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Alternative Energy Savings Goals in Michigan: Promoting Longer Term Savings

ACEEE Energy Efficiency as a Resource Conference, 2013

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Prepared for:
Michigan Public Service Commission

Funded by:
National Association of Regulatory Utility Commissioners

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Agenda

Interaction between Savings Goals and Longevity of Savings

- Conceptual review of the issue
- Analysis of Program & Measure-Level Data
- Options for Alternative Ways to Express Energy Savings Goals
- Recommended Solution

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Savings Goals Structure and Measure Life – How They Interact

- In MI and many other jurisdictions, goals are expressed in terms of first year savings. This fails to recognize or reward the full value of savings based on longevity
- Utilities are encouraged to maximize first year savings rather than lifetime savings or value over the entire life of the measure, given other resource constraints
- Hypothetical Example:

	Savings/ Year	**Measure Life**	**Cost**	**Cost/unit of 1st year savings**	**Cost/unit of lifetime savings**
Measure 1	20 therms	1	$10	$0.50	$0.50
Measure 2	100 therms	20	$200	$2.00	$0.10

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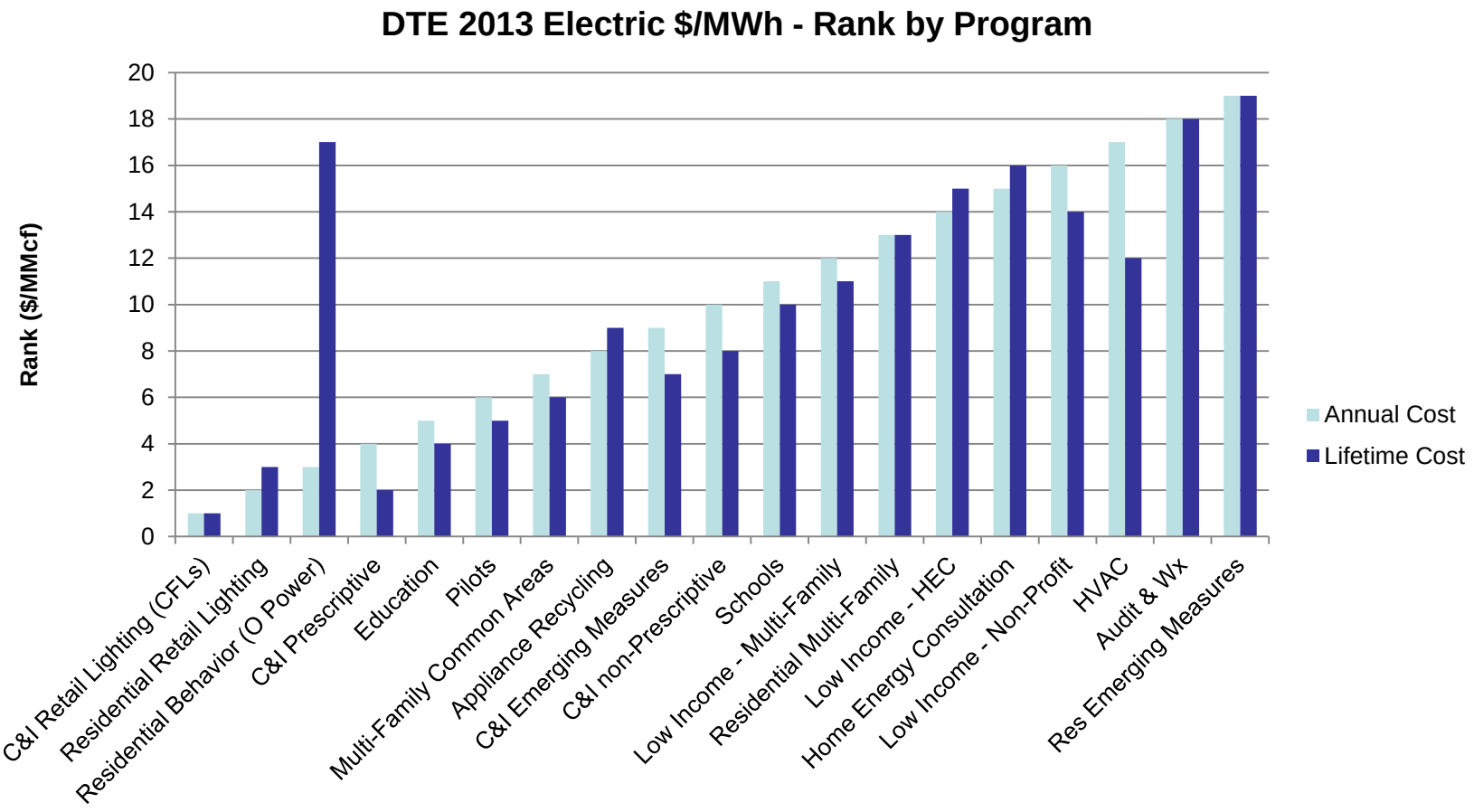
2013 Program Forecast — DTE Electric



