

Advanced Cooling Efficiency Campaign



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What is the Advanced Cooling Efficiency Campaign?

Older, inefficient commercial rooftop unit (RTU) air conditioning systems are common and can waste up to \$52,000 per year depending on the building. By replacing or retrofitting your building's rooftop air conditioning unit, you can save money, improve your energy efficiency, make your building more comfortable, and help the environment. The Advanced Cooling Efficiency (ACE) Campaign encourages commercial building owners and operators to replace their old RTU with a more efficient unit or to retrofit their RTUs with advanced controls in order to take advantage of these benefits.

Rooftop Unit Campaign

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Purpose & Objectives - Problem Statement

- Packaged rooftop units (RTUs) are used in over 60% of U.S. commercial buildings and have a typical life of 15 to 20 years
- Replacement is often only after failure and urgency leads to replacement with a new version of the old unit
- Technical and financial barriers inhibit deployment of high efficiency technology
 - First cost drives buying decisions
 - Lack of awareness / uncertainty of benefits
 - Split incentives
 - Lack of expertise about how to specify equipment/what to buy
 - Improper installation and commissioning



Purpose & Objectives - Impact of Project

- Packaged HVAC units are responsible for 2,100 trillion BTUs of primary energy consumption annually
- The project goal is to recruit building owners and operators to deploy high efficiency RTU tech. in the market
- Advanced controller retrofit can reduce RTU energy consumption by up to 40% with a 2-4 year payback
- RTU early retirement and replacement with a high efficiency unit can reduce energy use by 50% compared with Standard 90.1-2001 efficiency levels

Energy Savings Examples

- Supermarkets can save up to \$52,000 per year (up to \$8,700 per RTU)
- Stand-alone retail stores can save up to \$24,000 per year (up to \$5,900 per RTU)
- Strip malls can save up to \$23,000 per year (up to \$2,300 per RTU)
- Small office buildings (5,500 sq. feet) with one RTU can save up to \$2,400 per year

Purpose & Objectives

Project Focus

- This project will develop the RTU Campaign with partners (including market leaders, utilities, manufacturers, and energy efficiency programs) to engage building owners to make large scale efficiency improvements for packaged cooling systems
- The RTU Campaign directly supports the DOE BTO goal for existing buildings and creates a market to support the goal for new technology development
- **Existing Commercial Buildings:** Reduce the energy required to operate existing commercial buildings by 40%, at less than the cost of the energy saved. Bring needed technologies and practices to market delivering:
 - 1,600 trillion BTUs in annual savings by 2020
 - 6,000 trillion BTUs in annual savings by 2030
- **New Technology Development:** Bring to market technologies to save 70% on lighting, 60% on water heating, 40% on HVAC, and 20% on other appliance energy use at less than the cost of the energy saved

Approach – Leverage DOE resources through key partnerships

- **What:** Move the commercial building RTU market to greater adoption of high efficiency RTUs and RTU controls
- **Who:** Campaign organizers, supporters, and partners
 - Organizers: ASHRAE, RILA, and others to be announced
 - Supporters: Utility programs, efficiency organizations, and manufacturers
 - Participants: Building owners
 - Department of Energy provides technical support
- **How:** Recruit building owners and operators to pledge to:
 - Evaluate their buildings for opportunities
 - Replace their RTUs or retrofit with controls
 - Share energy savings with the campaign
- **When:** The project launches May 2013 through November 2014

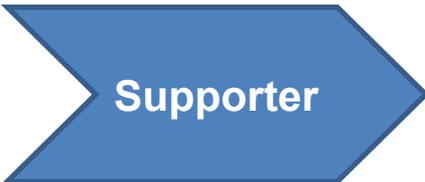


Approach – Overcoming Key Technical and Market Issues

Barrier Type	Barriers	Campaign Resources
Technical	<ul style="list-style-type: none">• Lack of expertise about how to specify equipment/what to buy• Improper installation and commissioning	<ul style="list-style-type: none">• Guidelines to determine whether to retrofit or replace• Performance data from DOE and other demonstrations• Right-sizing guidance• Energy savings calculators• Procurement specification (performance, installation, and quality maintenance)• Example quality maintenance contract• Case studies targeted at both end users and utilities• 3rd party demonstrations
Market	<ul style="list-style-type: none">• First cost drives buying decisions• Lack of awareness of the benefits of high efficiency units• Split incentives between owners and tenants	<ul style="list-style-type: none">• A list of RTU incentives and financing resources• Manufacturer supporter financing• Utility supporter relationships with local debt providers• Examples of energy aligned- leases or owners/tenants that have successfully negotiated upgrades

Approach – Distinctive Characteristics

The campaign is led by organizers, and roles are structured around a 3-tiered collaborator model

