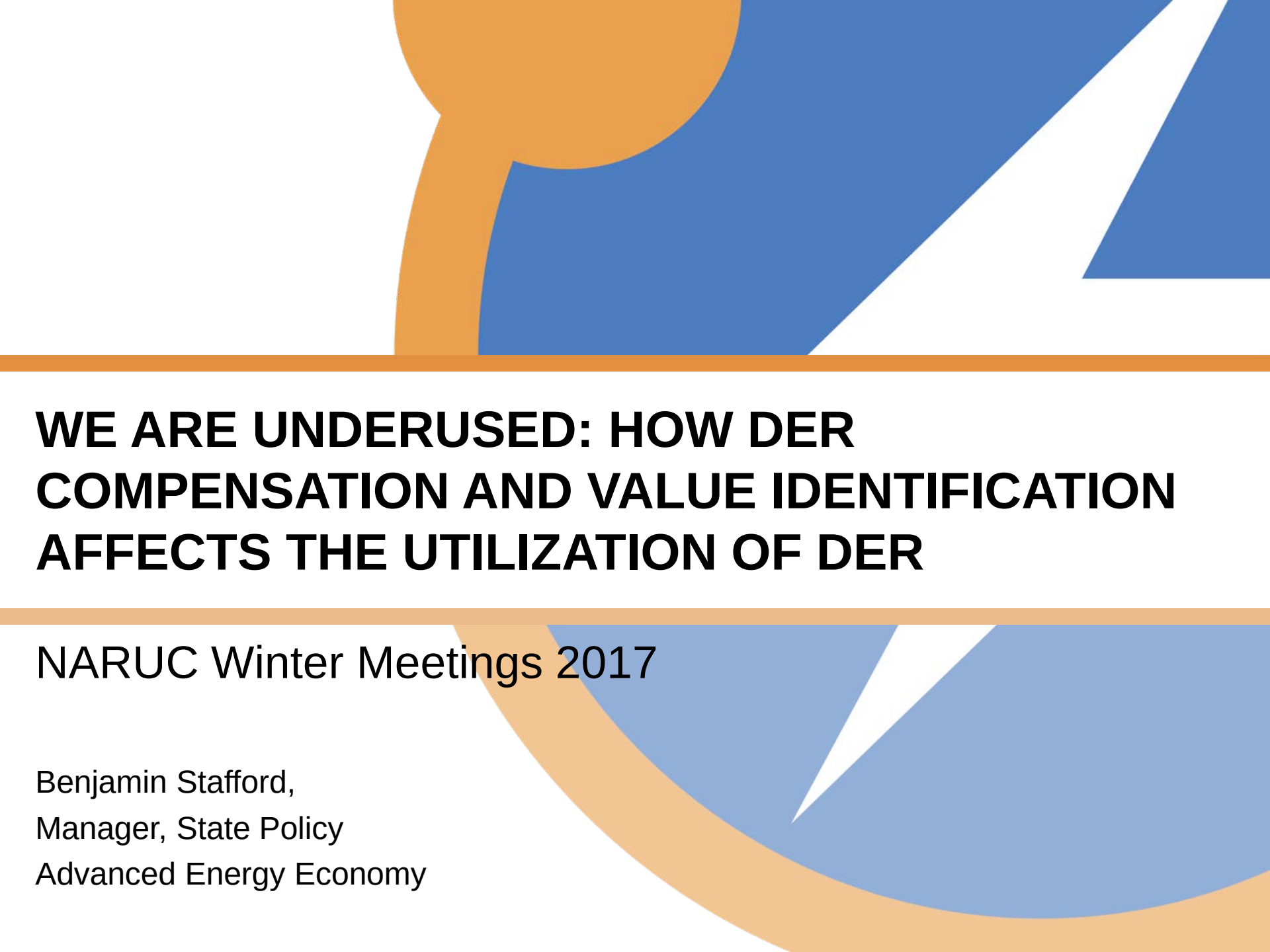




NARUC

Winter Committee Meetings

Staff Subcommittee on Rate Design



WE ARE UNDERUSED: HOW DER COMPENSATION AND VALUE IDENTIFICATION AFFECTS THE UTILIZATION OF DER

