Multi-Family Retrofit

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Agenda

- Overview of Multi-Family Initiatives
- Recent Evaluations
- Looking Forward

Overview

Who Can Participate in the Initiatives?

Multi-Family Retrofit

- 5+ units on the property
  - Building configurations come in all shapes and sizes
- Commercial or residential meters
- Gas, electric, or delivered fuels
- Property owners, condo owners, property managers, residents

Low Income Multi-Family

At least 50% of the households have income at or below 60% of the State Median Income

New Construction Multi-Family

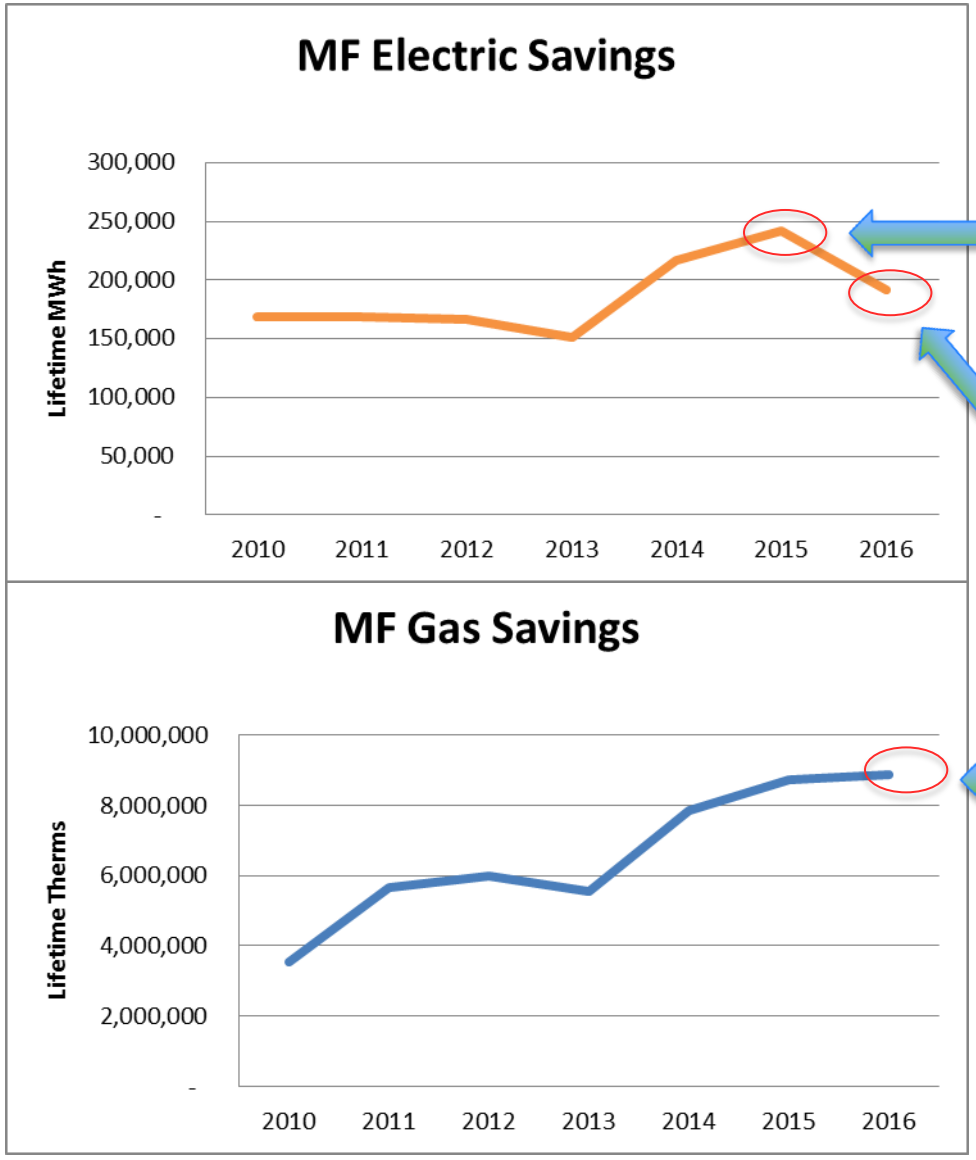
5+ units of ground up new construction or major renovation

