
Financial Impacts of Achieving Aggressive EE Program Savings Goals: *Building Stakeholder Support*

Peter Cappers, Andrew Satchwell, Charles Goldman
Lawrence Berkeley National Laboratory

Jeff Schlegel
Independent Consultant

Report Summary

August 2010



Background and Policy Context

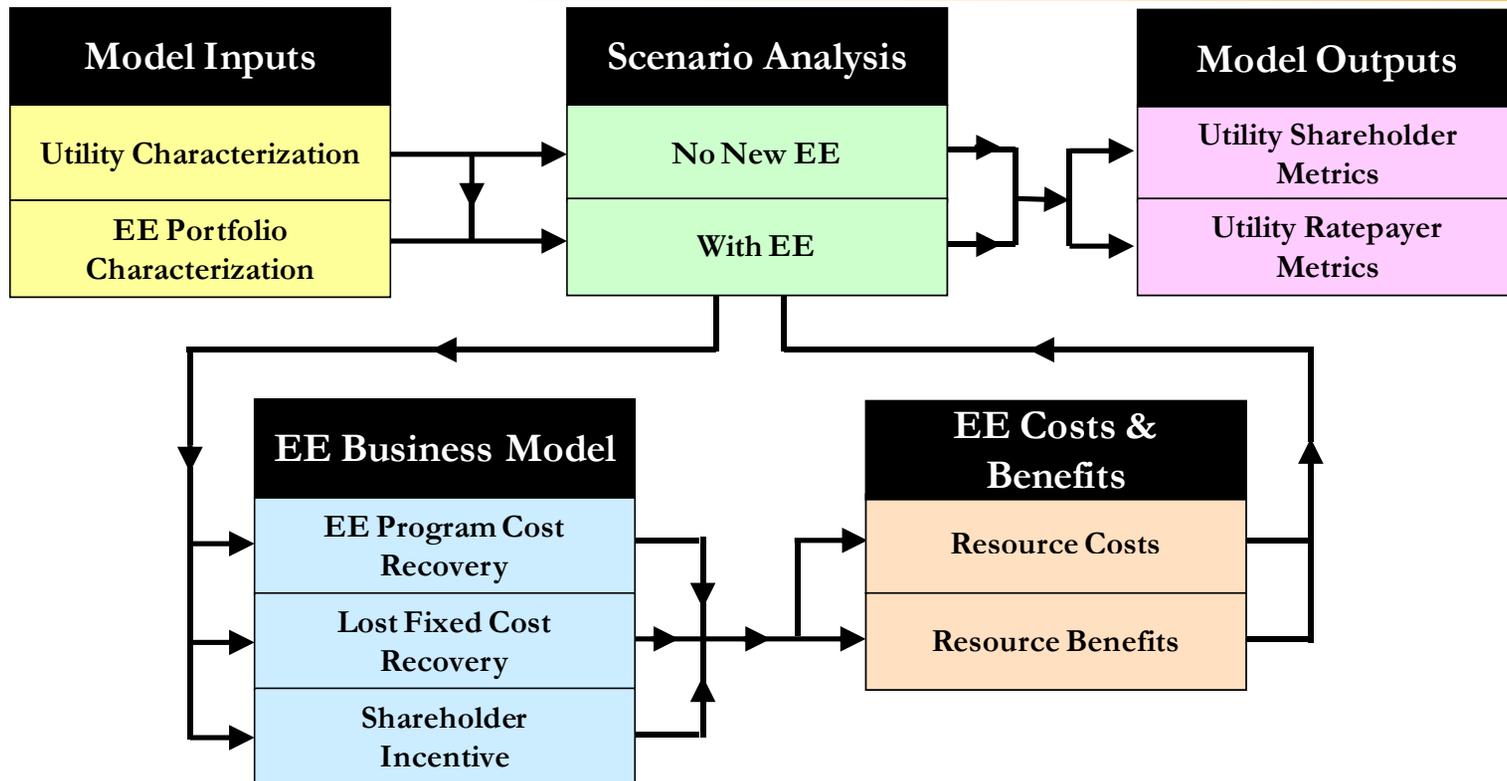
- Increased interest by regulators and policymakers in pursuing aggressive energy efficiency (EE) goals
- Massachusetts Case Study
 - MA Green Communities Act (GCA) directs EE program administrators to achieve “all cost-effective EE”
 - Resulted in establishing a target of 2.4% annual reduction in retail electric sales, beginning in 2012 (ramp up earlier)
- Policy issues of interest
 - Ratepayer concerns - What are the customer bill savings and potential rate impacts of a long-term commitment to highly aggressive EE goals?
 - Shareholder concerns – What are the effects on shareholder value if highly aggressive EE goals are pursued over the long-term? Is there a viable utility “business model” that is acceptable to customers?

