Synapse
Energy Economics, Inc.

Energy Efficiency: Rate, Bill and Participation Impacts

American Council for an Energy Efficient Economy
Energy Efficiency as a Resource Conference

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Rate Impacts of Energy Efficiency Programs

- Concerns about rate impacts are possibly the biggest barrier to expanding efficiency activities.
- The standard response to rate impact concerns:
  - Rates go up, but average bills go down.
  - On average customers are better off.
- This response is not sufficient.
  - Program participants see higher rates but lower bills.
  - Non-participants see just higher rates.
- There is a widely-held belief that only a small minority of customers participate in efficiency programs.
- Rate & bill impacts are a matter of customer equity.

Addressing Customer Equity

- Program participation rates:
  - Typically not well understood or analyzed.
  - Are the key to drawing the right balance between rates and bills.
  - Can and should be addressed through regulatory policies.
- Big picture recommendations:
  - Analyze rate, bill and participation impacts, in order to fully understand what the impacts are;
  - Manage rate, bill and participation impacts, in order to achieve energy goals and optimize benefits to all customers; and
  - Promote customer participation, to address equity concerns.

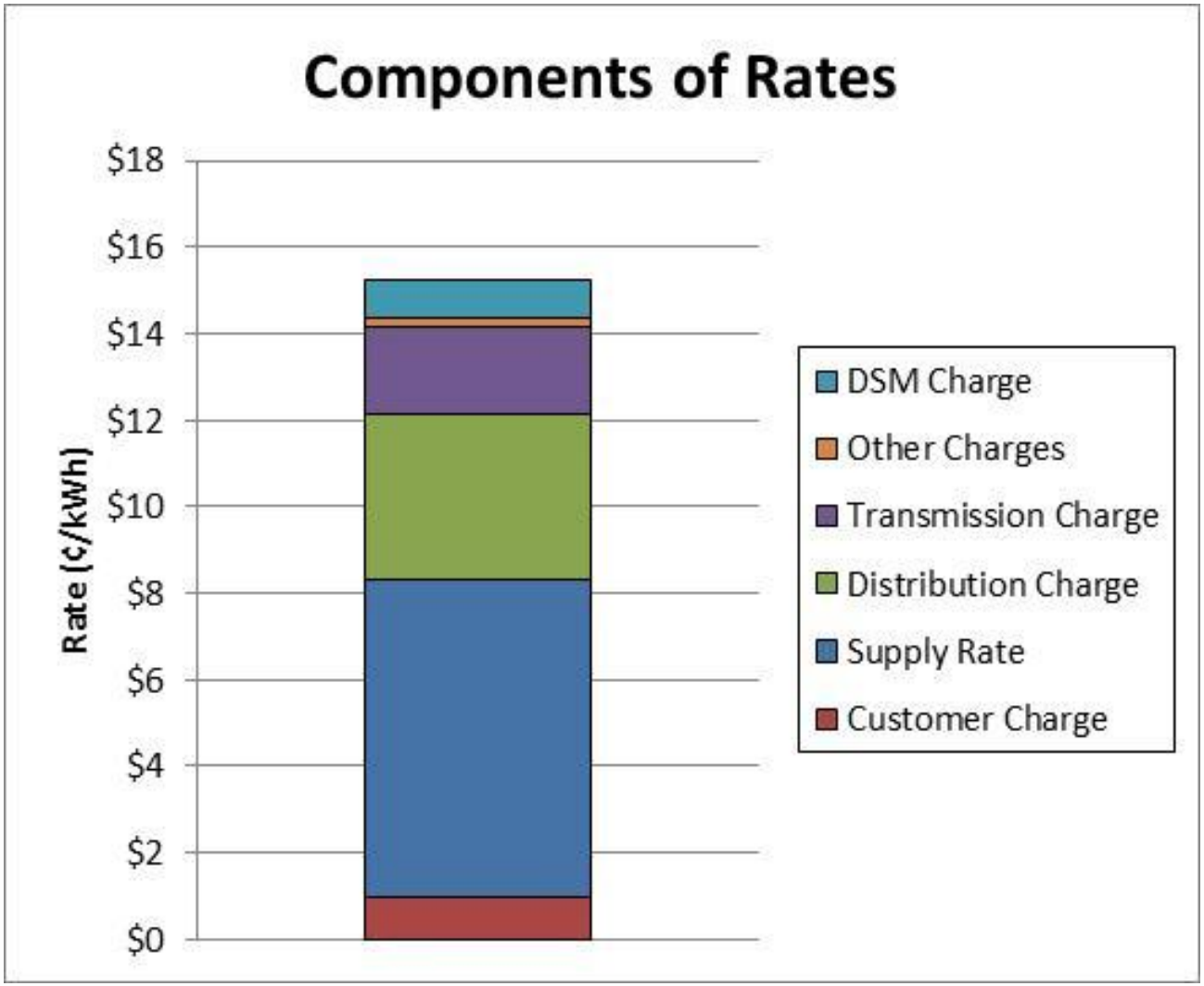
Actual Utility with Aggressive Efficiency Plan

- Analysis here is based on a proposed three-year energy efficiency plan for Rhode Island.
- Program costs recovered through a system benefits charge. Distribution rates are decoupled.
- Standard EE programs, targeted to all customer types:
  - Low-income: audit and retrofit at no cost.
  - Residential: new construction, retrofits, lighting, appliances, HVAC.
  - C&I: new construction, small C&I, large C&I.
- Relatively aggressive programs have been in place for many years.
- Significant ramp-up in efficiency savings in recent years.
- Proposed annual energy savings: 2.4% for 2015-2017.

