Measuring the Performance of Lamps and Thermostat Collection Programs: What is Best Practice?

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Today's presentation

- Why measure performance? What constitutes best practice?
- Performance measurement requirements in thermostat laws
  - Maine and PSI approaches
- Performance measurement requirements in fluorescent lamps laws
  - MA's approach
- Reality check
- Conclusions

Why measure performance?

- Know if we are making a difference
- Motivate performance improvement
- Facilitate comparison and learning
- Demonstrate commitment to program outcomes
- Satisfy regulatory requirements

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Characteristics of Sound Performance Measures

- **Relevant:** Measure progress toward stated goals
- **High Quality:** Underlying data are credible and reliable
- **Easy to Use:** No huge investment of time and resources required
- **Transparent & Accessible:** Data and assumptions are available for public analysis and debate
- **Widely Accepted:** Enable comparison among programs
- **Adaptable:** Can be updated as more is learned

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Key Performance Metric: Collection Rate

- Refers to: Amount Collected/Amount Available for Collection
- Measures program effectiveness in capturing products that can harm environment and health
- Metric of greatest relevance for products containing mercury and other toxics

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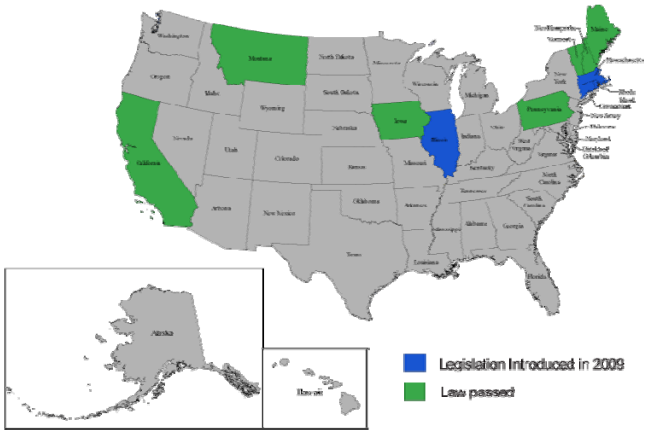
EPR Laws and Legislation for Thermostats



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	Performance Goals?	Incentives?	Performance Measurement & Reporting?
ME	By statute: 160 lbs Hg by 11/1/2009	$5	"Actual collection rates"
VT	By statute: 65% by 7/1/2011	$5	Agency to estimate # of out-of-service thermostats by 7/1/2010
CA	By agency	--	Agency to specify collection rate methodology by 1/1/2012
IA	By agency	--	"Actual collection rates"
MT	--	--	--
NH	By agency	--	Agency to report # of thermostats that go out of service
PA	By agency	--	"Actual collection rates"

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Maine Thermostat Program

- Maine program has $5 incentive, paid by the manufacturers. Incentive payments are a disincentive to industry to make program successful.
- Performance goals are therefore critical because expectations and potential consequences are clear. Without performance goals industry would have little pressure to improve program. Performance goals counteract disincentives.

Calculating What's Out There:

Maine's Approach

- Determine # of residential and commercial buildings (based on US Census or utilities info)
  - ❑ Assume every building has a minimum of 1 thermostat
  - ❑ Assume all thermostats have a minimum of 3 grams Hg
  - ❑ **Variable:** Thermostat life span
    - o 30 years is conservative; TRC states typical life span is more like 15-18 years
  - ❑ **Variable:** % of thermostats that contain Hg
    - o Evidence from ME is 70-80%

- US Census # qualified buildings (homes + businesses minus mobiles, etc.) = 669,211.
- Assume each building has 1 t-stat with 3 grams Hg

  (669,211 x 3 grams)/454 grams = 4422 lbs.
- Assume that 80%, 70%, and 60% of thermostats coming out of service contain mercury

  80% = 3538 lbs.; 70% = 3095 lbs.; 60% = 2653 lbs.

- Let's say in Maine, 60% of buildings have 1 mercury thermostat with 3 grams of mercury and a lifespan is 20 years.
- 2653 lbs/20 years = 132 lbs coming off walls each year (about 20,000 mercury thermostats)

These are extremely conservative minimums

ME is about to do a study to nail the #s down

Calculating What's Out There:

PSI's approach

- Determine # of thermostats sold for replacement
  - ❑# sold for replacement = # coming out of service
  - ❑Avoids having to make assumptions about thermostat life spans
- Estimate % coming out of service that contain mercury

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- Frost & Sullivan (2003) report that in the US, about 10,200,000 thermostats were sold for replacement in 2002
- To estimate sales for replacement in a particular state, multiply by that state's % of the US population
- Survey contractors to determine % coming out of service that contain mercury
- ME and PSI approaches yield similar results

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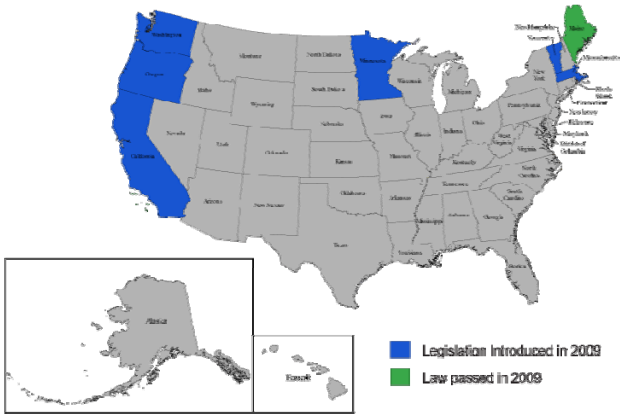
EPR Laws and Legislations for Lamps



Performance Metrics in Lamps Laws

- ME law requires manufacturers to report recycling rate and methodology
- MA Mercury Management Act requires agency to determine lamp recycling rate and estimate targets:
  - 30% by 12/31/08
  - 40% by 12/31/09
  - 50% by 12/31/10
  - 70% by 12/31/11

- MA, CA, EC, Stewardship Ontario, and recyclers all measure performance by comparing lamps collected to lamps available for collection based on historic lamps sales data
- Assume different life spans for different lamp types
- MA compared NEMA sales data to other sources; NEMA revised data
- MA methodology open for comment until 12/17/2009

Reality Check

- Goal of ME's mercury thermostat law is to collect 160 lbs. by 11/09
- Reality =
  - Collected 22 lbs. in 2006
  - Collected 44 lbs. in 2007
  - Collected 47 lbs. in 2008
- TRC reports collecting 135,604 mercury thermostats in 2008, about 1% of the number of thermostats sold for replacement
- Lamps collection rate in MA was 34% in 2008, compared to 30% goal

Conclusions

- Collection rates tell us whether programs are working or need to be strengthened
- Increasingly, states are choosing collection rates as the basis for measuring performance
- Straightforward methods are available now to calculate collection rates of mercury products
- Collection efforts are falling short of goals
- To improve results, legislation should include performance goals based on collection rates as well as performance incentives

For More Information Contact…

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Per capita collection rates

- A simple way to gauge a state's collection performance relative to others
- Maine: 1,316,000 people/6731 thermostats = 195/capita
- Vermont: 621,270 people/1367 thermostats = 454/capita

In 2008, ME and VT had 1st and 3rd highest per capita collection rates in US and only two with $5 incentive programs. See available state rankings sheet.