NARUC Winter Meetings 2017

Benjamin Stafford,
Manager, State Policy
Advanced Energy Economy

The Power of Many to Transform Policy

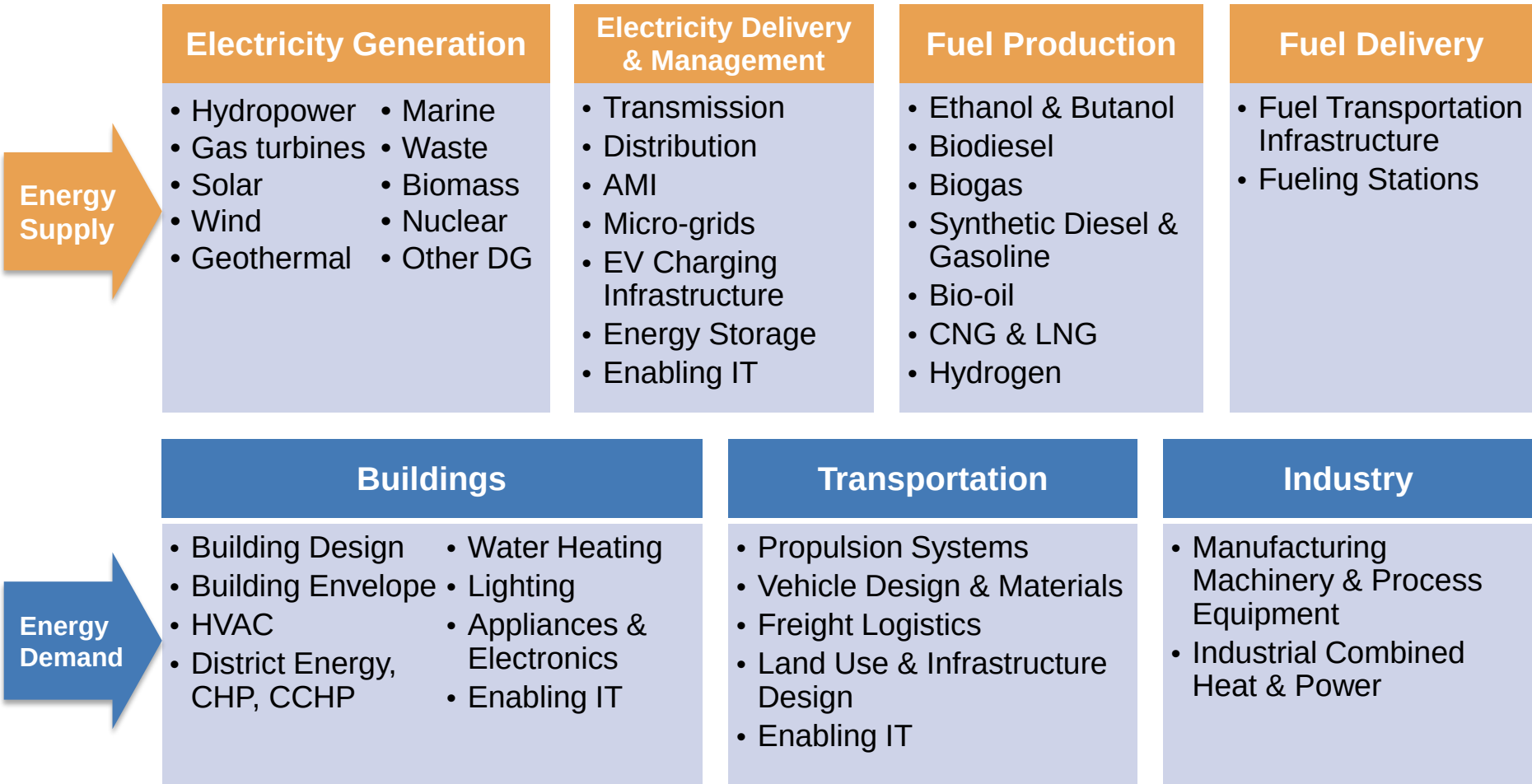
Leadership Council



Members



What is Advanced Energy?



