Pacific Power Community Resiliency Pilot
Preliminary Findings
February 2021

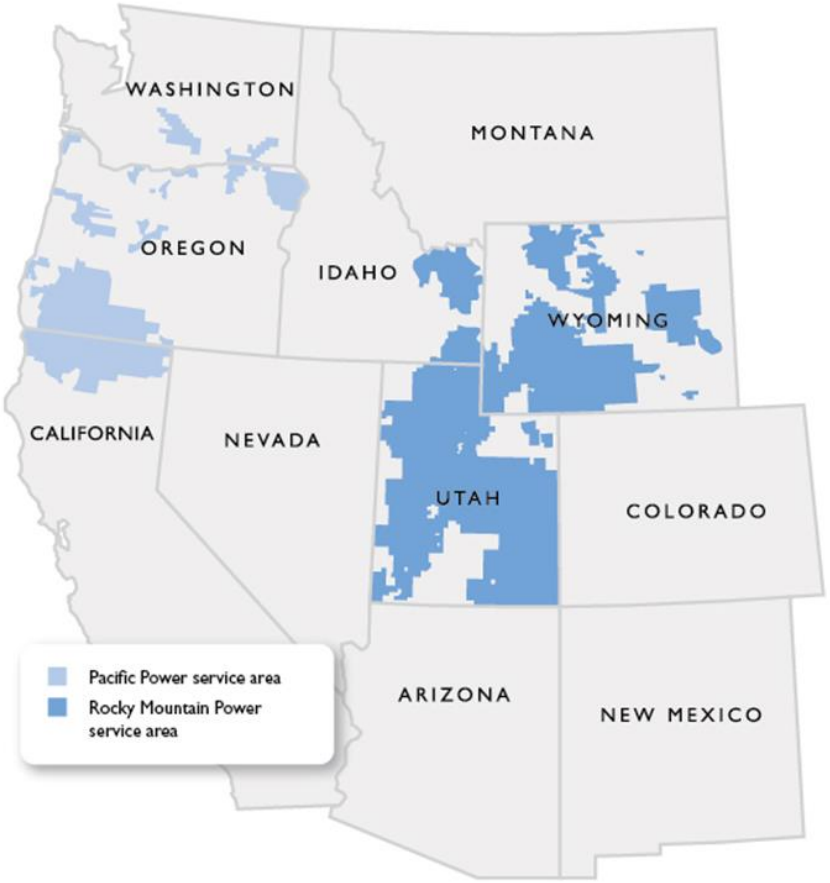





PACIFIC POWER

POWERING YOUR GREATNESS

PacifiCorp Overview



- Serving 1.9 million customers across 141,000 square miles in six Western states
  - Pacific Power serves customers in Oregon, Washington and California
  - Rocky Mountain Power serves customers in Utah, Wyoming and Idaho
- Service areas include Salt Lake City and a portion of Portland, but largely rural
- 60,600 customer sited generating systems, approximately 525 MW (OR: 8,800 Projects, 93 MW)
- 862 customer sited storage facilities, 7.8 MW and 17.8 MWh of capacity (OR:106 Projects, 0.9 MW, 1.8 MWH)

