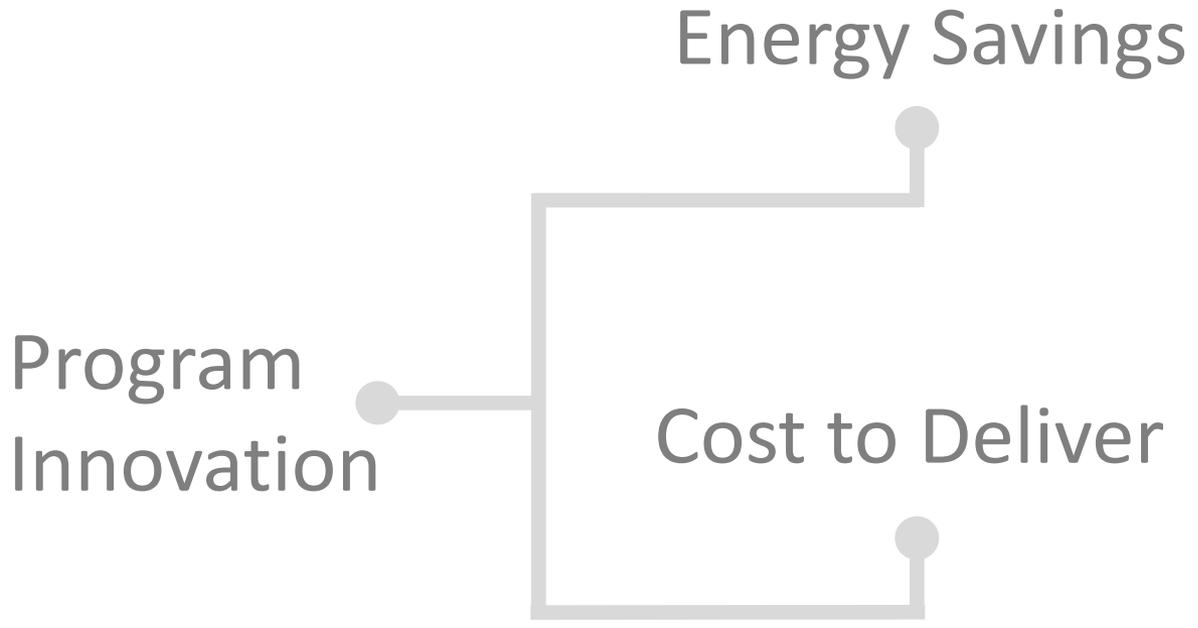


Residential Pilot Program Proposal

March 23, 2016



Why pilot a different delivery model from Mass Save HES?

- Mass Save HES: a fixed menu approach – designed for delivery at scale, but doesn't fit the needs of all homes
"I want to focus on the what the customer needs, not what measures the program offers"
- Complex program and comprehensive measures requires a lot of data collection and reporting
"The program needs to be simpler, a lot of staff time is taken up with data entry"
- Residential Lighting savings are diminishing as EISA /DOE standards take effect

Recommendations: Pilot a contractor-led delivery model. Simplify and streamline data collection where possible

Program models discussed in RCWG

MA (HES)



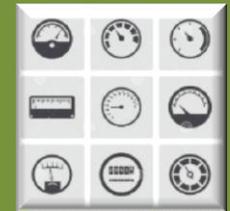
- Savings based on statewide measure evaluation & model of each home

OR_(Portland)



- Savings based on model of each home's energy use

CA (P4P)



