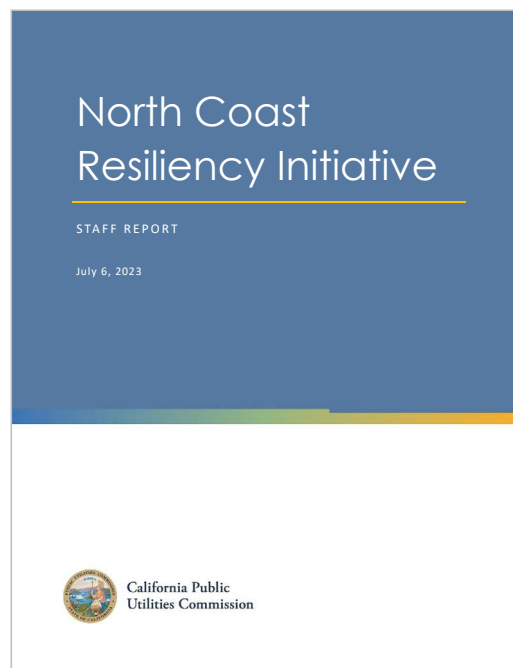


# INTRODUCING AN ENERGY RESILIENCY PROBLEM SOLVING FRAMEWORK

## OVERVIEW

Gridworks recently brought together state energy agencies, local government representatives, and Pacific Gas and Electric to determine the causes of and identify mitigations for electric resiliency challenges facing California's North Coast. Individuals from these organizations spent two years learning alongside one another and working collaboratively to develop and implement a replicable energy resiliency problem-solving framework. Through applying the problem-solving framework, these stakeholders reached agreement on cost-effective solutions to power outages along the North Coast caused by Public Safety Power Shutoff (PSPS) events during wildfire season. This case study explores the structure of this problem-solving framework and how it was used in the North Coast Resiliency Initiative (NCRI).

*A report summarizing the NCRI's scope, key findings, and detailing the lessons learned along the way is available [here](#). The Initiative's website is [here](#).*

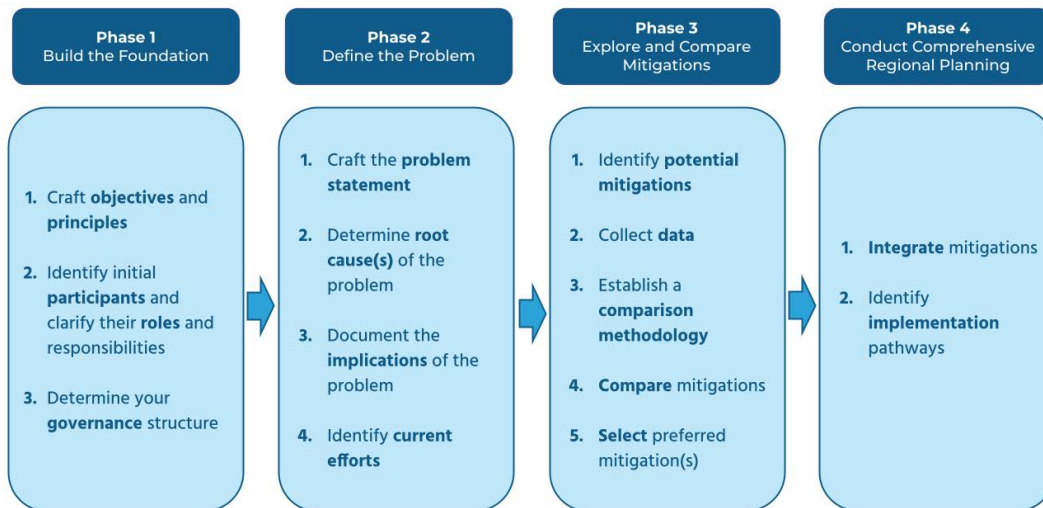


## APPROACH

With support from the Initiative's Steering Committee, Gridworks and the California Public Utilities Commission (CPUC) developed a four-phase problem-solving framework that can be used to better understand the root causes of and identify preferred solutions to any energy resilience issue. The four-phase problem-solving framework consists of high level steps with a series of questions to guide the respondent in addressing their own energy resilience challenge. A fillable version of the problem-solving framework with a detailed list of questions to use in your work is available for download below.

- 1. PHASE 1: Build the Foundation** - Identify objectives, principles, participants and their roles, and a governance structure.
- 2. PHASE 2: Define the Problem** - Develop the problem statement and identify root causes, implications, and current efforts.
- 3. PHASE 3: Explore and Compare Mitigation** - Identify a solution by collecting data then comparing that solution to alternatives using a consistent methodology.
- 4. PHASE 4: Prepare for Implementation** - Integrate solutions into a comprehensive plan, identify funding, and revisit participant roles, responsibilities, and governance structure.

[DOWNLOAD FILLABLE WORKSHEET](#)



Source: Gridworks, 2023

## OUTCOMES

Through applying the problem-solving framework, the NCRI identified the following cost-effective mitigations for PSPS impacts affecting customers along California's North Coast:

- **Repairing or replacing several pieces of equipment on transmission lines** could **reduce the projected number of certain transmission-level PSPS events in the area by 80%**. Doing so is projected to **cost only \$500,000 and can be completed by the end of 2023**.
- An **existing transmission switch can supply energy to an impacted substation in the region** from an alternate transmission line that is not considered in-scope for most anticipated PSPS events. This reduces the number of projected substation outages caused by PSPS events from 9 to potentially three or fewer over a ten-year period. This can be accomplished **without additional work or spending**.
- **PG&E's proposed Clean Substation Microgrid (CSM) at the Calistoga substation** will reduce the number of projected substation outages caused by PSPS events from 5 to zero. The Calistoga CSM will install 8.5 MWs of batteries and green hydrogen fuel cells with an online date of June 2024. PG&E has proposed a budget cap of ~\$50 million in revenue requirement for this project.



*Gridworks staff Claire Halbrook (right) and Sarina Soor (left) presented the framework at the 2023 California Adaptation Forum in a session titled, “Mitigating Public Safety Power Shutoffs: An Energy Resiliency Problem Solving Framework”. As a group, participants identified their own energy resilience issues and applied the framework together. The deck from that presentation is available [here](#).*

## ABOUT GRIDWORKS

*Gridworks facilitates difficult discussions and collaboration between policymakers, decarbonization advocates, energy providers and utility operators. We work with these groups to determine the best approach to meet decarbonization goals. Our work has eased the shift toward clean energy in the Western U.S. We're expanding to further our mission and invite you to work with us to navigate your clean energy challenges.*

*Learn more at [gridworks.org](https://gridworks.org).*