Synapse
Energy Economics, Inc.

A Regulator's Perspective on Energy Efficiency

Efficiency Maine Symposium

In Pursuit of Maine's Least-Cost Energy

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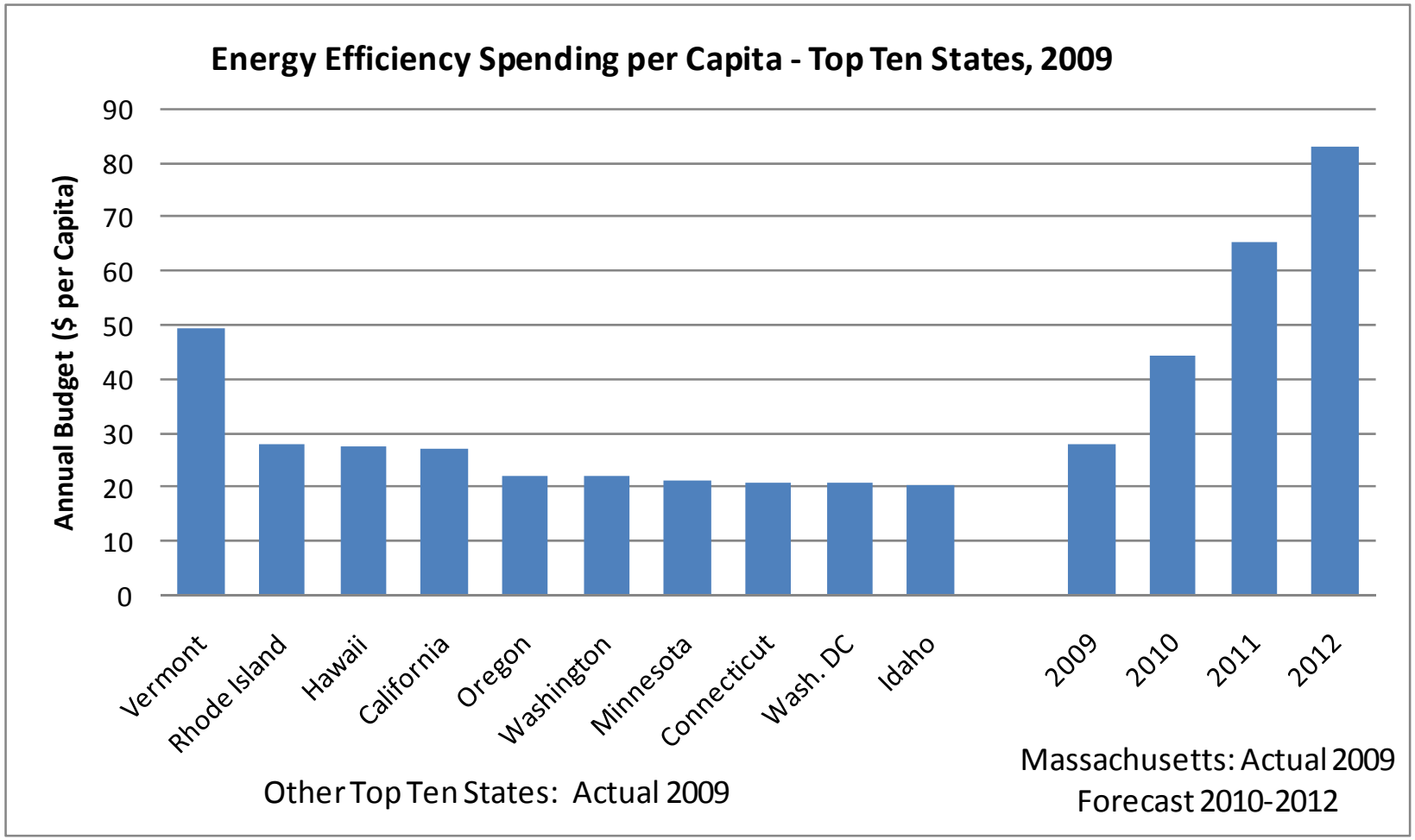
Background on Energy Efficiency in MA

- Since the late 1980s the MA Department of Public Utilities has been consistently supportive of efficiency.
- In 2008 the Green Communities Act:
  - Required program administrators to achieve all cost-effective EE.
  - Required statewide, three-year EE plans.
  - Established the Energy Efficiency Advisory Council to oversee the planning process.
- In October 2009 the Program Administrators filed the first three-year plan.
- In January 2010 the DPU approved the plan.

