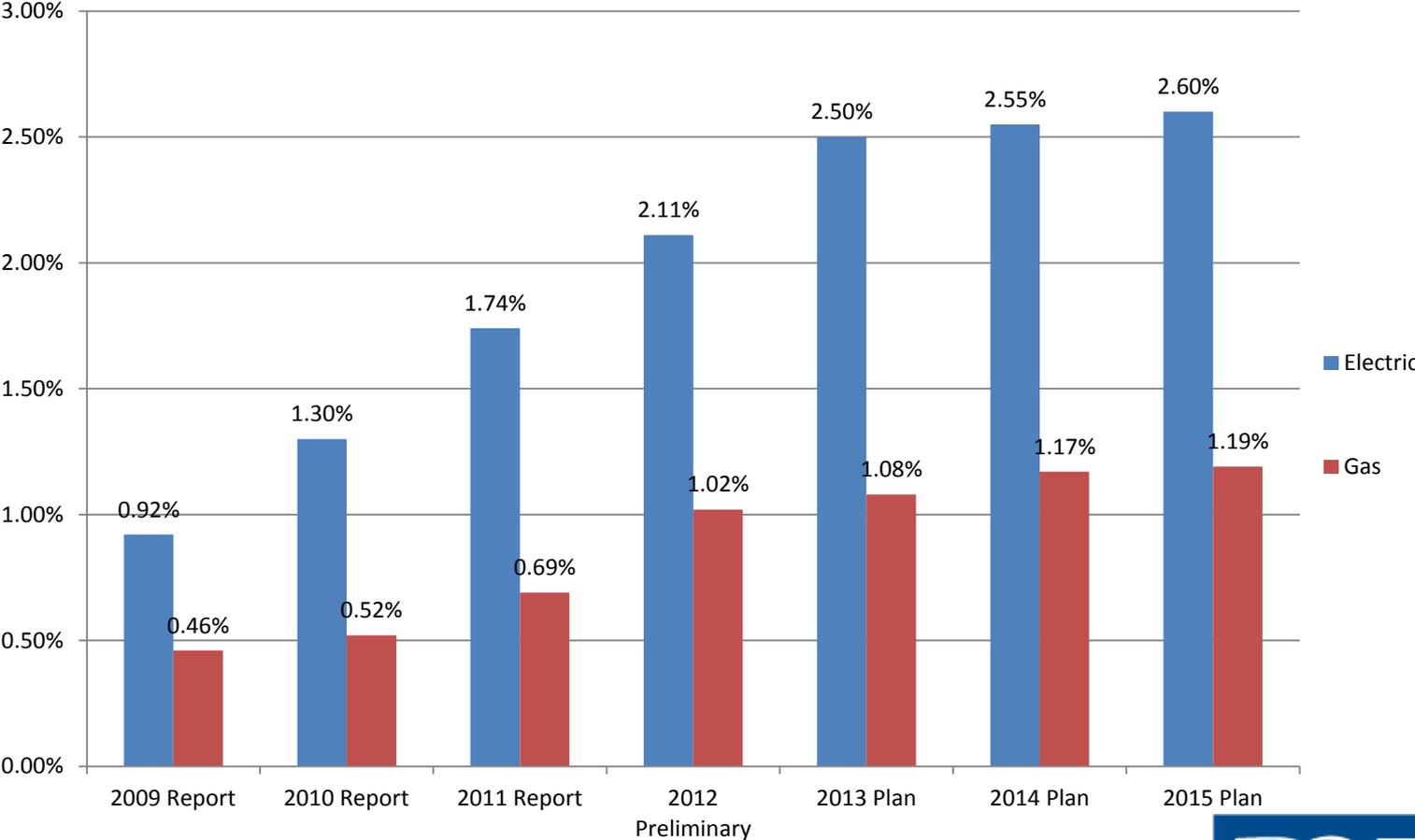


# **Energy Efficiency: A look into costs and benefits**

**Christina Halfpenny  
Division Director, Energy Efficiency  
4/3/2013**

# Rise in Massachusetts Efficiency Efforts

Efficiency goal as a percentage of retail sales



