



**Advanced Rooftop Unit Workshop Summary  
Schneider Electric in Andover, Massachusetts on June 15, 2015**

**Workshop background and purpose:**

The Northeast/Mid-Atlantic region operates an aging and inefficient fleet of commercial packaged HVAC systems or “Roof-top units” (RTU). What will it take to make significant progress towards changing both the installed base and new equipment market? The NEEP workshop, which took place at Schneider Electric’s facility in Andover, Massachusetts, focused on considering this question by bringing existing and potentially new market actors together to contemplate new market strategies, including new business models that capture the full variety of value streams to unlock significant energy and peak savings.

Workshop Attendees		
First Name	Last Name	Organization
Jan	Aceti	Concord Municipal Light Plant
Samantha	Attwood	Efficiency Vermont
Ethan	Bellavance	Efficiency Vermont
Bridget	Bohnson	EFI
Emilie	Bolduc	Ecova
Fran	Boucher	National Grid
Samantha	Bresler	NEEP
Philip	Burke	Energi
Sue	Coakley	NEEP
Joe	Colett	Ecova
Michael	Deru	NREL
Alicia	Dunn	NEEP
Richard	Ekstrom	DCNE
Joseph	Fernandez	FW Webb
Steve	Jaslowich	EFI
Gary	LaCasse	Eversource
Jon	Linn	NEEP
Dave	Lis	NEEP
Brian	Meneghan	Carrier Corporation
Howard	Merson	Efficiency Vermont
William	Oconnor	EnerNOC
David	Parker	CSG
Mary Jane	Poynter	Efficiency Vermont
Daniel	Sabin	National Grid
Dan	Skilton	Homans Association
Rishi	Sondhi	Eversource
Nathan	Strong	Eversource
Michael	Wentworth	Thayer Corporation

**Presentations**

NEEP presents RTU Market Assessment

A brief presentation by Jon Linn concerning NEEP’s developing ARTU Market Assessment. The findings from the Market Assessment included:

- Shipment and installation volumes
- Supply channel and market actor identification
- Energy and demand savings
- Market barriers

Linn additionally presented on a new program model concept concerning a 3<sup>rd</sup> party owner of the commercial HVAC who is responsible for the delivery of temperate air in exchange for efficiency gains.

Panel session on new RTU Market opportunities/Strategies

1. Michael Deru, from NREL, presented on DOE’s ARTU Campaign and savings potentials from advances in technology.
2. Howard Merson, from Efficiency Vermont, presented on their upstream program model and how they manage the different industry partners.
3. Philip Burke, from Energi, presented on novel program models (including CPACE, service programs, etc.) that Energi engages in.

[All powerpoint presentations can be found here](#)

**Breakout Session 1- Prioritizing market barriers**

In the first Break-out session, the stakeholder attendees ranked five, common barriers, from 1-5, and listed new ideas/solutions for overcoming them. The five barriers were “Knowledge” of ARTUs and related efficiency programs; “Authority” concerning tenant/owner dynamic and decision making; “Cost” of ARTUs; “Value” of high efficiency equipment perceived by customers; and “Availability” of the units in the marketplace. These scores were tallied and the ranked barriers are prioritized below.



**Feedback: Barriers**

	Team 1	Team 2	Team 3	Team 4		
Barriers	Impact on Adoption	Impact on Adoption	Impact on Adoption	Impact on Adoption	Total All Categories	Total Average
Capital	5	5	5	5	20	5
Knowledge	1	4	5	4	14	3.5
Availability (of the units)	4	4	3	3	14	3.5
Value	3		3	5	11	2.75
Authority (i.e. Split Incentive)	2	3	2	4	11	2.75

- Capital barrier
  - The overall reasoning for “Capital” ranking was the cost has imperceptible savings, but is a top concern.
  - New Ideas/Solutions
    - Need specifics strategies for different market segments.
    - Good baseline studies on lifetime of units (which impacts cost-effectiveness).
    - Capturing value of peak demand (qualification and better understand the impact of the equipment).
    - Lease with preventative maintenance plan, longer payback period (i.e. solar model, auto industry, etc.)
    - One option is 3<sup>rd</sup> party to support a “fund” available for HVAC system purchases.
- Knowledge barrier
  - Overall reasoning for “Knowledge’s” ranking was that HVAC is hard to explain and there is a wide range of knowledge among market actors.
  - New Ideas/Solutions was at a high level: targeting specific market segments for education.
    - Educate channel partners on the value of upgrading & investing in a targeted marketing for specific channel partner or end customer.
    - Have cold climate systems for heat pump roof-tops.
    - It is up to the pre-screening process organization.
- Availability barrier
  - Overall reasoning for “Availability’s” ranking was that there is a need for distributor assurance that stocking the efficient units will be a positive
  - New Ideas/Solutions was at a high level: reducing the financial risk for distributors.
    - Manufacturer reduces cost of inventory for distributors.
    - Attain incentives for high efficiency units or on DOE ARTUs.
    - Incent/influence distributors to carry high efficient equipment upstream.
    - Channel distribution model such as amazon.com for HVAC.
- Value barrier
  - Overall reasoning for “Value’s” ranking is that it is not always a net positive.
  - New Ideas/Solutions was at a high level: clearly demonstrating that the benefits>cost.
    - Educate on non-energy benefits with research, case studies, etc. to display an increase in productivity, building envelope life, and how this ties to cost.
    - Cost/benefit of early replacement is less maintenance/operating cost.
    - Bundle capital access with delivery mechanisms.
- Authority barrier (i.e. split incentive)
  - Overall reasoning for “Authority’s” ranking is that the owner and tenant situation/relationship needs to be considered.
  - New Ideas/Solutions was at a high level: Green Lease and evaluate non-energy benefits.



