



Program Designs- Energy Saving Program (ESP)

Day: Wednesday February 18th

Time: 3:30-5 PM

Room: Nautilus 2

Presentation Agenda



Michael Berry-Senior Manager, ICF:

- *Improvise, Adapt and Overcome-Program Designs-Why Change?*

Steve Ellison-Senior Manager, ICF:

- *Climate Zone 3: New Homes Program Transitions under 2009 IECC-A quick look at Residential, New Construction EE Programs in Oklahoma, Arkansas & New Mexico*

Peter Hubbe-Associate, ICF:

- *Massachusetts Residential New Construction Low Rise Program Energy Savings Initiative*



Improvise, Adapt and Overcome

Program Designs-Why Change?

**"You improvise.
You adapt.
You overcome."**

**~ Clint Eastwood
Heartbreak
Ridge**

Agenda

- Driving Change in MA
- MA Overview
 - Current Program Design
 - Program Process Overview
 - Flow Charts
 - Cost Per Unit of Energy Analysis
- Program Planning Discussions
 - Streamlining Opportunities
 - Vendors Role
 - Cost Effectiveness

MA: NUMBER 1 RANKING

ACEEE STATE ENERGY EFFICIENCY SCORECARD



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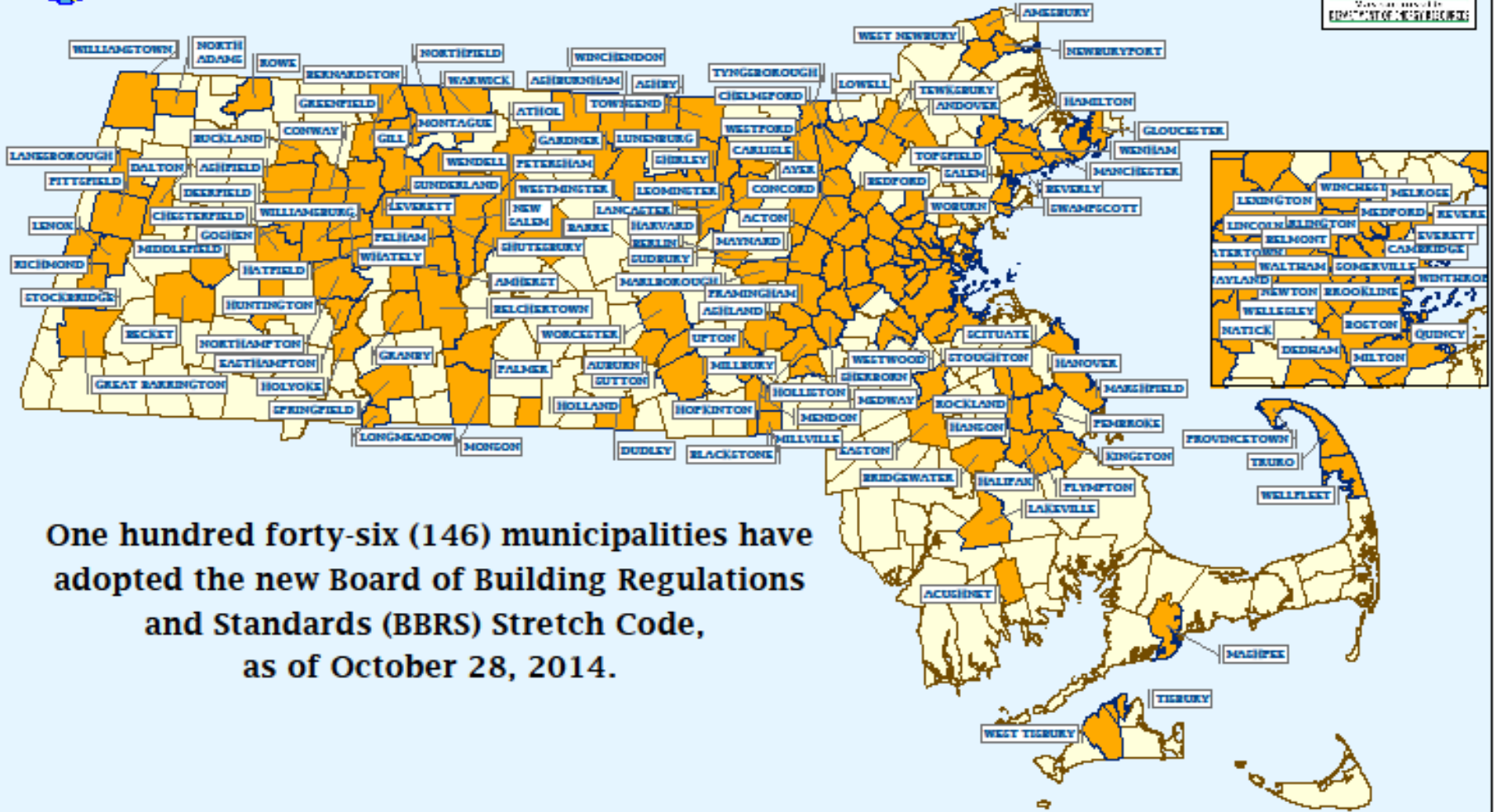
GREEN COMMUNITIES ACT (GCA)