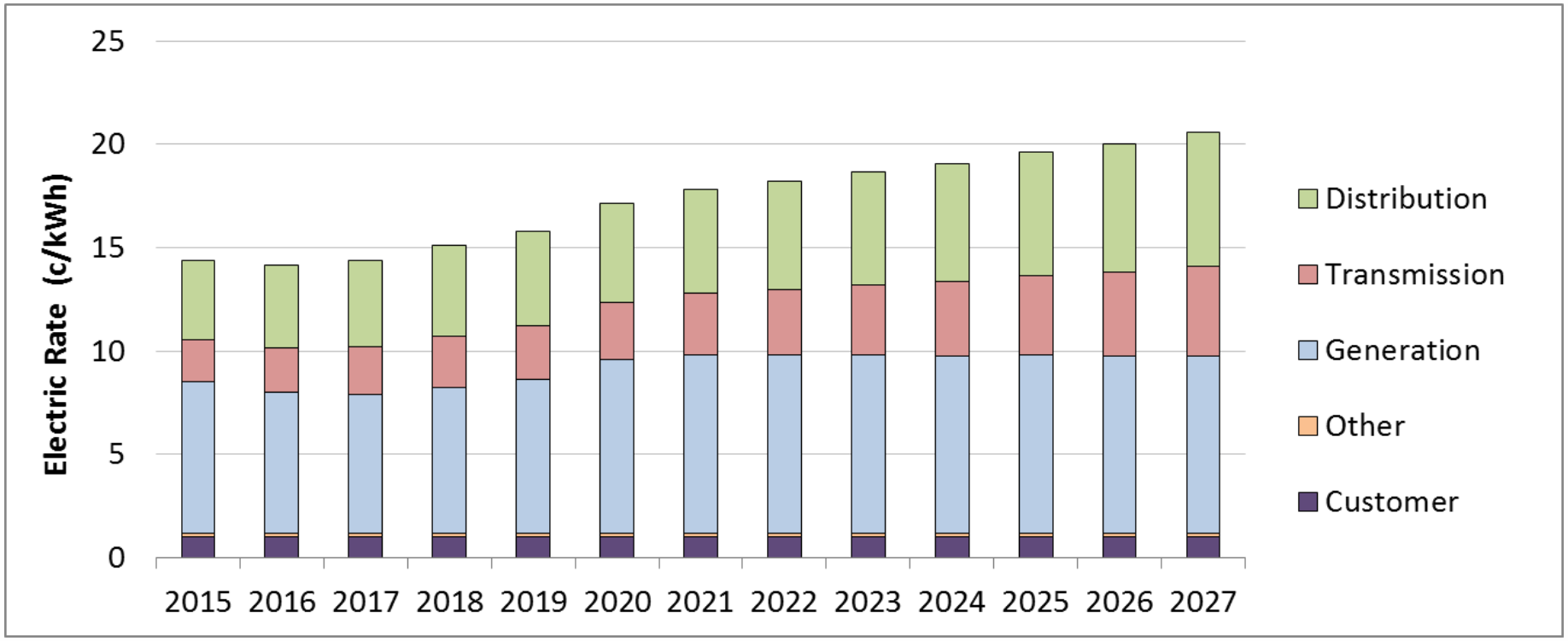
Relatively Cost Effective Programs

- Program average benefit-cost ratios:
  - Low-income: 1.5
  - Residential: 1.6
  - C&I: 2.9
  - Total: 2.3
- Program average cost of saved energy (¢/lifetime kWh):
  - Low-income: 12.9
  - Residential: 7.7
  - C&I: 3.7
  - Total: 4.9

