Building the Stack:
Unleashing Market Forces in Battery Economics

CLEAN ENERGY NH

Your Voice in All Energy Matters

FIGURE ES1

ENERGY STORAGE VALUES VARY DRAMATICALLY ACROSS LEADING STUDIES

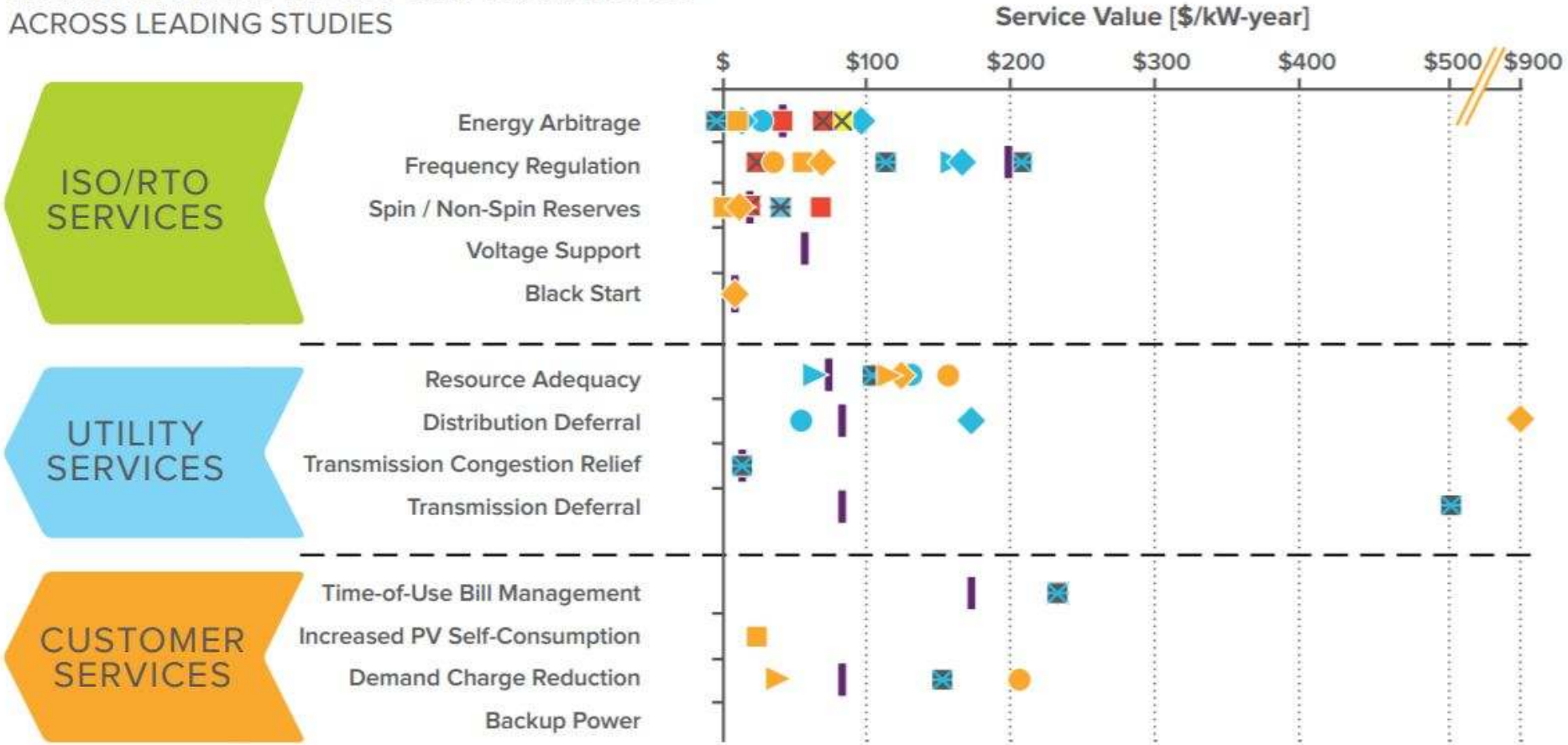


FIGURE 6

BQDM SYSTEM-LEVEL LOAD BEFORE AND AFTER DISTRIBUTED ENERGY STORAGE DEPLOYMENT

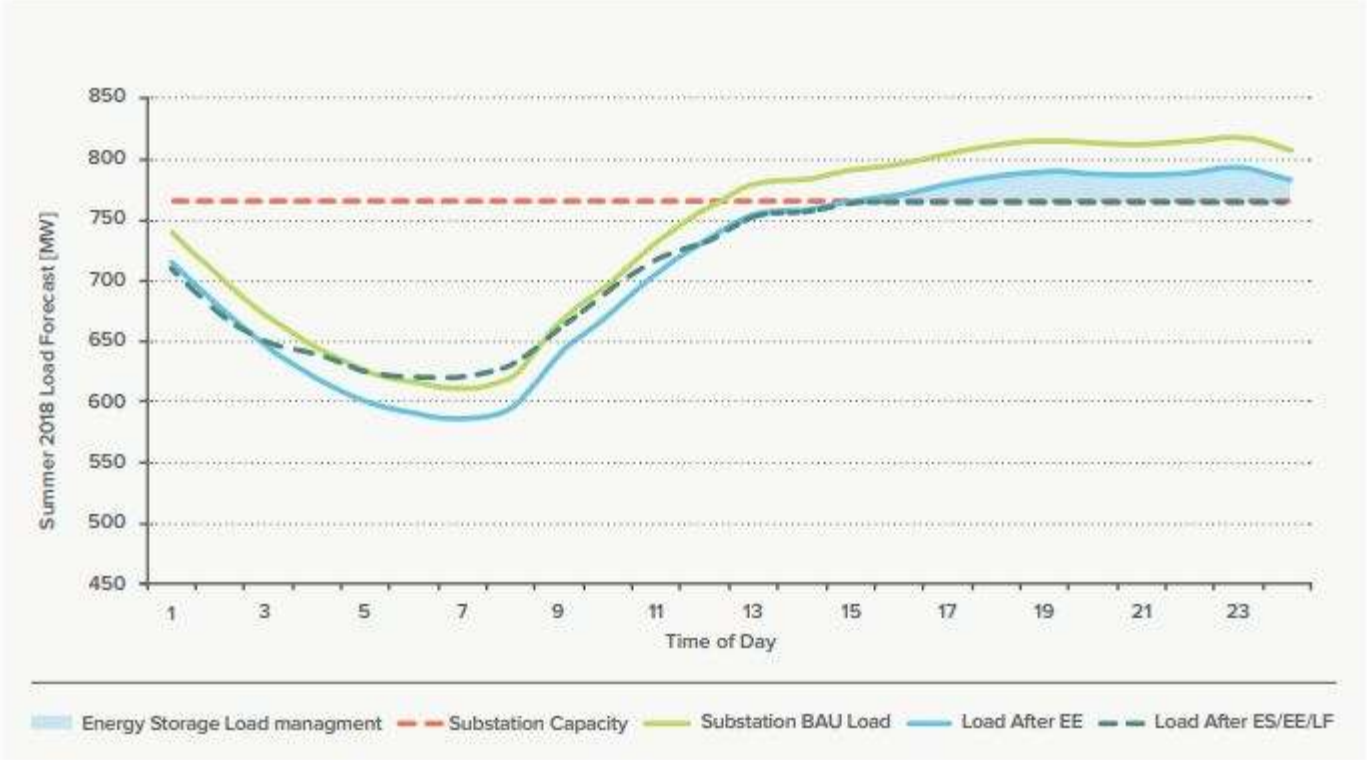
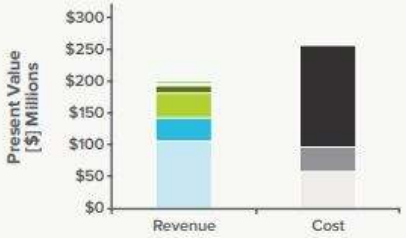


