

# Technology Innovation Project



Project Brief

## TIP 140: Energy Efficiency Emerging Technologies (E3T): Assessments and Demonstrations

### Context

BPA is committed to achieving the Northwest Power and Conservation Council's Sixth Power Plan goal to offset 85% of the region's load growth over the next 20 years through energy efficiency. BPA's Energy Efficiency organization understands that relying on existing energy efficiency technologies will not achieve this goal. To ensure success, BPA needs to stay current with new EE technologies. TIP 140 funding provides the resources to assess new technologies and find energy savings through field tests and demonstrations.

### Description

The Energy Efficiency Emerging Technology Team (E3T) identifies new technologies, validates their energy savings performance, and works with EE Programs to define incentives programs. E3T has identified four areas of focus for 2012: VCHP, RTU, Energy Management and LED Lighting. Some of the current projects include the following:

- HPWH - EPRI Heat Pump Water Heater Field Test
- VRF - Variable Refrigerant Flow - Assessment, Market Analysis and Demonstration
- DHP - Ductless Heat Pump Pilot
- RTU/DCV - Demand Controlled Ventilation - Feasibility Assessment and Field Tests
- RTU - Premium Ventilation - Field test, Functional Analysis Report and Ventilation Performance Analysis
- Energy Management – Behavioral-Based EE Pilots
- LED Lighting - E3T Technical Advisory Group

### Why It Matters

Utilities, state and regional entities across North America are realizing that they cannot solely rely on existing energy efficiency technologies to achieve future goals for energy savings. With the political, legislative and consumer landscape rapidly changing, manufacturers are bringing energy efficient technologies to the marketplace at an accelerating rate.

To that end, it's important for BPA's Energy Efficiency organization to stay current with technology changes and their implications for successful resource acquisition. Hence there's a need to effectively assess the benefit of new technologies to BPA and its customers through small scale field tests and demonstrations.

### Goals and Objectives

The goal for TIP140 is to collaboratively "fill the pipeline" with innovative energy efficiency measures that promise significant energy savings. The E3T team collaborates with customer utilities, EE industry experts, and regional policy makers.

### Deliverables

HPWH - On October 4, 2011, the RTF voted to "provisionally deem" heat pump water heaters which will enable BPA to offer an incentive program in April 2012. EPRI's Power Delivery and Utilization (PDU) sector has selected BPA to receive a 2011 PDU Technology Transfer Award for the collaborative evaluation of the HPWH technology.

DHP – The second research phase involves 45 installations evaluating 5 applications. A final report is due in 2012.

VRF – Since the last review a TI Roadmap was completed and an RTF measure was developed for approval in January. Collaboration with EPRI over the past year has included: EE VRF Demo site results; planned field test with Intel Lab for a non-invasive load monitoring device; and participation in VRF Coordinated Early Deployment.

RTU/DCV - Tools developed for streamlined Custom Projects and Custom Rooftop Unit (RTU) Programs include a site-based savings estimator, verification and acceptance tool, best practice M&V protocol, and a planned collaboration with the Energy Trust of Oregon and Clark Public Utility to launch a Custom RTU Program.

WEPT - Web Enabled Programmable Thermostat – Whole building regression tool developed to estimate site-based WEPT savings and M&V using monthly billing data. A Webinar on the use of the tool is posted on YouTube at [http://www.youtube.com/watch?v=bs\\_NmmiwC3o](http://www.youtube.com/watch?v=bs_NmmiwC3o)

Energy Management – The EM Technical Advisory Group (TAG) was convened in 2011. Members recommended five technologies for further evaluation.

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**Project Start Date:** October 2007  
**Project End Date:** September 2015

### Funding

Total Project Budget: \$8,123,000  
 BPA Share: \$7,323,000  
 External Share: \$ 800,000  
 BPA FY2012 Budget: \$1,345,000

### Links

#### **BPA E3T page**

[http://www.bpa.gov/Energy/N/emerging\\_technology/index.cfm](http://www.bpa.gov/Energy/N/emerging_technology/index.cfm)

#### **BPA Project Map**

[http://www.bpa.gov/energy/n/emerging\\_technology/MapBPARegion.cfm](http://www.bpa.gov/energy/n/emerging_technology/MapBPARegion.cfm)

#### **EE Roadmap**

<http://www.bpa.gov/corporate/business/innovation>

### For More Information Contact:

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### Participating Organizations

- › NW Power and Conservation Council, Regional Technical Forum (RTF)
- › 92 BPA Customer Utilities
- › Northwest Energy Efficiency Alliance (NEEA)
- › Regional Energy Transportation Advisory Committee (RETAC)
- › Southern California Edison (SCE)
- › Electric Power Research Institute (EPRI)
- › NYSERDA
- › Sacramento Municipal Utility District (WMUD)
- › PECI
- › Cadmus
- › EMP2
- › EES
- › WSU Energy Program
- › Ecotope
- › ETO
- › NW Energy Efficiency Taskforce
- › Pacific Gas and Electric Co.
- › BC Hydro
- › UC Davis University of California
- › Pacific Northwest National Laboratory

### Reports and Publications

[Variable Capacity Heat Pump Measure Development Roadmap](#)

[Measure Summary Report: Variable Refrigerant Flow](#)

[Residential Heat Pump Water Heater Lab Testing Results Presentation to Regional Advisory Team](#)

[Residential Heat Pump Water Heater Interim Reports and Preliminary Assessments for AO Smith](#)

[Residential Heat Pump Water Heater Interim Reports and Preliminary Assessments for GE](#)

[Residential Heat Pump Water Heater Interim Reports and Preliminary Assessments for Rheem](#)

[Measure Summary Report: Web-Enabled Programmable Thermostats](#)

These reports and others are available at:

[http://www.bpa.gov/energy/n/emerging\\_technology/reports.cfm](http://www.bpa.gov/energy/n/emerging_technology/reports.cfm)