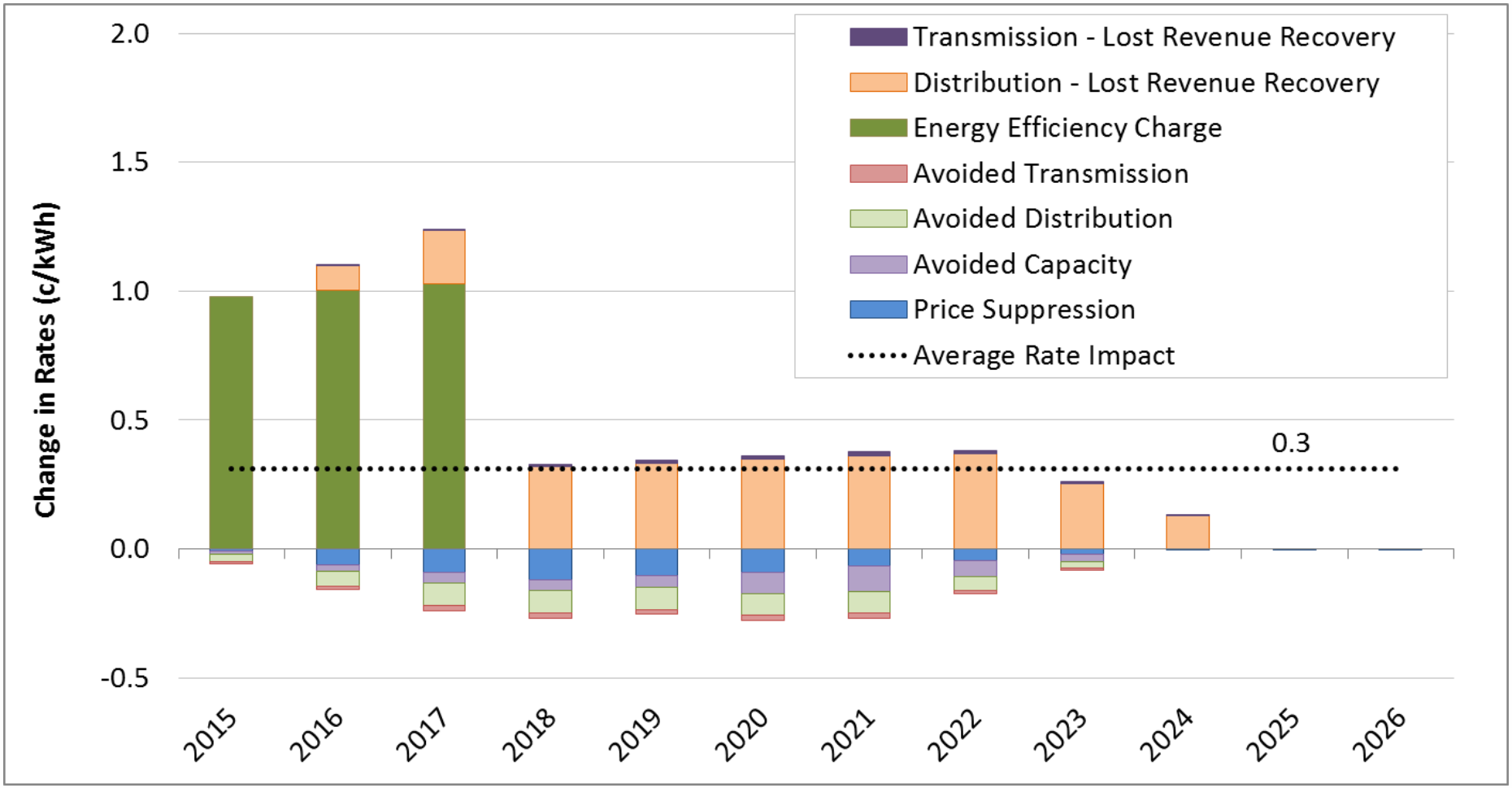
Breakdown of Current Rates



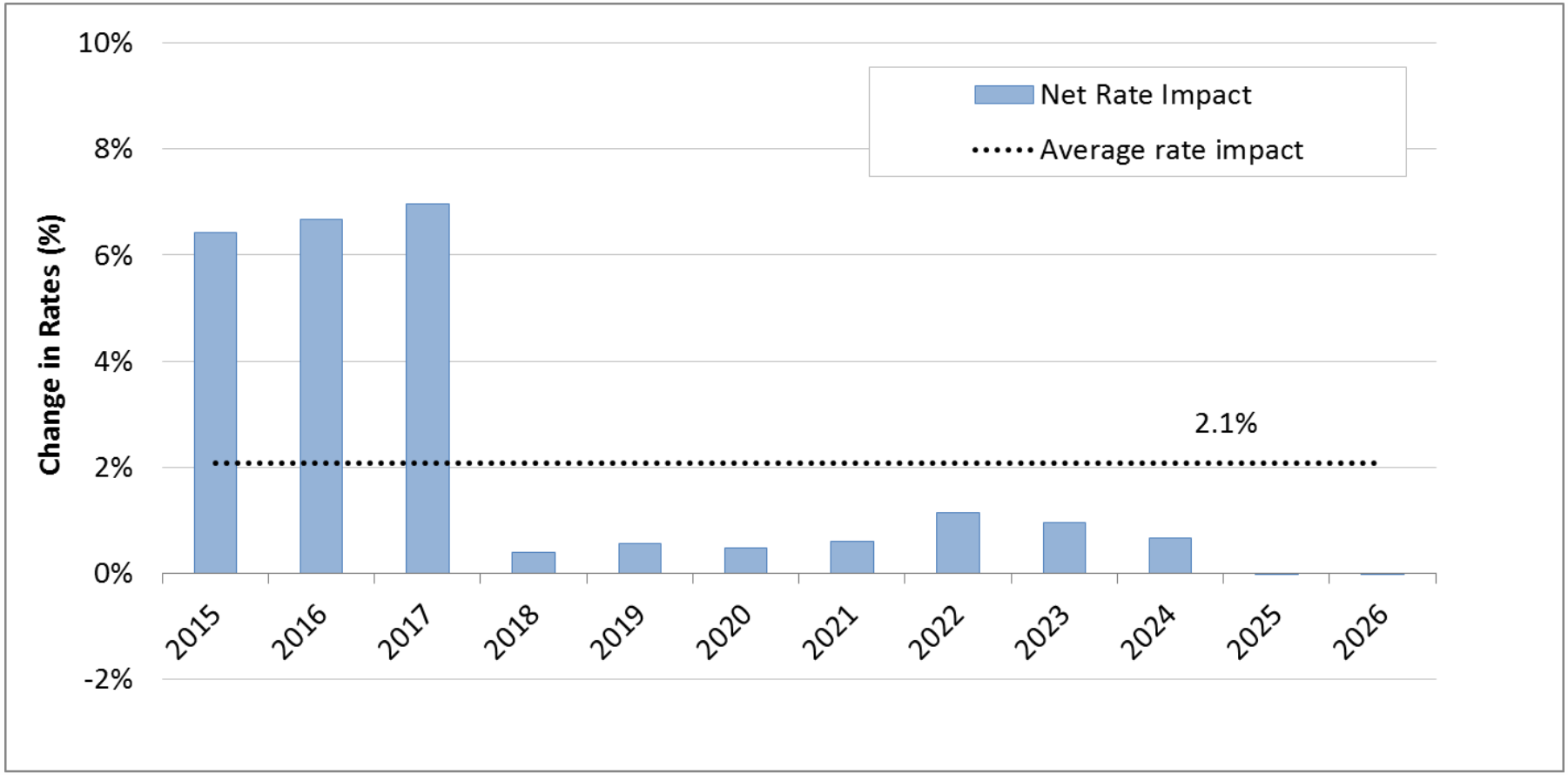