Presentation Overview

- **Analysis Approach**
- **Characterization of Massachusetts “Super-Utility” and EE Portfolios**
- **Analysis Results**
- **Summary and Conclusions**



Analysis Approach: Benefits Calculator



- Utilized a pro-forma financial spreadsheet model originally developed as part of the National Action Plan for Energy Efficiency (NAPEE) but significantly enhanced by LBNL over the past 3 years

Analysis Approach

- Assessed impacts of varying levels of EE on a “super-utility”, composed of all major Electric Operating Companies (EOCs) in Massachusetts
- Constructed a baseline EE case in order to compare effects of two Additional EE portfolios that achieve significant savings
 - “No New EE” scenario establishes the case in Massachusetts if no *new EE* efforts are undertaken
 - “Business-As-Usual (BAU) EE” based on ~0.9% annual savings
 - “Aggressive EE” based on MA DPU decision approving utility compliance filings to achieve GCA goals (~2.4%/year)
- Assumed EE programs are only offered from 2010-2020
 - After 2020, no new EE programs are offered, but effects of measures still in their useful lifetimes are captured from 2020-2030
- Quantify impact on ratepayers if additional funding sources are utilized
- Quantify impact on shareholders and ratepayers if decoupling mechanism is implemented

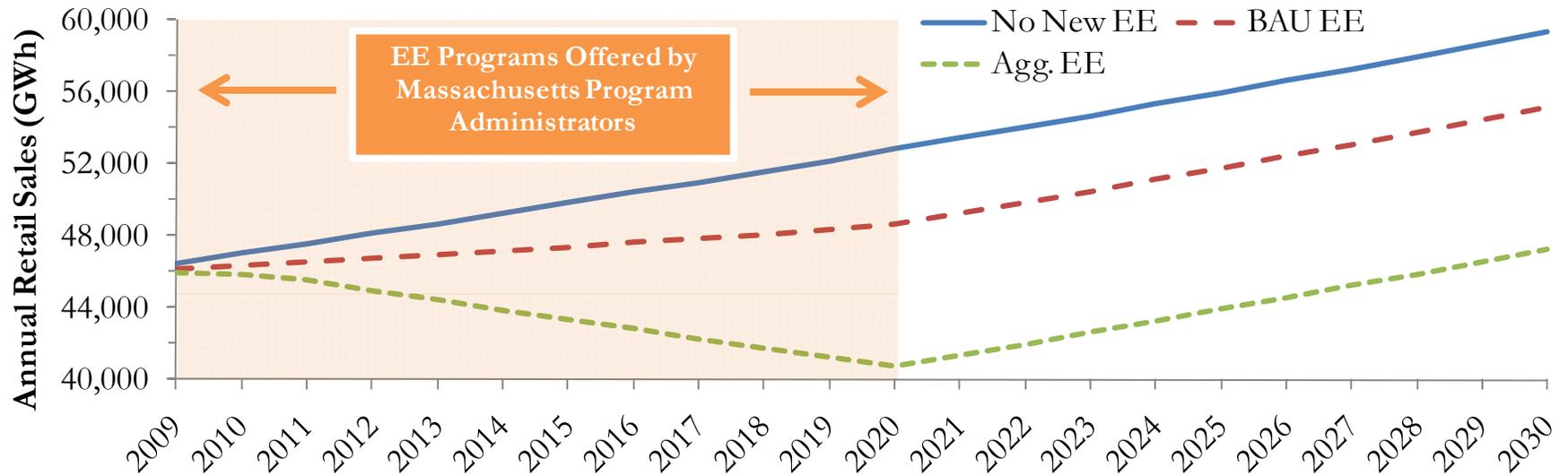


Presentation Overview

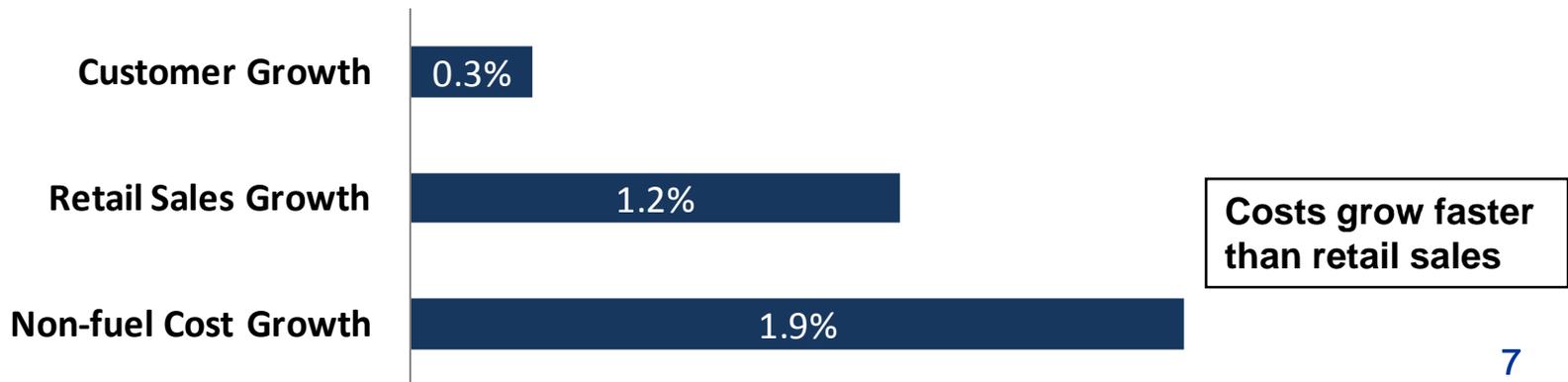
- Analysis Approach
- **Characterization of Massachusetts “Super-Utility” and EE Portfolios**
- Analysis Results
- Summary and Conclusions



Impact of Energy Efficiency on MA “Super-Utility” Retail Sales Forecast



"No New EE" Utility Assumptions (% per year)