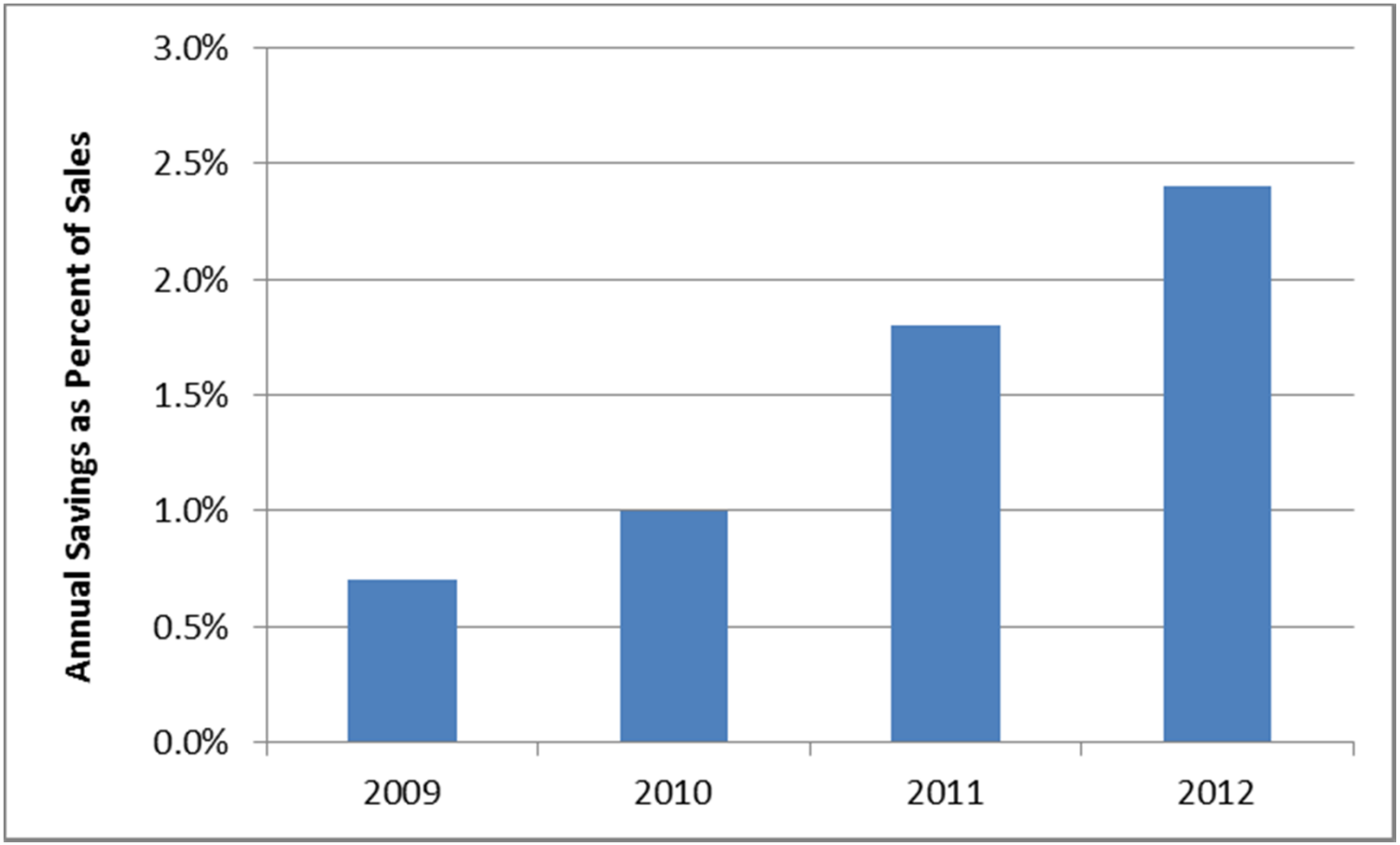
Three-Year Plan 2010-2012

- Continued and expanded well-established energy efficiency programs.
- Dramatically expanded the budget:
  - $294 mil (2010); $431 mil (2011); $547 mil (2012).
  - Budgets higher than other states (see slide 4).
- Savings targets:
  - Savings targets tripled relative to 2009 (see slide 5).
- Included a reconciling charge to allow program administrators to recover all costs.
- Updated the shareholder performance incentive.

MA Three-Year Plan Budgets Relative to Others



Three-Year Plan Savings Targets



The DPU's Role in Reviewing the EE Plans

- Ensure that programs are cost-effective.
- Approve proposed budget levels.
- Approve reconciling charge to cover budgets.
- Consider rate impacts associated with the EE charges.
  - In light of the benefits.
- Review proposals for shareholder incentives.
- Resolve any conflicts that remained among the parties of the Energy Efficiency Advisory Council, or others.
  - There were few.