Forecast of Rates – Without Efficiency



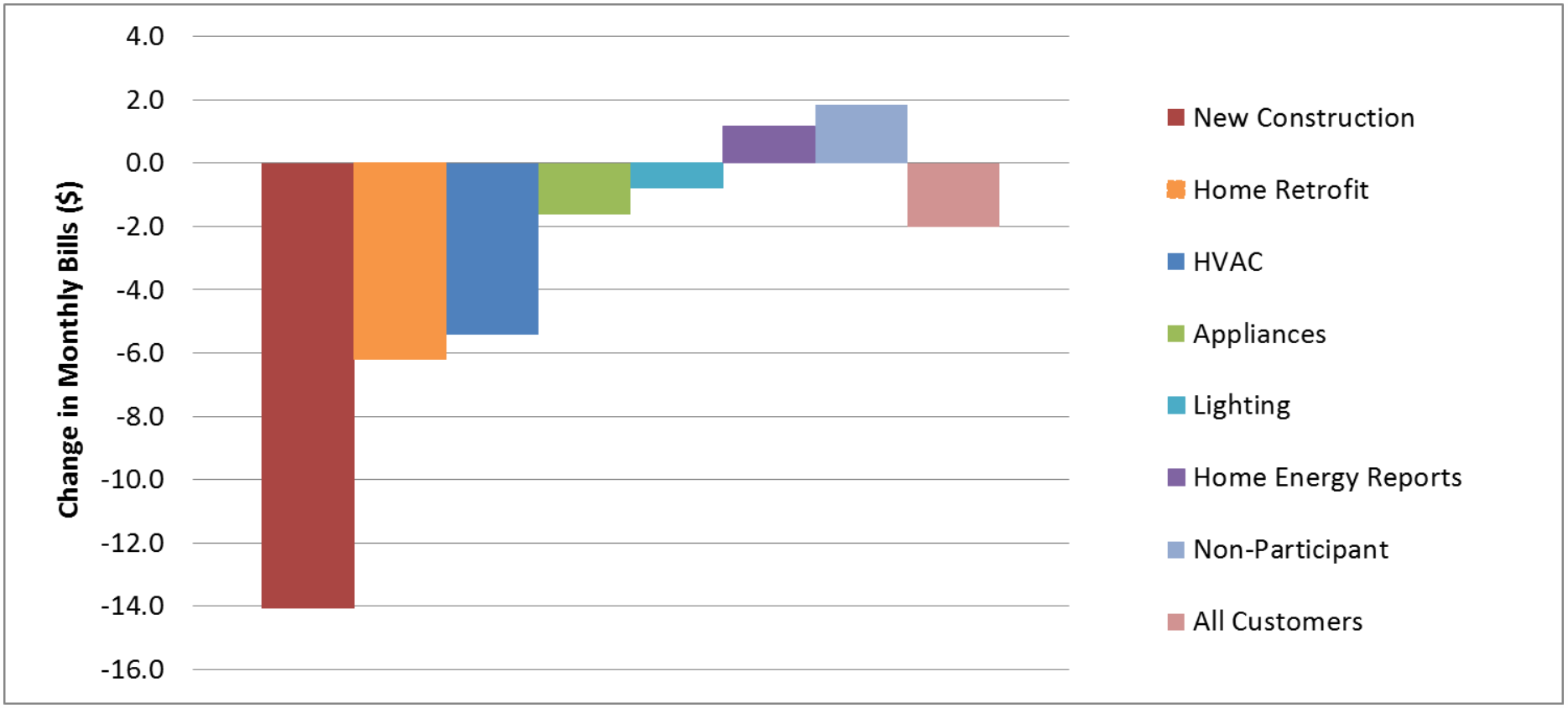
Residential Rate Impacts – by Components



