




Leading the responsible transition to a
clean energy future.

ESIG

DER Valuation – HCE's distribution co-op perspective

Holy Cross Energy
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Holy Cross Energy is leading the responsible transition to a clean energy future.

Holy Cross Energy (HCE) provides safe, reliable, affordable and sustainable energy and services that improve the quality of life for our members and their communities.

Founded in 1939, we serve more than 44,000 members in scenic Western Colorado with:

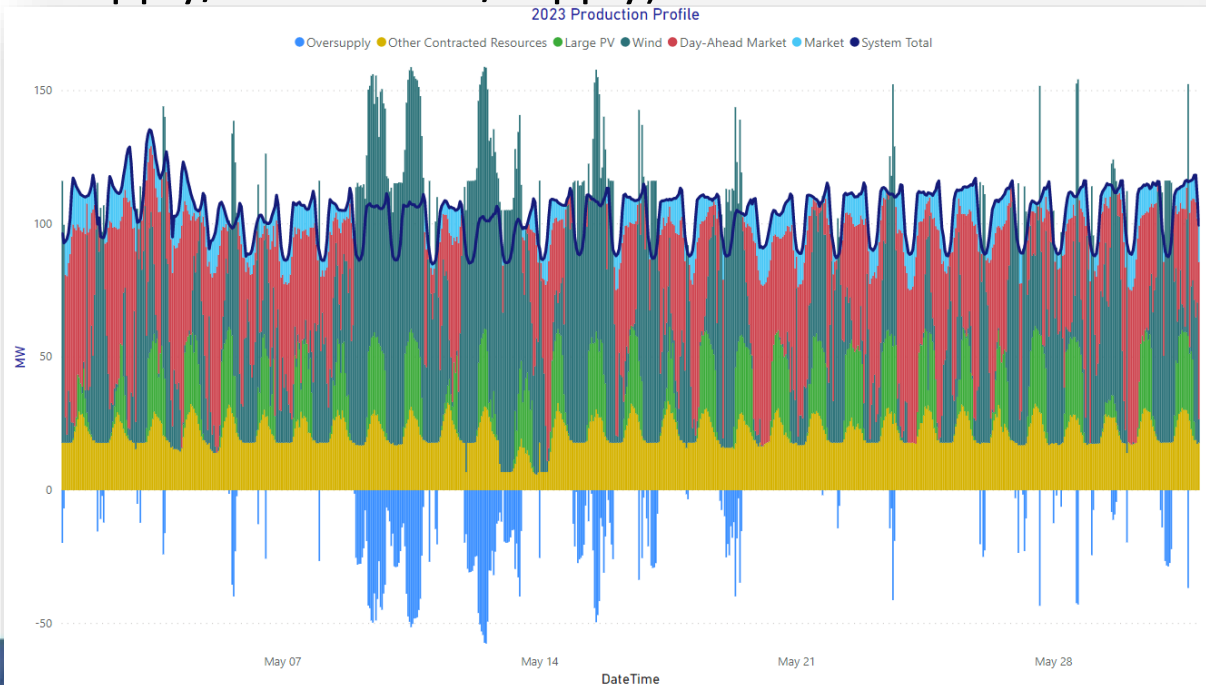
- 270 MW peak demand
- 3,000 miles distribution
- 120 miles transmission
- 165 employees
- \$135,000,000 annual revenue

HCE's resource plan calls for 70% renewable energy by 2030 and we're currently projecting to exceed that target.

Load Flexibility & DER Control – why are we interested in this?

Main Value Streams:

- **Capacity Costs** (need for peak demand reduction)
- **Renewable Oversupply** (need for balancing supply/load or load/supply)



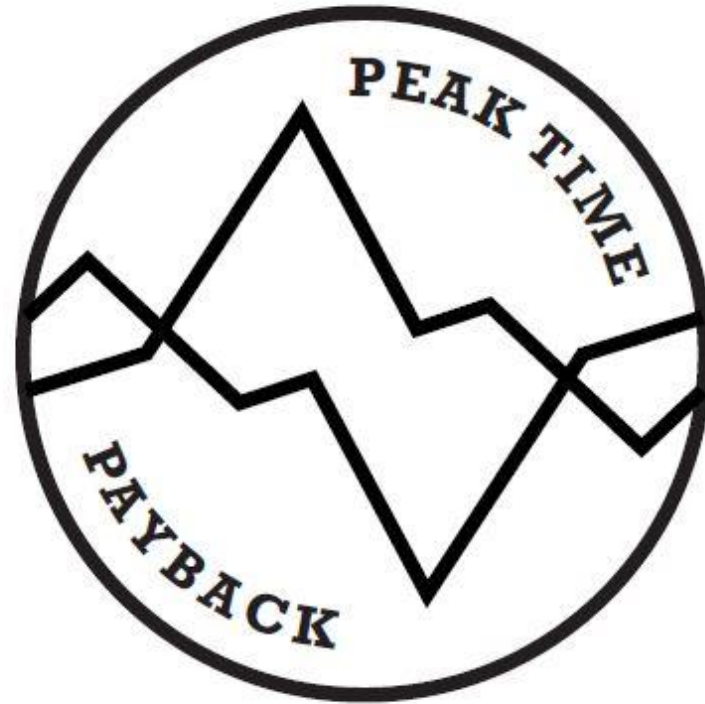
Our Approach:

- **Member Option to Control** – Dynamic rates are messaged to participants to provide voluntary price signals and incentives to member's that exercise control over their own DERs and/or usage
- **HCE Option to Control** – HCE offers a bill credit in exchange for the member giving HCE operational control over the DER
- **Cover installation costs** - A Service Agreement helps members overcome investment hurdles and repay the DER installation cost to HCE over time

Dynamic Rates – Peak Time Payback:

Peak Time Payback – behavioral demand response rate for ~96 hours per year

- Credits provided based on consumption that is less than the baseline
- \$0.50/kWh reduction for “High” events
- \$1.00/kWh reduction for “Critical” events



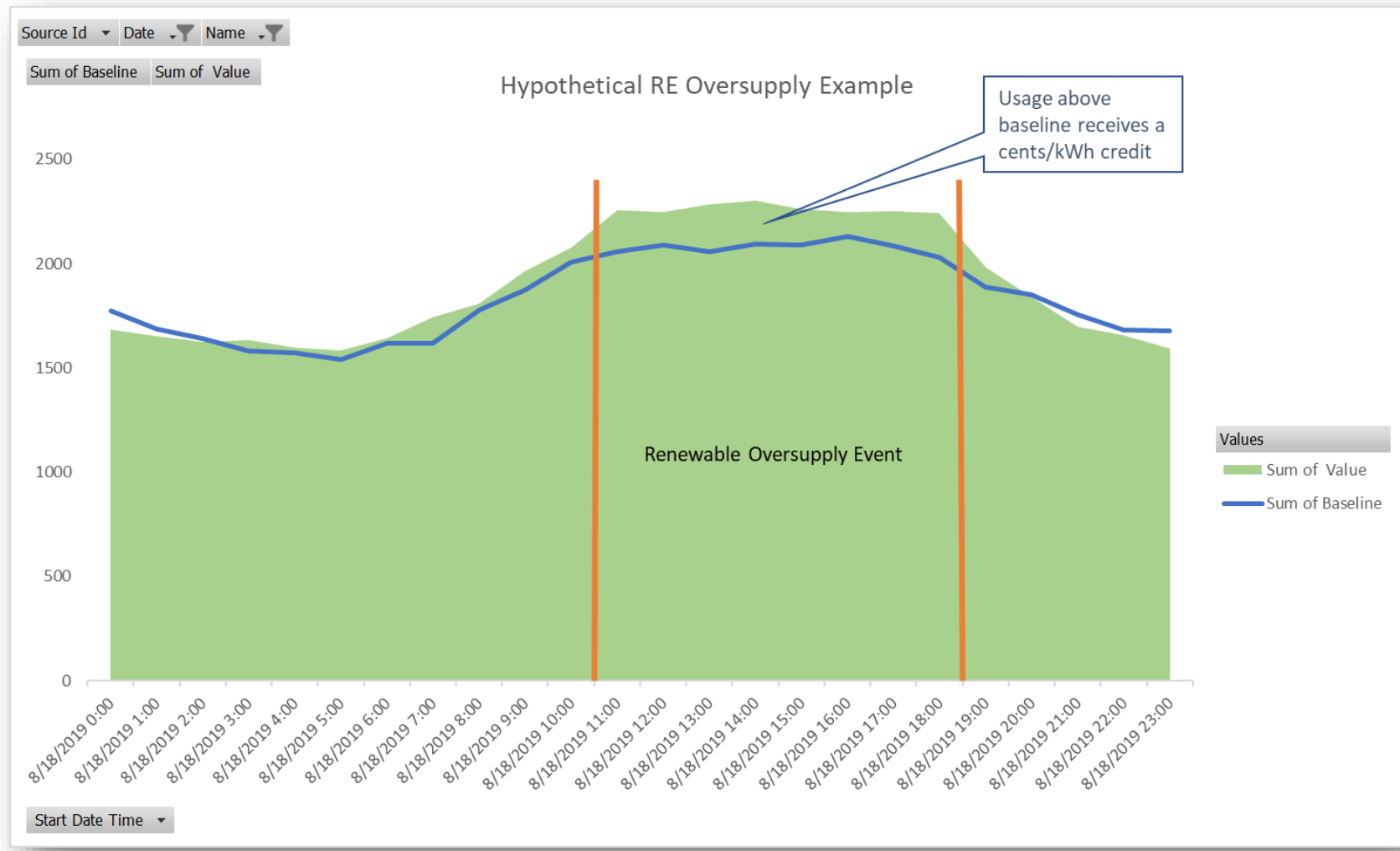
July/August Results

- Over 1k members enrolled as of October
- Provided \$21K in credits in two months
- Aggregate average reduction of 25%
- Consistent response, even with August heat wave

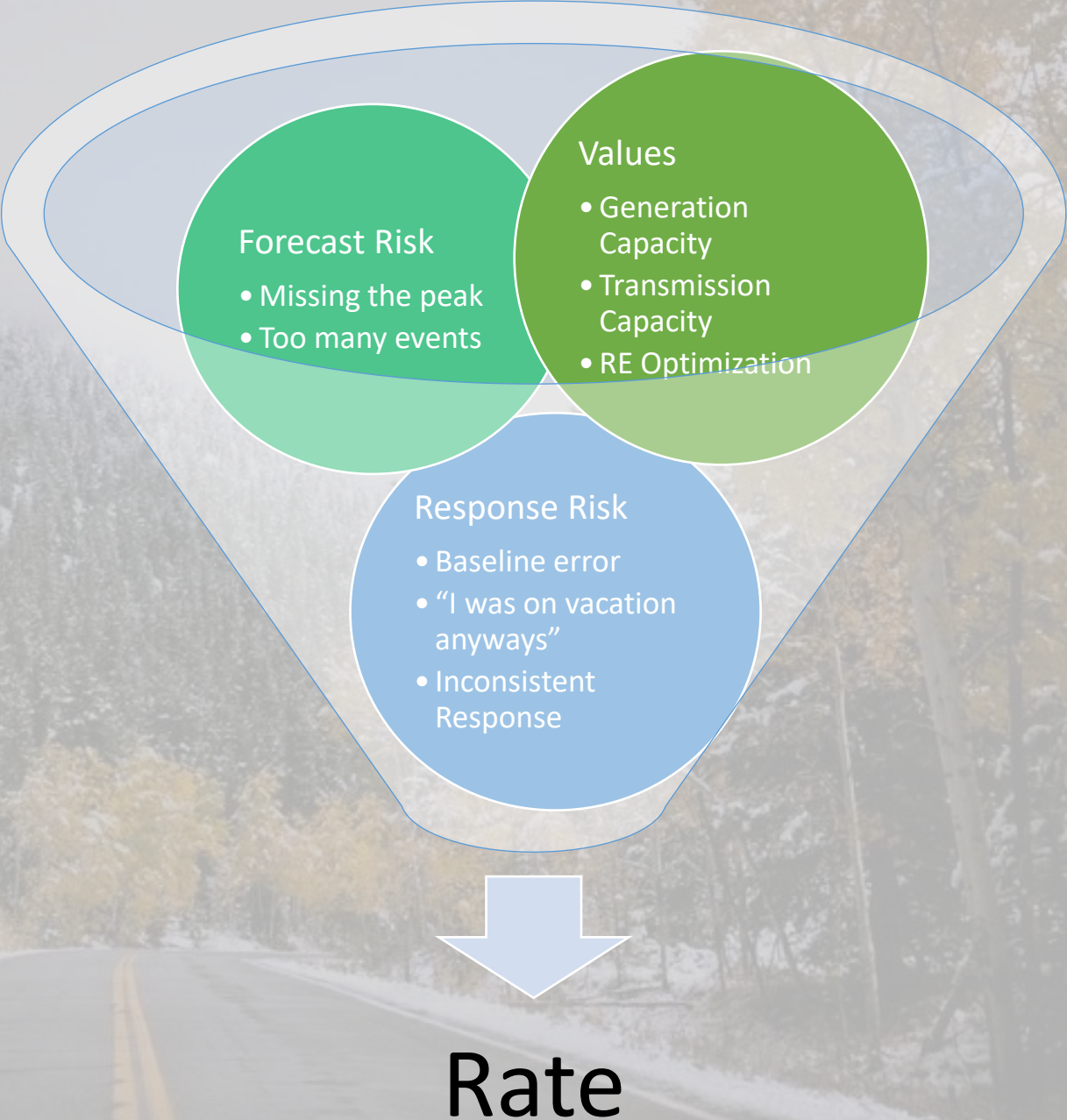
Dynamic Rates – Renewable Optimization:

