

Load Management: The Methods are Many, the Concepts are Few...but Expanding

Stefan Johnson, April 24th 2025



Your community. Your co-op. Your choice.



About Holy Cross Energy

- **Founded in 1939**
- **Not-for-profit rural electric co-op**
- **Headquartered in Glenwood Springs**
- **Serving Eagle, Pitkin, Garfield Counties**
- **Providing safe, reliable, affordable, and sustainable energy**

**45,000+
Members**

**62,000+
Meters**

**170+
Employees**

250 MW peak demand

3,000 miles of distribution lines

120 miles of transmission lines

1,107 miles of underground line

1,856 miles of overhead line

\$125,000,000 annual revenue



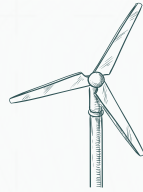
Our 100x30 Goal

To achieve this goal by 2030, we must partner with our members and communities to incorporate new, clean, dispatchable resources into our power supply mix:



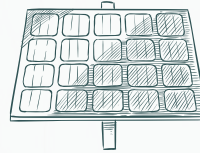
Energy Efficiency

Obtain an additional 0.25% per year of energy efficiency improvements



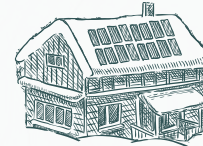
Cleaner Wholesale Power

Incorporate new, clean, dispatchable resources into HCE's power supply mix.



Local Clean Energy Resources

Continue our existing agreements for energy from local biomass, hydro, solar, & coal mine methane projects



Distributed Energy Resources

5 MW of Distributed Energy Resources, including rooftop solar, distributed local solar arrays, & energy storage.



Smart Electrification

Encourage the expanded use of electricity for transportation, building heating & cooling, & industrial processes



HCE Residential Rates

- Regular Residential
 - \$0.11 per kWh
 - no Demand Charge
- Optional Time of Use Rate
 - \$0.06 per kWh Off-Peak (9-4pm)
 - \$0.24 per kWh On-Peak (4-9pm)





Methods of Load Management



Direct Load Control (“Active”)

Residential Batteries
EV Chargers
HP Water Heaters?
EV Telematics?



Behavioral Demand Response (“Passive”)