- BERDO-type model: Do a comparison of programs - maybe make them competitive (i.e. shame game). Rating properties across all measures.
- Green lease arrangements. Tenants allow owners to reap the savings benefits.
- Tax deductions for efficiency upgrades to landlord/tenant (financial tool).
- Software to monitor maintenance offers value to property owners.

**Breakout Session 2- Exploring new regional strategies**

In the second Break-out session, five potential regional activities were presented. From 1-5 (5 being a high score), the stakeholders were asked to rank the activities on their “Savings Potential” and their suitability for “Regional Cooperation” to ultimately develop strategies and help move the market forward. The five activities were “Contractor Training” of ARTUs; “Provider Registry” of ARTU service providers; “Stakeholder Exchange” to connect and foster stakeholder relationships; lowering the “Cost” of ARTUs; “Market Research” to further characterize the Commercial HVAC market ; and “Program Templates/Business Models” to share with other efficiency programs. These scores were tallied and the rankings are prioritized below.

**Feedback: Activities**

Activities	Total Average
Training & Curriculum	4.5
Program Templates & New Business Models	4.25
Registry of Providers	3.6875
Stakeholder Exchange	3.625
Market Research	3.25

		Team 1	Team 2	Team 3	Team 4
Activities	Regional Cooperation	Regional Cooperation	Regional Cooperation	Regional Cooperation	Regional Cooperation
Training & Curriculum	4	5	3	4	4
Program Templates & New Business Models	4.5	5	4	5	4
Registry of Providers	4	3	5	3	5
Stakeholder Exchange	4.5	5	4	4	5
Market Research	3.5	2	5	4	3

		Team 1	Team 2	Team 3	Team 4
Activities	Savings Potential	Savings Potential	Savings Potential	Savings Potential	Savings Potential
Training & Curriculum	5	5	5	5	5
Program Templates & New Business Models	4	5	2	5	4
Registry of Providers	3.375	3	3	3.5	4
Stakeholder Exchange	2.75	2	3	4	2
Market Research	3	2	5	3	2

- Training
  - Savings Potential Score is a result of stakeholders needing to learn ‘How to sell’ rather than ‘how to fix/install’.
    - Need to differentiate for each market segment.



- At the contractor & distributor level, they need to know more about the product and need to be able to make the case for high efficiency.
      - Manufacturer, who sells directly, will also need to implement program.
    - Training can help everyone to understand the potential impact of new units as well as equipment and control strategies. A solid curriculum will help ensure that everyone (distributors & customers) all relay/understand how programs can help.
  - Regional Cooperation Score was a mixed bag.
    - There could be a regional curriculum with specific information for each State.
    - Expand Efficiency Vermont model to the region.
- Provider Registry
  - Savings Potential Score is a result of there being a value in compiling all of this information.
    - Increase access to capital, bundle “one-stop shop”, and inform the market of where it can access services.
    - If a registry is involved in “qualifying” partners, then savings potential increases.
    - A registry is not that impactful for a contractor - could be helpful to finance.
  - Regional Cooperation Score
    - There is a difference between aggregating and appealing for providers.
    - Potential in aligning channels to support end customer.
- Stakeholder exchange
  - Savings Potential Score was low for direct savings.
    - Behind the scene communicate with others in the industry doesn’t necessarily lead to increase in installations. But could learn from others to take away a little bit of info that could be implemented back at “home” program.
  - Regional Cooperation Score was a result of the great opportunity to learn and network.
    - Region is similar enough in climate & customer type (except NYC) that it would be worth getting individuals together. Additionally, sales reps & distributor companies span states and can bring perspectives on what is happening in the region.
- Market Research
  - Savings Potential Score was a result of research, which is important for quantifying savings/baselines, but individuals don’t think it directly leads to savings.
    - Good to understand the market, but it doesn’t directly lead to added savings. It will however spread the word of savings potential access to vendors/customers.
    - It is impactful for program implementers trying to quantify savings for utilities/regulators. Not getting a high score because information needs are already met.
  - Regional Cooperation Score which is a result of the disparity between ‘enough information’ and ‘not enough information’.
    - Although a high level of cooperation would lead to some great market information, there would be concerns about opening up some data from the vendor point of view.
- Program Templates
  - Savings Potential Score is high.
    - Consistency helps contractors/distributors.
    - (ex. CEE) We need a base to work from - something customizable, but it’s difficult because of the already entrenched programs.
  - Regional Cooperation is a result of the economies of scale for templates.
    - Suppliers are not necessarily local. Larger manufacturers hire one utility liaison.
    - This is a great way to learn about what works in one region and apply it elsewhere.