Residential Rate Impacts - Net

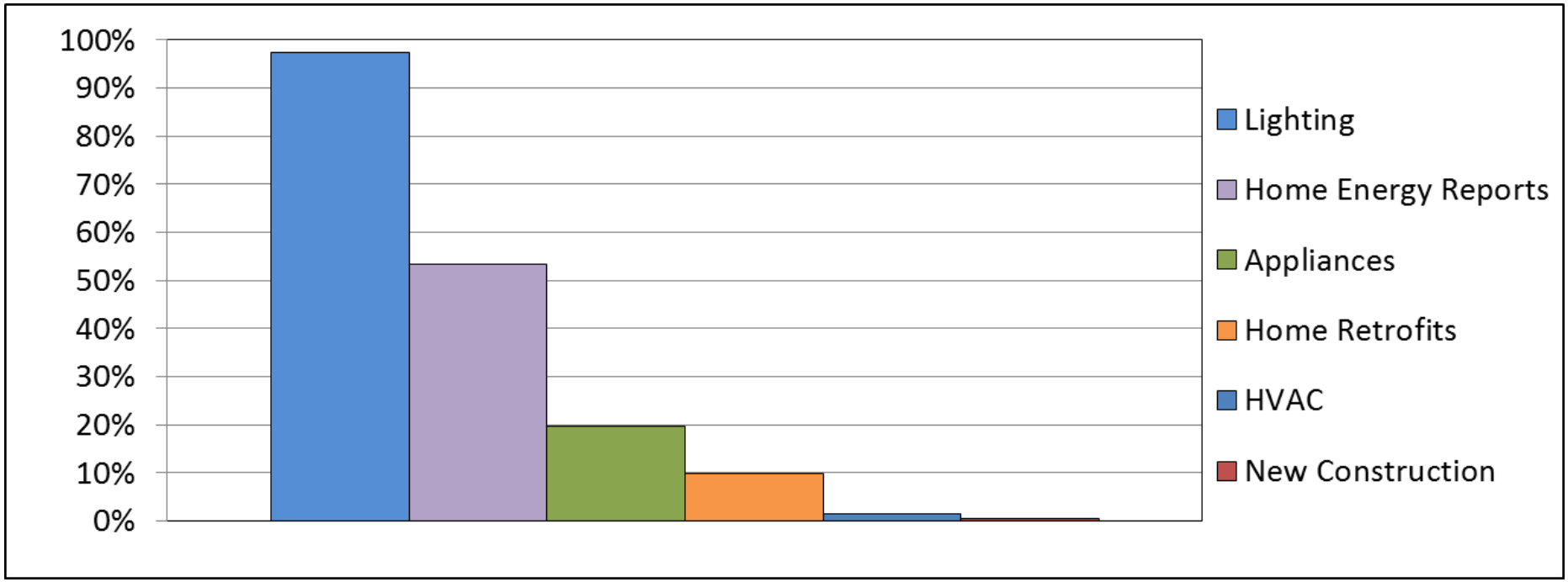


Residential Bill Impacts – by Program



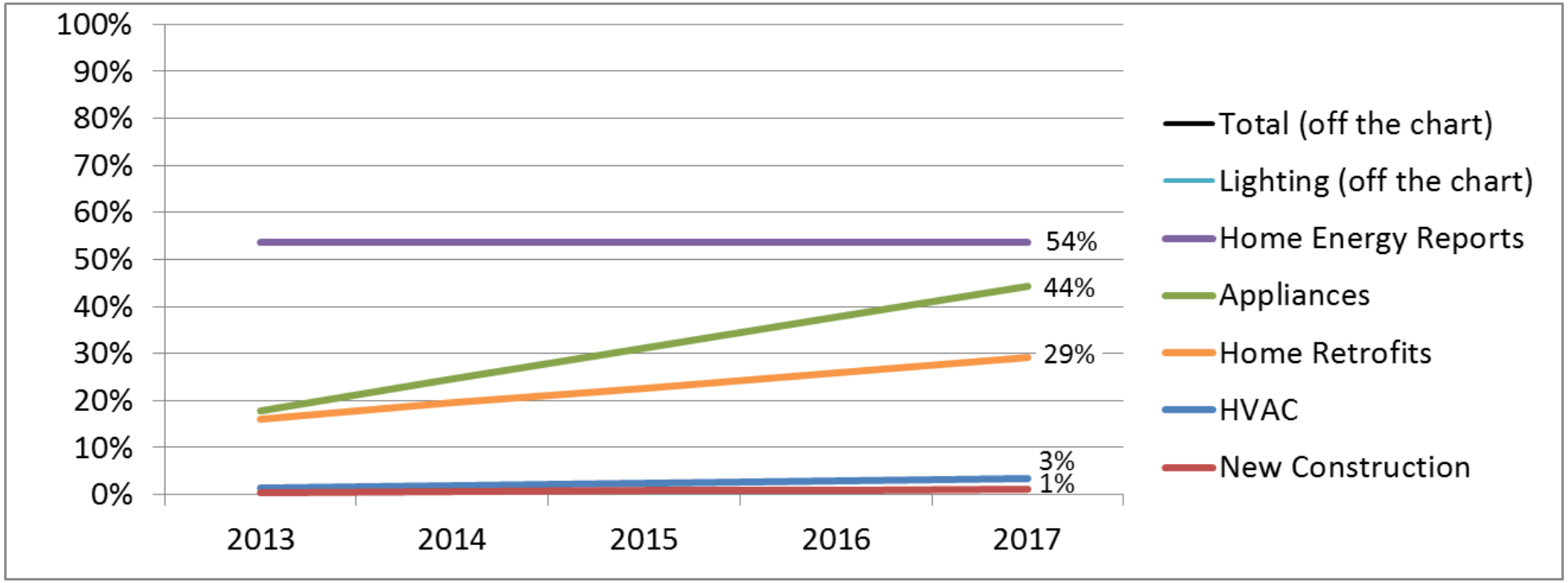
Assumes participation in only one program.

Residential Participation Rates: 2015-2017



Accounts for double participation

Residential Participation Rates:1998 - 2017



Accounts for double participation

Summary of Results - Residential

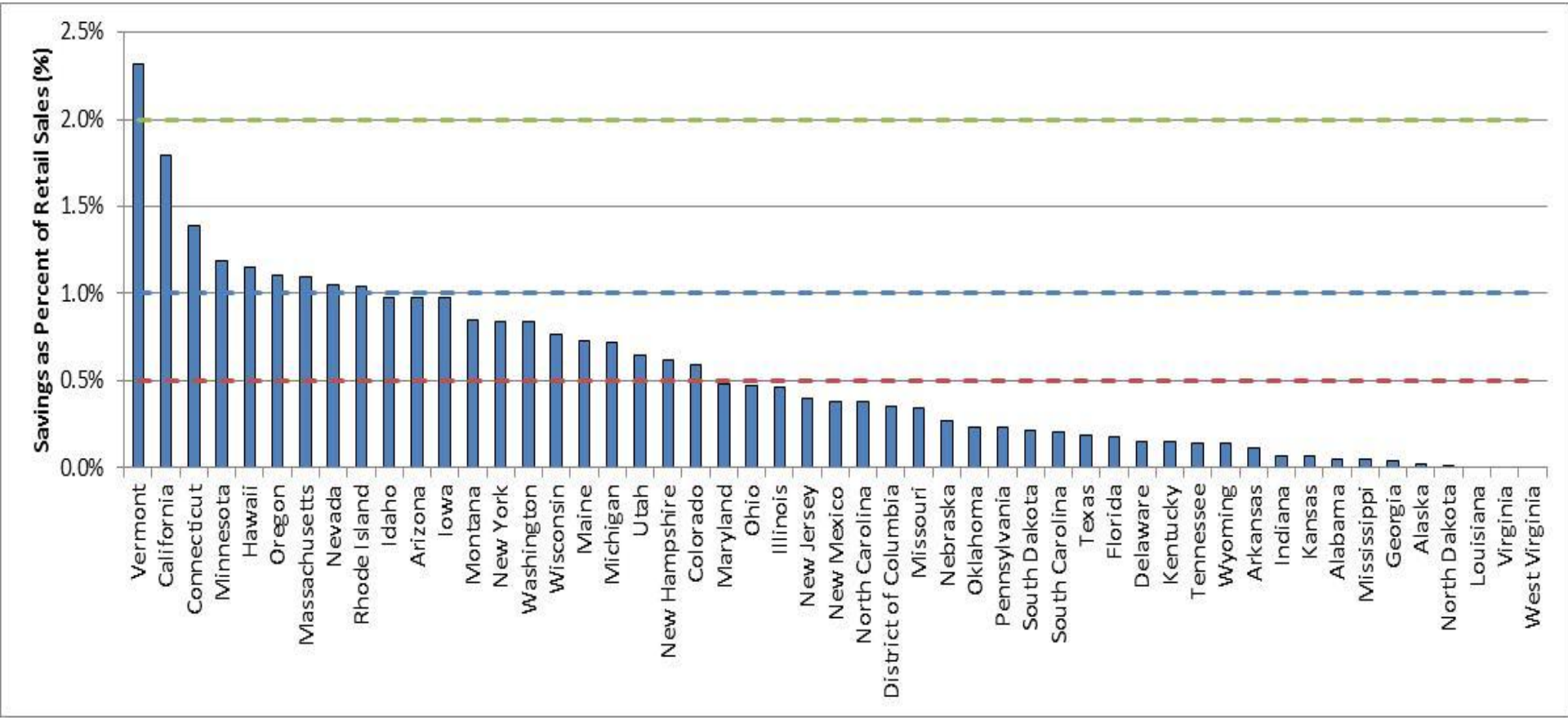
	Rate Impacts (% of Total Rate)	Bill Savings (% of Total Bill)	2015-2017 Participation (New % of Customers)
New Construction	2.1%	9.3%	0.5%
HVAC	2.1%	5.5%	1.5%
Home Retrofit	2.1%	6.3%	9.8%
Home Energy Reports	2.1%	-1.4%	53.5%
Lighting	2.1%	0.7%	97.5%
Appliances	2.1%	1.5%	19.7%
Non-Participant	2.1%	-2.1%	a minority