C&I
Heat Tape
V2X



Pay for Performance

Pitkin County Microgrid
V2X
Set it and forget it



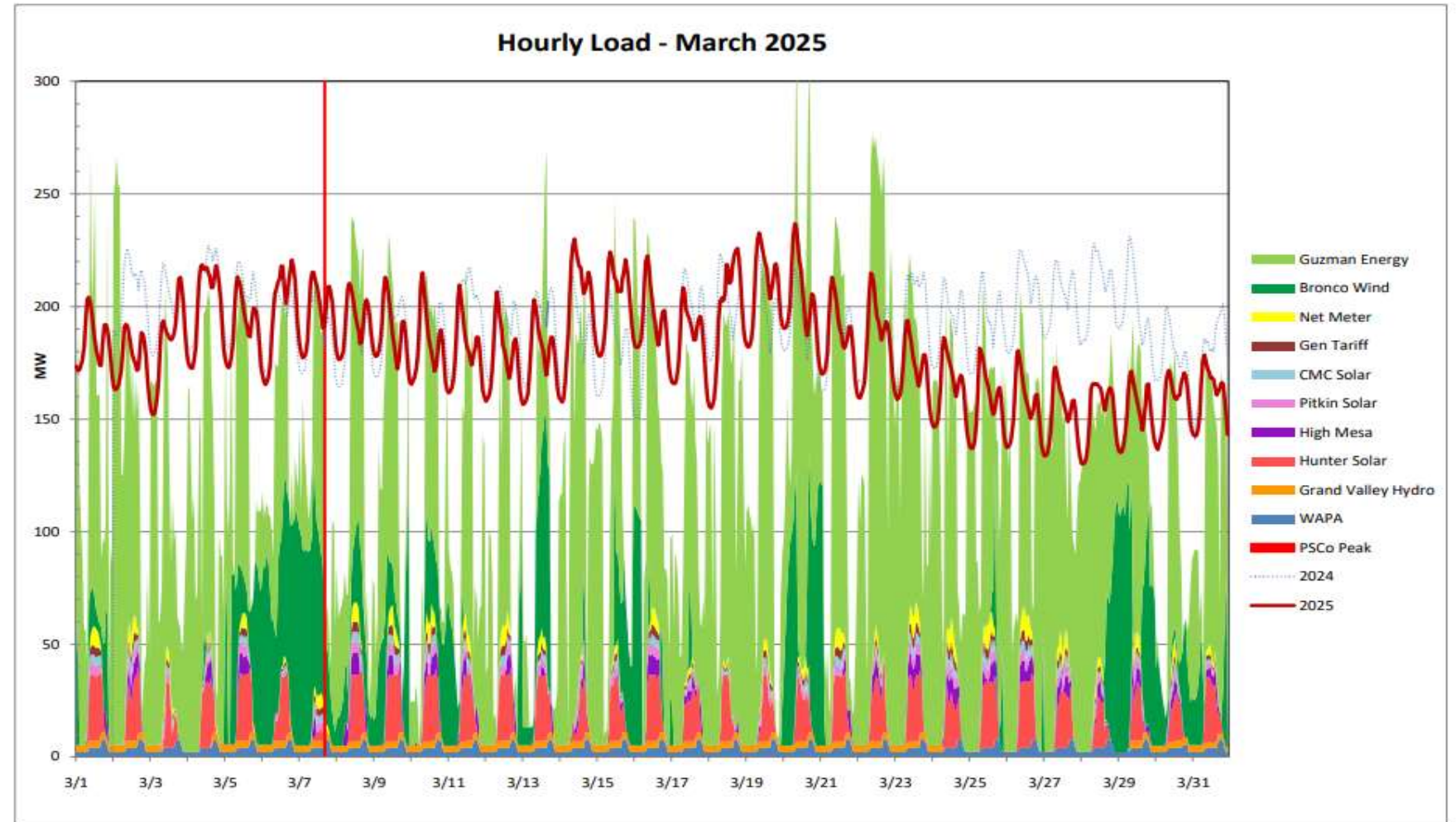
Tariffs

TOU
Demand Charge



What is Load Management used for Now?

- Monthly Peak-Shaving @ Bulk System Level





What might Load Management do in the Future?

- Distribution System
 - Avoid panel upgrades
 - Defer transformer upgrades triggered by electrification
 - Minimize feeder upgrades
- Optimize for Renewable Generation / Emissions
- Market Participation
 - FERC Order No. 2222
 - Colorado moving towards RTO
- Resilience





