DER Use Cases

OEB Framework for Energy Innovation Working Group

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A suite of DER sourcing options...

Pricing

- Administratively-set tariffs that define DER value to the grid and/or the cost of using the grid

Procurements

- Competitive solicitations to contract with DER to address identified utility system needs

Programs

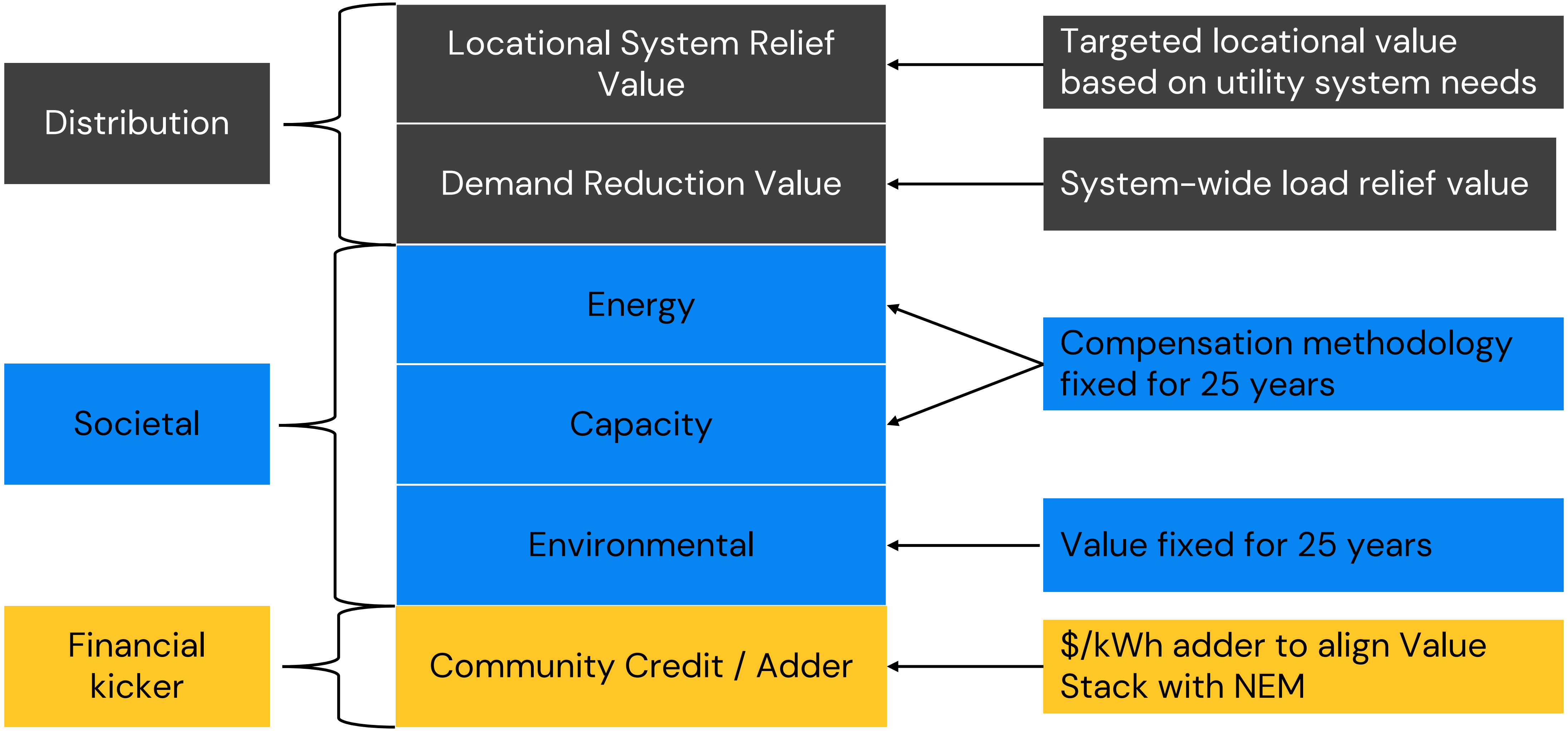
- Use of financial incentives to encourage DER adoption and use in a manner that provides system value