The lack of appropriate accounting and valuation of new services affects the adoption of resources.

- Valuing performance and fostering innovation must be part of thoughtful rate design.
- Determining the benefits and costs of resources and technologies is vital.
- Regulators have a toolbox outside of traditional rate design to address issues.
- There are widespread examples of alternative rate design already being implemented or considered.



Rate design directly impacts the deployment of technologies.

- AEE believes the adoption of relevant technology is foundational for deployment of resources and technologies.
- We support the creation of programs, products, services and rates that will ultimately transform how customers, utilities, and third party service providers interact with the modern grid.
- Designing rates involves assessing costs and benefits of technologies...



Benefits from DERs may be broad, quantifiable, and within regulatory responsibilities.

Customers Benefits

Load Reduction & Avoided Energy Costs

Demand Reduction & Avoided Capacity Costs

Avoided Compliance Costs

Ancillary Services

Utility Operations

Market Efficiency

Risk Reduction

Participant Benefits

Participant Non-Energy Benefits

Participant Resource Benefits

Societal Benefits

Public Benefits

Environmental Benefits



Regulators have a toolbox outside of traditional rate design to address issues.

- **Performance metrics** and output-oriented incentives align utility behavior with public good.
- Some jurisdictions allowing **return on investments for procured services** allow for options akin to capital investments.
- Integrated **distribution system planning** can allow utilities to see technologies as an asset that they actively want to promote.
- **Demonstration projects**, with third-party involvement, allow for limited and appropriate test of technologies and business models.



There are examples of alternative rate design already in practice or under consideration.

Rates

California - residential rate design (R1206013)

Arizona – time varying rates

Massachusetts – time varying rates (14-04)

Illinois – real-time pricing and bill savings

Distribution System Planning/DER

New York – Value of Distributed Energy Resources proceeding (15-E-0751)

Minnesota - Value of Solar Tariff

NARUC - Distributed Energy Resources Manual

Rhode Island Investigation Into the Changing Electric Distribution System

Performance Based Regulation

AEE Institute – PBR for Pennsylvania Whitepaper

Massachusetts Energy Efficiency Programs

Discussions in MN, MO, IL, MI, NH

Wholesale Markets

FERC – Electric Storage Participation in Regions with
Organized Wholesale Electric Markets - No. AD16-20-000



Join us in creating an Advanced Energy Economy

Benjamin Stafford,
Manager, State Policy
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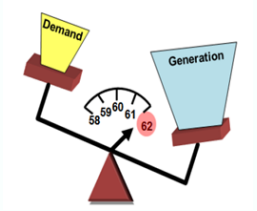
John Diem
NARUC Presentation
Staff Subcommittee on Rate Design



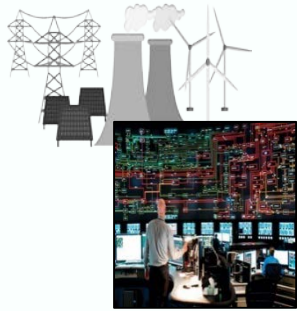
Washington DC
February 12, 2017

What's the challenge?

