NARUC Innovation Webinar

Coordinating Federal Energy Efficiency Funding with Regulated Utility Programs

October 26, 2023

Thank you to the U.S. Department of Energy Office of Electricity for their support of this event
The National Association of Regulatory Utility Commissioners (NARUC) is a non-profit organization founded in 1889.

Our Members are the state utility regulatory Commissioners in all 50 states & the territories. FERC & FCC Commissioners are also members. NARUC has Associate Members in over 20 other countries.

NARUC member agencies regulate electricity, natural gas, telecommunications, and water utilities.
THE NARUC CENTER FOR PARTNERSHIPS & INNOVATION

Background & Focus

- NARUC staff dedicated to providing technical assistance to members.
- CPI identifies emerging challenges and connects state commissions with expertise and strategies to inform their decision making.
- CPI builds relationships, develops resources, and delivers trainings.
- All CPI support is federally funded via cooperative agreements with DOE and NIST.
NARUC Innovation Webinar Series

One webinar most months
All NARUC members and stakeholders are invited

The Energy-Transportation Nexus:
Solar Highways and the Road to a Cleaner Grid
November 9, 2023 | 3:00 – 4:00 PM EST

Powering the Future:
Transforming Energy Distribution with Artificial Intelligence
December 14, 2023 | 3:00 – 4:00 PM EST

https://www.naruc.org/cpi-1/innovation-webinars/

NARUC thanks the U.S. Department of Energy for its support of this series.
UPCOMING IN-PERSON EVENTS

2023 NARUC Annual Meeting and Education Conference

CONNECTING THE DOTS
Innovative/Disruptive Technology and Regulation
NOVEMBER 12-15, 2023 • LA QUINTA, CALIFORNIA

NARUC-DOE Transportation Electrification Planning Workshop

NARUC Grid Data Sharing Framework Simulation
DISTRIBUTION SYSTEM AND RESILIENCE PLANNING TRAINING

• November 29-30, 2023, Washington, DC (Registration now open!)
• Week of January 22, 2024, Orange County, CA (Registration coming soon)
• Week of March 18, 2024, Nashville, TN (Registration coming soon)
KEY IRA REBATE PROVISIONS

• Section 50121: Home Energy Performance-Based, Whole House Rebates
  • “Home Efficiency Rebates” (HOMES)
  • All households eligible, but bonuses for LMI

• Section 50122: High-Efficiency Electric Home Rebate Program
  • “Home Electrification and Appliance Rebates”
  • AKA “High-Efficiency Electric Home Rebate Act (HEEHRA)”
  • Limited to households <150% AMI

https://www.energy.gov/scep/home-energy-rebates-frequently-asked-questions
FEDERAL TAX CREDITS AMENDED BY IRA

• Energy Efficiency Home Improvement Credit
  • Typically 30% of costs, with some individual limits
  • $1,200 aggregate yearly tax credit maximum for building envelope
  • Separate $2,000 aggregate yearly credit limit for appliances

• Residential Clean Energy Property Credit
  • Typically 30% of costs
  • No limit
Moderator: Commissioner Jeffrey Hughes
North Carolina Utilities Commission

Speakers:
Jennifer Amann, ACEEE
Laura Schauer, Illume Advising LLC
Rebecca Foster, Vermont Energy Investment Corporation
Increasing Deep Retrofits & Electrification with IRA Funding

Jennifer Amann, ACEEE
Better Buildings Residential Network Peer Exchange webinar
October 12, 2023
About ACEEE:

The American Council for an Energy-Efficient Economy (ACEEE), is a nonprofit research organization that develops policies to reduce energy waste and combat climate change. Its independent analysis advances investments, programs, and behaviors that use energy more effectively and help build an equitable clean energy future.

Learn more at aceee.org
A robust package of retrofit measures can cut a home's energy use by 58% to 79% and its carbon emissions by 32% to 56% depending on the home's age and regional climate. Costs range from $35k to $57k.

How do we increase consumer interest and participation?
Breaking retrofit packages into stages can help customers manage costs and better meet their needs

• Retrofit B: prioritizes envelope upgrades in the first phase. Older homes in the heating-dominant cold, mixed-humid, and marine climate regions benefit the most from comprehensive envelope upgrades, which account for most energy savings.