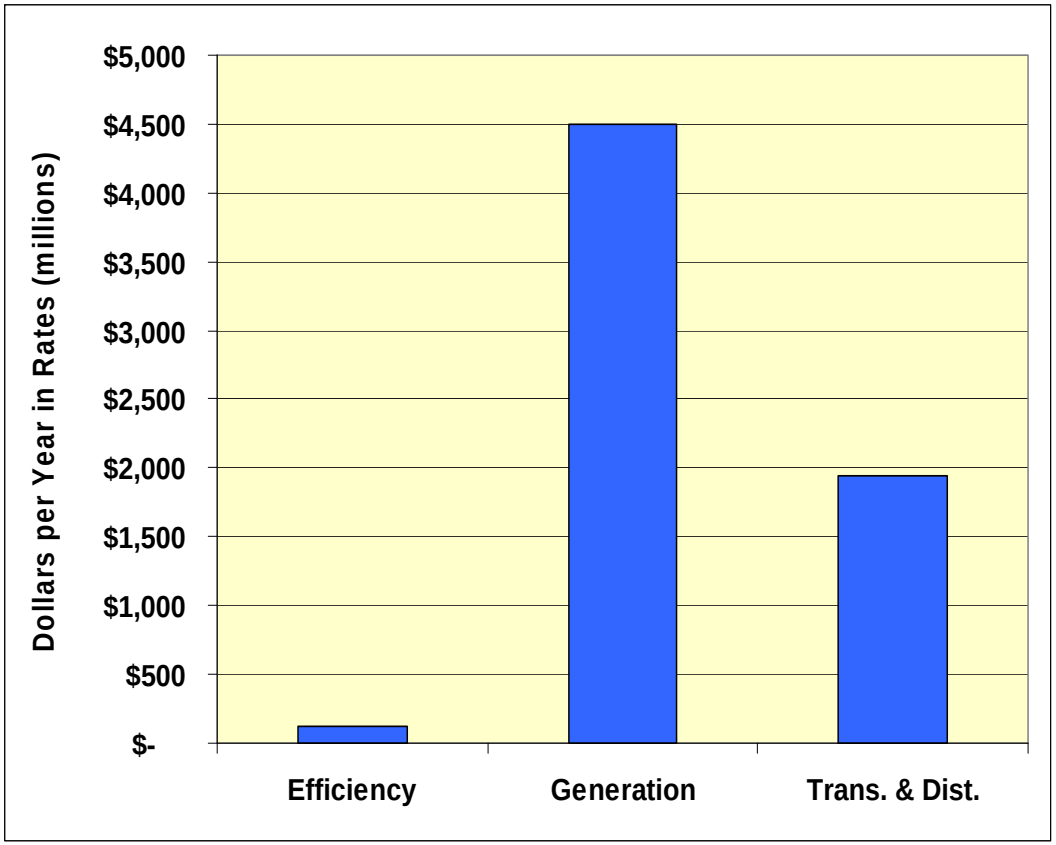
MA DPU Perspective on Energy Efficiency

- MA DPU has historically recognized the value of energy efficiency in reducing electric and gas costs.
- Historic expenditures on EE were capped by legislation and were relatively small (see slide 8).
- After restructuring the DPU has much less opportunity to reduce customer costs (see slide 9).
  - EE offers the best way to lower customer costs/bills.
- Energy efficiency should be viewed as an alternative to other resources (generation, transmission, distribution).
- Energy efficiency programs must be demonstrated to be cost-effective, and must be backed up with M&V.

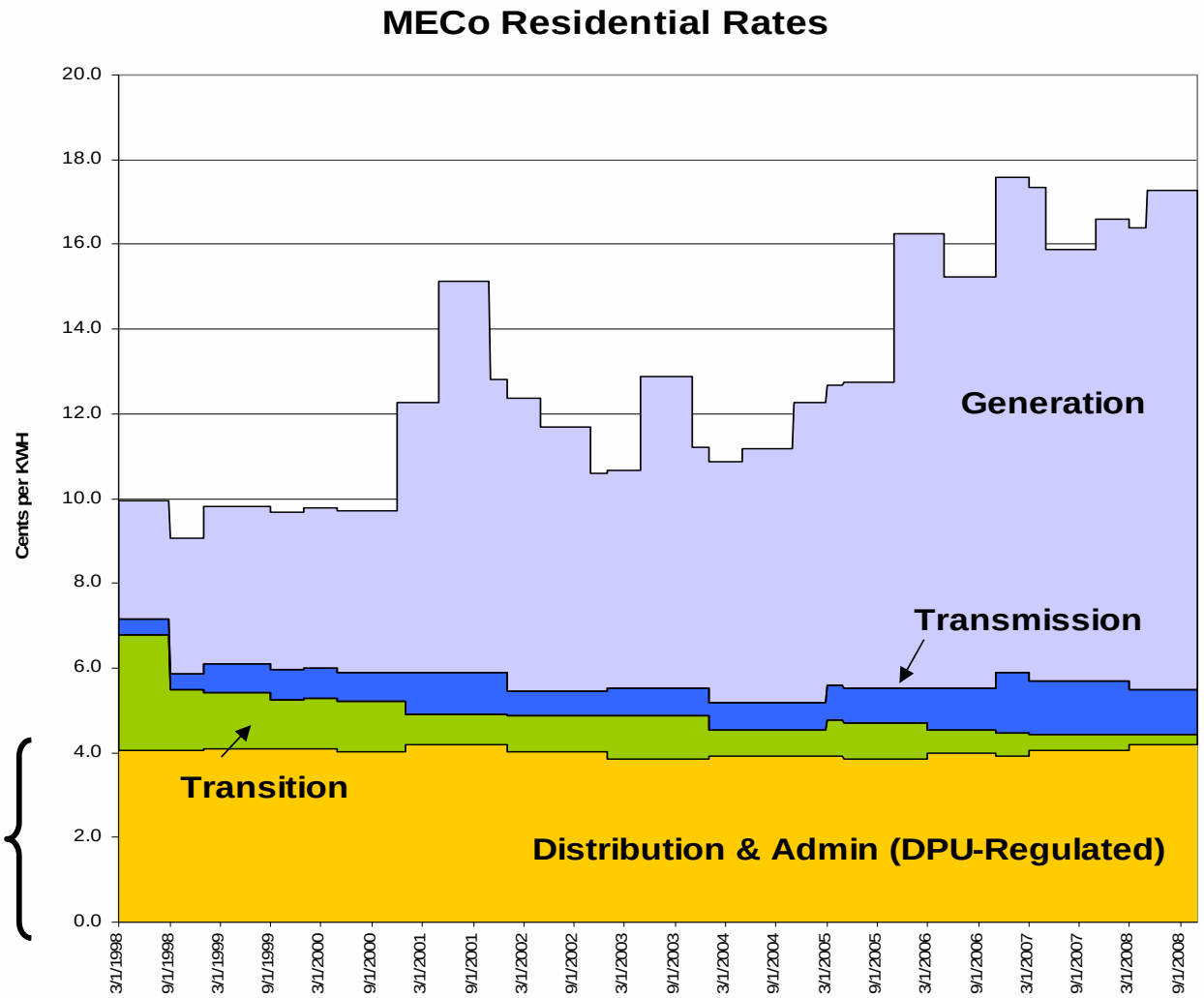
Electricity Expenditures in Massachusetts