These mechanisms can work together as part of a portfolio of solutions

	Prices	Procurements	Programs
Benefits	• Generally provides greater certainty of longer-term revenues and costs • Can be administratively simpler than procurements and programs	• Competitive solicitations lead to more economic solutions • Contractual requirements provide greater certainty that DER will address system needs	• Generally more flexible, easier to manage, and faster to implement than other options • Often represents "low-hanging fruit" for utilities
Challenges	• Less flexible to modify as system conditions shift • Utilities may have to seek regulatory approval to allow for locational compensation	• Certain criteria need to be met for procurements to be pragmatic (e.g., timeline, cost, type of need) • Evolving regulatory treatment of NWA costs and savings	• Marketing required to influence customer behavior • Utilities may have to seek regulatory approval to allow for locational implementation / compensation

→ …but there's no perfect solution

New York VDER value stack



→ Use case: price signals for multiple value compensation

Arizona Public Service

Punkin Center Battery Energy Storage

- Electric Storage Procurement in Punkin Center, Arizona
- Size: 2 MW, 8 MWh
- Challenge: Rural location with difficult thermal conditions year-round, capacity constraints
- Sourcing: Direct procurement (competitive-bidding process)
- Technology Focus: Electric storage

→ Use case: procured energy storage for capacity constraints

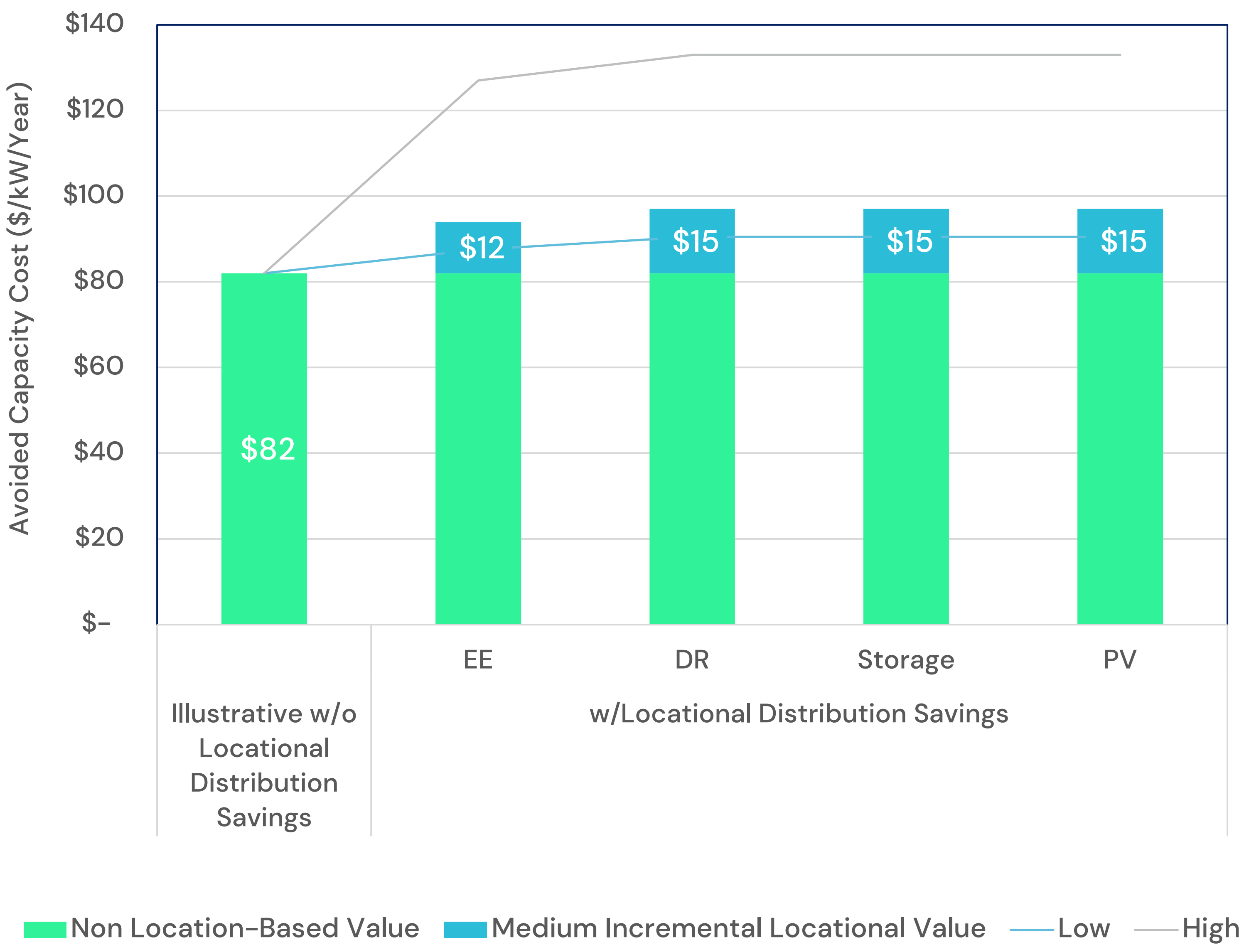
Vertically-integrated Midwest utility

Scope

- 1,300 feeders - 10% expected to be loaded >85% by 2020
- ICF analyzed NWA potential to reduce feeder strain

Findings

- Benefit-cost ratios of EE programs could increase between 4% and 27%
- Previously non-cost-effective programs could become cost-effective
- Some program elements could be targeted on a locational basis to derive greater value