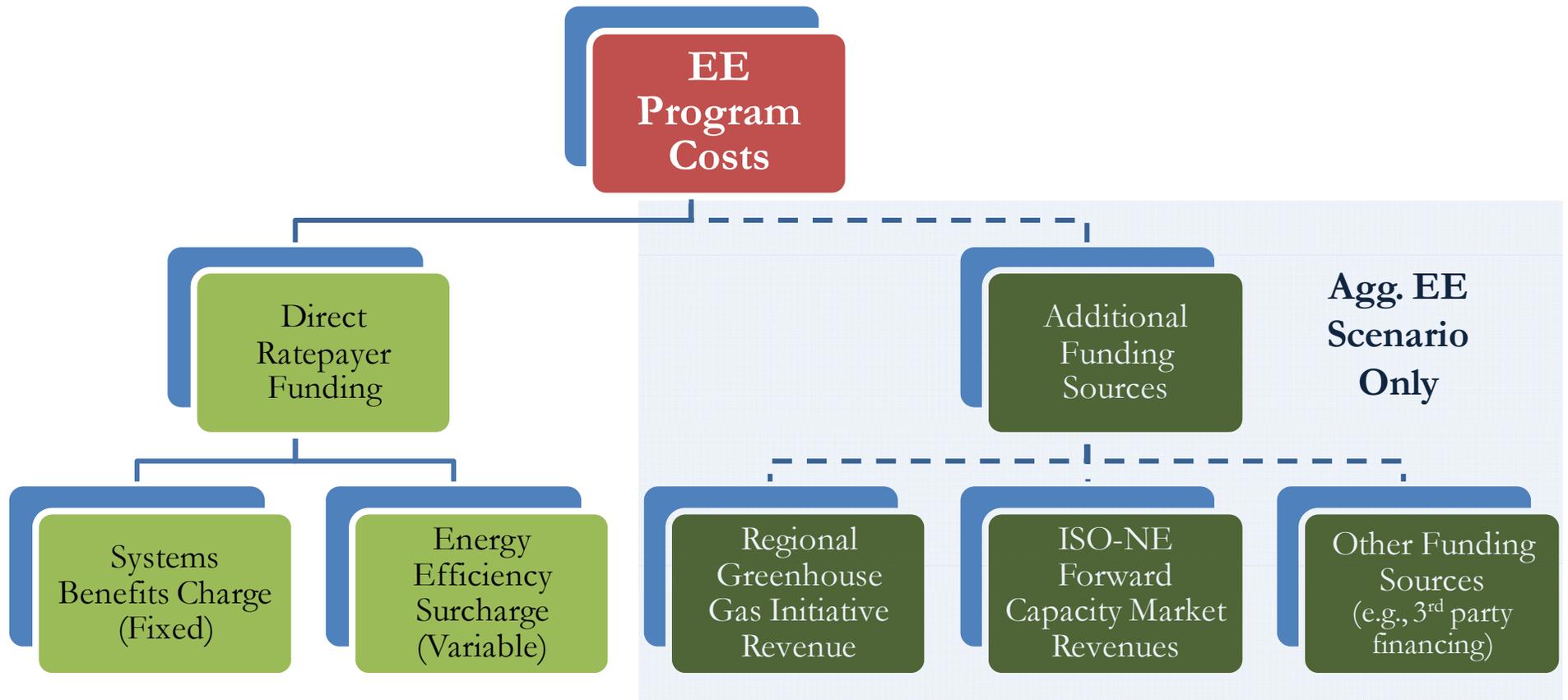


Initial EE Business Models

- **Lost Fixed Cost Recovery Mechanism**
 - **Lost base revenue mechanism applied**
- **Shareholder Incentive Mechanism**
 - **3% of program costs on after-tax basis are provided to “super-utility” annually**
- **EE Program Cost Recovery**
 - **EE program budgets are covered by Systems Benefits Charge (fixed 3 mills/kWh) and Energy Efficiency Surcharge (variable volumetric charge to cover residual EE budget)**