- Savings tied to TOU metered results
- Portfolio averages out variability

Other New England states

Maine: Efficiency Maine - Home Energy Savings Program

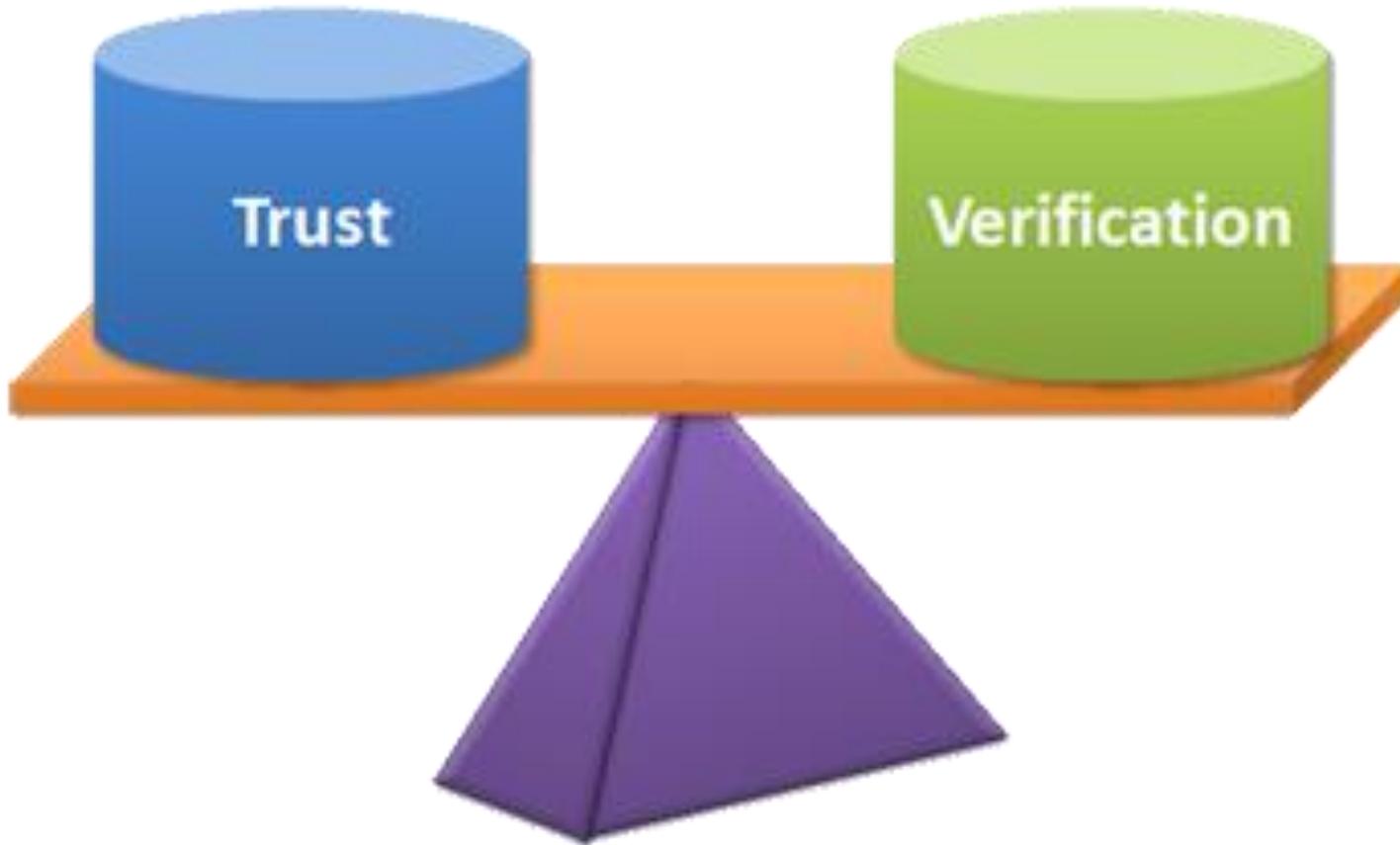
- Contractor led model
- Paper audit option – fixed rebates, low cost financing
- Model audit option – performance-based
- Flexible insulation – spray foam, cellulose, rigid foam
- Promoting non-fossil fuel option – heat pumps, solar and biomass