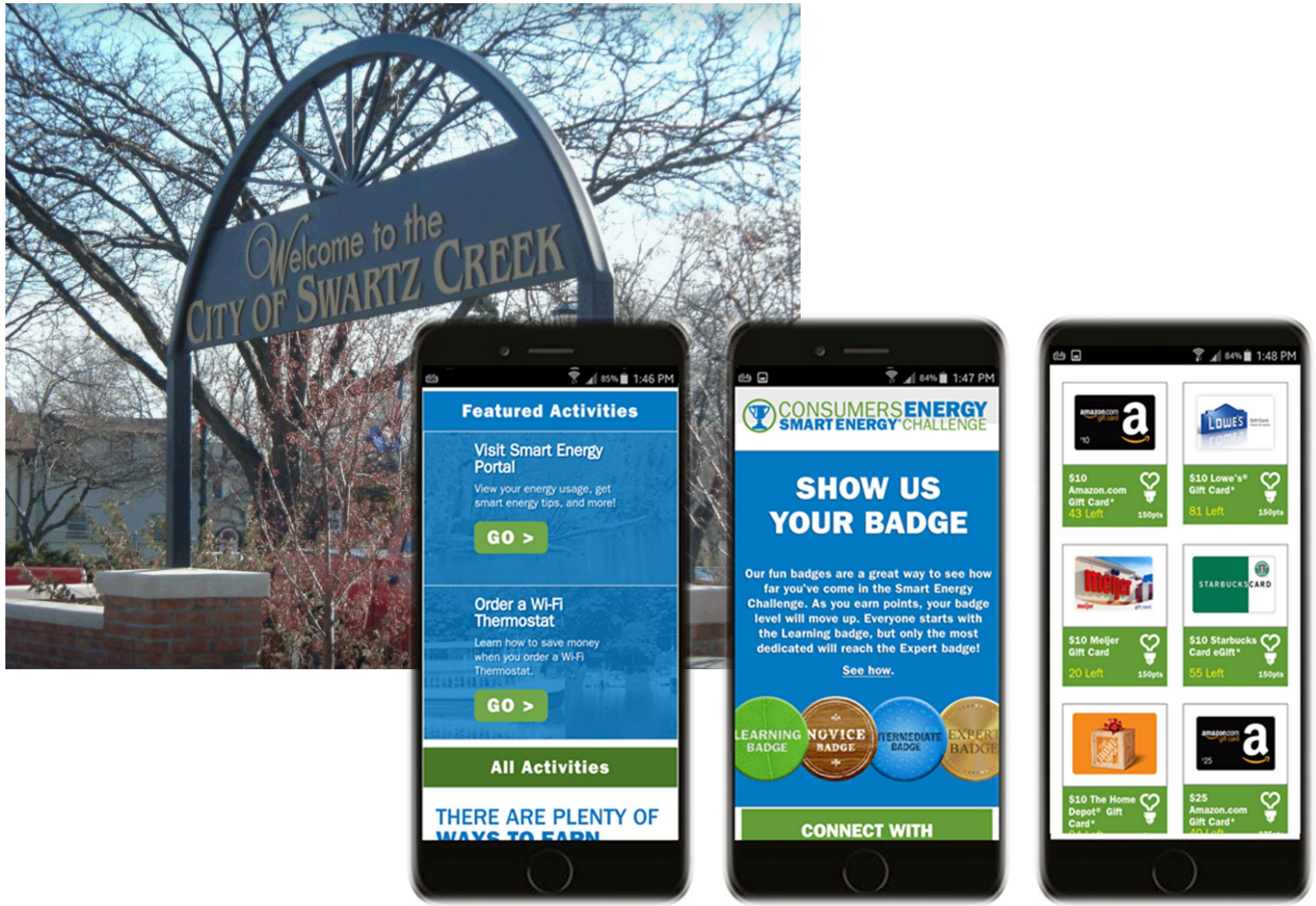


Use case: distribution deferral + enhanced program effectiveness

Consumers Energy

Swartz Creek Energy Savers Club

- NWA Pilot Program in Swartz Creek, Michigan
- Size: Up to 1.6 MW
- Challenge: Distribution grid constraint
- Potential Cost Deferral: $1.1 million in distribution infrastructure investment
- Technology Focus: Energy efficiency, demand response