 - **Under Agg. EE Case, impacts of applying additional funding sources (FCM, RGGI and Other funding) are also shown**



Funding Sources of Energy Efficiency



Presentation Overview

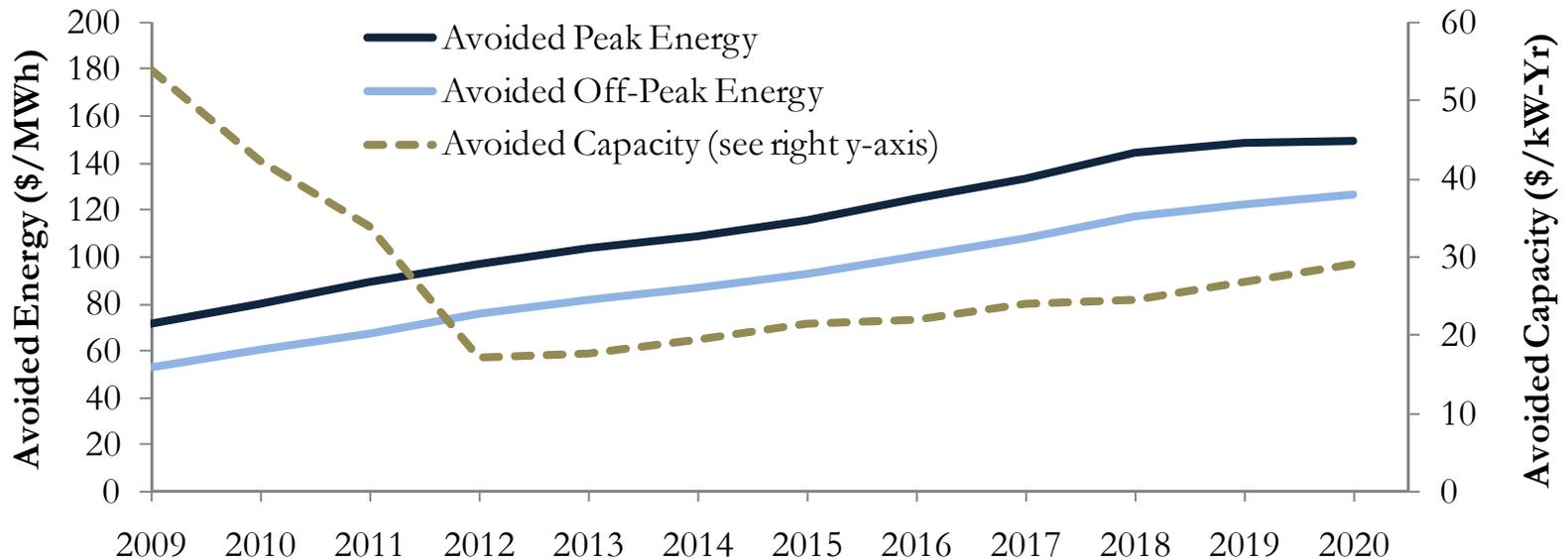
- Analysis Approach
- Characterization of Massachusetts “Super-Utility” and EE Portfolios
- **Analysis Results**
- Summary and Conclusions