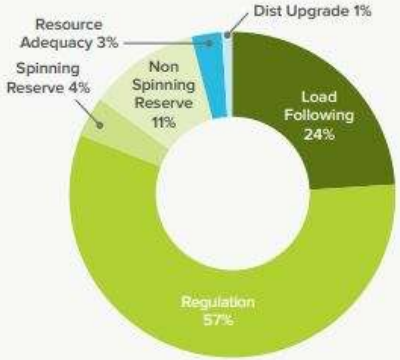
FIGURE 7

USE CASE II MODELING RESULTS

Distribution upgrade deferral in New York



Percentage of hours energy storage is dispatched to each service



Load Following
Frequency Regulation
Spin Reserve
Non-Spin Reserve
Black Start
Resource Adequacy
Dist Deferral
Capital Cost
O&M & Charging
Tax Cost
Tax Benefits

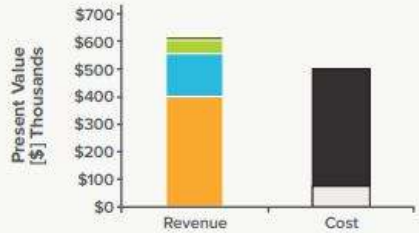
FIGURE 4

BUILDING-LEVEL LOAD BEFORE AND AFTER ENERGY STORAGE DEPLOYMENT

FIGURE 5

USE CASE I MODELING RESULTS

Commercial demand-charge management in San Francisco.



Percentage of hours energy storage is dispatched to each service

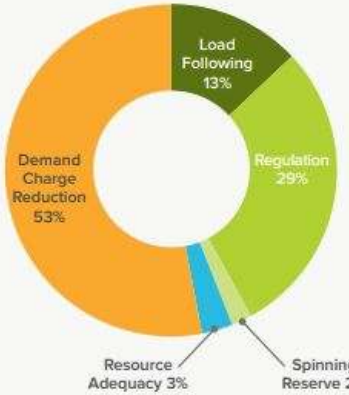


FIGURE 10

RESIDENTIAL LOAD AND PV PRODUCTION BEFORE AND AFTER ENERGY STORAGE IS DEPLOYED

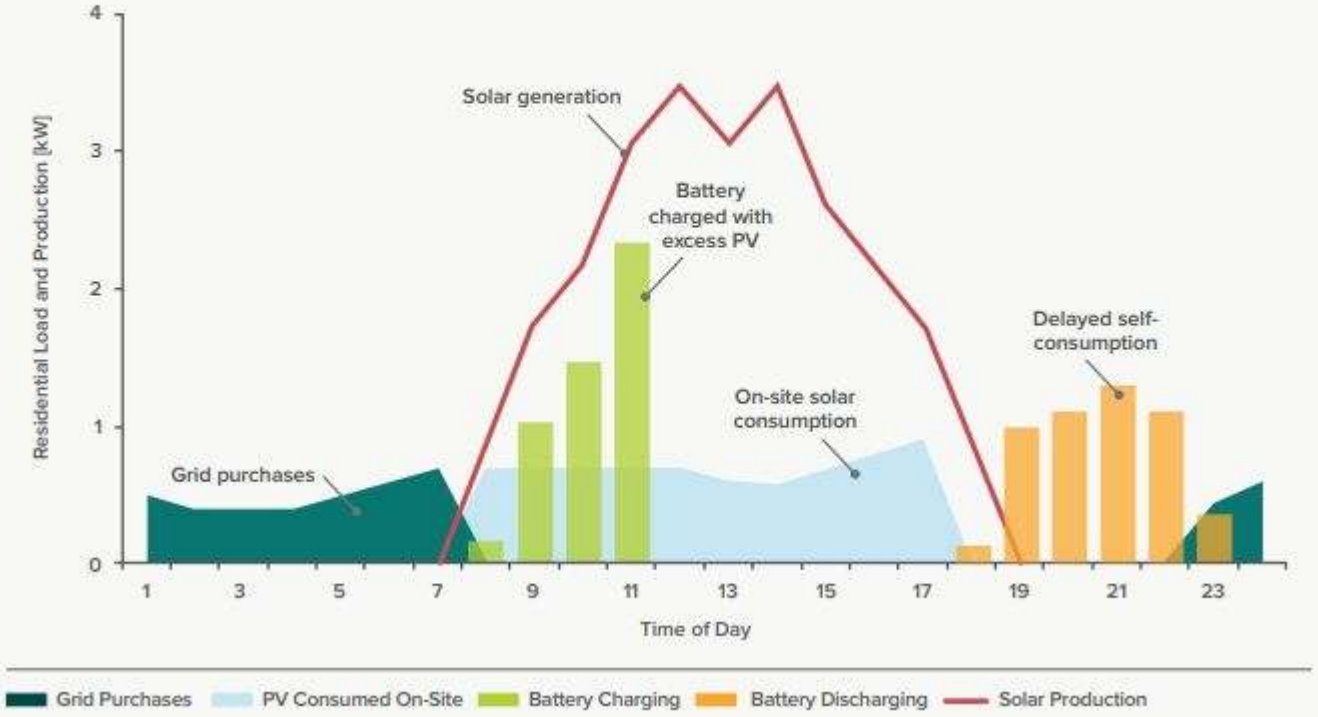
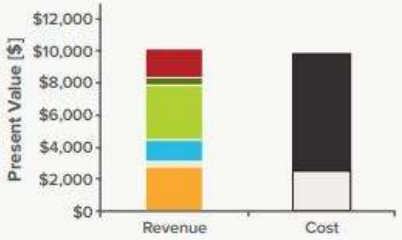