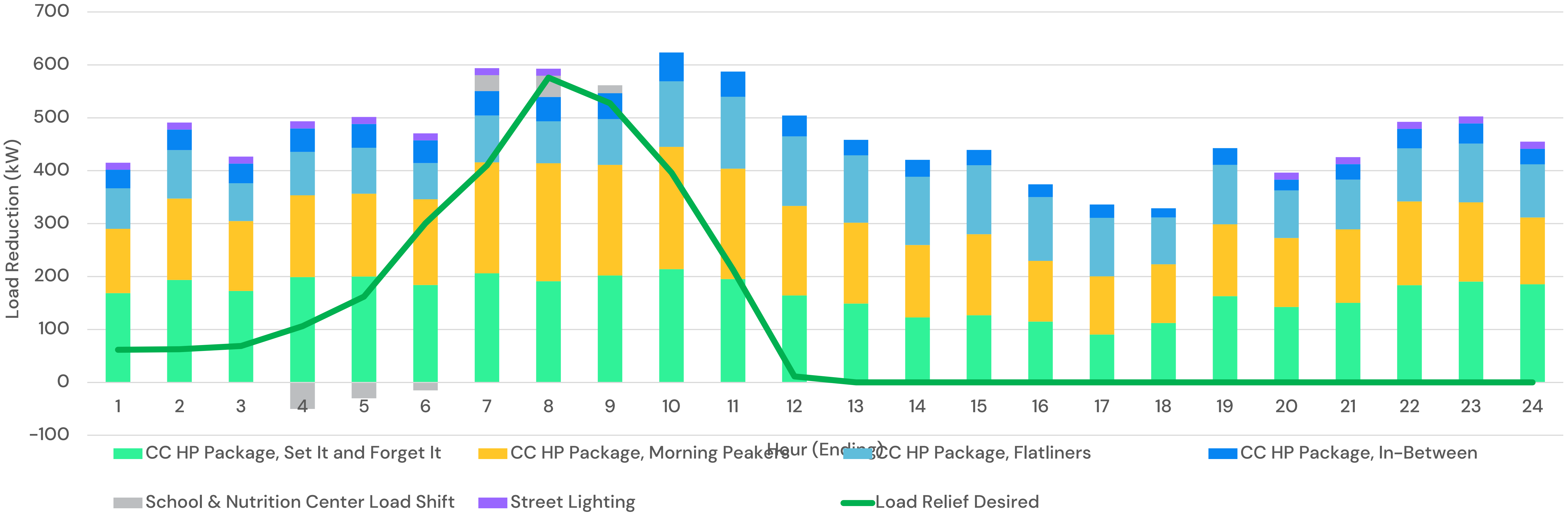


→ Use case: demand-side resources for distribution relief

Public Service Company of Oklahoma

The challenge: A long, congested rural feeder with high seasonal variation and winter peak

Total load reduction	588 kW
TRC cost-effectiveness ratio	1.24



Use case: tech combos to achieve load reduction

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