	Role	Benefits
 Organizer	<ul style="list-style-type: none">• Provide input on campaign design• Lead recruiting on a national scale• Sponsor participant recognition	<ul style="list-style-type: none">• Enhance organization’s brand by leading the campaign• Represent member interests in how the campaign and its resources are developed
 Supporter	<ul style="list-style-type: none">• Feature logo on and link to the campaign website• Provide input to or review case studies of energy savings• Promote existing resources through campaign• Assist recruiting of participants	<ul style="list-style-type: none">• Enhance brand by partnering with other organizations• Leverage campaign marketing and resources to enhance your own programs• Collaborate with DOE to document energy savings
 Participant	<ul style="list-style-type: none">• Evaluate buildings for opportunities for retrofit or early retirement• Share data with the campaign• Implement either an RTU retrofit or an RTU early retirement	<ul style="list-style-type: none">• Access to DOE technical resources and webinars• Save energy and money• Earn campaign recognition for achievements

Goals and Accomplishments – Key milestones have been completed on time

- The program plan was completed, including components for financing, M&V, and marketing
- Key industry partners reviewed the plan, including CEE, RILA, ASHRAE, BOMA International and other key internal and external stakeholders
- Two organizing partners have signed on to organize the campaign and a kick-off call was held on March 15
- The campaign is currently developing resources, recruiting utility, manufacturer, and efficiency program supporters
- The campaign will launch in May 2013

Awards/Recognition

- Campaign organizers are sponsoring recognition for participants that achieve significant energy savings
- Participants have until September 2014 to submit energy savings claims
- Awards will be conferred Fall/Winter 2014

Project Plan & Schedule

Current project funding Oct 2012 to Sep 2013
 Planned (pending funding) Oct 2013 to Sep 2014
 All milestones on time

Summary		Legend							
RTU Early Retirement Campaign, NREL		Work completed							
Agreement # 19987, Project # FY13-09		Active Task							
		Milestones & Deliverables (Original Funding)							
		Milestones & Deliverables (Actual Funding)							
Task / Event	FY2013				FY2014				
	Q1 (Octt-Dec)	Q2 (Jan-Mar)	Q3 (Apr-Jun)	Q4 (Jul-Sep)	Q1 (Octt-Dec)	Q2 (Jan-Mar)	Q3 (Apr-Jun)	Q4 (Jul-Sep)	
Project Name: RTU Campaign									
Q1 Milestone: Progam, Finance, and M&V plan	◆								
Q2 Milestone: Industry review of program plan		◆							
Q3 Milestone: Campaign launch		◆	◆						
Q4 Milestone: Project Summary Report			◆	◆					
Future work									
Report on first year's impact					◆				
Final achievement recognitions (November 2014)								◆	

Project Budget: \$160K

Variances: None

Cost to Date: \$65K

Additional Funding: None

Budget History	
FY2012	
DOE	Cost-share
\$160K	0

The DOE team includes labs and contractors, and it is currently recruiting organizing partners to lead the campaign

- **DOE team members**
 - National Renewable Energy Laboratory
 - Waypoint Building Group
 - ICF
- **Organizing partners to date**
 - American Society of Heating, Refrigeration, and Air Conditioning Engineers
 - Retail Industry Leaders Association
- **Additional organizing partner targets**
 - BOMA International
 - NAIOP
 - Edison Electric Institute

The primary campaign goal is deployment of efficient RTU technology through recruiting owner and operator participants



Description	Evaluate the business case for high-efficiency RTU improvements	Commit to retrofitting or replacing at least one RTU	Share expected and actual energy savings and provide feedback	Recognition will be awarded to participants in a variety of categories
Resources	<ul style="list-style-type: none"> • Case studies • Calculators • Technical advisors 	<ul style="list-style-type: none"> • RTU specifications • Financing / incentives list 	<ul style="list-style-type: none"> • Calculators • Technical advisors 	Exact form of recognition (plaque, certificate, etc.) to be determined
Important Dates	Campaign launches May 2013	Limited technical assistance is available until July 2014	Deadline to report savings claims is September 2014	Recognitions announced November 2014

DOE will collaborate with organizers and supporters to recruit participants to join the campaign

Enrollment - Participants join the campaign through the website as they search for technical and financing resources

Industry events - Organizers market the campaign through key industry groups

Partner outreach - Organizers and supporters promote through dissemination of campaign information through their newsletters and list serves

Webinars - Organizers and supporters host webinars to provide information on the campaign, profile successful case studies, and announce interim campaign results



The organizers are developing the campaign, which will launch at the Better Buildings Alliance Efficiency Forum

Pre Launch

- Finalize organizer commitments
- Recruit early adopter supporters and participants
- Finalize program materials and website

Launch May 2013

- Host webinars
- Provide technical support
- Recruit additional supporters
- Work with supporters to recruit participants
- Author case studies and additional resources
- Participants report first year results and are recognized for achievements by December 2013