Vermont: Home Performance with Energy Star

- managed network of qualified contractors who have knowledge of building science, and experience with a range of building types
- Program goals include promoting electrification

MA Summary: Pilot Straw Proposal

- Contractor-focused model:
 - Contractor audit and delivery
 - Open market pricing set by contractors
 - Contractor has the customer relationship, and liability
 - Contractor and homeowner determine best solution for the house
- Performance-based; home-specific incentives:
 - 2 audit options: Simple incentive or Modeled incentive for weatherization
 - Potential additional incentive based on before & after meter data compared to predicted savings (Meter data release form required)
 - Identify “top” contractors based on meter data (% savings, better than model)
- Leverage open-market Mass Save[®] rebates; add access to financing
 - Regular non-HES Mass Save rebates for HVAC, appliances, etc.
 - Access to DOER Expanded HEAT loan and Solar loan
- Use innovative software/solutions to streamline process
 - Audit software from a HPXML provider; possibly usage-calibrated
 - Minimal audit option – similar to Efficiency Maine, consider scannable forms
 - Real-time EM&V 2.0 – streamline data collection (need utility billing data)

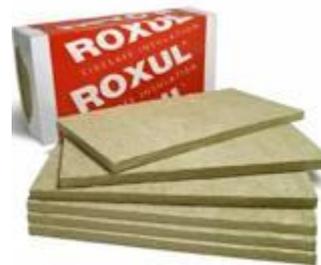
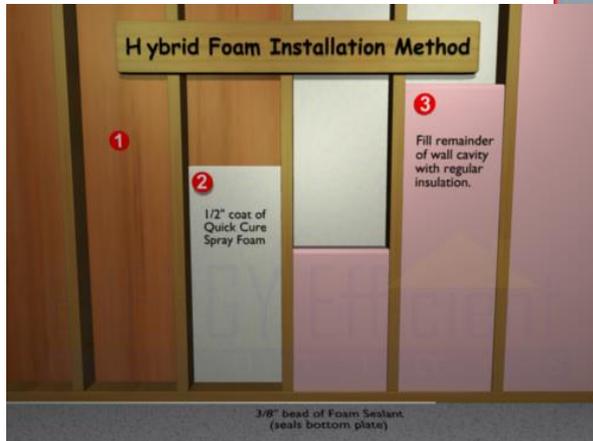


TRUST BUT VERIFY

(more) Trust in Contractors

- Identify customers
- Set project scope
- Set project cost
- Receive incentives

Materials choice



Verify energy Savings (more quickly)

- Existing QA/QC – check measures installed
- Incentive requires customer usage data
- Compare modeled savings to bill savings
 - 12 months pre and post install
- Feedback to contractors on portfolio
- Bonus incentive based on portfolio

Verify: Metrics for Contractors

- Depth of savings:
 - Average bill savings per home
- Actual vs. Model:
 - % bill savings relative to model prediction
- Cost of savings:
 - Average \$/MMBtu per home
- All contractors see their own metrics
 - Top 3 contractors made public

Innovations: EM&V 2.0

- Tracking fuel use savings allows for more rapid feedback to contractors and program vendors
 - Opportunity to improve model predictions
 - Rewards professional installation
- Pilot launched in 2017 needs early results to inform 3-year planning in 2018
- Provides an opportunity to true-up savings from modeled or deemed savings estimates



2 AUDIT PATHS - CONVERGE

Home Audits: 2 Contractor options

12 month true-up – Sample numbers

SIMPLE AUDIT

Audit/Assessment	0
Minimal set of home data	40
Air sealing w/ blower door	700
Insulation:	
Attic	1000
Wall	1000
Basement	700

Attic only Whole house

Upfront Incentive

\$ 1,740 \$ 3,440

ENERGY MODEL AUDIT

Energy model audit	150
Air sealing w/ blower door	125 \$/mmbtu
Whole house	
5% - 20%	125 \$/mmbtu
20% - 40%	150 \$/mmbtu
>40%	160 \$/mmbtu