Electric energy efficiency budgets in MA were historically capped at roughly $125 million per year.

Meanwhile, we were spending roughly $4.5 billion per year on generation, and nearly $2 billion per year on transmission and distribution.



Components of a Typical Residential Bill



41% of total

24% of total

DPU Findings on Three-Year Efficiency Plans

- The programs were found to be cost-effective.
- The budget goals were deemed appropriate.
- The reconciling EE charge was approved.
- The shareholder incentive mechanism was approved;
  - After several modifications required by the DPU.
- The rate impacts were found to be “well within the range of what we consider to be reasonable.”
  - Given the benefits associated with the programs.

Factors to Consider Regarding Rate Impacts

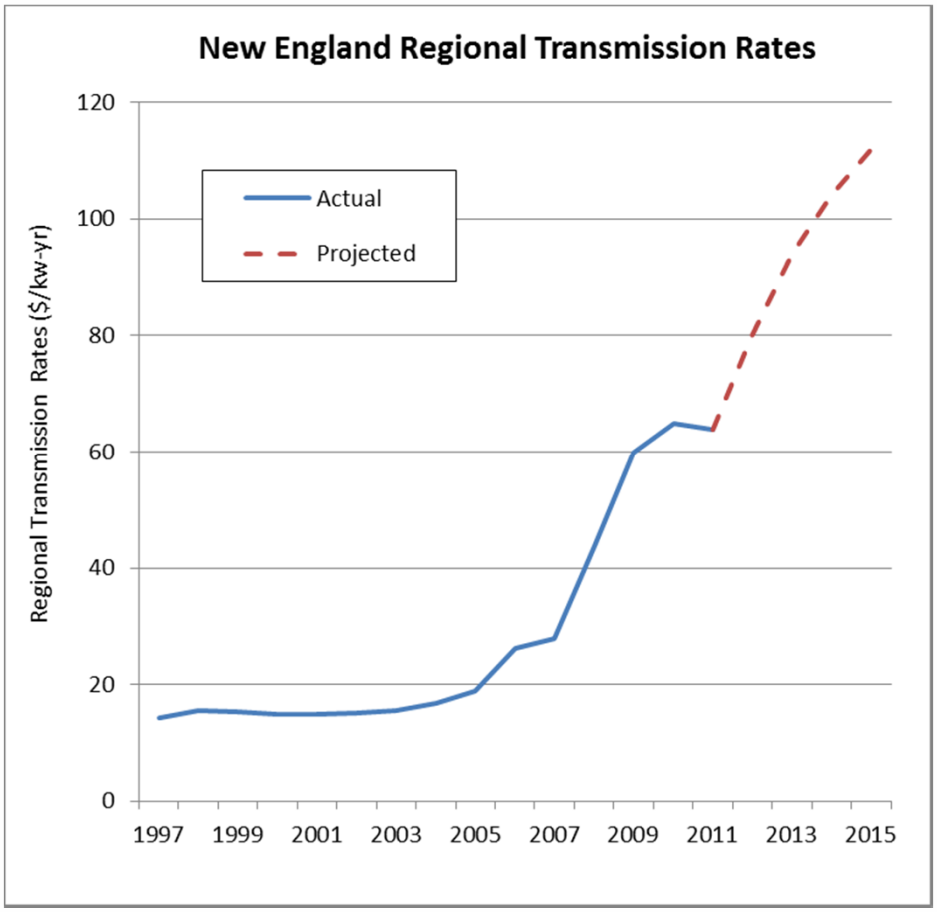
- Rate impacts considered in light of benefits.
- Must account for long-term impacts as well as short.
- Rates increase slightly, but bills are reduced significantly.
- All customers, including non-participants, experience some benefits from EE (see slides 12, 13 and 14).
- Program participants experience more benefits than non-participants.
  - Therefore, rate impacts are an equity issue.
- Utilities frequently invest in resources that provide more benefits to some customers (e.g., new distribution circuits, new transmission lines, new generation.)

