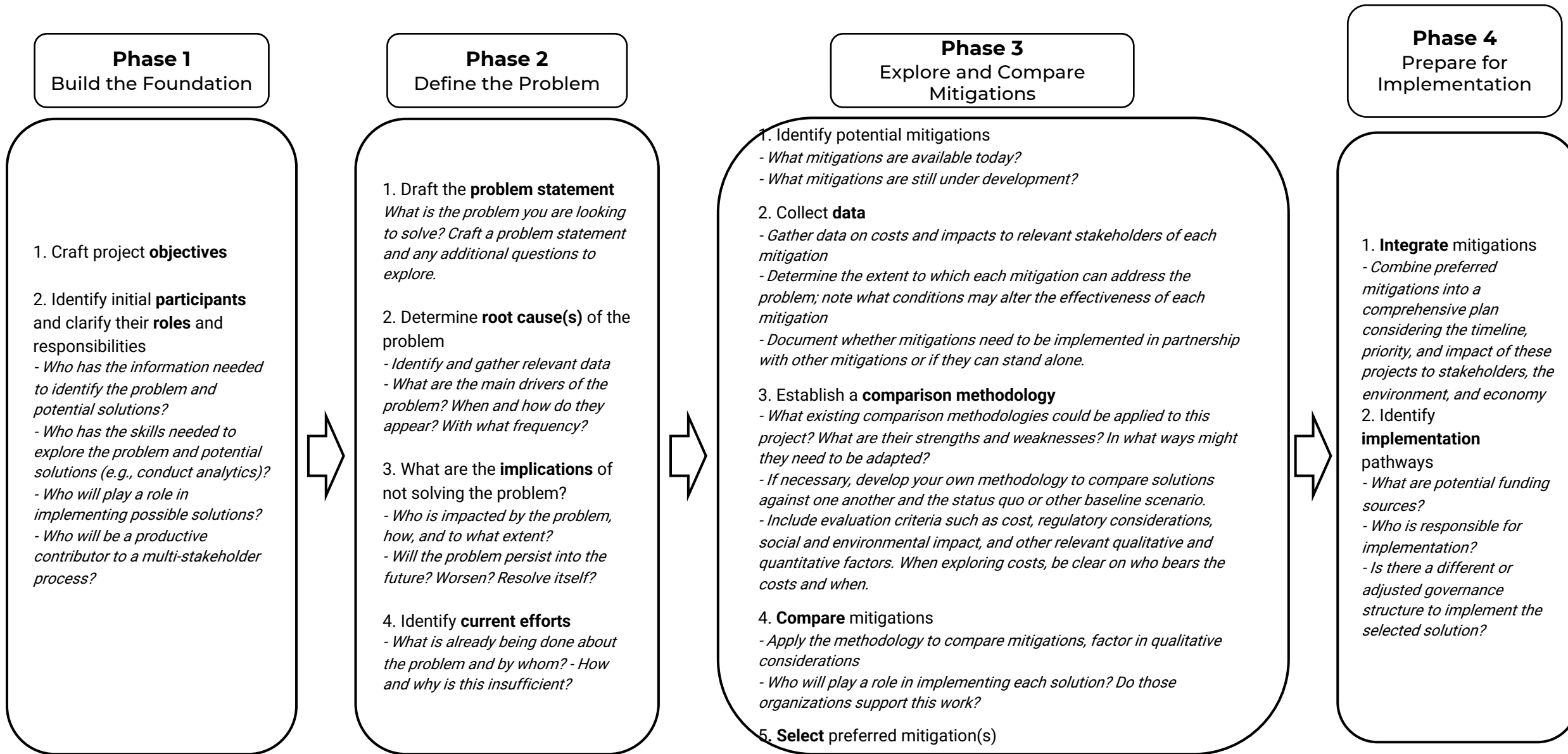
[www.gridworks.org](http://www.gridworks.org)



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# 4-Step Problem-solving Framework Worksheet

# 4-Step Framework for Addressing Energy Resiliency Challenges



# Apply the Framework to an Energy Resiliency Challenge

Selected Energy Resiliency Challenge:

Region or Location:

**Phase 1**  
Build the Foundation

1. Objective

1. Initial Participants

**Phase 2**  
Define the Problem

1. Draft problem statement

1. Implications of the problem

1. Related efforts underway?

**Phase 3**  
Explore and Compare  
Mitigations

1. Potential mitigations

1. Data to collect

1. Craft & Conduct  
Comparison methodology

1. Select preferred  
mitigation(s)

**Phase 4**  
Prepare for  
Implementation

1. Integrate mitigations into  
existing plans and efforts

2. Identify implementation  
pathways