Accounts for double participation

Summary of Results – All Sectors

	Highest Single-Year Rate Increase	Average Long-Term Rate Increase	Range of Bill Savings	General Participation Conclusion For Cumulative Participation 1998-2017
Residential	7%	2%	-1% to 9%	Vast majority of customers participate.
Low-Income	8%	2%	-2% to 12%	Large majority of LI dwellings ge retrofits.
Small C&I	6%	1%	37% to 47%	Roughly 30% of customers participate.
Large C&I	9%	0%	2% to 3%	Majority of customers participat

2010 Electricity Savings by State (% of Sales)



Source: ACEEE 2012 Energy Efficiency Scorecard

What Does This Mean for Other States?

- This analysis is not directly transferable to other states.
  - However, some general conclusions can be drawn.
- States where efficiency savings is 0.5% or less:
  - Rate impacts probably in the noise.
  - Participation rates probably very low.
- States where efficiency savings is 1.0%-0.5%:
  - Rate impacts probably small.
  - Participation rates probably low to moderate.
- States where efficiency savings is 2.0% or greater.
  - Rate impacts: short-term probably acceptable, long-term probably modest.
  - Participation rates probably high to very high.
  - Participation rates nearly offset the rate impacts.

Program Designs to Increase Participation

- EE programs should address all end-uses.
- EE programs should address all customer types.
- All customers should have an opportunity to participate.
- Customer incentives and support 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.

Policy Options to Increase Participation

- Increase budgets to increase participation.
  - This is the exact opposite of the typical response to rate impact concerns.
- Require program administrators to gather better data on participation; annual & cumulative.
- Require program administrators to analyze participation rates when designing programs.
- Include participation requirements in efficiency plans and goals.
- Incorporate participation rates in utility shareholder incentives.
- Make the participation goal explicit:
  - Achieving all cost-effective energy efficiency means serving all customers.

Appendix

Appendix

Benefits of EE that Flow to All Customers - I

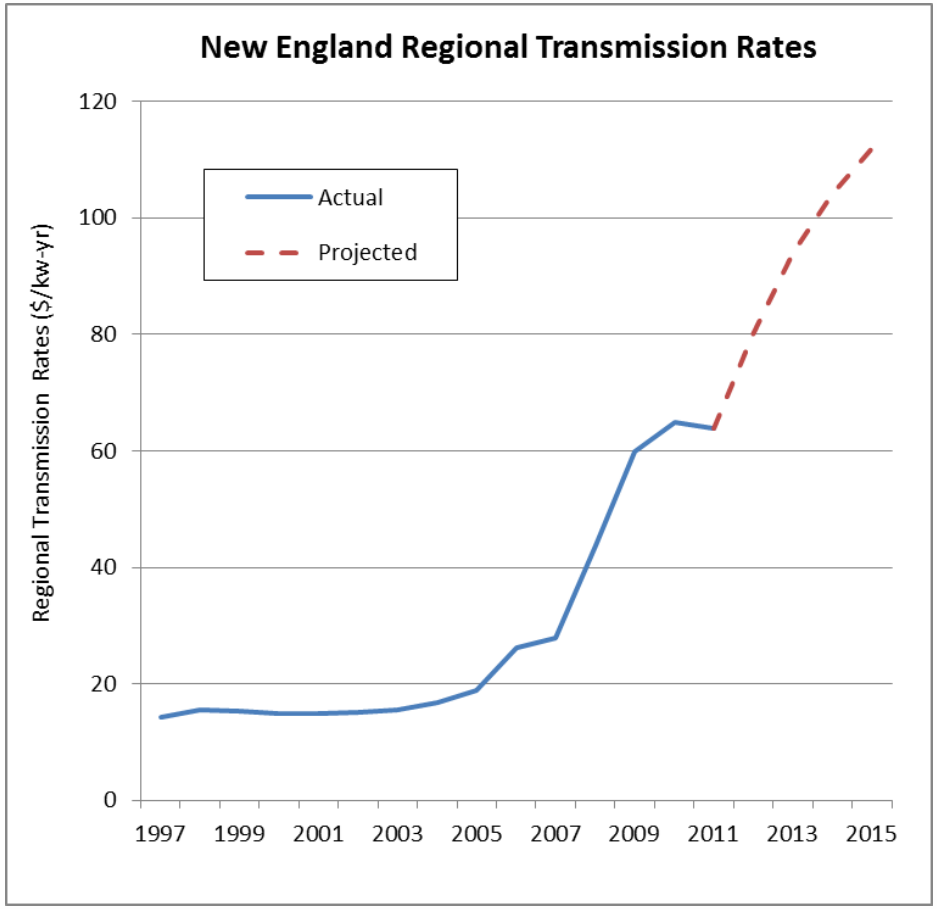
- Increased system reliability.
- Reduced risk and exposure to volatile fossil fuel prices.
- Reduced cost of compliance with environmental regulations.
- Reduced consumption of fossil fuels.
- Reduced reliance upon imported fuels.
- Reduced environmental impacts, including reduced greenhouse gases.