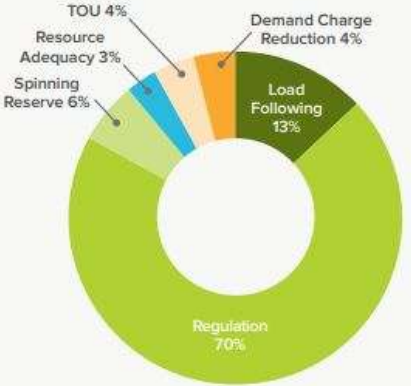
FIGURE 9

USE CASE III MODELING RESULTS

Residential bill management in Phoenix



Percentage of hours energy storage is dispatched to each service



Load Following
Frequency Regulation
Spin Reserve
Resource Adequacy
TOU
Demand Charge Reduction
Capital Cost
O&M & Charging
Tax Cost
Tax Benefits

FIGURE 8

RESIDENTIAL LOAD IN PHOENIX, BEFORE AND AFTER ENERGY STORAGE IS DISPATCHED

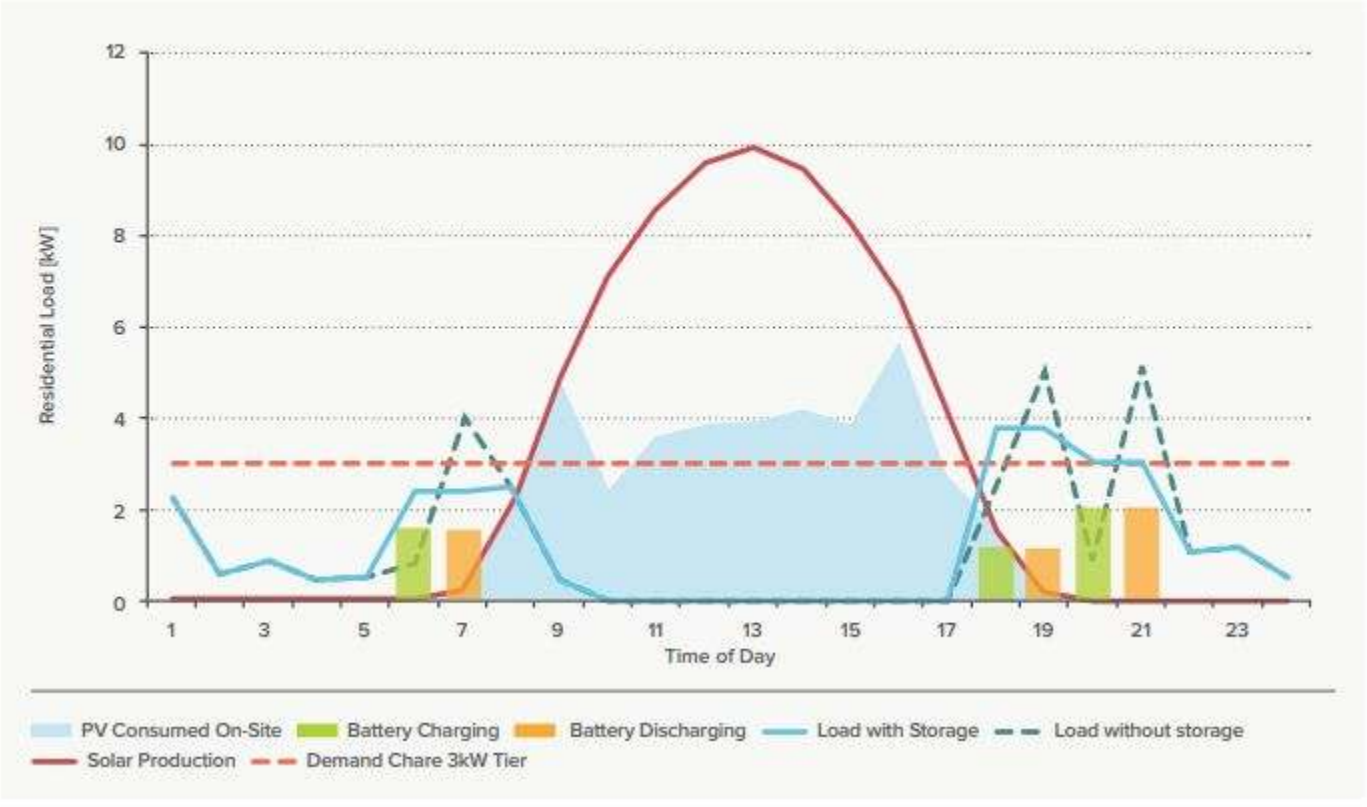
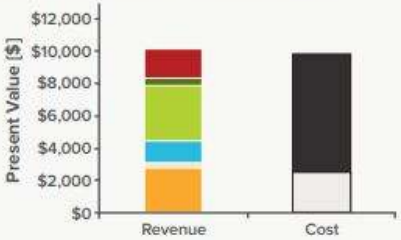