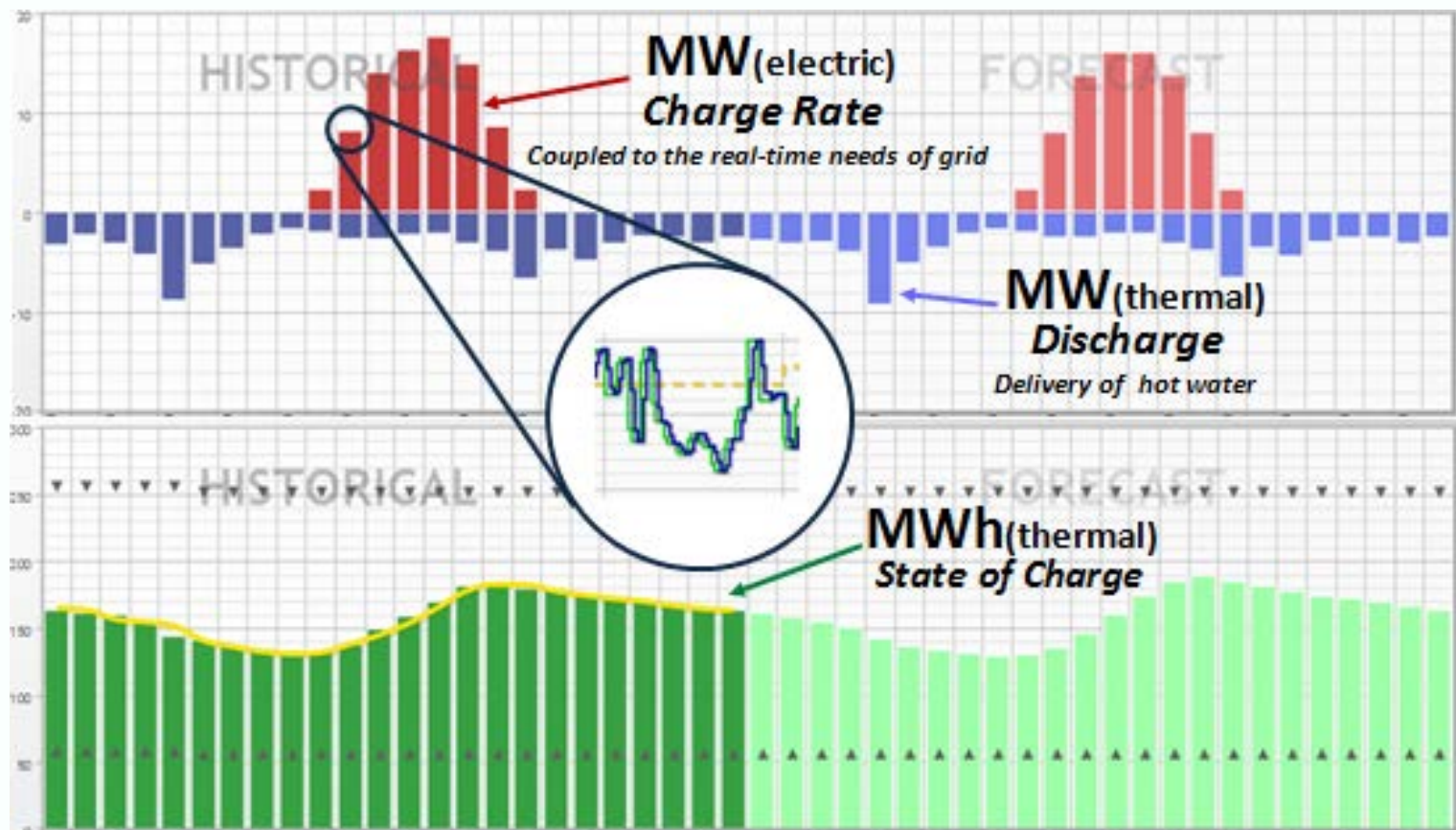
- Provide fast regulation to stabilize the grid
- Integrate much higher percentages of renewable electricity