Benefits of EE that Flow to All Customers - II

- 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.

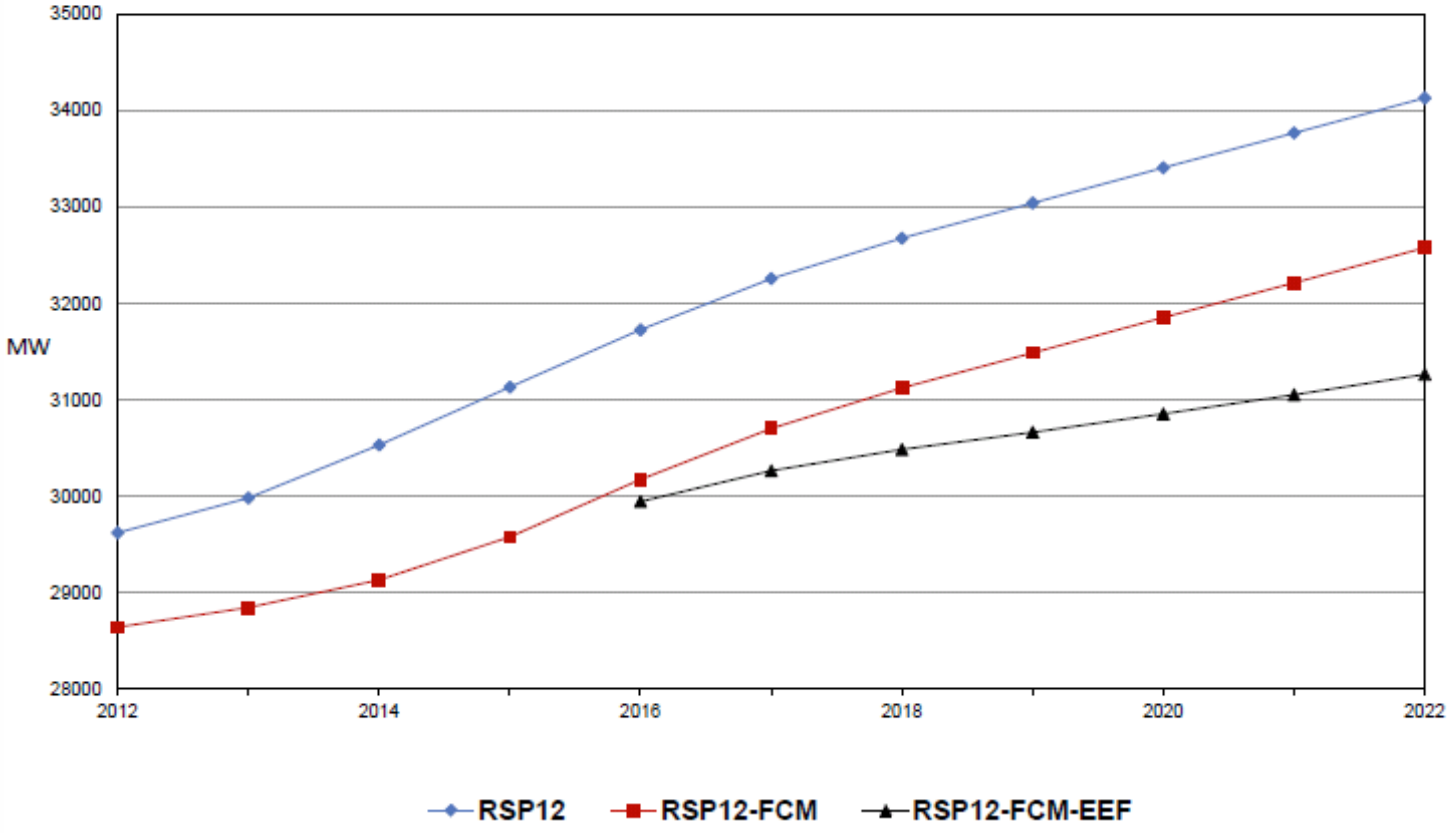
Benefits of EE that Flow to All Customers - III

- 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.