Today's Agenda

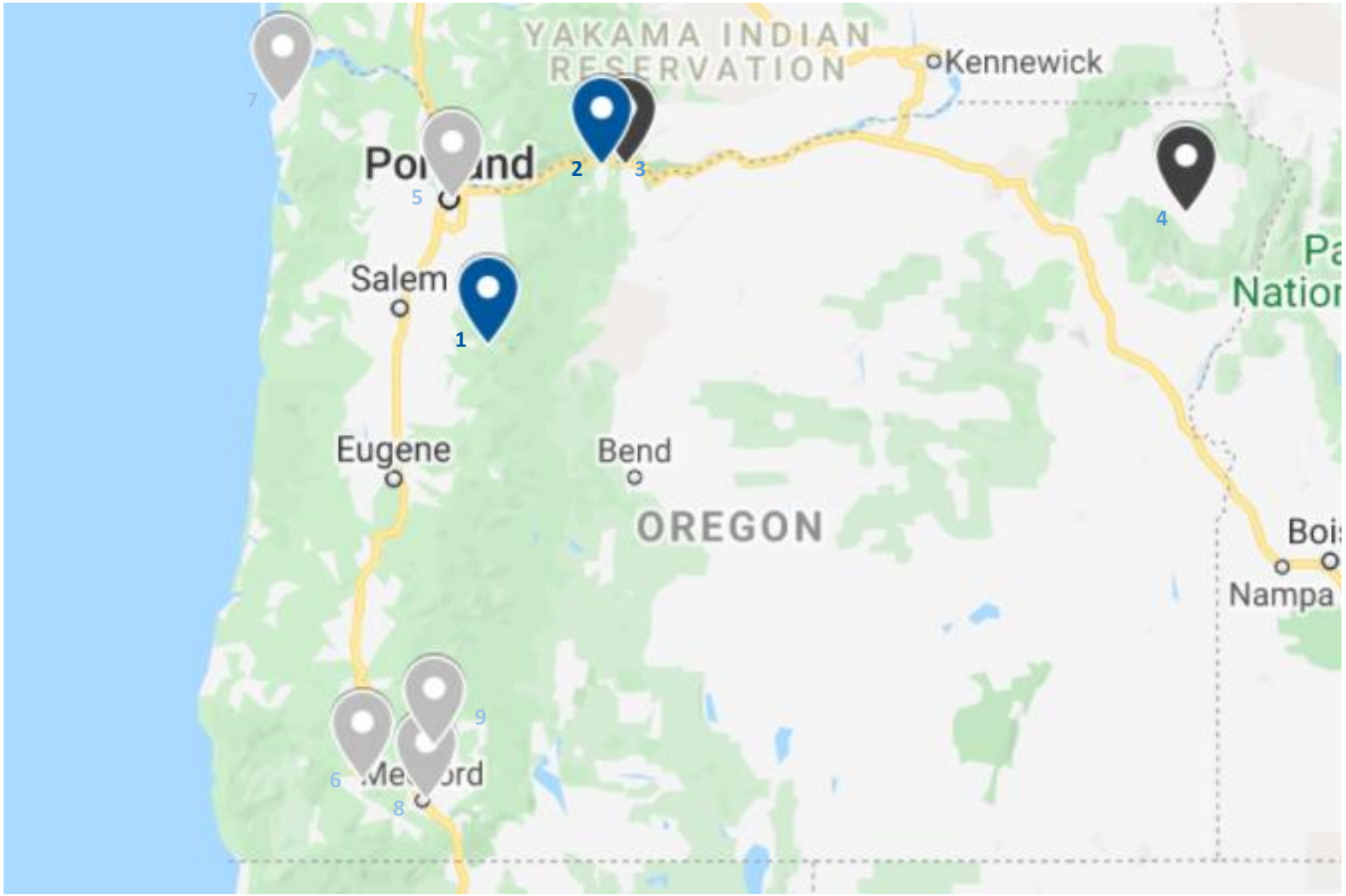
1. Overview of the project
2. Facility Learnings
3. Project Findings

Project Goals & Objectives

Work with communities to test storage opportunities for resiliency during long-term power outages

- Identify the value of energy storage
- Identify value of energy storage for customers and utility during normal grid operations
- Identify market barriers, solutions and additional value streams
- Develop methodologies for balancing the benefits of customer-sited equipment
- Strengthen existing community connections
- Understand how technical assistance informs and motivates customers
- Utilize results to inform future energy storage initiatives

Selected Facilities



	Facility Type	FEMA Category
1	Fire Station	B – Emergency Ops.
2	Fire Station	B – Emergency Ops.
3	School	A – Designated Shelter
4	Community Center	A – Designated Shelter
5-9	Varied	Initiated Studies