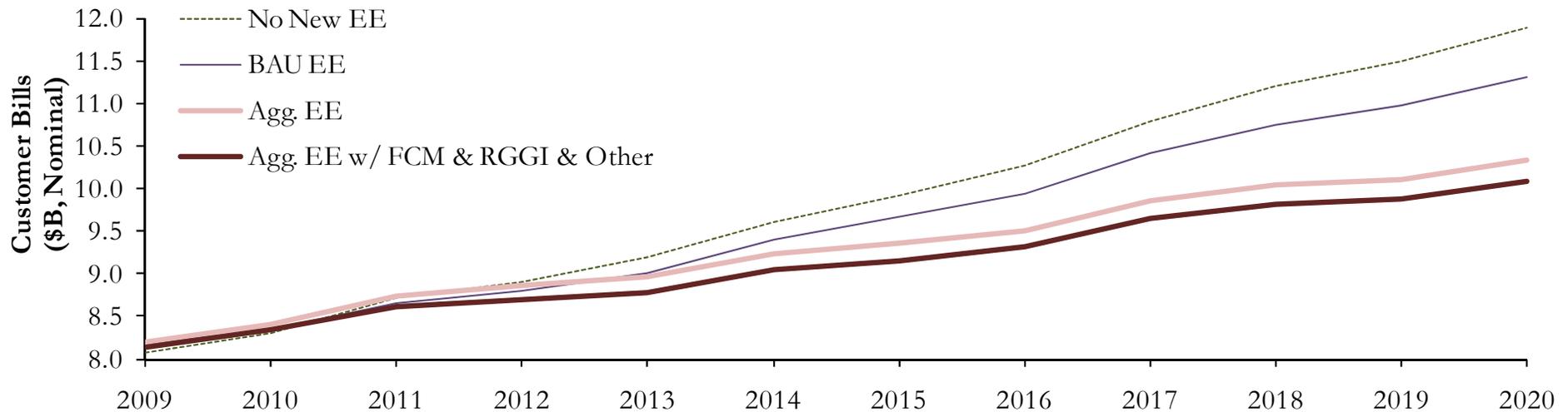
Pursuing these EE Portfolios Produce Significant Net Benefits

	Portfolio Lifetime Savings (2009-2020)				Total Resource (\$B, PV)		
	Peak Energy (GWh)	Off-Peak Energy (GWh)	Total Energy (GWh)	Peak Demand (MW)	Benefits	Costs	Net Benefits
BAU EE	12,221	28,516	40,737	603	\$5.6	\$1.5	\$4.1
Agg. EE	34,577	80,679	115,255	1,604	\$16.1	\$4.9	\$11.2