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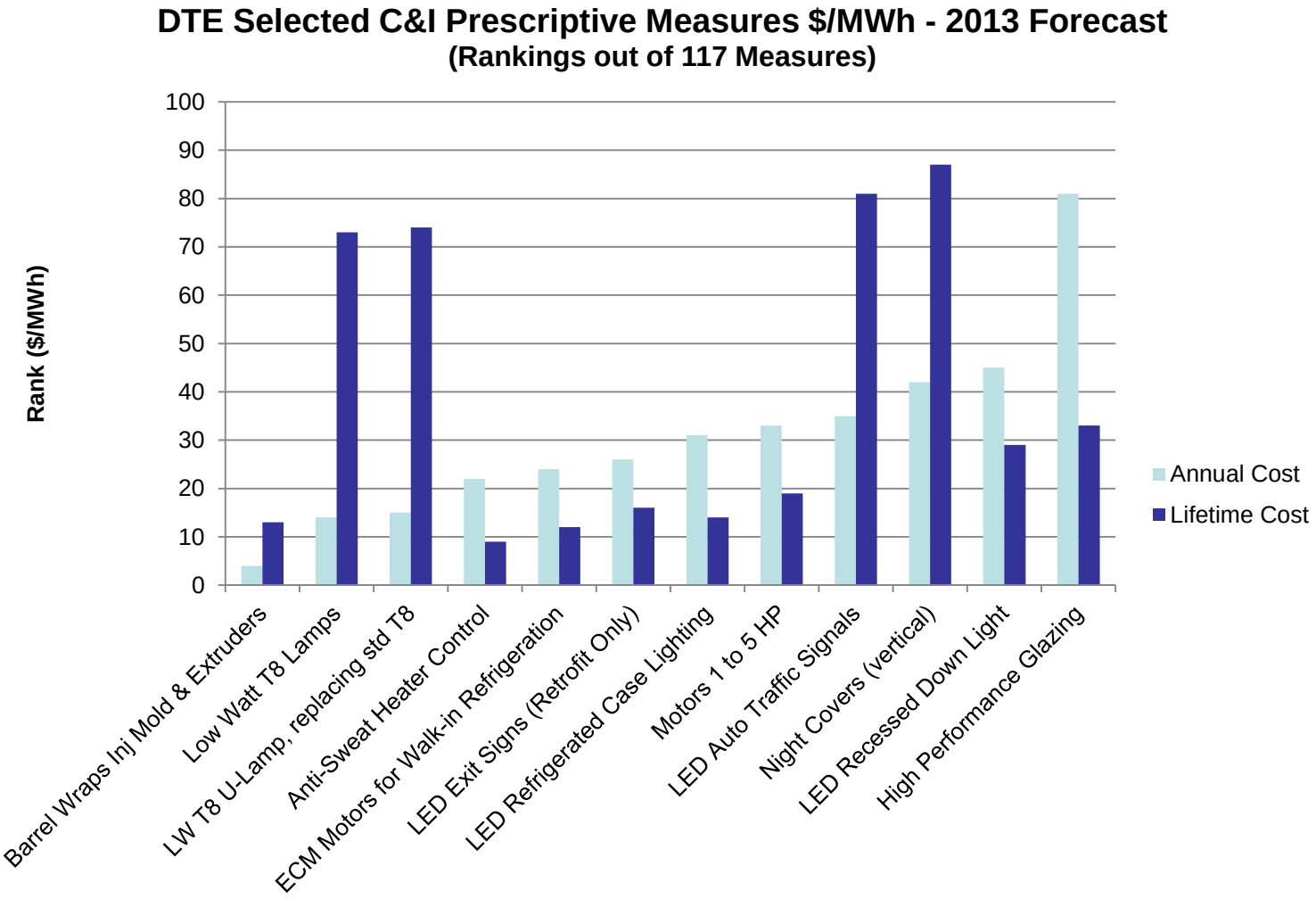
Measure-Level Analysis – DTE 2013 C&I Prescriptive Program