Facility Findings

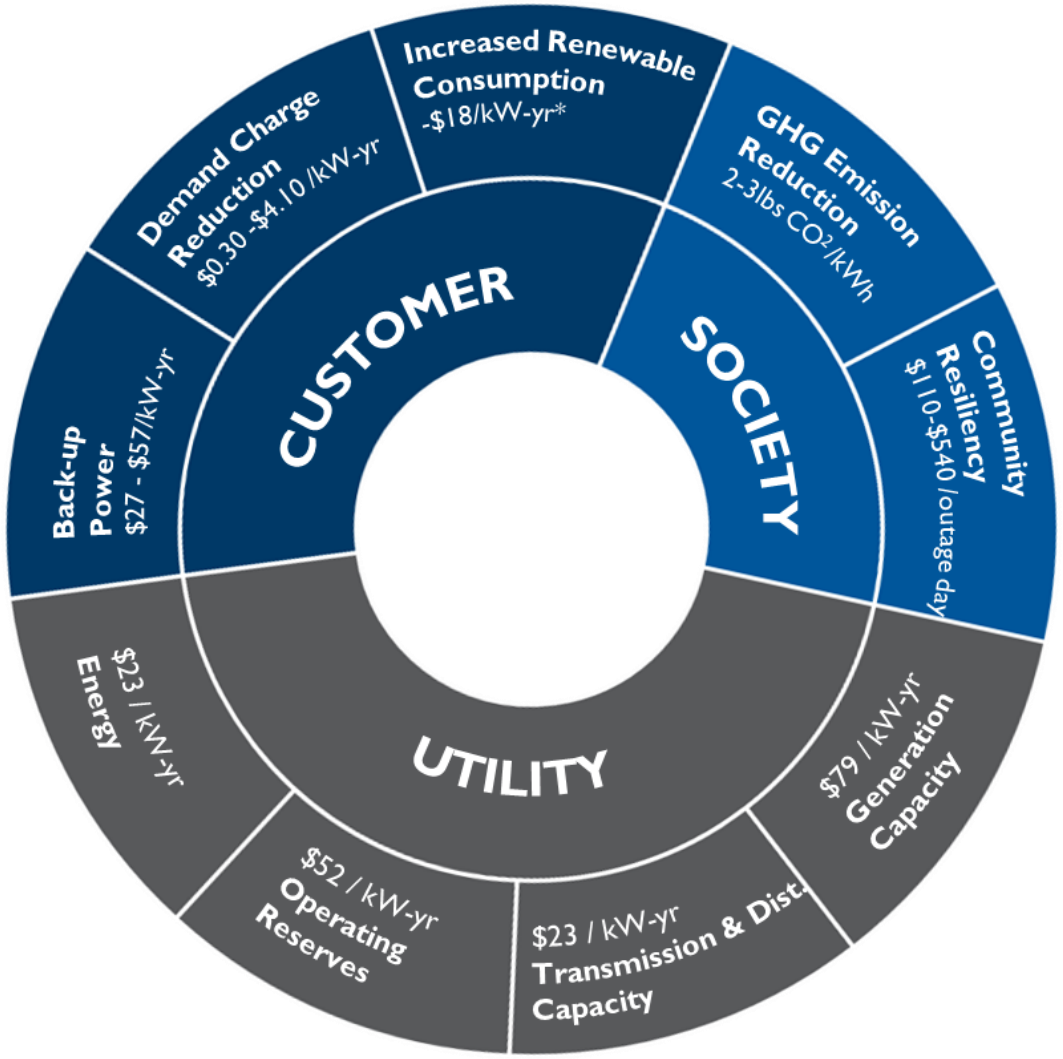
Tie the technical assistance to funding—grant funding or incentive dollars—to ensure follow-through and adoption.

- Back up storage systems may be more resilient than a standard back up generator, primarily because it reduces fuel delivery risk. Battery storage and solar reduce the run time and fuel usage of the backup generator.
- Resiliency Projects are long lead time projects, plans need to be developed, funding sources secured, building operations need be modified to reflect the new infrastructure.
- Understanding the energy systems can be outside the scope of the community facility managers and limit the interest of potential participants.