Long-term Avoided Cost Forecast (2009-2020)

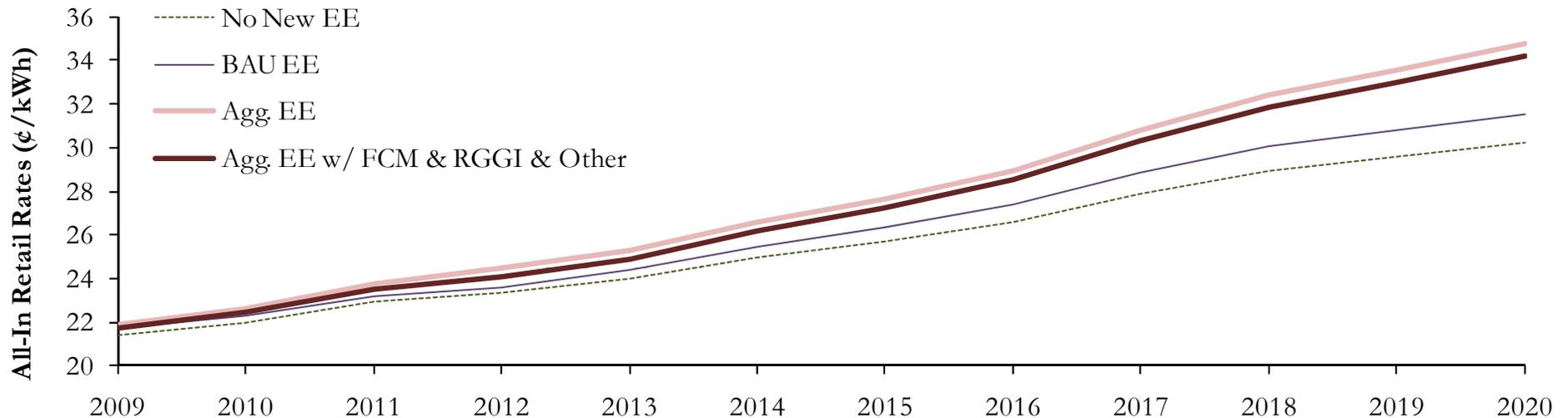


Customer Bills Are Reduced Significantly; Other Funding Alters Timing of Bill Savings



- **Agg. EE portfolio w/ all additional funding sources saves customers ~\$7B (~7%) relative to BAU EE and ~\$10B (~10%) relative to No New EE, on a PV basis (2009-2030) (after accounting for rate impacts)**
- **After five years of achieving Agg. EE savings goals, customer bills are lower than what is observed under BAU EE**
- **Aggregate customer bill savings occurs two years earlier if all additional funding sources are applied in Agg. EE case**

Aggressive EE Portfolio Results in Negative Sales Growth and Large Rate Increases



- **Rate increases with Agg. EE are sizable (~4.4%/year) and are driven primarily by sales dropping while utility costs rise**
 - **Utility costs grow at 1.8% per year**
 - **Electric sales decrease by -1.1% per year**
- **Additional funding sources modestly offsets the rate increases with Agg. EE between 2009 and 2020 (down to ~4.2%/year)**