• Retrofit C: combines some envelope efficiency measures with priority equipment replacement. This approach may be especially appealing to customers in the hot-humid and hot-dry regions, which have milder winters and newer housing stock.

• IRA funding can support staging
  • Home efficiency rebates + 25C tax credits
  • Home electrification and appliance rebates
  • Supplemental financing when needed
Ongoing role for existing efficiency programs

- Support participation above and beyond IRA
- Incentivize measures that offer lower cost, less disruption, and greater consumer amenity
  - Alternatives measures that reduce heating, cooling, and water heating loads
  - Supplemental measures to reduce other end-use categories
- Offer financing options
- Market transformation activities
## Financial analysis

Three finance scenarios analyzed for 10- and 20-year repayment at 0%, **2.5%**, and 5% to determine upfront capital/incentive required.

- **Cash-flow neutral:**
  - 10-yr: $30k-$47k (65-88% project cost)
  - 20-yr: $17k-$42k (38-78% project cost)

- **Monthly added cost of $75:**
  - 10-yr: $22k-$39k (48-73% project cost)
  - 20-yr: $3.5k-$28k (8-52% project cost)

- **Monthly added cost of $150:**
  - 10-yr: $14k-$31k (31-58% project cost)
  - 20-yr: $0k-$14k (0-25% project cost)

<table>
<thead>
<tr>
<th>Climate</th>
<th>Project cost</th>
<th>Pre-retrofit costs ($/month)</th>
<th>Post-retrofit costs ($/month)</th>
<th>Savings ($/month)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Electric</td>
<td>Gas</td>
<td>Electric</td>
<td>Gas</td>
</tr>
<tr>
<td>Cold, pre-1950s</td>
<td>$ 53,223</td>
<td>$ 112.47</td>
<td>$ 203.83</td>
<td>$ 187.04</td>
</tr>
<tr>
<td>Cold, 1970</td>
<td>$ 53,657</td>
<td>$ 131.21</td>
<td>$ 150.29</td>
<td>$ 194.49</td>
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<tr>
<td>Mixed-humid,</td>
<td>$ 46,569</td>
<td>$ 135.21</td>
<td>$ 172.07</td>
<td>$ 125.50</td>
</tr>
<tr>
<td>pre-1950s</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed-humid,</td>
<td>$ 56,748</td>
<td>$ 121.54</td>
<td>$ 141.57</td>
<td>$ 125.95</td>
</tr>
<tr>
<td>1970</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot-humid</td>
<td>$ 45,159</td>
<td>$ 143.34</td>
<td>$ 43.98</td>
<td>$ 95.43</td>
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<tr>
<td>Hot-dry</td>
<td>$ 42,582</td>
<td>$ 146.70</td>
<td>$ 71.82</td>
<td>$ 158.03</td>
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<tr>
<td>Marine</td>
<td>$ 50,683</td>
<td>$ 66.47</td>
<td>$ 133.05</td>
<td>$ 96.12</td>
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</table>
### Home Efficiency Rebates + 25c tax credits

<table>
<thead>
<tr>
<th>Improvement</th>
<th>% of cost</th>
<th>Maximum credit</th>
<th>Efficiency criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home energy audits*</td>
<td>30%</td>
<td>Up to $150</td>
<td>Auditor certification requirements to be determined by DOE</td>
</tr>
<tr>
<td>Heat pumps</td>
<td>30%</td>
<td>Up to $2,000 per year</td>
<td>Based on CEE Tiers</td>
</tr>
<tr>
<td>Heat pump water heaters</td>
<td>30%</td>
<td>Up to $2,000 per year</td>
<td>Based on CEE Tiers</td>
</tr>
<tr>
<td>Central air conditioners*</td>
<td>30%</td>
<td>Up to $600</td>
<td>Based on CEE Tiers</td>
</tr>
<tr>
<td>Natural gas, propane, or oil furnaces, boilers, or water heaters*</td>
<td>30%</td>
<td>Up to $600</td>
<td>Based on CEE Tiers</td>
</tr>
<tr>
<td>Biomass stoves or boilers</td>
<td>30%</td>
<td>Up to $2,000 per year</td>
<td>Thermal efficiency of at least 75%</td>
</tr>
<tr>
<td>Electric panel or circuit upgrades for new electric equipment*</td>
<td>30%</td>
<td>Up to $600</td>
<td>200 amps or more</td>
</tr>
<tr>
<td>Insulation materials*</td>
<td>30%</td>
<td>Up to $600</td>
<td>Based on 2021 IECC</td>
</tr>
<tr>
<td>Windows and skylights*</td>
<td>30%</td>
<td>Up to $600</td>
<td>ENERGY STAR Most Efficient</td>
</tr>
<tr>
<td>Exterior doors*</td>
<td>30%</td>
<td>Up to $500 (max of $250 for each door)</td>
<td>ENERGY STAR</td>
</tr>
</tbody>
</table>