2016-2018 Enhancements

A - Residential
A1 - Residential Whole House
Residential New Construction & Major Renovation
Residential Multi-Family Retrofit
Residential Home Energy Services
Residential Behavior/Feedback Program
A2 - Residential Products
Residential Cooling & Heating Equipment
Residential Lighting
Residential Consumer Products
A3 - Residential Hard-to-Measure
B - Low-Income
B1 - Low-Income Whole House
Low-Income New Construction
Low-Income Single Family Retrofit
Low-Income Multi-Family Retrofit
B2 - Low-Income Hard-to-Measure
C - Commercial & Industrial
C1 - C&I New Construction
C&I New Buildings & Major Renovations
C&I Initial Purchase & End of Useful Life
C2 - C&I Retrofit
C&I Existing Building Retrofit
C&I Small Business
C&I Multifamily Retrofit
C&I Upstream Lighting
C3 - C&I Hard-to-Measure

- Project Point of Contact (PPC)
- New Commercial Multi-Family Electric and Gas reporting lines
- Delivered fuel services
- Joint (Resi & Commercial) Multi-Family implementation group
- Exploration of new technologies and measures
- Refinement of Energy Action Plan, Multi-Family Market Integrator, targeted marketing

Multi-Family Savings Achievements Over Time



- New lighting impact factors as a result of evaluations
- Changes to lighting lifetime savings as a result of new federal standards
- Commercial Multi-Family Electric & Gas tracked in a Commercial Multi-Family line items

Delivered Fuels

2016 Residential Multi-Family Delivered Fuel Services

Units served with insulation		649
% of 2016 MF units served		2%
MMBtu saved		2,768
Incentives	$	473,732
Benefits	$	2,076,798

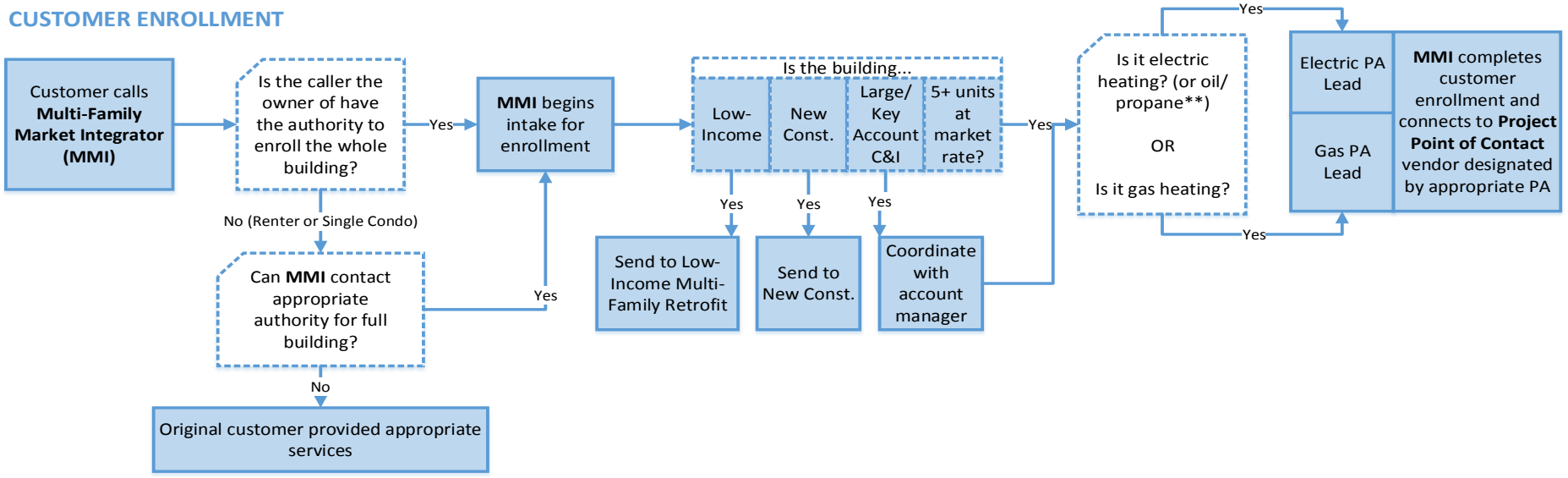
2016 Commercial Multi-Family Delivered Fuel Services