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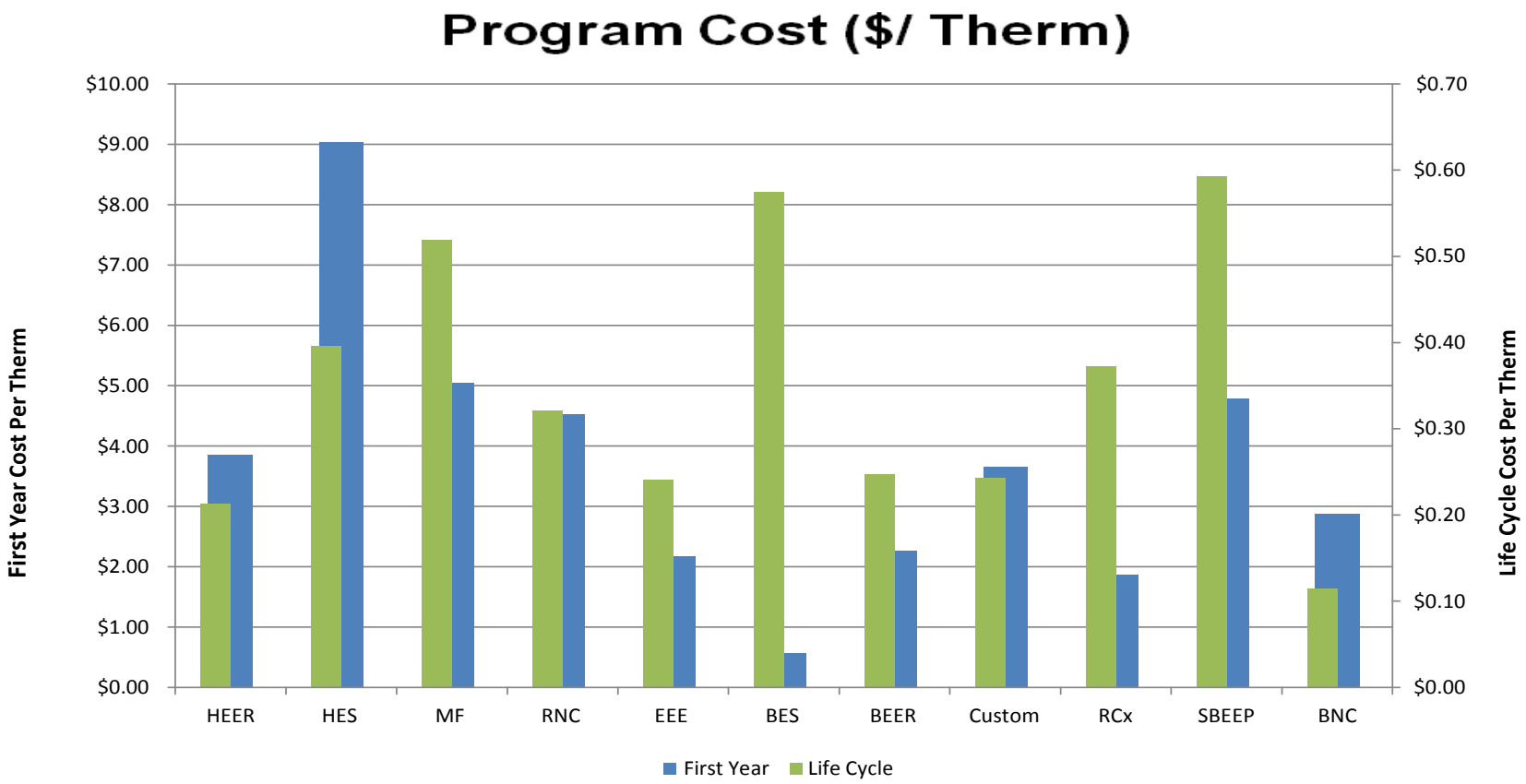
Midwest Gas Utility Comparison of First Year vs. Lifetime Costs