- Electric and natural gas resource needs shall first be met through all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply.
- Acquisition of all available energy efficiency and demand reduction resources that are cost effective or less expensive than supply
- Seek to maximize net economic benefits through energy efficiency and load management resources while achieving energy, capacity, climate and environmental goals through a sustained and integrated statewide energy efficiency effort.



Stretch Code Adoption, by Community



Massachusetts Residential New Construction Program Design



- For Builders or Home-Owners constructing low and high rise single-family homes and multi-family buildings, the Program Administrators (PAs) provide participants the following:
 - Direction on how to achieve greater energy efficiency for heating, cooling, lighting, and appliance operations
 - Homes are designed, site inspected, and performance tested to the Programs requirements
 - Participants follow one of several paths and must meet a verified level of performance in order to receive Program incentives

Program Design-Low Rise



2 Residential New Construction Paths

Multiple Options in each Path

Key Features

**Low-Rise Path
1-3 Stories**

Prescriptive Option 1

High Efficiency HVAC and DHW, WaterSense fixtures, all ducts in conditioned space, low air infiltration and mechanical ventilation. Other: Programmable thermostats and high efficacy lighting.

Prescriptive Option 2

Same as above, but with enhanced envelope levels: R60 roof, R40 wall, R20 foundation, R10 slab

Performance Option

Continuation of the 2012 3-tiered program design: 15%, 30%, or 45% improvement or better over the 2012 MA UDRH and compliance with the Air Sealing and Insulation Section of Thermal Enclosure checklist.

**High-Rise Path
≥ 4 Stories**

**Residential In-Unit Savings
Prescriptive Option**

A focus on in-unit residentially metered electric savings. Appliances, lighting, domestic hot water usage, and in-unit production.

**Whole Building Simple
Prescriptive Option**

Focus on a simplified package of offerings including both in-unit and whole building energy savings for gas and electric ECMs (Envelope, HVAC, DHW, Pumps & Motor and Common Area Lighting)

**Whole Building Interactive
Prescriptive Option**

An interactive tool that allows participants to fine tune their design decisions to maximize energy efficiency and increase incentive opportunities. In-unit and whole building ECMs are comprehensively addressed.