2013-2015 numbers DPU Order 12-100-12-111



Massachusetts Department of Energy Resources

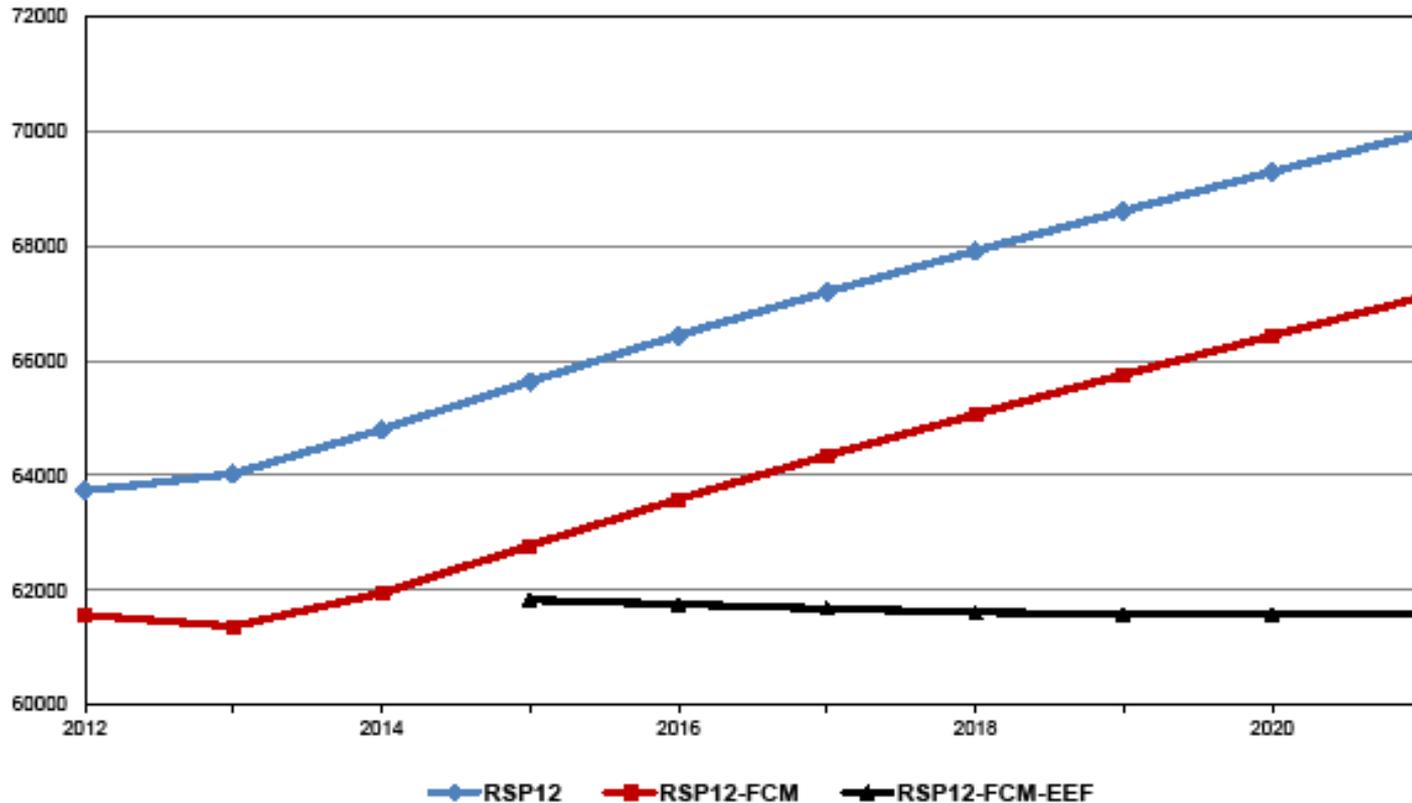
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# Nation-Leading Energy Efficiency Goals