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Data Analysis — Conclusions

- 2013 program portfolios include some programs whose value would change significantly with focus on $/lifetime savings
- Program rankings obscure other issues:
  - Rankings of measures within programs can change a lot
  - MEMD (MI TRM) measure life assumptions seem problematic in some cases
    - 9 years for CFLs
    - Apparent historic cap of 20 years on other measures (e.g. insulation)
- Modifying current goal structure to focus on lifetime savings rather than 1st year savings is warranted.
  - Would align administrator incentives with long term benefits of efficiency when structuring EE portfolios

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Alternative Energy Savings Goal Options

1. Annual Lifetime Savings
2. Discounted Annual Lifetime Savings
3. Net Present Value of Net Benefits
4. Cumulative Annual Savings Over Multi-Year Period
5. 1st Year Savings Goals with Short-Lived Measure Limits
6. 1st Year Savings Goals with Bonuses/Penalties for Short/Long-Lived Measures
7. 1st Year Savings Goals with Average Measure Life Adjustment Factor

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Annual Lifetime Savings w/ or w/o Discounting

- Goals set based on lifetime savings achieved each year.
- PA performance measured relative to the total savings they produce over the life of the efficiency measures installed.
- Primary metric in WI and Ontario (gas only) undiscounted

- Hypothetical:
  - If a furnace saves 100 therms of gas per year for 20 years, then the lifetime savings for that measure installation in a given year would be 2000 therms.

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Annual Lifetime Savings w/ or w/o Discounting

- Advantages:
  - Conceptually easy to explain and understand
  - Preserves annual goal construct, allows for annual “report card” and cost recovery/performance incentives
  - Simple to calculate using data that utilities already routinely collect and evaluate
  - Values all of the savings that efficiency measures will produce over their lives consistently
  - Preserves utility flexibility in being able to choose a balanced portfolio that can support short-lived measures as well, so long as they have a plan that meets the overall target
- Disadvantages:
  - Undiscounted would treat all future savings equally
  - Discounting *may* better reflect future value, but not necessarily depending on avoided costs. Also reduces transparency and, if DR changes, consistency with other planning and forecasting functions
  - Harder to put goals in context (e.g. relative to annual sales)

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Net Present Value of Net or Gross Benefits

- Goals expressed in terms of NPV net or gross benefits rather than physical units of energy
- Short and long-lived measures are valued consistently in proportion to the lifetime benefits that they provide to the economy
- In theory, focuses utilities on maximizing net benefits (or gross benefits with a given budget constraint) which is primary goal of DSM
- Several jurisdictions in New England have this as one of several performance metrics (for shareholder incentives)

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Net Present Value of Net Benefits