Program Findings

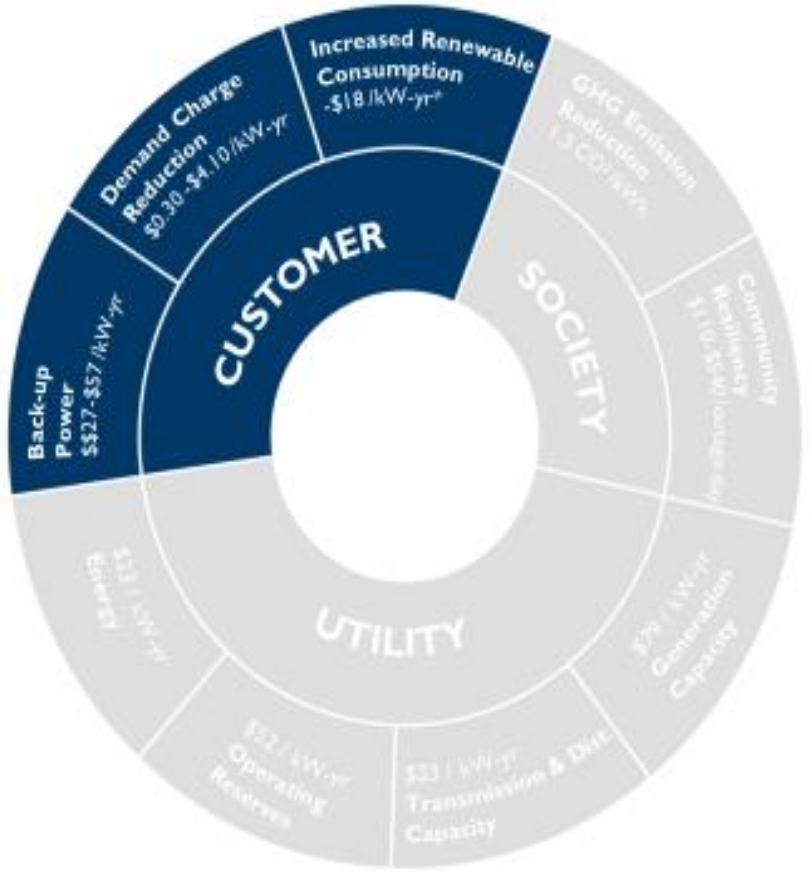
Must consider the balance between "Individual benefit" and "Ratepayer benefit" when designing incentives for resiliency.

Increased understanding of the benefits beyond Utility benefits provides insights into the possible expansion of storage programs.