Dynamic Renewable Pricing – behavioral demand response rate for ~300 hours per year

- Variable rate “credits” based on consumption that is greater than the baseline
- Rate credits will vary based on market conditions (i.e. renewable curtailments, market pricing, other system operation conditions)



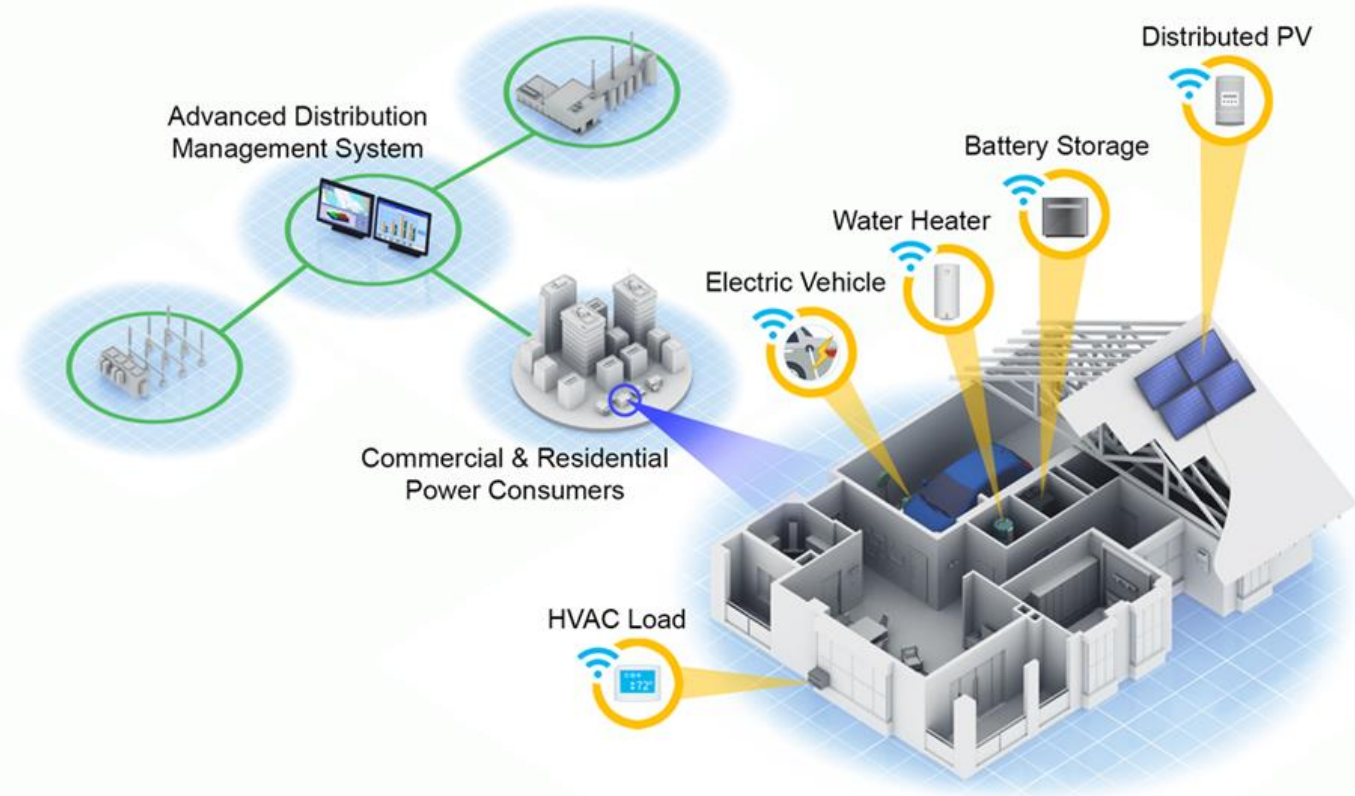
Behavioral Rate Response Valuation



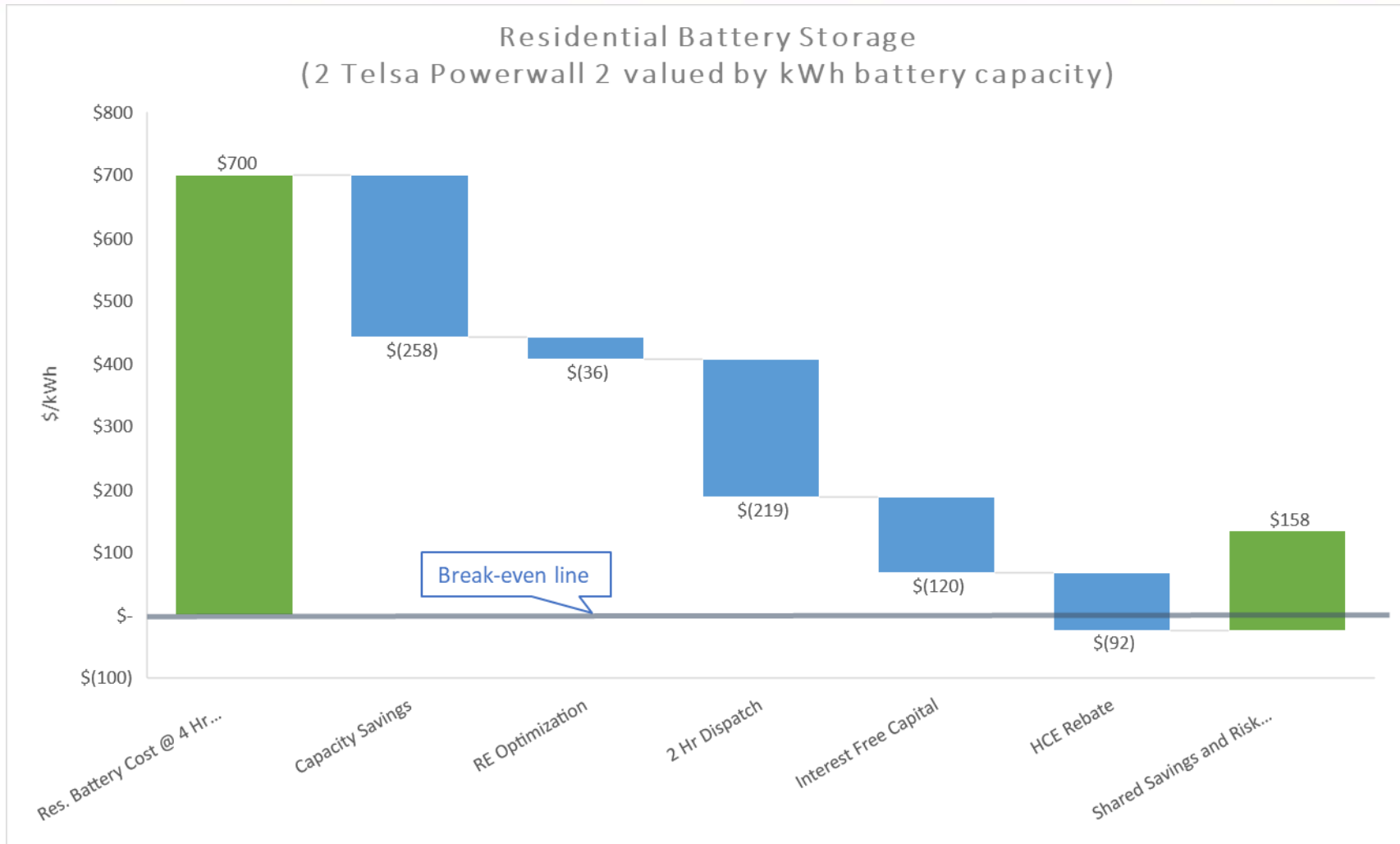
Distributed Control of DERs

HCE's Approach




1. **EV Program** – 1.25MW controllable residential load, significant growth in transit and DCFC
2. **Basalt Vista Pilot** – early learnings about DER controls
3. **Distribution Flexibility Tariff** – financial incentives for providing HCE control of DERs
4. **DER Service Agreement** – financing mechanism for upfront cost of DERs
5. **Camus Energy Platform** – provides integration of market operations, insight into DER capabilities, and dispatch/control of DERs
6. **Tesla Powerwall Pilot** – combination of tariffs/programs for HCE's storage control and member resilience for ~\$30/mo















DER Control Valuation Example



Rates Vs Direct Control – key considerations

Key	
	Less Risky
	Neutral
	Riskier

Rate Response Risk Tolerance	Consideration Item	Direct Control Risk Tolerance
	Event Quantity Tolerance	
	Signaling Simplicity	
	Risk of Non-Response	
	Measurement Quality	
	RTO Participation	
	Missed Dispatch	



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