Benefits of EE that Flow to All Customers - I

- EE will reduce the price of the wholesale energy and capacity markets in New England.
  - Lower peak and energy demands means that marginal supply-side resources are dispatched less.
  - This results in a lower market clearing price.
- This benefit flows to all customers in New England, regardless of whether they participate in EE programs.
- The MA Three-Year Plans were estimated to save over $700 million for all MA customers.
  - This is in addition to the bill savings to participants.

Benefits of EE that Flow to All Customers - II

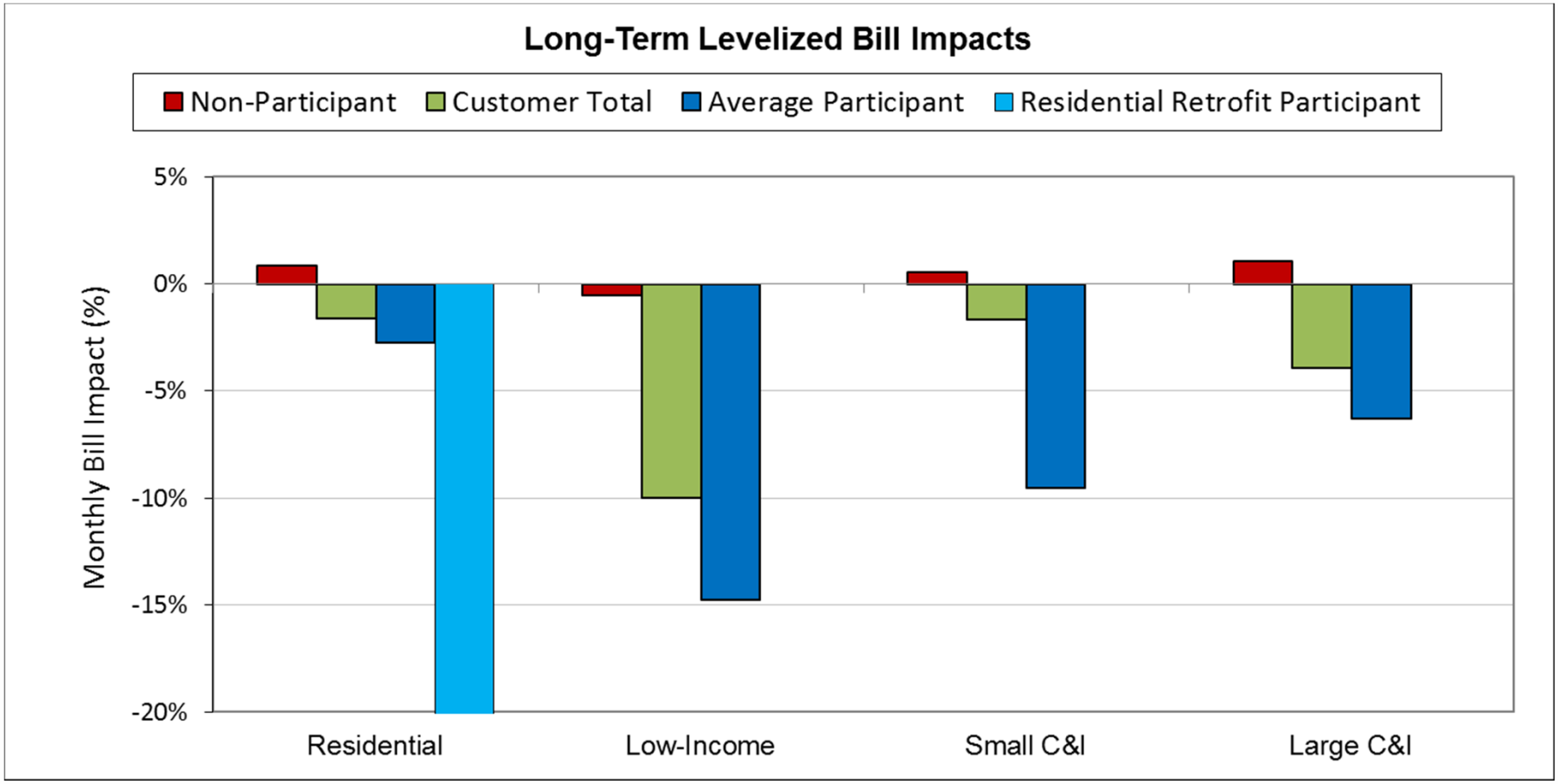
- Energy efficiency will avoid costs of transmission and distribution lines.
- MA Three-Year Plans were estimated to save roughly $423 million in avoided T&D costs.
  - This is in addition to the bill savings to participants.
- Transmission costs in New England are expected to increase dramatically.