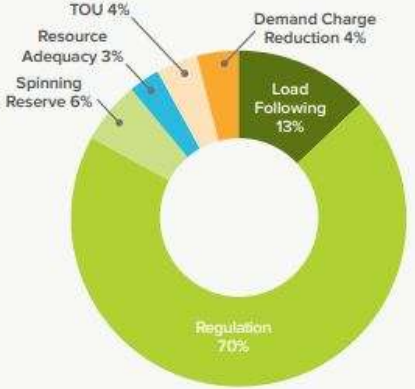
FIGURE 9

USE CASE III MODELING RESULTS

Residential bill management in Phoenix



Percentage of hours energy storage is dispatched to each service



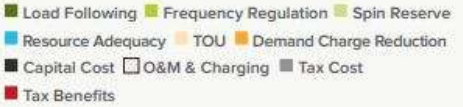
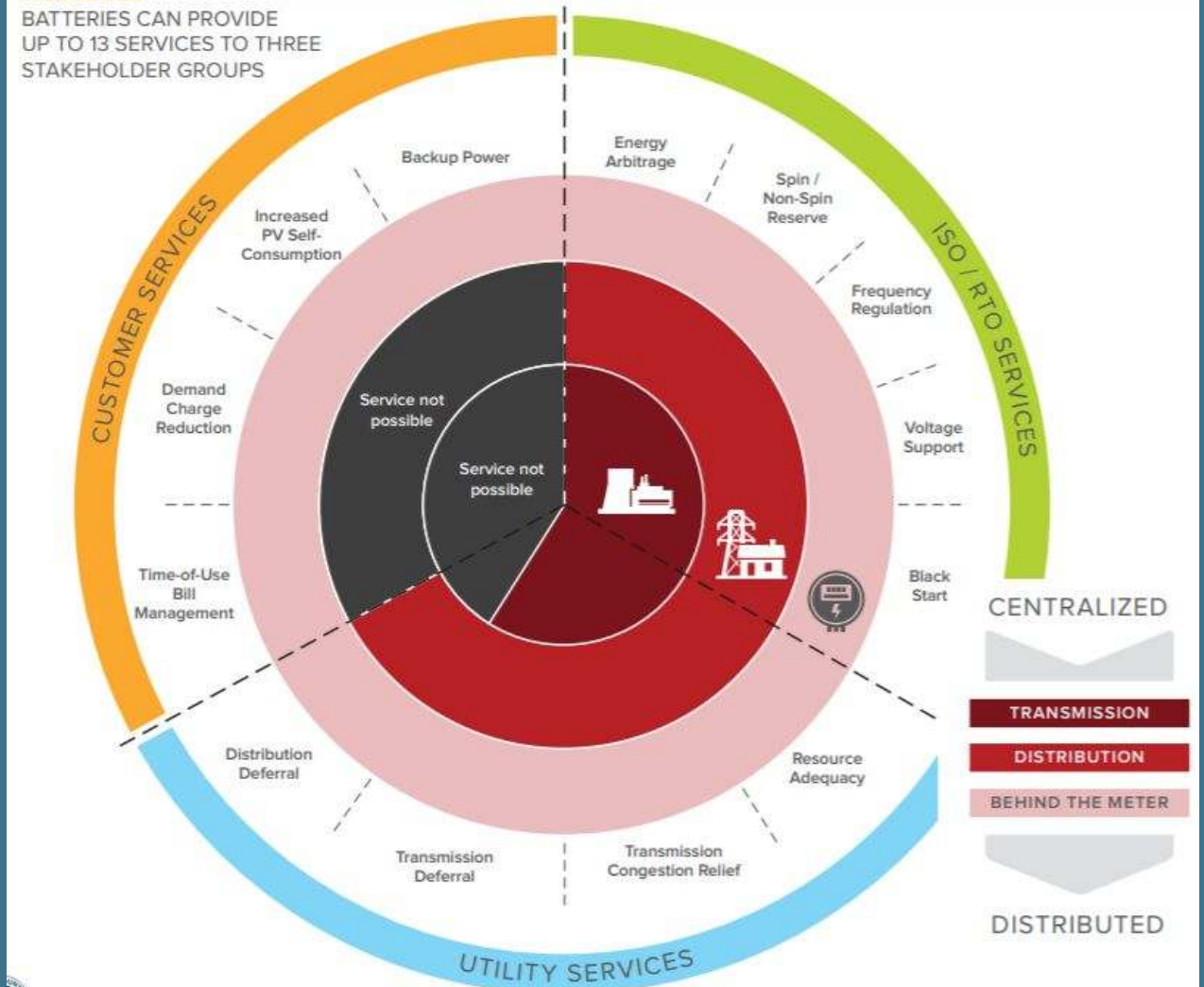


FIGURE ES2

BATTERIES CAN PROVIDE UP TO 13 SERVICES TO THREE STAKEHOLDER GROUPS



What's Needed?

- Energy Arbitrage → Price Signals
- Frequency Regulation → Price Signals
- Reserves → Price Signals
- Voltage Support → Price Signals
- Black Start → Price Signals
- Resource Adequacy → Price Signals
- Distribution Deferral → Price Signals
- Transmission Deferral → Price Signals
- TOU Bill Management → Price Signals
- Self-Consumption → Price Signals
- Demand Charge Reduction → Price Signals
- Backup Power → **Lack of Reliability**