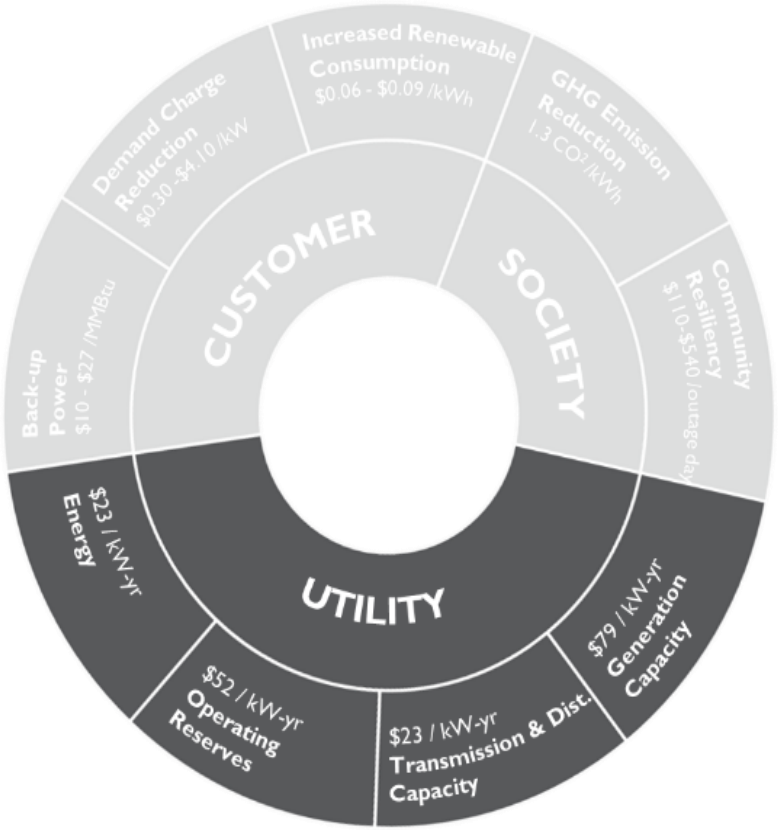


Potential Value to the Customer

Customer Benefit	Description
Back Up Power	Provide additional Reliability and Resiliency in the case of an outage
Demand Charge Reduction	Sometimes called peak shaving or load shifting, involves dispatching a battery's stored energy to level demand (kW) use to reduce the associated charges on utility bills
Increased Renewable Self-Consumption	Capture solar energy to use onsite to increase value



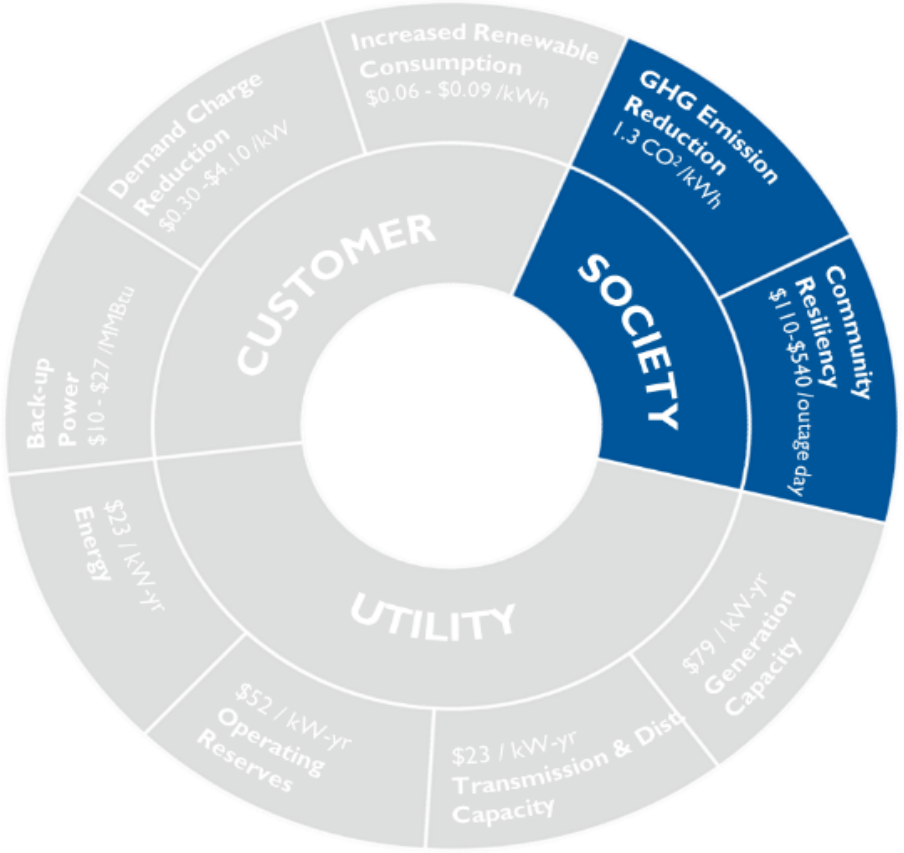
Potential Value to the Utility



Grid Service	Description
Energy Arbitrage	The practice of purchasing and storing electricity during off-peak times, and then utilizing that stored power during periods when electricity prices are the highest.
Resource Adequacy	A condition in which the region is assured that, in aggregate, utilities or other load serving entities (LSE) have acquired sufficient resources to satisfy forecasted future loads reliably.
Operating Reserves	Demand that the end-use customer makes available to its load-serving entity via contract or agreement for curtailment.
Transmission & Distribution Deferral	Defer or avoid the need for a T&D equipment upgrade that is needed due to demand growth.