Additional Funding Sources Affects both Customer Bills and Rates

■ Impact on Aggregate Customer Bills

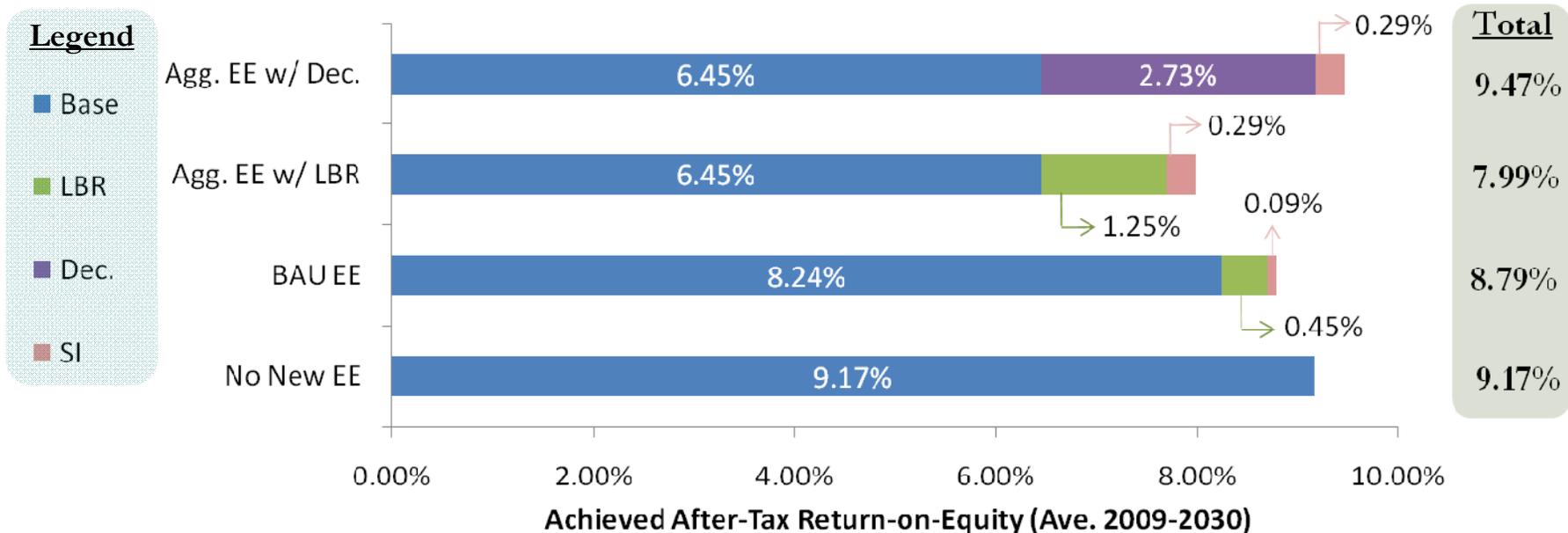
- Utilizing additional funding sources reduces ratepayers' share of EE program costs by ~32%
- Ratepayers experience an additional \$1.2B, or 1.3%, in bill savings due purely to the use of FCM, RGGI and Other Funding Sources

■ Impact on All-in Retail Rates

- Applying additional funding sources reduces annual all-in retail rates in 2020 by 0.25 cents/kWh
- Mitigates rate increases somewhat, but not a “silver bullet” (because the rate increases are not driven primarily by program costs)



“Super-Utility” needs Decoupling to Reduce Effect of Agg. EE on ROE



- LBR mechanism is insufficient to keep pace with revenue erosion between rate cases (authorized ROE of 10.98%)
- Properly designed decoupling mechanism with a k-factor is capable of removing financial impact of Agg. EE on ROE erosion
- MA shareholder incentive mechanism provides opportunity for additional earnings for investors

Decoupling Mechanism Affects Both Shareholders and Ratepayers

- **Utility -- Combining the decoupling mechanism with shareholder incentive provides 30 basis point improvement to ROE and slightly higher earnings (~\$20M) than if utility did not pursue future EE efforts**
- **Customers – Implementing the decoupling mechanism, relative to lost base revenue mechanism, would raise customer bills by ~\$830M and average rates by ~1.5 mills/kWh**
 - **However, applying all additional funding sources to Agg. EE program costs lowers customer bills by ~\$1.2B**
- **Achieving Agg. EE, relative to No New EE, with application of both decoupling and additional funding sources produces ~\$8.9B in total bill reductions**



Summary: Policy Conclusions

- **Aggressive EE portfolio provides very large customer bill savings; in MA, possible to design a “business model” that aligns the financial interests of utility program administrators with the state’s aggressive energy policy goals to achieve the substantial customer bill savings**
- **As you move towards a “comprehensive” business model, important to consider the combined impact of decoupling (or LBR) and shareholder incentive mechanisms on utilities and customers in their design**
- **Given current economic climate, rate impacts may limit broad stakeholder support for Agg. EE goals; leveraging additional funding sources besides ratepayer funds can mitigate rate impacts somewhat**