Program Design-Vendors Role

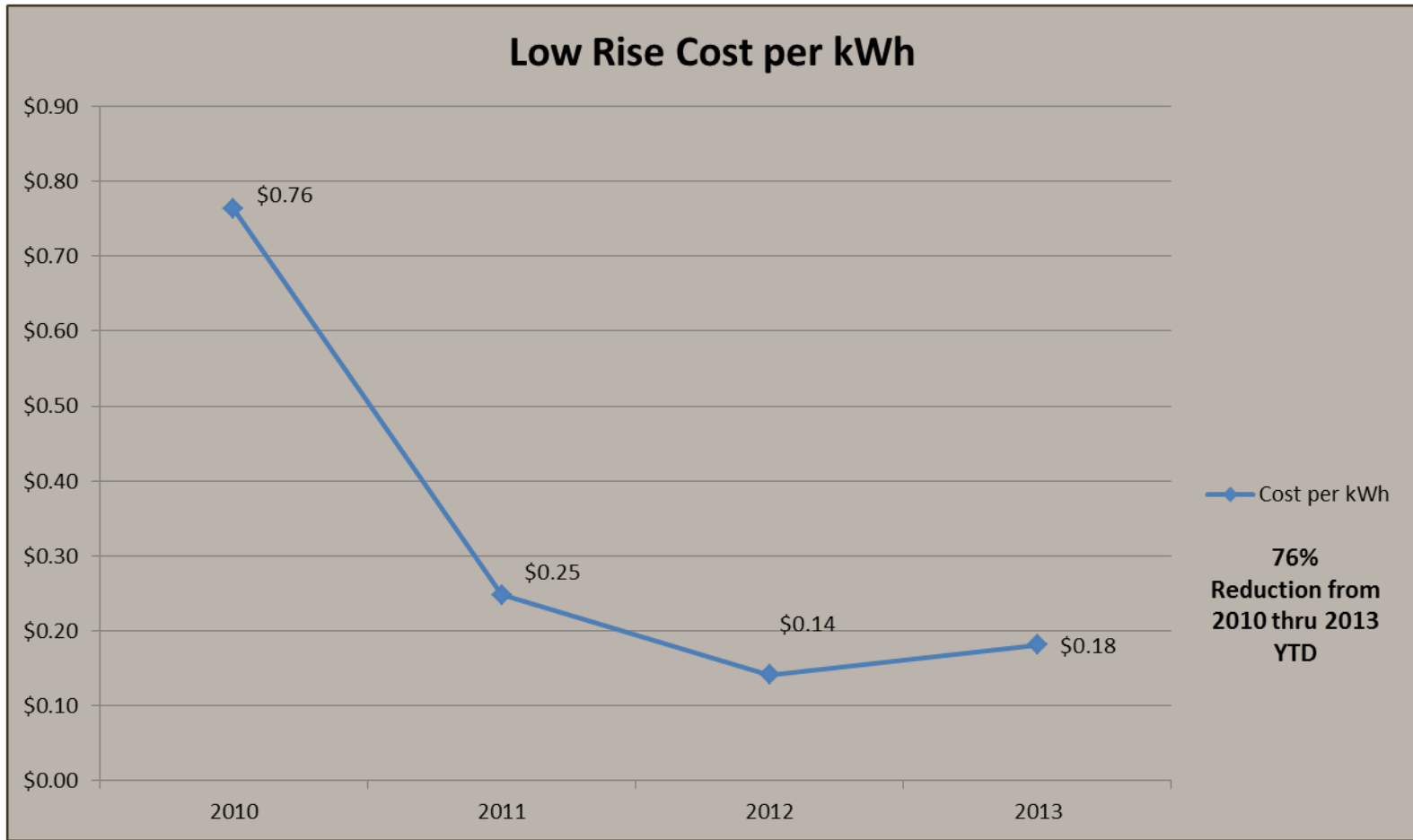


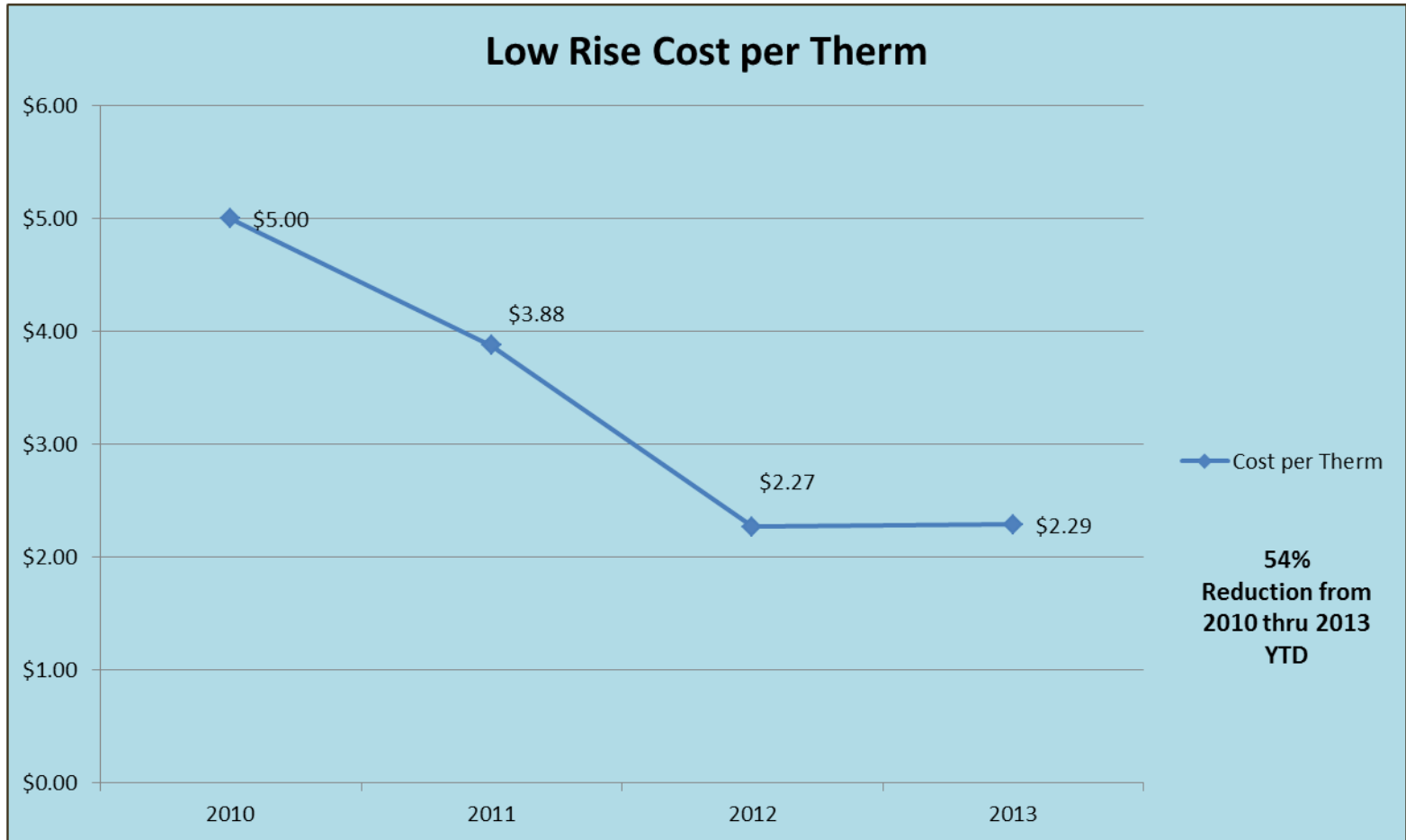
- Vendor provides the following:
 - Program Oversight and Management