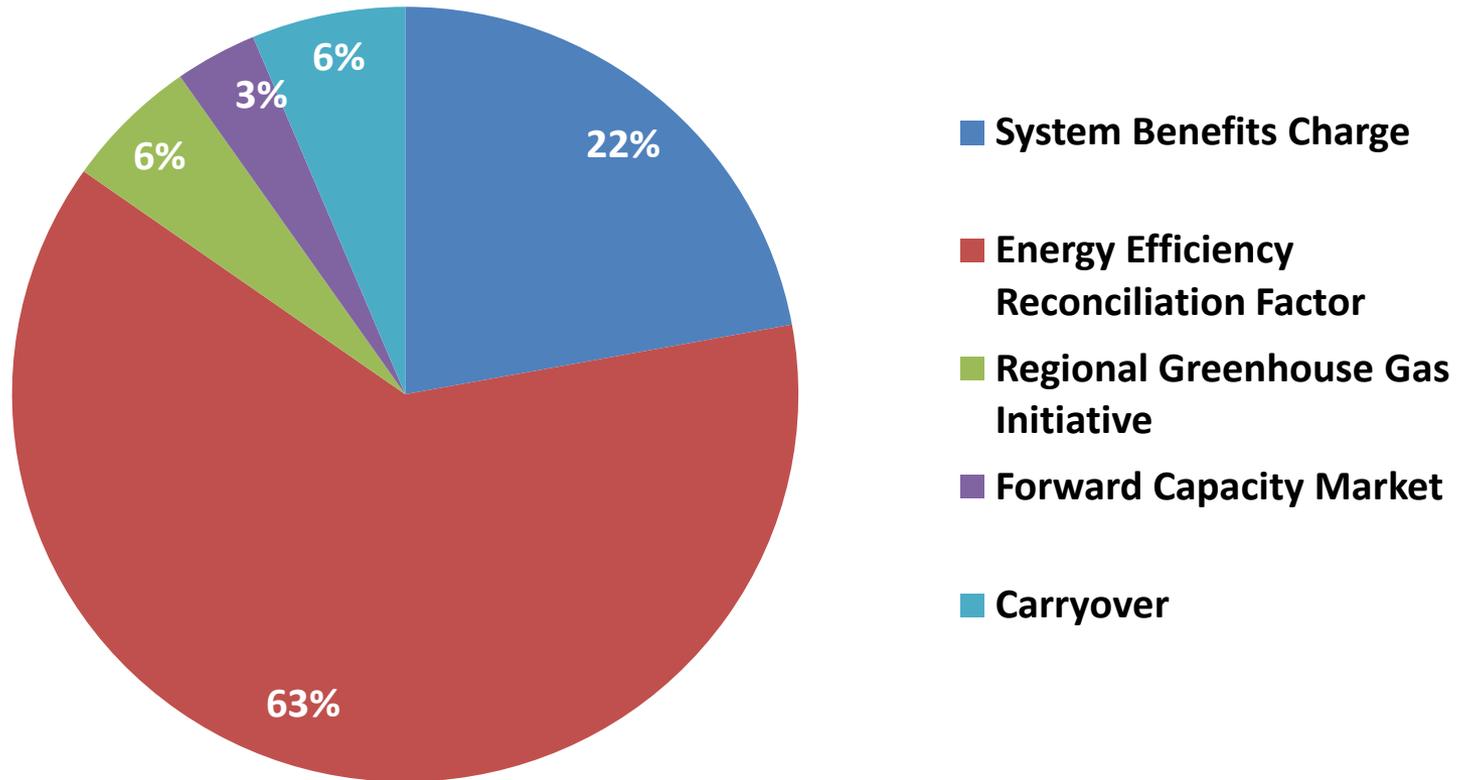
| Three Year Plan Goals                      | 2010-2012 Plan<br>(ACTUAL) | 2013-2015 Plan | % Increase |
|--|----------------------------|----------------|------------|
| Program Investment (million \$)            | \$1,627                    | \$2,246        | 24%        |
| Total Benefits (million \$)                | \$6,039                    | \$8,923        | 49%        |
| Annual Electric Savings (GWh)              | 2,625                      | 3,706          | 41%        |
| Annual Therm Savings<br>(million therms)   | 57                         | 72             | 26%        |
| Lifetime Electric Savings (GWh)            | 28,530                     | 40,279         | 41%        |
| Lifetime Therm Savings (million<br>therms) | 766                        | 937            | 22%        |
| Total Costs (TRC)<br>(million \$)          | \$2,178                    | \$2,785        | 28%        |

# External Factors-ISO-NE Forecast

MASSACHUSETTS Annual Energy: RSP12 Forecast (GWh)



# Funding Sources for 2013-2015



# Regulatory Landscape

## Green Communities Act (GCA)

Electric and natural gas resource needs shall first be met through **all available, cost-effective energy efficiency** and demand reduction resources