Benefits of EE that Flow to All Customers - III

- Increased system reliability.
- Reduced risk and exposure to volatile fossil fuel prices.
- Reduced consumption of fossil fuels.
- Reduced reliance upon imported fuels.
- Reduced environmental impacts, including reduced greenhouse gases.
  - This helps to reduce costs associated with environmental regulations.

Rate and Bill Impacts of the MA EE Plans



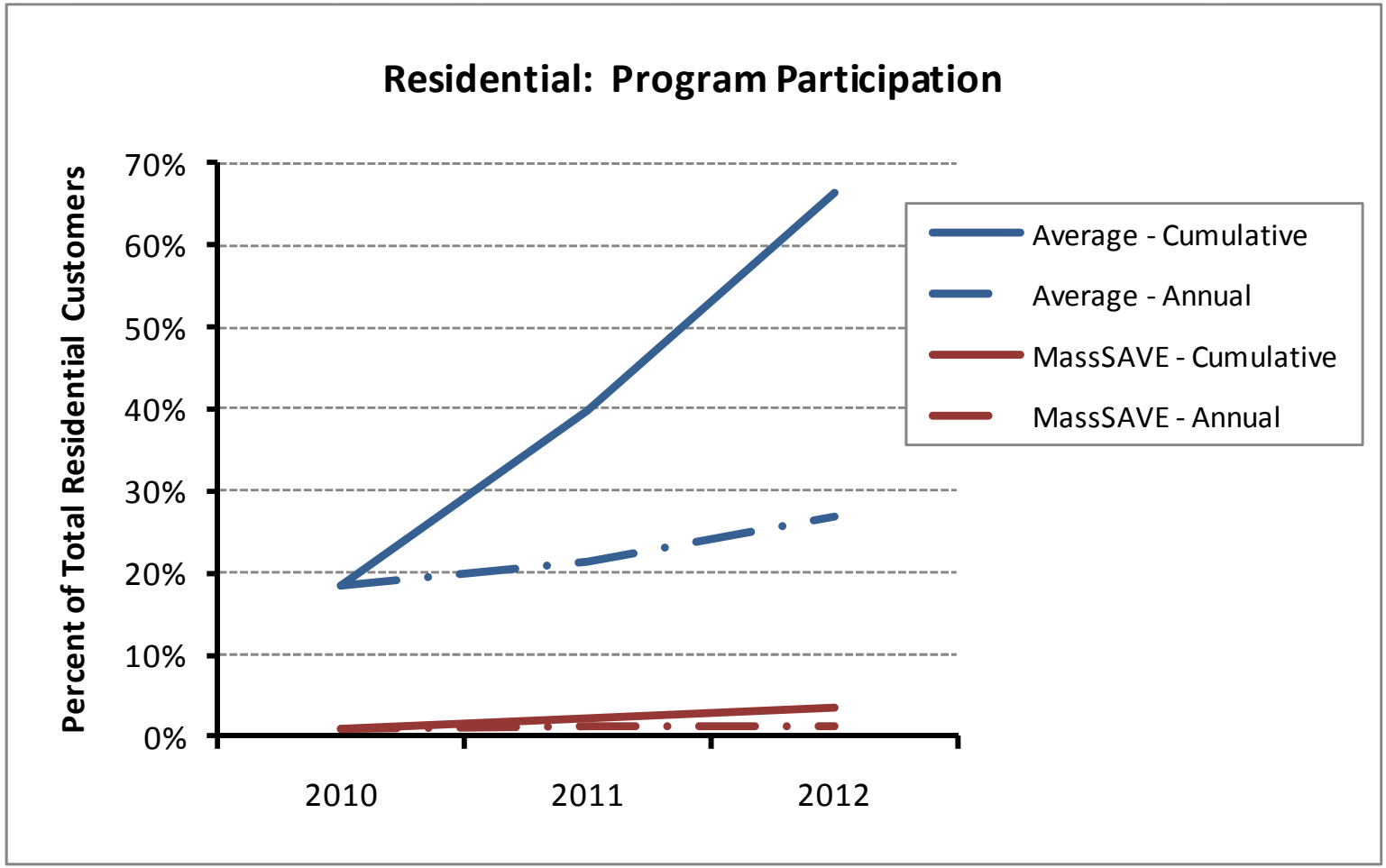
The Importance of Considering Participants

- In general, customers that participate in EE programs will see their bills reduced, despite any rate increases.
- Small rate increases from EE are easily outweighed by the potential bill savings:
  - For a typical residential customer, installing only five CFLs would reduce bills by over 3%.
  - For a Residential customer, participating in EE retrofit programs can reduce bills by 10% - 30% or more.
  - For a C&I customer, participating in EE retrofit programs can reduce bills by 20% - 40% or more.