 - HERS Rater Oversight
 - HERS Rater and Code Support Trainings
 - Marketing
 - Data Management, Project Verification, and Reporting
 - Invoicing
 - Initiative Program Implementation
 - **Short and Long Term Program Design Planning**

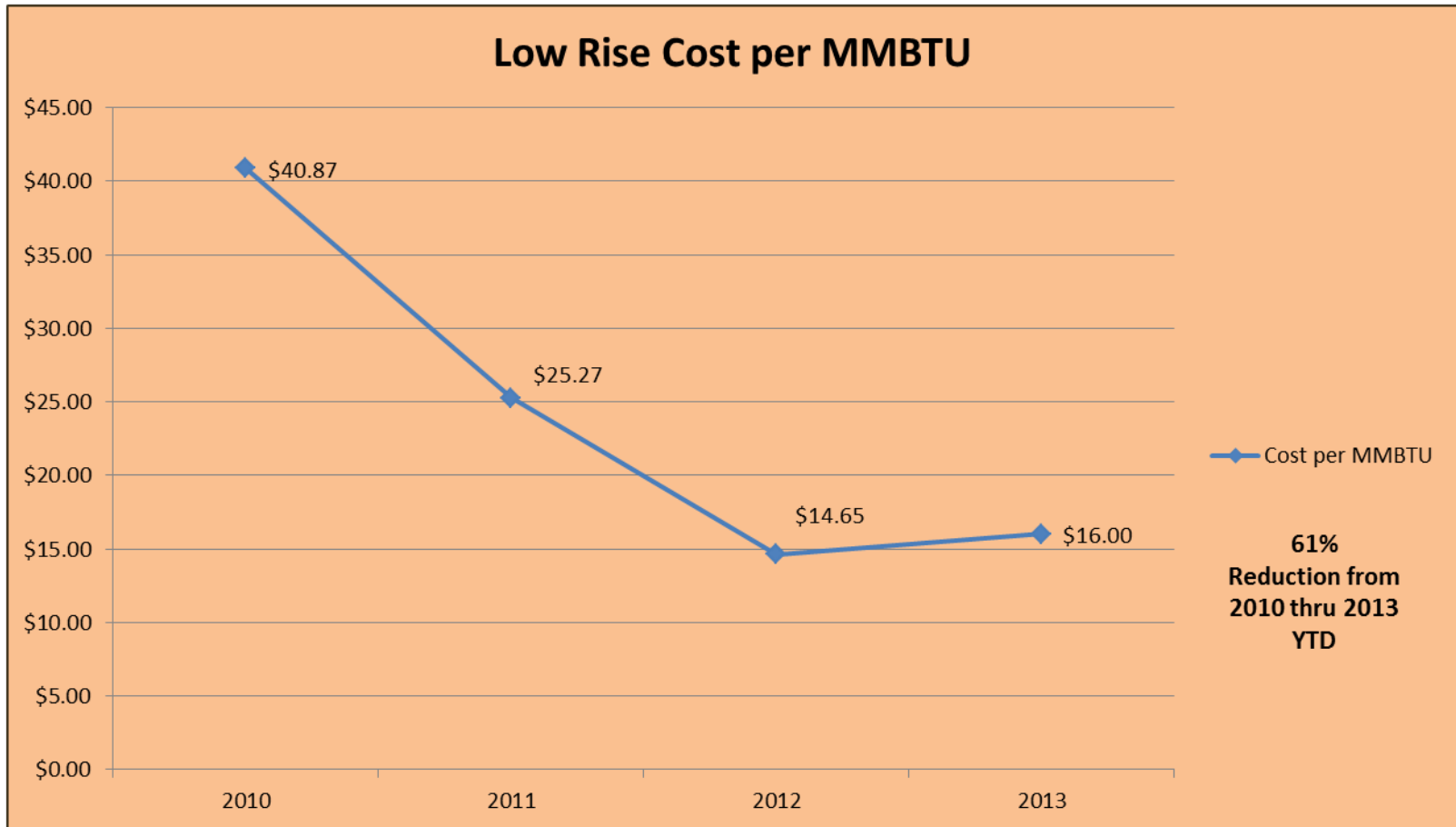
Program Design-Cost Per Unit of Energy Analysis