Attic only Whole house

Upfront Incentive

\$ 2,500 \$ 4,300

Billing data Savings	1 year bonus
5% - 20%	125 \$/mmbtu
20% - 40%	150 \$/mmbtu
>40%	160 \$/mmbtu

Billing data	1 year bonus
5% - 20%	125 \$/mmbtu
20% - 40%	150 \$/mmbtu
>40%	160 \$/mmbtu

**Average Total after 1 year bonus
(requires min. of 20 homes)**

\$ 2,600 \$ 4,300

\$ 2,600 \$ 4,300

1. Simple audit option – Flat incentives

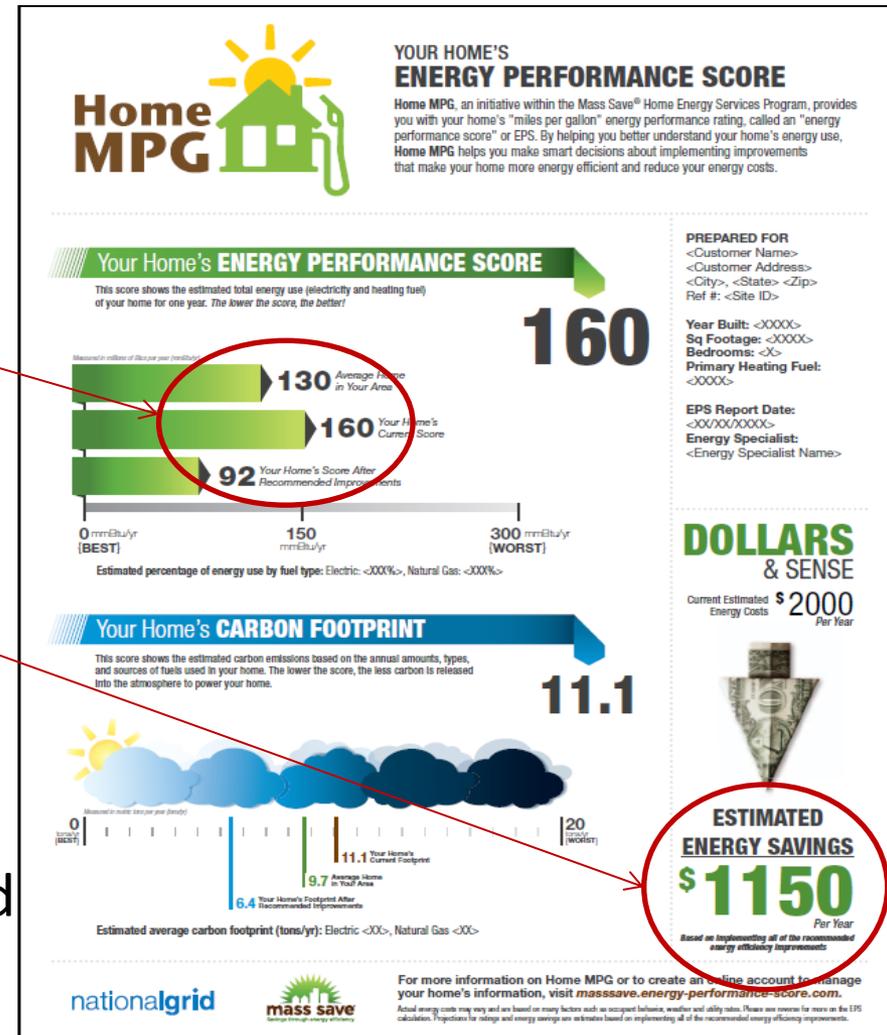
- No Lighting or other ISMs required
- Simple Audit data collection fee \$40
- Air sealing: \$700
- Walls or Attic: \$1,000
- *E.g. Total Prescriptive incentive \$1,740*
- Good chance of higher total savings
- Usage Data release form allows tracking of meter savings
 - 12 month true-up potential for significant additional incentive payment.