Participation in MA Three-Year Plans

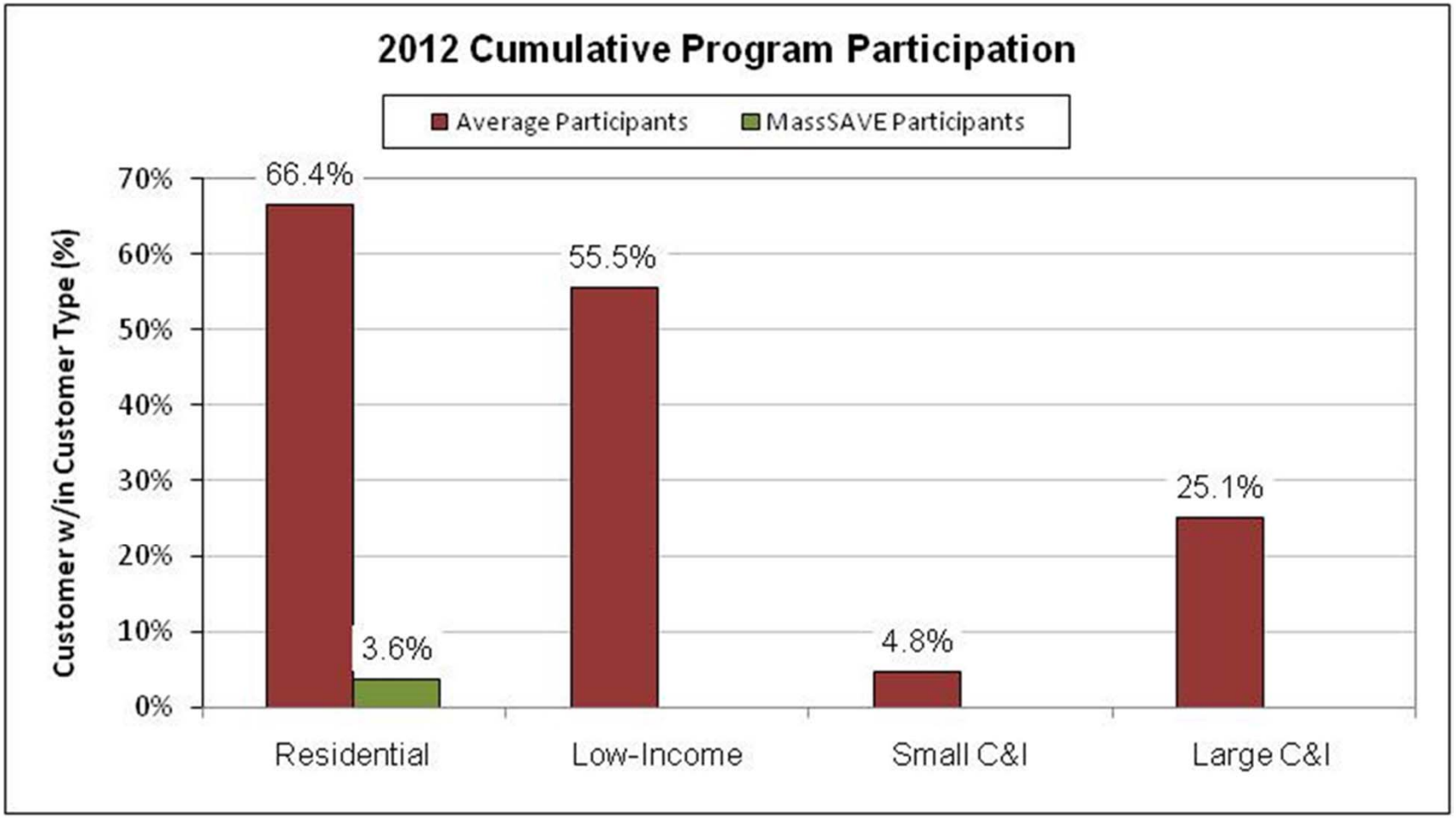
- Initial analyses indicate that a significant portion of MA electricity customers will participate in the 2010-2012 efficiency programs (see slides 18 & 19).
  - Note these numbers are illustrative only.
  - The residential rates are overstated due to double-counting.
- A large portion of residential customers participate.
  - A much smaller portion participates in the retrofits.
- Small C&I participation rates are much lower due to the large number of small C&I customers.
  - But some Small C&I customers are included in the residential numbers.

Participation Rates in MA Three-Year Plans - I



Caveat: These are approximations and may include some customers more than once.