- Between 2010 -2013 the Program increased in complexity and offerings, the cost per unit of energy has decreased
- Working with PAs, the vendor identifies additional areas where the Program can be streamlined to increase operational efficiencies and decrease administrative cost
- The vendor also identifies additional areas to streamline







Streamlining Opportunities



The following items have been identified as areas to streamline the Program and decrease administrative costs:

- Moving away from a multi-tiered program design to a simpler “pay for savings” model
 - Offer an incentive for every unit of energy saved
 - Incentives will be based on a sliding scale, with higher incentives offered for deeper savings
 - During 2014 a working group was convened to design a BTU’s per square foot offering, meetings are being held monthly
- Simplify energy savings calculations and reporting

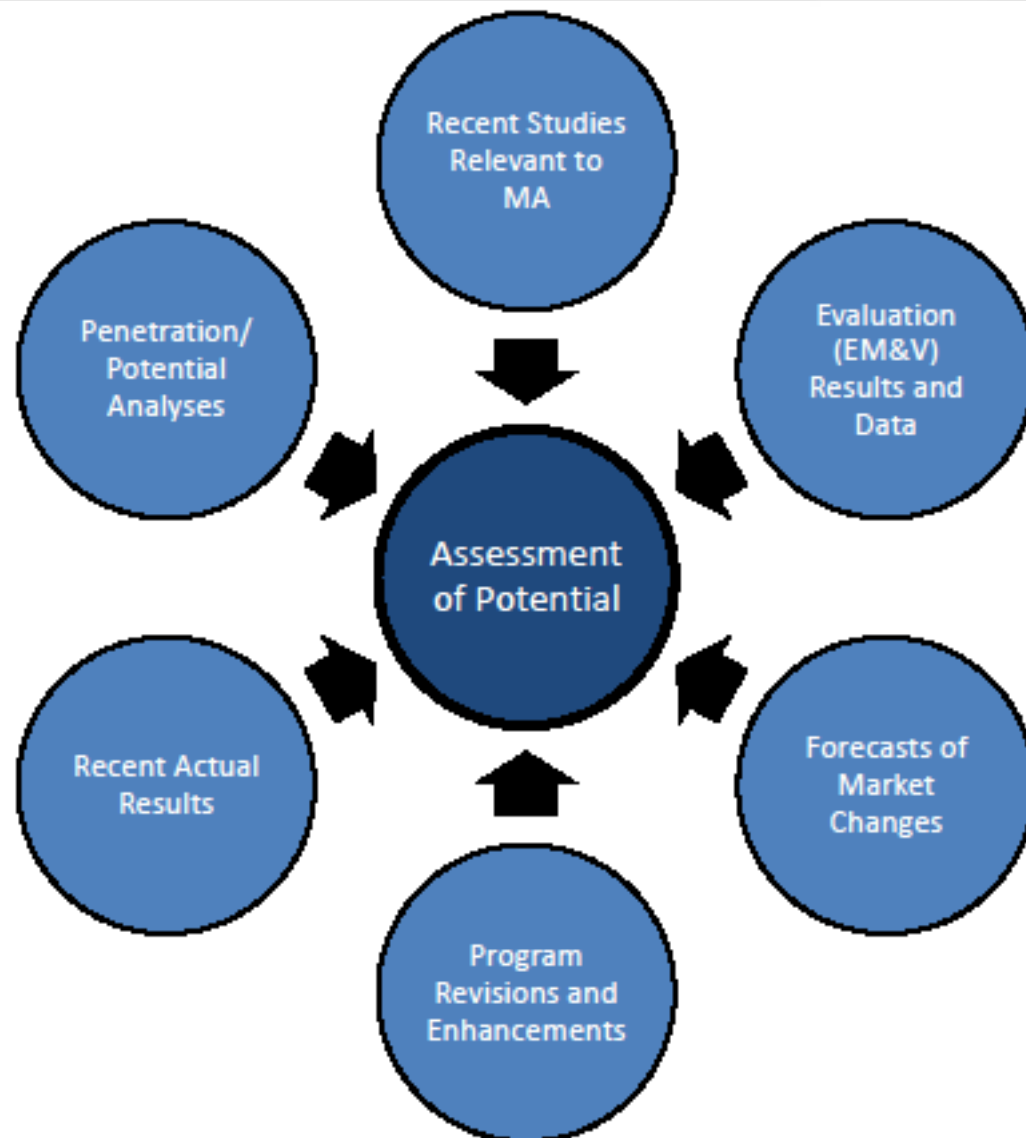
- Moving towards an un-subsidized Rater market
 - Proposed several times, however PA's have been reluctant to altering the Rater subsidy due to concerns that it will negatively impact Program participation and reporting
 - Vendor needed to formulate a transition plan that would align with the three year plan and the states adoption of new energy codes
 - Vendor works with Program Raters to prepare the market in the event the subsidies are lowered or removed
 - Altering the current process around the Rater subsidy would decrease administrative time
 - Currently the Program offers one Low-Rise path that does not subsidize the Rater

KEY STEPS EARLY IN THE PLANNING PROCESS



- Assessment of potential
- Goals framework and levels of goals
- Budgets and funding
- Cost to achieve savings (cost drivers)
- Cost effectiveness
- Performance incentives for the PAs
- Program strategies and enhancements

ASSESSMENT OF POTENTIAL



WHAT GOALS ARE REALLY USED? AND HOW?



- Initial goals are developed and negotiated using % savings – i.e., annual energy savings as a % of retail sales (in order to put all PAs on a level basis)
- The % savings goals used for goal development and negotiation are translated into the real goals:
 - Annual savings (physical units of kWh and therms, not %)
 - Lifetime savings (savings over the measure lives)
 - Benefits (\$, economic value of the savings, from all fuels)
 - Net benefits (\$, benefits minus costs)
- Performance incentives are based mainly on:
 - “Savings” component – incents achievement of benefits (\$)
 - “Value” component – incents achievement of net benefits

COST EFFECTIVENESS, TRC TEST



1. Cost effectiveness is determined using the Total Resource Cost (TRC) Test
2. Benefit cost ratio (BCR) = ratio of total lifetime benefits divided by total costs
3. Benefits = economic value of the savings due to the programs
4. Costs = costs to the PA and the participant that are associated with the program and measure
5. For more detail, see: <http://ma-eeac.org/wordpress/wpcontent/uploads/TRCMassSave051011frev.pdf>

HOW DOES THE TRC TEST DETERMINE COST-EFFECTIVENESS?

- TRC test is applied by dividing the total lifetime **benefits** of a program by the total **costs** of the program, to create a Benefit Cost Ratio (BCR):

$$\text{BCR} = \frac{\text{Total benefits (\$)}}{\text{Total costs (\$)}}$$

If the BCR is	it is considered	because
≥ 1.0	cost-effective	benefits exceed costs
< 1.0	not cost-effective	costs exceed benefits

Continual Improvement and Change

