







### M&V: Utility EE Programs

AEE NE Roundtable Discussion Cambridge, MA

April 8, 2014





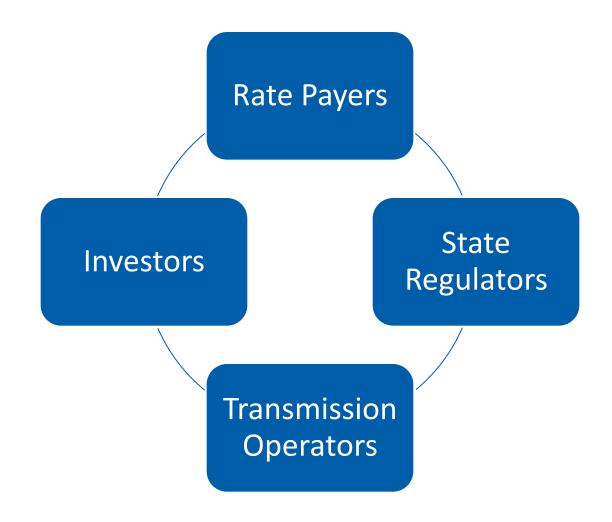








### **Utilities have Customers**













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## Each Customer has questions....

- Were program funds spent appropriately?
- How is resource consumption changing?
- How much of the change is attributable to program activities?
- What is the value of the change?
- What is the economic impact of program activity?
- How can these programs improve?













### Questions come in layers

**Economic Impact** 

**Portfolio Savings** 

**Program Attribution** 

**Program Savings** 

Site or Technology Savings



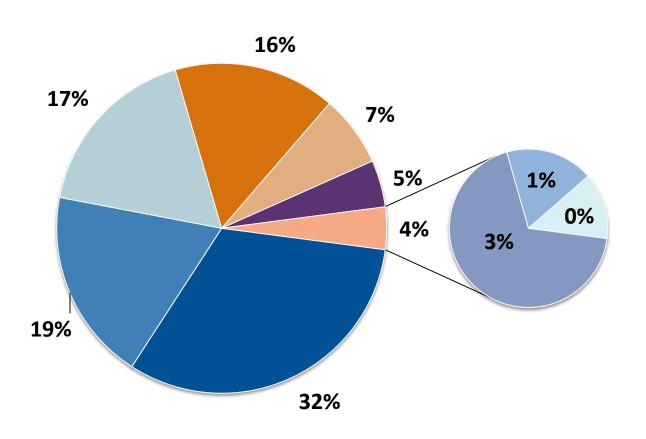








#### **Achieved Portfolio Savings**



- Large Commercial Retrofit
- ENERGY STAR ® Lighting
- Large Commercial New Construction
- Small Business Direct Install
- EnergyWise
- ENERGY STAR ® Appliances
- Income Eligible Services (IES)
- Electric HVAC
- Residential New Construction

#### **CADMUS**





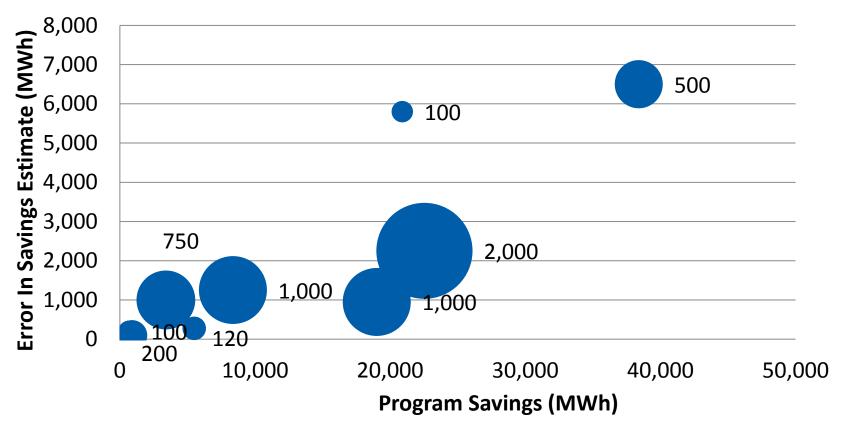






#### **Uncertainty of Savings**

(Bubble Size = Number of Unique Installations)















### EE Program M&V

- Manage Risks in the portfolio
  - Fraud
  - Equipment Removal
  - Database Errors
- Manage the Error of the savings estimate
  - Sample Design
  - Measurement Scope
  - Interval of Analysis











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### M&V Methods Spectrum

#### **Field** Metering & **Field Analysis** Verification • Temporary Meter **Phone** Installation Installation Nameplate Verification Consumption • Building Type over time Installation Occupancy Database Levels Characteristics Review Calculations













### **Contact Information**

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