Efficiency & Electrification:
6 Steps to Success

Bridget French
VEIC
About VEIC

• Nonprofit founded in 1986
• 300+ employees
• Locations: DC, OH, VT, WI
• Design and deliver programs and policies nationwide:
  • Energy efficiency
  • Clean transportation
  • Building electrification
  • Renewable energy

• Our customers:
  • Utilities
  • Government
  • Foundations
  • Environmental & consumer groups
  • Business
EE and Electrification Strategy: Steps to Success

Wisconsin

Massachusetts

New York

Vermont
Step 1: Continue EE as Foundation of Clean Energy Transition

Vermont’s Pathway: Efficiency, Electrification, and Renewables
Step 2: Use Efficiency Smarter

Goal: Flatten Vermont’s Growing Duck through Time-Targeted EE
Savings Curve for LEDs on High Stress Cold Days
Savings Curve for High Efficiency Pool Pumps on High Stress Hot Days
Ducks ≠ Gators

Source: Greentech Media, "Forget the Duck Curve. Renewables Integration in the Midwest Is a Whole Other Animal", Author: Andrew Twite
Step 3: Establish a Bridge Between Efficiency, Grid Flexibility, & Electrification
Efficiency Vermont Future Vision

Redefined Efficiency

Reducing GHG Emissions

Electric
- Controls to reduce peak
- Time & location

Transportation
- Marketing
- Supply chain
- Efficient product support
- Demand management

Thermal
- Weatherization
- Efficient heating

Other
- Digesters
- Refrigerant Management

focus on energy®
Partnering with Wisconsin utilities

Appendix A – Research Topics Identified by Focus on Energy for EERD Funding
Demand Response (DR) Ready Program Offerings

Recently Released Call for Concept Papers
Step 4: Get Started with a Targeted Approach

• At current fuel prices, it often makes sense to target:
  
  o **Existing homes** that currently heat with electric resistance, oil, or propane
  
  o **New construction:** Net zero program tiers and stretch codes to promote construction integrating heat pumps with high-performance building shells

Efficiency Vermont: Zero Energy Modular Home
Midwest Take

• Establish **short-term solutions** to continue momentum where coal plant & gas line infrastructure isn’t cost-effective to retire
  
  • Invest in gap technologies
  • Prepare customers to make better decisions through education & program design

Mysa Communicating Line
Voltage Thermostat
Step 5: Leverage Partnerships for Greater Success

- Integrate and coordinate delivery of efficiency, demand flexibility, electrification programs to break down program silos.
Partnerships: Utility & Efficiency Provider

• Pilot testing grid-interactive water heaters as a virtual thermal battery
• Collaboration between WEC and Efficiency Vermont

Join Project PowerShift
Help Washington Electric Co-Op keep energy costs lower for our community.
Partnerships: Efficiency Program & Trade Allies

- **Vermont Zero Energy Now Pilot:**
  - Wx + heat pumps + PV
  - 50-80% reduction in total energy use

- **NYSERDA Heat Pump Ready Pilot:**
  - Demonstrate affordable standard packages of whole house load reduction measures (air sealing, insulation, duct repair/sealing, low E windows, smart controls)
  - Create a viable and innovative service model for contractors

 Zero Energy Now 2016 Summary Statistics

<table>
<thead>
<tr>
<th>Participants</th>
<th>22 Vermont existing homeowners</th>
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<tbody>
<tr>
<td>Customer investments</td>
<td>$1.2 million (split relatively evenly between efficiency and solar PV)</td>
</tr>
<tr>
<td>Median total project cost</td>
<td>$44,739 (ranging between $22,000 and $170,000)</td>
</tr>
<tr>
<td>Net customer project cost</td>
<td>$31,090 (after incentives from Zero Energy Now, Efficiency Vermont and 30% Federal tax credit)</td>
</tr>
<tr>
<td>Median energy cost savings</td>
<td>$3,692/year</td>
</tr>
<tr>
<td>Average annual energy savings</td>
<td>95 MMBtu (60 MMBtu from efficiency and 31 MMBtu from solar PV) from 120 MMBtu pre- to 25 MMBtu post-improvement</td>
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<tr>
<td>Customer return on investment</td>
<td>11.9%</td>
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http://bppa-vt.org/page-1737726
Partnerships: Utility, Customers, & EE

• Offered to C&I customers
  • Real-time energy dashboard
  • Demand limiting strategies
  • Financial incentive

• By end of pilot, customers had better understanding of their demand & it’s impacts
Step 6: Set Next-Generation Goals

• Align EE program goals (and utility performance incentives) with state policy goals:
  • Peak demand reduction
  • Fuel-neutral energy savings or GHG reduction
  • Market transformation indicators
  • Energy or GHG savings for low-income customers or other target groups
Massachusetts: EE Program Metrics in 2019-2020 Period

<table>
<thead>
<tr>
<th>Old Goal</th>
<th>New Goal</th>
<th>Advantage</th>
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<tbody>
<tr>
<td>Lifetime kWh savings</td>
<td>Lifetime MMBtu savings</td>
<td>• Converts electric, oil, and propane savings to common units</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Encourages energy optimization by providing holistic view of tradeoffs such as electrification</td>
</tr>
<tr>
<td>NA</td>
<td>Peak kW savings</td>
<td>• Measures savings from both active and passive demand reduction</td>
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Vermont & Wisconsin: Evolution of Third-Party Administrators

**GHG Reduction**
- Efficiency Vermont has proposed as part of next 3-year plan
- WI Gov. Evers signed EO for carbon neutrality by 2050; established task force

**Grid Service-Ready Technologies**
- Efficiency Vermont proposed as part of next 3-year plan
- Focus on Energy planning greater emphasis on innovation this Quadrennial period – CCHP demo project

Technologies Installed / Customers Served
To Recap

✓ Continue EE as foundation of clean energy transition
✓ Make EE smarter with data-driven insights and time & location targeting
✓ Establish connection between electrification, flexibility, & EE
✓ Get started with targeted approaches
✓ Explore partnerships to further goals & impact
✓ Set next-generation performance metrics and incentives
Thank you!

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