Welcome. Today’s webinar is being recorded and will be posted within days to:

- [www.E3Tnw.org](http://www.E3Tnw.org)
- [www.ConduitNW.org](http://www.ConduitNW.org)

If you have any questions during the presentation, please submit them to us through either the Chat or Q&A windows on your screen. We’ll go over these questions during the Q&A at the end of today’s session.

The webinar will begin momentarily. Thank you for attending!
Dive into E3TNW’s Emerging Technologies Database

Emerging Technologies Showcase
Karen Janowitz
Jack Zeiger

October 24, 2012
Sponsored by BPA’s E3T Program
E3TNW Website Overview

• E3T Background

• E3TNW Website
  • Database of Emerging Technologies
  • Technical Advisory Groups

• Navigating the website – search, browse and more

• Three ET descriptions
Energy Efficiency Emerging Technology (E3T) Program

Expand BPA’s portfolio of energy efficiency measures

- Identify
- Assess
- Prioritize
- Make recommendations

Emerging Technologies Database
Technical Advisory Groups
3 Basic Criteria

- Is the technology commercially available and new?
- Are the electric energy savings quantifiable and reliable?
- Does the technology work as intended?
Technology Information

- Description
- Synopsis
- Energy savings and dependencies
- Installed and O&M costs
- Effective life
- Cost effectiveness

- Standard practice
- Development status
- End user drawbacks
- Competing technologies
- Citations and additional information resources
E3Tnw Website Demonstration

At this point in the presentation, there is a live demonstration of how to navigate the E3TNW website. To view, please access the recorded webinar at

http://e3tnw.org/Webinars.aspx
Technical Advisory Groups in the E3T process

BPA Technology Innovation

BPA Energy Efficiency Emerging Technologies (E3T)

R&D Roadmapping

E3TNW database

TAGs

New Measure Documentation

Scan

Stage Gate

Screen

Stage Gate

Assess

Stage Gate

Programs
Technical Advisory Groups

Concluded TAGs

- Lighting - 2009
- HVAC - 2009 & 2010
- Energy Management 2011
- LED/SSL - 2012

Other Focus Areas

- Computer/Electronics
- Commercial Buildings
- Residential Buildings
- Industrial/Ag/Municipal
- Consumer Products
- Data Centers
- Integration
Technical Advisory Group Partners
## TAG Ranking Results - selection

### 2010 E3T HVAC TAG Weighted Ranking

<table>
<thead>
<tr>
<th>Title</th>
<th>high rating</th>
<th>avg points</th>
<th>low rating</th>
<th>total points</th>
<th>avg rank</th>
<th>tot rank</th>
<th># of &quot;5s&quot;</th>
<th># of &quot;0s&quot;</th>
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<tbody>
<tr>
<td>Variable Capacity Compressor in RTUs &amp; Data Centers - 6</td>
<td>5</td>
<td>4.2</td>
<td>3</td>
<td>50</td>
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<td>Premium Ventilation Package for Rooftop Units - 43</td>
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<td>3.7</td>
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<td>44</td>
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<td>Air-Side Economizers for Data Centers - 119</td>
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<td>3.6</td>
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<td>47</td>
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<td>Advanced Design Rooftop HVAC Unit - 246</td>
<td>4</td>
<td>3.5</td>
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<td>38</td>
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<td>Web-Based Small Commercial Thermostat - 247</td>
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<td>3.3</td>
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<td>39</td>
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<td>HRV vs. Exhaust Only - 20</td>
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<td>Heat Pump Water Heaters - 172</td>
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<td>36</td>
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<td>Use Lighting Occupancy Sensors for Offices to Control HVAC - 53</td>
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<td>Dedicated Outside Air System (DOAS)</td>
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<td>Heat-Pump Domestic Hot-Water Heaters with Air Conditioning - 40</td>
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E3T TAG Scoring Criteria

• Energy savings
• Non-energy benefits
• Technology readiness
• Ease of adoption
• Value
TAG Scoring

E3T 2012 LED TAG Scoring
May 4 - June 7, 2012

Scores expressed on a five-point scale

- Street Lighting
- Outdoor Wall-Mounted Area Luminaires
- Area and Parking Lot Lighting
- Linear Commercial Office Lighting

AVERAGE: 3.9, 3.9, 4.0, 3.8, 3.6, 3.6, 3.6
ENERGY SAVINGS: 3.5, 3.1, 2.9, 3.3, 3.2, 3.2, 2.5
NON-ENERGY: 3.9, 3.9, 4.0, 3.7, 3.6, 3.4, 2.9
READINESS: 4.2, 4.0, 4.1, 3.9, 3.3, 3.4, 2.9
ADOPTION EASE: 3.8, 3.7, 3.6, 3.2, 3.4, 3.2, 3.6
VALUE: 2.5
LED Street Lighting #78
Street lighting fixtures employing light-emitting diode (LED) technology

Summary

The TAG gave LED Street Lighting high marks on technical performance and availability. As with other LED technologies, the prices are still high but coming down. The biggest remaining barriers for street lighting center on programmatic changes, and particularly issues having to do with the fact that street lighting is seldom metered. Designing rate schedules that provide savings to the customers and provide load savings to BPA that remain relatively simple and do not require metering would go a long ways to making this technology viable for BPA programs. Other utilities are doing this successfully, so it would be worthwhile studying their models.

Since public safety is at stake and these products last for so long, it is also important for each jurisdiction to have competent technical advice on how best to light their streets efficiently while providing adequate safety and aesthetics.
A TAG Recommendation

LED Street Lighting #78
Street lighting fixtures employing light-emitting diode (LED) technology

Overall Score: 3.9

Research Recommendations

- Glare
  - Health impacts
  - High-wattage fixtures
- Longevity

Programmatic Recommendations

- Rate Structures
- Group Purchases
- Technical Support
- Incentive Structures
- Retrofit Kits
- Health Impacts
At this point in the presentation, there is a live demonstration of the TAG section of the E3TNW website, and technologies. To view, please access the recorded webinar at

http://e3tnw.org/Webinars.aspx
Questions?

Contact Jack Zeiger

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360-956-2092
Next Webinar

Emerging Technologies Showcase

- Variable Refrigerant Flow – VRF
- Wednesday, November 14, 2012
- 12:00 noon to 1:00 p.m. Pacific time

More information about emerging technologies:

E3T database: www.E3Tnw.org
E3T Program: www.bpa.gov/energy/n/emerging_technology/
Conduit: www.ConduitNW.org