Key Challenges



OEM & DERMS / Aggregator Fees



Cyber Security



Quantifying Value & Avoided Cost @ Distribution Level



Simplicity vs Complexity



Power + & Power + Flex

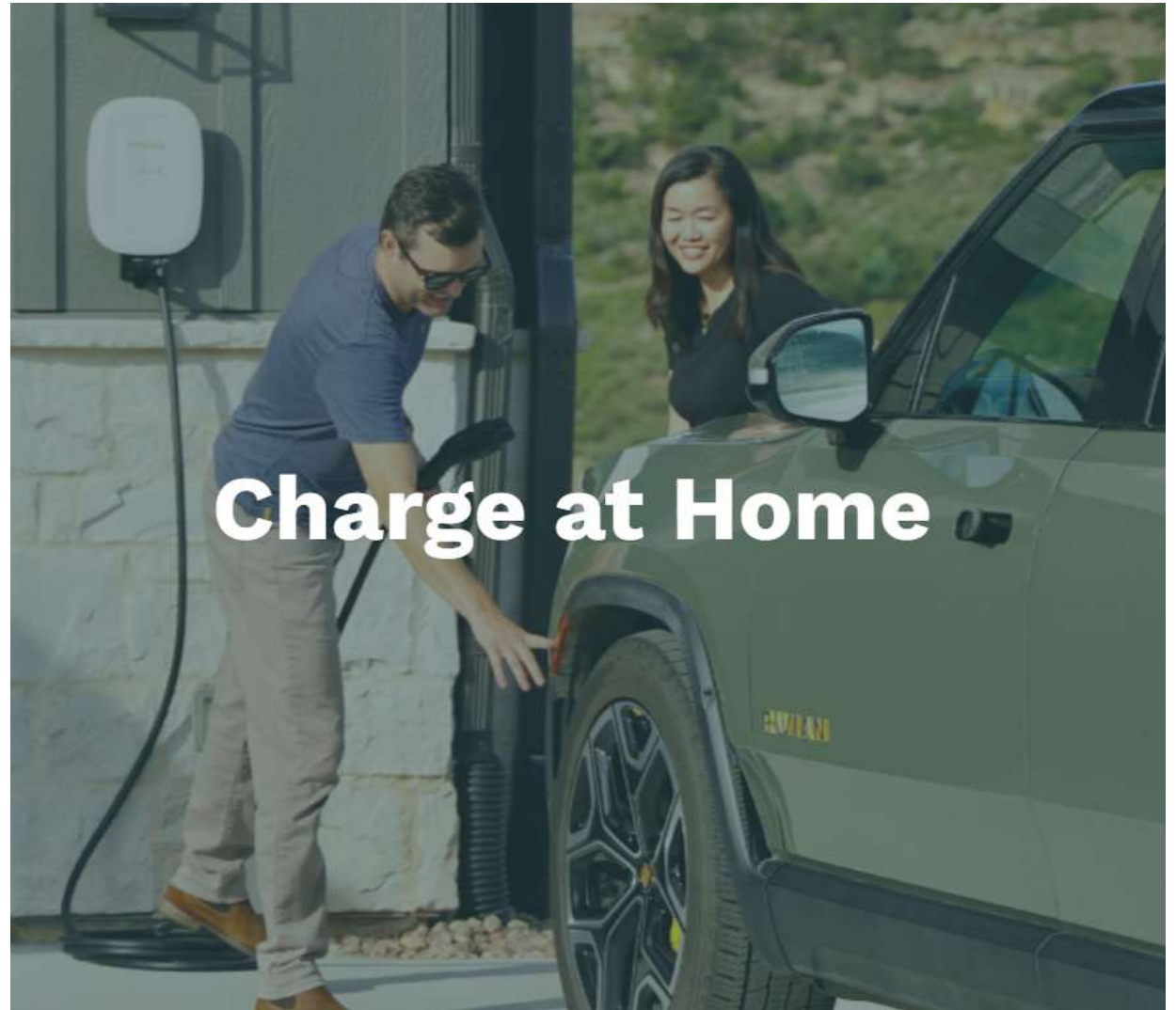
- 231 Participating Homes
- Over 4.5 MW of Capacity (2 Hour Events)
- Eligible OEMS
 - Tesla
 - Emporia
 - Enphase
- HCE can call batteries up to 10x a month, guaranteed minimum 20% SOC
- Direct Load Control and Member cannot opt-out





Charge at Home

- 500 Level 2 Chargers
- Started in 2019 exclusively with ChargePoint
- Expanded to include Wallbox and Emporia (briefly included EnelX)
- Direct Load Control but member can Opt-Out





Expanding Charge @ Home

- EV-based Telematics?
- Set it and Forget it?
- Additional EVSE?
- V2X ?





Pitkin County Microgrid



- Resilience = Primary Purpose
- 4 MW Battery + 5 MW Solar
- Harnessing “Blue Sky” Benefits
- No DERMS / API Integration
- Event-Based Notifications for Optional Dispatch
- M&V via AMI Meter Data
- Pay for Performance (kW/Month Capacity)
- Pathway for V2X?



Thank You!

sjohnson@holycross.com