- Advantages:
  - Adjusts for the life of the savings, as well as the value to the system of savings in different years, the value of savings during different seasons and times of day, the time value of future savings, and for the cost of acquiring the savings
  - Sends a single clear signal with a single metric of dollars that can be used for combined electric and gas goals, where appropriate.
- Disadvantages
  - Potential for disagreements over calculation of benefits, avoided costs, load shapes, measure costs, etc.
  - More burdensome to track
  - Setting goals requires more extensive analysis and potentially deeming of values, and reduces transparency
  - As input parameters change, potentially reduces annual comparability and value of reporting for planning and forecasting

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Cumulative Annual Savings over Multi-Year Period

- Utility performance measured relative to the total annual savings that are still being realized in the final year of a multi-year period
- Metric of European Union's recent Energy Efficiency Directive

- Hypotheticals:
  - For efficient furnace that produced 100 therms of savings for 20 years in each of the five years of a program (1 furnance/year, five furnaces total), cumulative annual savings in year 5 would be 500 therms (all savings still existing in year 5).
  - For a behavioral program that produced 10 therms of savings that lasted only one year, cumulative annual savings after five years of implementation would still only be 10 therms (only new year 5 savings still exist)

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Cumulative Annual Savings over Multi-Year Period

- Advantages
  - Focuses utilities on actual cumulative impacts of DSM on loads at end of planning period, rather than annual accounting
  - Inherently puts a value to PAs on longer lived measures
- Disadvantages
  - Metric creates a binary value to savings – either they still exist in end year or not.
  - Does not distinguish between the value of measures with moderate lives and the value of those with long or very long lives
  - Creates perverse incentives at beginning and end of the period (e.g., a 1 year measure life has no value until last year of a period, and then becomes as valuable as a 30 year measure)
  - Constrains ability for annual accounting, cost recovery and performance incentives

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First Year Savings Goals with Short-Lived Measure Limits or Bonus/Penalties based on Longevity

- Limits:
  - A cap or limit placed on the share of savings allowable from short lived measures that can be counted towards the first year savings target.
  - Can be done with explicit bans, or a required overall average measure life minimum.
  - Used in several European countries
- Bonus/Penalty:
  - Provides bonuses for long-lived measures and/or penalties for short-lived measures.
  - Used in Denmark

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First Year Savings Goals with Measure Limits or Bonus/Penalty

- Advantages
  - Curbs incentives for excessive promotion of inexpensive and very short-lived savings
  - Preserves annual goal setting construct
- Disadvantages
  - It is a blunt instrument depending on number of cut-points: i.e. with a limit of 5 years no distinction is made between measures with lives of 6 or 7 years and measures with lives of 20 or 30 years
  - Doesn't distinguish between the relative cost-effectiveness and value of different efficiency measures (bonus/penalty could but only if a continuum of cut-points which add complexity).
  - Reduces administrator flexibility and could result in suboptimal outcomes.

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First Year Savings Goals with Average Measure Life Adjustment Factor

- Establish an average measure life expectation and related total savings adjustment factor that is applied at the portfolio level, along with the 1st year savings target.
- No known examples.
- Hypothetical:
  - A utility with a first year savings goal of 100,000 MWh with an average life of 10 years achieved only 90,000 but with an average life of 12 years.
  - The savings achieved would be given a 20% bonus (i.e. a multiplier of 12 divided by the expected 10) and the goal would have been exceeded (108,000 MWh after adjustment).

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First Year Savings Goals with Average Measure Life Adjustment Factor

- Advantages:
  - Scalable nature provides the right level of incentive to all efficiency measures regardless of their useful life
  - Retains the communication advantages of a 1st year savings goal while preserving existing annual goals and reconciliation construct
  - Preserves utility flexibility to weigh lifetime savings with other objectives and focus on the overall mix of resources that optimizes the portfolio
- Disadvantages
  - We do not see any major disadvantages
  - Does require negotiating two parameters—savings goals and base portfolio measure life

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Thank You

Questions?

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