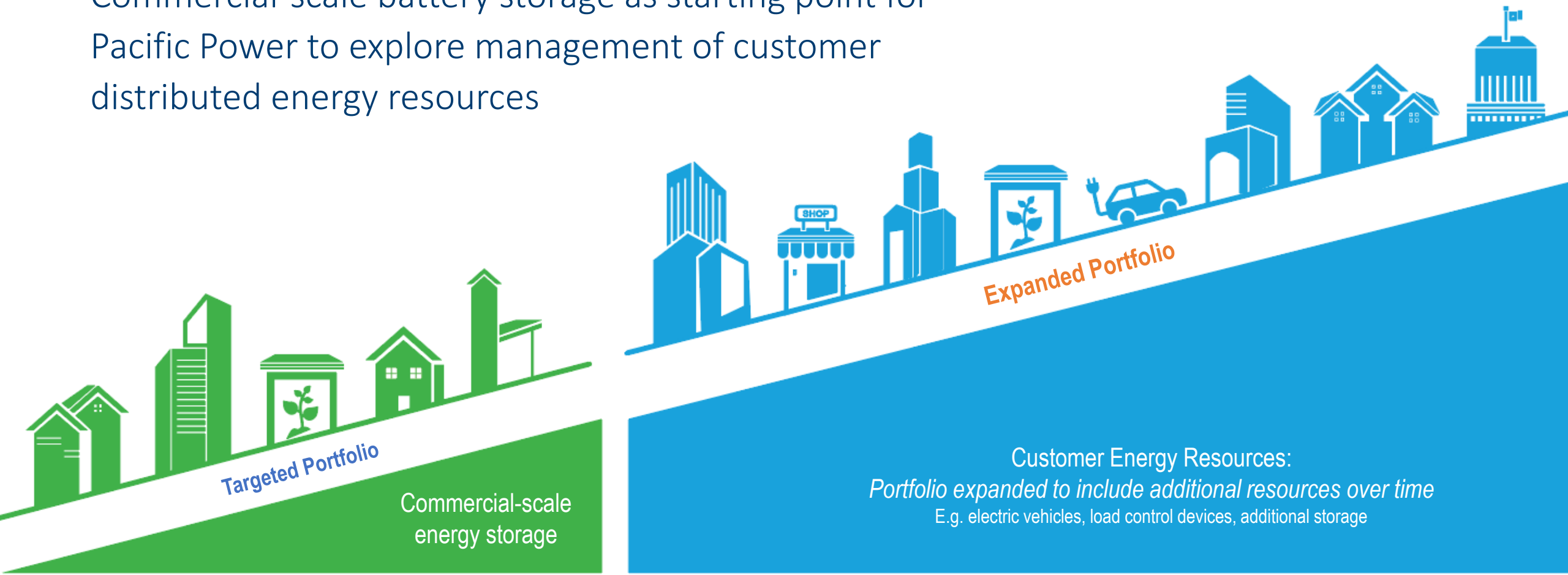
Potential Value to Society

Societal Benefit	Description
Community Resiliency	During a grid outage, the value of having backup power to ensure the availability of emergency services can be valued in terms of avoided property damage, injuries, lives lost, and, to a lesser extent, lost revenue.
GHG Emissions Reductions	GHG emissions reductions from a solar plus battery energy storage resiliency system come from offsetting utility energy consumption during normal operations from the solar system and reducing or eliminating fossil fueled backup generator operation during an outage.



Program Value Tomorrow

Commercial-scale battery storage as starting point for Pacific Power to explore management of customer distributed energy resources



Questions?

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