2. Model Audit option – performance-based incentives

- Similar in many respects to existing Mass Save home assessment
- Differences:
 - No Lighting or other ISMs required
 - Contractor/customer choice on measure mix
 - Utility data collection required for incentive
- Incentive for model audit and blower door result
- Incentive in \$\$/MMbtu saved based on project specific modeled estimate

Innovations: Customer Scorecards

- Scorecards provide an asset based estimate of a home's annual energy consumption that can be easily compared to other homes.
- Scorecards would provide homeowners an easy-to-understand summary of MMBtu based incentives.
- Updated scorecards show homeowners their improved performance



Energy Model Audit example

- Contractor assessment
 - Energy Model audit fee \$150
- Recommended air sealing and spray foam attic measures
 - Modeled incentives total \$2,500
- Data release form allows tracking of meter savings
 - 12 month true-up limited potential for additional incentive payments.

12 month data true-up - Savings

- Collect actual meter savings – weather adjusted
- Compared to model savings
- Each home has + or – net savings
- Require 20 homes or more in portfolio
 - Contractor can claim bonus on net savings (ie. Performance better than model)
 - Contractor can wait for larger portfolio (potential for larger savings)

Home Audits: 2 Contractor options

12 month true-up – Sample numbers

SIMPLE AUDIT

Audit/Assessment	0
Scanned form home data	40
Air sealing w/ blower door	700
Insulation:	
Attic	1000
Wall	1000
Basement	700

Attic only Whole house

Upfront Incentive

\$ 1,740 \$ 3,440

ENERGY MODEL AUDIT

Energy model audit	150
Air sealing w/ blower door	125 \$/mmbtu
Whole house	
5% - 20%	125 \$/mmbtu
20% - 40%	150 \$/mmbtu
>40%	160 \$/mmbtu

Attic only Whole house

Upfront Incentive

\$ 2,500 \$ 4,300

Billing data Savings	1 year bonus
5% - 20%	125 \$/mmbtu
20% - 40%	150 \$/mmbtu
>40%	160 \$/mmbtu

Billing data	1 year bonus
5% - 20%	125 \$/mmbtu
20% - 40%	150 \$/mmbtu
>40%	160 \$/mmbtu

**Average Total after 1 year bonus
(requires min. of 20 homes)**

\$ 2,600 \$ 4,300

\$ 2,600 \$ 4,300



NEXT STEPS

Innovations: Fuel switching incentives

- State RCS regulations allow for fuel switching
- Current Mass Save programs are fuel neutral but don't promote fuel switching
- DOER working on quantifying savings where primary heating fuel is changed. Examples:
 - Oil to Air-source heat pump
 - Propane to Biomass pellets
 - Solar PV or solar thermal reducing load

Selection of vendors

- DOER RFP going out soon
 - Selecting Lead Vendor
 - Selecting Software providers
 - Selecting QA/QC
- Preference is for teams with experience in performance-based program delivery
- Contractor recruitment begins once vendors are finalized – Late spring/early summer

Contractor selection

- All contractors eligible
- Qualifications required – BPI or equivalent certification, and minimum field experience
- If over-subscribed – selection based on lottery and geographic coverage

Questions? Comments

- Please type in questions if on GoToWebinar

Data collection challenges

- Oil / Propane usage data
 - How do we quantify oil or propane savings without a meter?
- Electric and Gas meter data
 - Access to meter data: customer or PA release?
- Fuel switching / PV systems
 - How do we count MMBtus in situations with a fuel switch?
- Remodeling projects
 - How do we count incremental costs of EE in a larger (e.g. ice-dam repair, or kitchen remodel) project?
- Evaluation: Rebound/comfort effects
 - WiFi Thermostat data or sub-metering sample?