*Subject to combined cap of $1,200 per year

Rebates of $2,000 to $4,000 depending on savings
Double to $4,000 to $8,000 for LMI households

$1,200 per year cap (excluding HP and HPWH)
$2,000 for HP
$2,000 for HPWH (or 30% of cost)
Home electrification and appliance rebates

- Up to $14,000 in rebates for low- and moderate-income households
- Prescriptive, point-of-sale rebates
- Supports transition to all-electric homes
- Incentives for contractor participation

<table>
<thead>
<tr>
<th>Appliance</th>
<th>Rebate Amount (Maximum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Pump (for space heating and cooling)</td>
<td>$8,000</td>
</tr>
<tr>
<td>Electric Stove, Cooktop, Range, or Oven, or Clothes Dryer</td>
<td>$840</td>
</tr>
<tr>
<td>Heat Pump Water Heater</td>
<td>$1,750</td>
</tr>
<tr>
<td>Electric Wiring</td>
<td>$2,500</td>
</tr>
<tr>
<td>Electric Load Service Center (Breaker Box)</td>
<td>$4,000</td>
</tr>
<tr>
<td>Insulation, Air Sealing, and Ventilation</td>
<td>$1,600</td>
</tr>
</tbody>
</table>
Recommendations

• Standardized (yet flexible) retrofit measure packages
• Staged retrofits to meet customer and program needs
  • Need mechanisms to keep consumer engaged and provide staged financing
  • Leverage remodeling and other projects/transactions
• Consider challenges and opportunities for electrification
• Expand the range of measures and delivery mechanisms
  • Multiple trades, retail, utility marketplaces, direct install, behavioral
• Funding packages that support customers and contractors with mix of incentives and financing
• Fed $$ makes things better, but gaps remain – still need state and private solutions to meet the need
Contact

Jennifer Amann
jamann@aceee.org
<table>
<thead>
<tr>
<th>Conference</th>
<th>Date</th>
<th>Location</th>
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<tbody>
<tr>
<td>Energy Efficiency as a Resource</td>
<td>October 16–18, 2023</td>
<td>Philadelphia, PA</td>
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<tr>
<td>Behavior, Energy &amp; Climate Change (BECC)</td>
<td>November 12–15, 2023</td>
<td>Sacramento, CA</td>
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<tr>
<td>2024 Hot Water Forum &amp; Hot Air Forum</td>
<td>March 12–4, 2024</td>
<td>Location TBD</td>
</tr>
<tr>
<td>2024 Summer Study on Energy Efficiency in Buildings</td>
<td>August 4–9, 2024</td>
<td>Pacific Grove, CA</td>
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Laura Schauer, Illume Advising LLC
Evaluation Policies and Considerations

Program Theory
Addressing questions such as:
What is the program theory?
What are we trying to achieve?
What are the barriers to overcome? Etc.

Credit and Value
Are public funds being used wisely? Who gets credit and how do we measure that? And to what extent does the “who” matter?

Metrics of Effectiveness
Traditional cost effectiveness vs. effective use of funds tying to program theory and goals

Collaborate to Achieve
While separate funding streams, they interweave to achieve a common goal. Finding opportunities to leverage resources is critical
Our Thinking
Planning and Approach is Important

Thoughtful planning:
Taking time to come together and align on the why, who, what, and again why

Measuring and documenting the beginning:
Often a missed opportunity, but we have it now

Shifting from a resource acquisition to market transformation mindset:
These take different approaches, and there’s been extensive thinking on methodologies to start from

A mindset of growth, education, and learning:
Necessary across all of us as we embark on a relatively new path