



Three Approaches to Assessing the Performance of Mercury Thermostat Collection Programs

	Recycling Rate Approach	Stretch Goal Approach	Collections-Based Approach
Definition	<i>A recycling rate compares the number of mercury thermostats collected to the number available for recycling. Using this approach, program managers can answer the questions: How well is the program working, given the scope of the problem? Is the program capturing sufficient quantities of mercury thermostats to reduce risk to acceptable levels?</i>	<i>A stretch goal approach compares the number of thermostats collected in a particular program to the number collected in best-in-class programs. Using this approach, program managers can answer: How well is the program working compared to the best programs?</i>	<i>A collections-based approach uses information about the characteristics of the recycling program, such as the number of collection locations in a state and the percentage increase in collections relative to a base year. Using this approach, program managers can answer: Is the program convenient to use, and how well is it working compared to previous years?</i>
Ambitiousness	Programs that assess performance based on recycling rates tend to set ambitious goals. For example, Iowa has set a 50% recovery goal for 2009, or 28,800 thermostats, and Vermont has set a 65% recovery goal by 2010.	Goals are based on performance achieved by the most successful programs. One metric, for example, might be the number of thermostats collected per capita in states or counties with the greatest number of collections.	TRC collected 114,158 mercury thermostats in 2007, about 5% of total discarded. (Total discarded is based on the report “Mercury Usage and Alternatives in the Electrical and Electronics Industries,” EPA, 1994).
Locus of Responsibility	Manufacturers’ responsibility includes collection and appropriate disposal of mercury that could be released into the environment through their products.	Manufacturers are responsible for putting into place the best possible recycling programs.	Manufacturers are responsible for offering a credible recycling program. They are not responsible for controlling the behavior of consumers or contractors, upon whom they depend to return thermostats.
Data	To calculate a recycling rate, two types of data are necessary: (1) number of thermostats collected for recycling (numerator) (2) number available for recycling (denominator) The number of thermostats collected is available, by state, from TRC. The number of thermostats available for recycling can be estimated using one of the following approaches, or a combination thereof:	Managers need information about the performance of their own collection programs as well as the performance of highly successful programs in other areas that may be similar in terms of building characteristics.	Managers need only consider information about program characteristics, which TRC has at hand.

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Four Methods for Calculating the Number of Mercury Thermostats Available for Recycling

1. Through careful analysis of the relationship between building characteristics (age, size, heat source, predominant use) and the presence of mercury thermostats, King Co. (WA) has developed a mathematical model that could be adapted for others' use. States could input information about local building characteristics available from county assessor, permit office, or other local databases with available building information. Using the King Co. model and localized data, states could estimate the number of mercury thermostats available for recycling in each county.
2. The U.S. Census provides data on the number of homes and businesses in each state. Most homes and businesses contain at least one thermostat. (Maine and Iowa assume 1.5 thermostats for each home and 1.25 thermostats for each business.) EPA estimates that 83% of thermostats in use are mercury-based. After determining the average lifespan of a mercury thermostat (15-30 years), the number available for recycling each year can be calculated.
3. The U.S. Census provides data on the number of housing units constructed in each state. When contractors build new homes and businesses, they generally install one thermostat for every 1000 square feet of construction. The average lifespan of a mercury thermostat is 20 years. Assuming that virtually all thermostats installed prior to 1985 used mercury, and that non-mercury thermostats entered the new construction market at 5% in 1985 and gained 1% market share each year thereafter, the number available for recycling each year can be calculated. (The methodology is described in the report: EPA, 1992. "Characterization of Products Containing Mercury in Municipal Solid Waste in the United States, 1970 to 2000.")
4. Manufacturers collect data on the number of thermostats they produce and sell each year and could provide those data to states. Alternatively, information is available for a fee from market research firms such as Frost & Sullivan. Information about the number of thermostats sold for replacement may also be available.