Grid Interactive Electric Thermal Storage



Aggregate Group

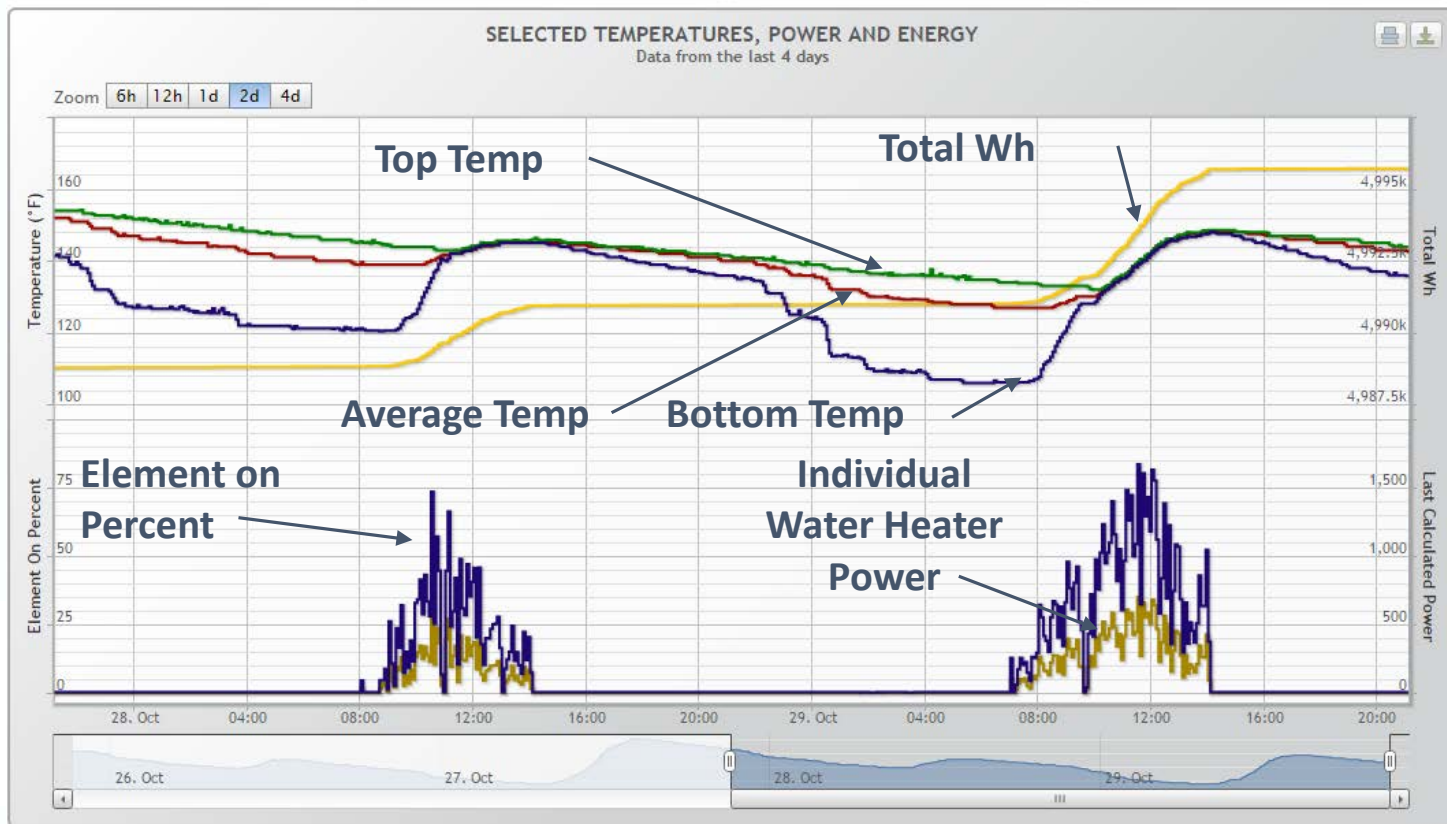


Individual GETS Water Heater

End Point Details

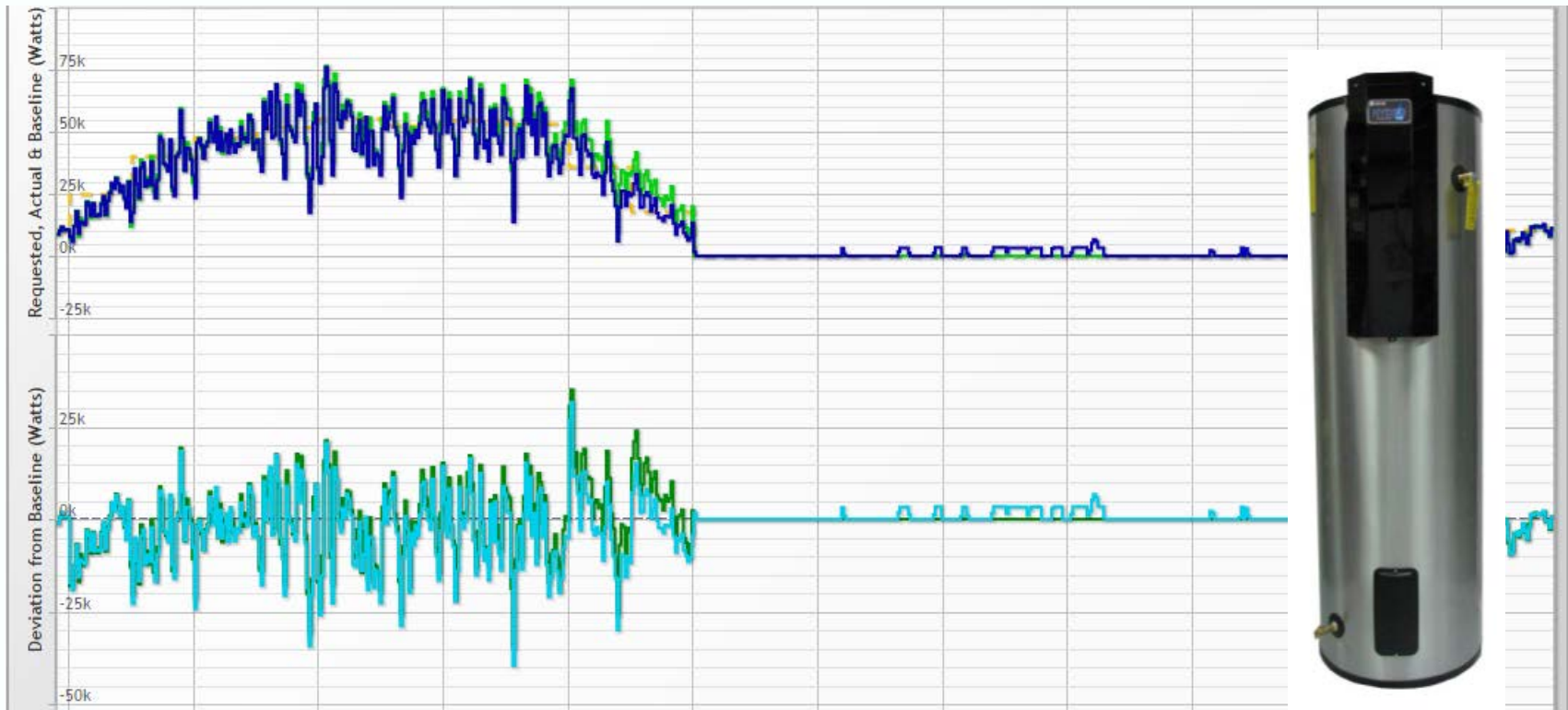
Water Heater: SITE05 - Water Heater

CONTROL STRATEGY AGGREGATE BALANCING CONTROL	CONTROL SIGNAL 0	ACTUAL POWER 4 Watts	STORED ENERGY 10,088 Wh
OVERRIDE CONDITIONS NO OVERRIDES	LOCKED CHARGE LEVEL 124	AVAIL POWER 4,888 Watts	AVAIL ENERGY STORAGE 4,462 Wh
ERROR STATUS NO ERRORS	CHARGE LEVEL INDEX 66	MAX POWER 4,892 Watts	MAX ENERGY STORAGE 14,550 Wh
DEVICE STATUS ACTIVE			



Hawaii

Fast Signal + Sun Following



Putting it all together in a “real” deployment:

<https://customers.microsoft.com/en-us/story/solving-renewable-energy-challenges-with-the-internet>

The Maritimes Wind Absorption



<http://powershiftatlantic.com/>

Alaskan Village Micro grid

Wind integration



Car vs GETS vs Battery



Nissan Leaf
9.5 kWh / day
\$30,000



Steffes Hydro
Plus
10 kWh/day
\$1500



Tesla
Battery
7 kWh
\$6,500

Steffes – North Dakota

"COMMITMENT TO INNOVATION"



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