## Energy Efficiency Advisory Council

15 voting members, 13 non voting (including each PA)

Stakeholders: business groups, unions, environmental groups, consumer advocates

Council consultants provide 3<sup>rd</sup> party expertise and review

Review Monthly dashboards, quarterly reports, annual reports and review of DPU filed reports and plans

Review and provide feedback on draft and final plans

## Department of Public Utilities

Review and approve Three Year Plans and Mid Term Modifications

Review cost effectiveness, bill impacts and Technical Reference Manual (TRM)

Review Annual Reports, including Evaluation, Monitoring and Verification studies

Energy Efficiency Reconciliation Factor filing

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of Energy Resources

# Savings and Benefits



- \$6.7B in net benefits for the Commonwealth
- Verified energy cost savings to residents and businesses
- Measurable economic and socioeconomic benefits
  - Short and long term benefits
- Environmental benefits
  - EE supports the objectives of the Global Warming Solution Act to reduce GHG emissions by 25% by 2020



# Reporting and Transparency

- **Monthly dashboards:** participation, expenditures, savings at the sector level
- **Quarterly reports:** same as monthly data, plus aggregated benefits at the program level  
Breakdown of “non energy benefits” at program level  
Emissions data: MA based and region wide sector level
- **Plans/MTMs:** 08-50 tables, screening models
- **Annual reports:** annual report tables
- **Annual report to the legislature**

# Data Tables: 08-50 Tables for Electric and Gas

| ELECTRIC  | GAS  |
|---|--|
| Funding Source by sector : SBC, FCM proceeds, RGGI proceeds, EERF   | Same: all rate payer funds   |
| Budgets by program (PP&A, M&A, Incentives, STAT, EM&V)  | Same   |
| Savings Table (annual and lifetime)   | Same   |
| Cost Effectiveness by program (Total Resource Cost test)  | Same   |
| Energy Benefits by program; capacity and energy (generation, transmission, distribution, DRIPE)                     | Energy Benefits by program; capacity and energy<br>(No transmission, distribution or DRIPE)            |
| Non Electric Benefits by program (resource: avoided natural gas, oil, propane, wood, water, kerosene, non resource) | Non Electric, Non Gas benefits by sector (resource: oil, propane, wood, water, kerosene, non resource) |
| Performance Incentive by sector   | Same   |
| Lost base Revenue by sector (NStar only)  | Same   |
| Low Income Minimum by sector  | Same   |

# Savings and benefits verification

- Savings are evaluated through in field inspections and testing, impact evaluations, and documented in the TRM
- Incremental cost study – Regional effort
- Economic value: energy value, capacity value relevant to the savings (savings x avoided cost)  
Avoided Costs are determined through the Avoided Energy Supply Costs study, a Regional effort

# Breakdown of Benefits

| TOTAL BENEFITS | Electric Benefits (capacity and energy) | Gas Benefits    | Resource benefits (oil, water, propane) | Non Resource benefits | Total Benefits  |
|----------------|---|-----------------|---|-----------------------|-----------------|
| Electric Plan  | \$6,070,508,898                         | \$(431,740,166) | \$671,033,530                           | \$1,261,864,939       | \$7,571,667,203 |
| % of total     | 80%                                     | -6%             | 9%                                      | 17%                   | 100%            |
| Gas Plan       | \$73,785,518                            | \$851,566,091   | \$34,336,614                            | 391,165,139           | \$1,350,853,362 |
| % of total     | 5%                                      | 63%             | 3%                                      | 29%                   | 100%            |

Examples of non resource benefits:

Residential: thermal comfort, noise reduction, increase in property value, home durability, reduced equipment maintenance, health benefits, reduced arrearage (low income)

C&I: Avoided O&M costs, avoided admin costs, increase in rent revenue

# Evaluation, Verification and Monitoring

- **Impact evaluation**

- Refine planning assumptions prospectively, via statewide technical reference manual (TRM)
- Reconciliation of savings retrospectively, via annual reports
- Inform program screening and cost-benefit analysis

- **Process evaluations**

- Improve program design and delivery

- **Market assessment**

- Support program planning and implementation
- Inform policymaking

- **Incremental Cost Studies**