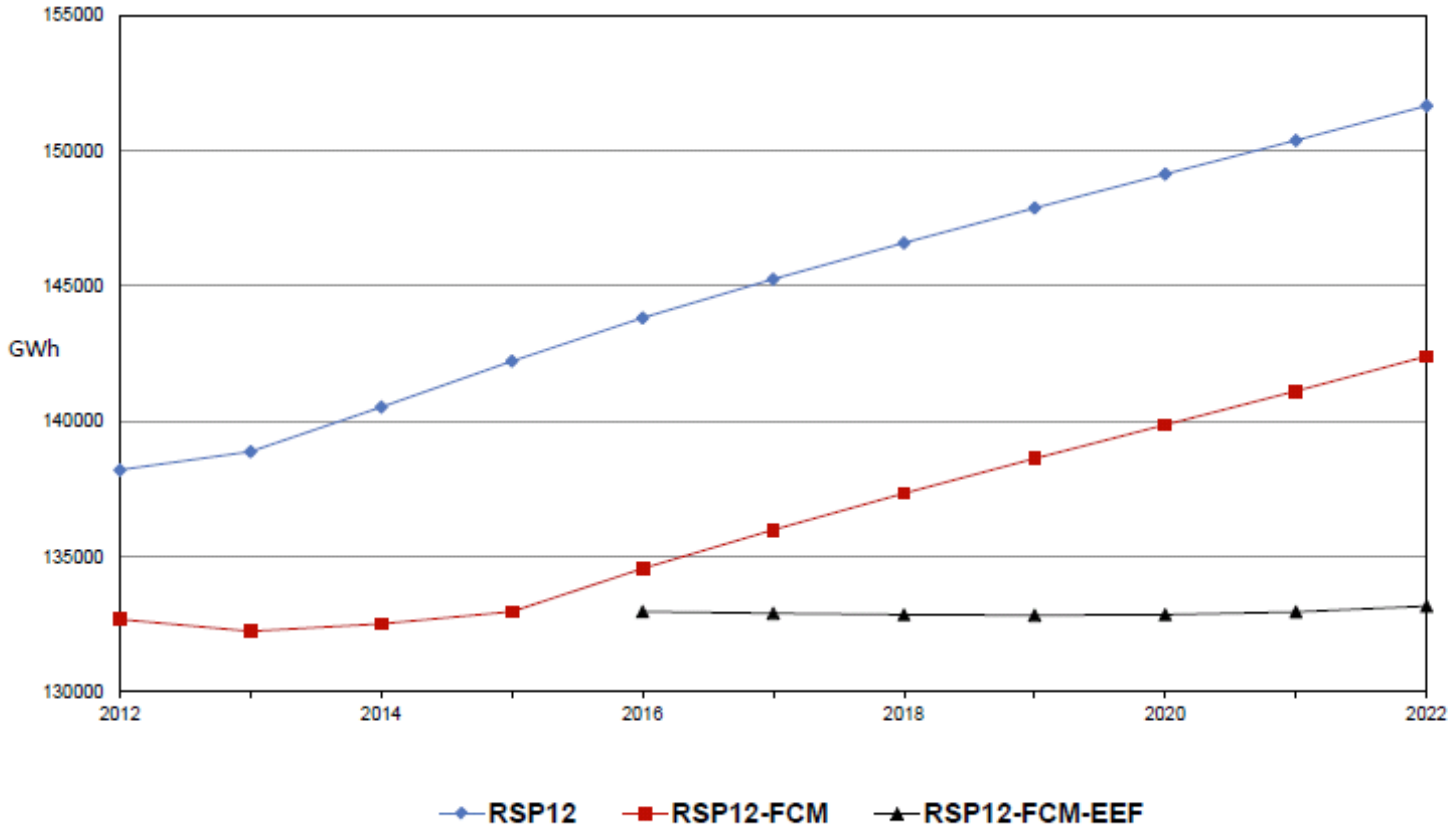
Impact of EE on New England Peak Demand

ISONE Summer Peak (90/10) Forecast

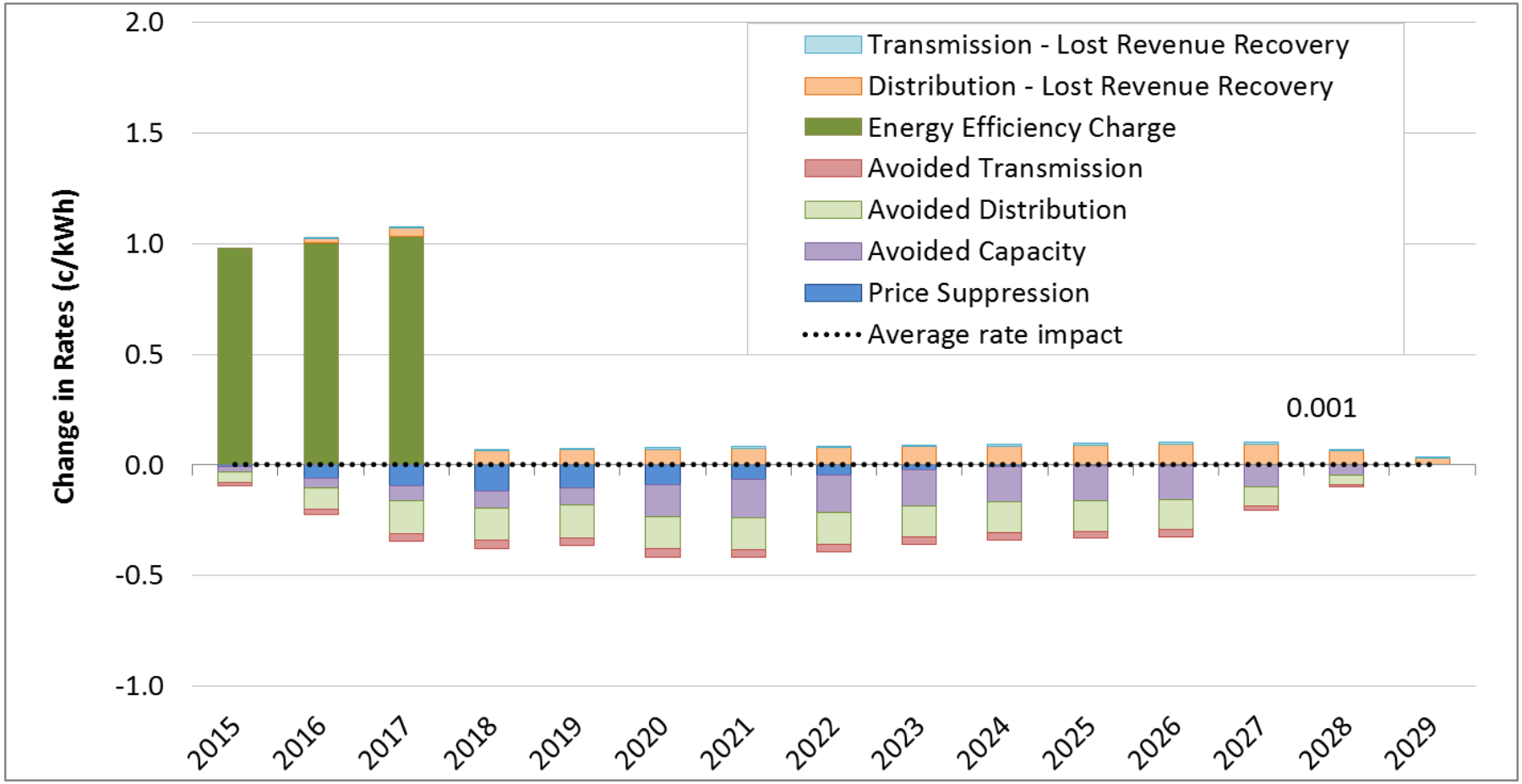


Impact of EE on New England Energy Demand

ISONE Annual Energy Forecast



Large C&I Rate Impacts – by Components



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