Participation Rates in MA Three-Year Plans - II

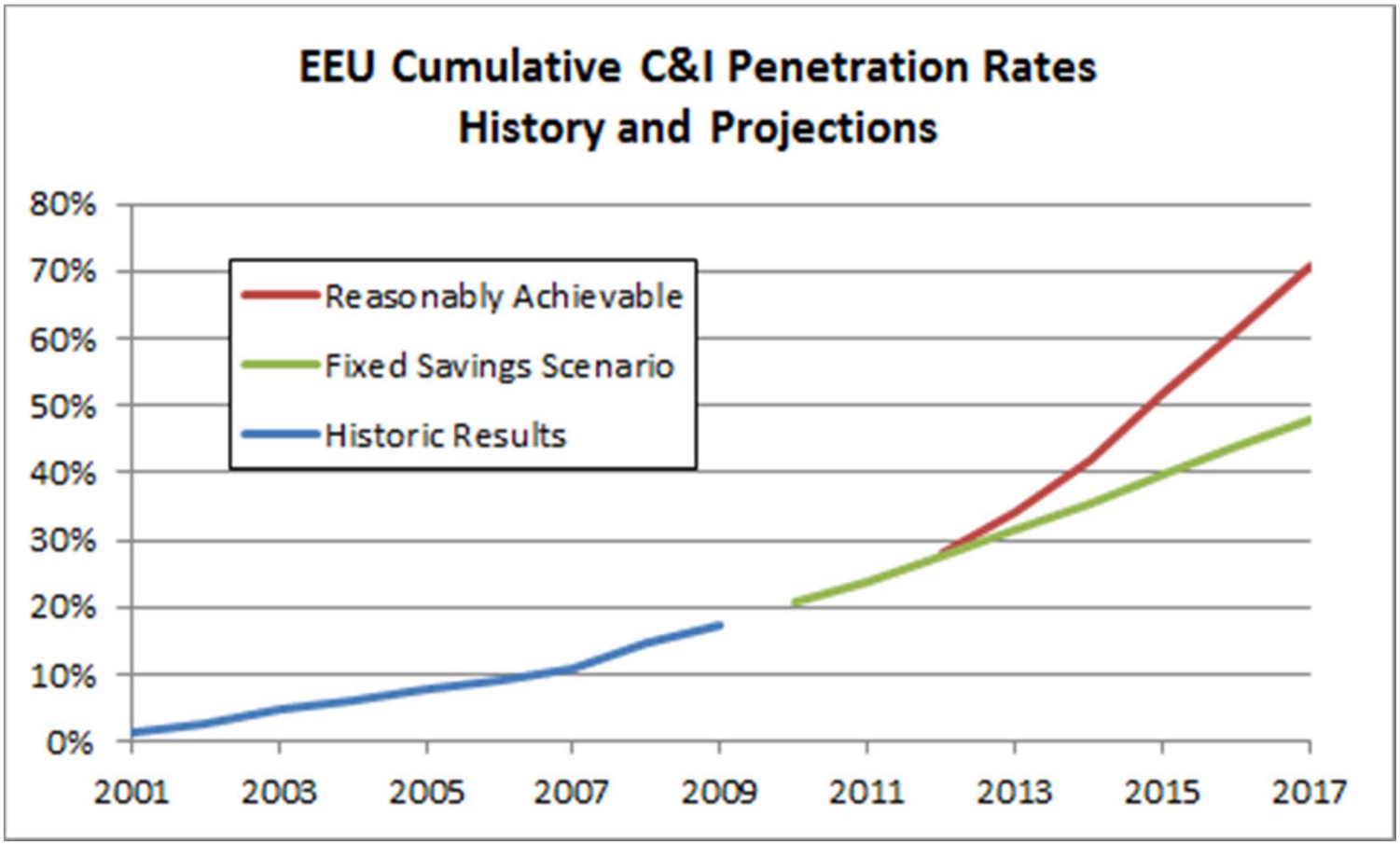


Caveat: These are approximations and may include some customers more than once.

Equity and Participation Rate Considerations

- Energy efficiency should be seen as a long-term resource:
  - Consider participants from recent past.
  - Consider participants expected in near- to mid-term future.
- Over a long-term time frame, EE can serve the majority of customers (see slide 21).
- In implementing all cost-effective energy efficiency, over time the vast majority of customers will be served.
- Once the majority of customers are served by the EE programs, the equity issue associated with rate impacts is significantly mitigated.

Participation Rates in Vermont – Past and Future



Opportunities to Increase Participation

Program administrators can take steps to increase participation in order to help mitigate the equity issue:

- EE programs should address all end-uses.
- EE programs should address all customer types.
- All customers should have an opportunity to participate.
- Program incentives should be tailored to assist all customers in overcoming barriers to energy efficiency.
- Program Administrators should actively pursue the non-participants and those who have not participated in a while.
- Program Administrators and others should consider increasing efficiency budgets:
  - Reducing or limiting budgets will likely reduce participation.
  - Increased budgets could be used to increase participation.

Benefits of the Three-Year Plan

It is important to consider rate/bill impacts in light of benefits:

- Achieve net benefits of $3.2 billion (see slide 24).
- Implement energy resource at low cost of ~5 cents/kWh.
- Reduce wholesale electricity prices throughout MA & NE.
- Reduce demand for imported fuels.
- Reduce demand for transmission.
- Reduce demand for fossil fuels.
- Improve reliability of the electricity system.
- Reduce CO2 emissions by 9.7 million tons.
- Create roughly 3,900 local jobs.

Costs and Benefits of Three Year Plan

- Costs: $1.7 billion
- Benefits: $4.9 billion
- Net Benefits: $3.2 billion
- Benefit to Cost Ratio equals 2.9
  - This means for every dollar spent there is a savings of nearly three dollars.