Meters served with insulation		48
% of 2016 MF meters served		7%
MMBtu saved		364
Incentives	$	35,790
Benefits	$	188,637

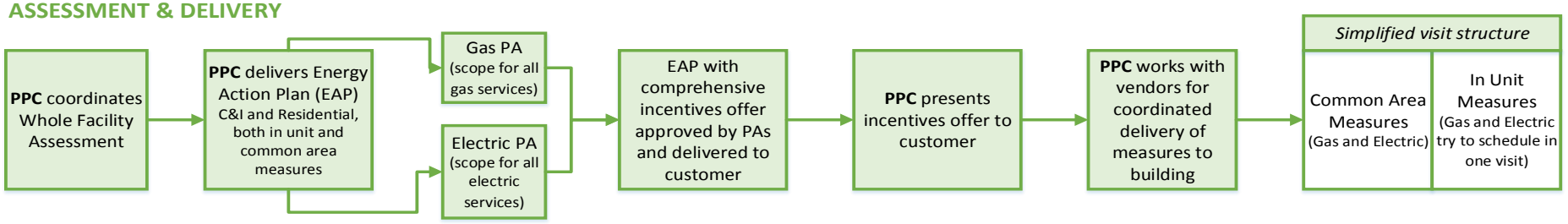
- Began delivered fuel offers in Spring 2016
- PAs continue to increase marketing efforts
  - Increased weatherization incentive in Winter 2016

Multi-Family Process Flow

CUSTOMER ENROLLMENT



ASSESSMENT & DELIVERY



Customer has a single point of contact that can serve the whole building regardless of fuel or meter type.

Costs and savings from actual measures recommended or installed may still be recorded in other initiatives, such as Residential Heating & Cooling or C&I Upstream.

Common Measures Offered

PRESCRIPTIVE MEASURES

- Insulation (attic, wall, basement, rim)
- Refrigerators
- Light fixtures, common area &exterior
- Occupancy sensors
- VSD pumps and VFD fans
- Wi-Fi thermostats

No-Cost Measures

- In-unit and common area lamps
- Smart strips
- DHW saving devices
- Programmable t-stats
- Air sealing, where applicable

Custom Measures

- Heating & Cooling Systems
- Hot Water Systems
- Energy Management Systems
- Other

Case Study – Columbia Gas/ National Grid

	Townhome condos Norton, MA
Project cost	$328,004
Mass Save incentive - E	$45,470
Mass Save incentive - G	$251,147
Owner's co-pay	$31,388
Lifetime kWh savings	13,388,838
Lifetime Therm savings	348,285

Site info:

- 153 units in 18 buildings
  - 93 signed up
- 2007 construction
- Forced hot air furnace
- Free standing hot water heater

What we did:

- Combustion safety test
- In unit measures
  - LEDs, DHW, smart strips
- Air sealing
- Attic insulation

Case Study – Cape Light Compact

	Garden style condos S. Yarmouth, MA
Project cost	$31,233
Mass Save incentive	$23,743
Owner's co-pay	$7,490
Lifetime kWh savings	148,483

Site info:

- 40 units
  - 27 signed up
- Electric base board

What we did:

- Common area fixtures
- Sealed air leaks
- Insulation
- Programmable thermostats
- In unit measures
  - LEDs
  - DHW
  - Smart strips

Case Study – Eversource

	5 unit apt building Montague, MA
Project cost	$9,885
Mass Save incentive	$9,018
Owner's co-pay	$867
Lifetime kWh savings	6,262
Lifetime MMBtu	1,944

Site info:

- 5 units
- Mix of heating fuels
  - oil (4)+ electric (1)
  - Central oil + electric base board

What we did:

- Air sealing
- Insulation – attic + wall
- In unit
  - LEDs
  - DHW
  - Smart strips

Case Study – Eversource/ National Grid

	217 unit apt building Boston, MA
Project cost	$197,134
Mass Save incentive – E	$138,326
Mass Save incentive - G	$26,208
Owner's co-pay	$32,600
Lifetime kWh savings	772,081
Lifetime Therm savings	58,818

Site info:

- 217 units, 21 stories
- Heat pump, water source

What we did:

- Air sealing
- Exterior + common area fixtures
- In unit
  - LEDs
  - Smart strips
  - DHW

Recent Evaluations

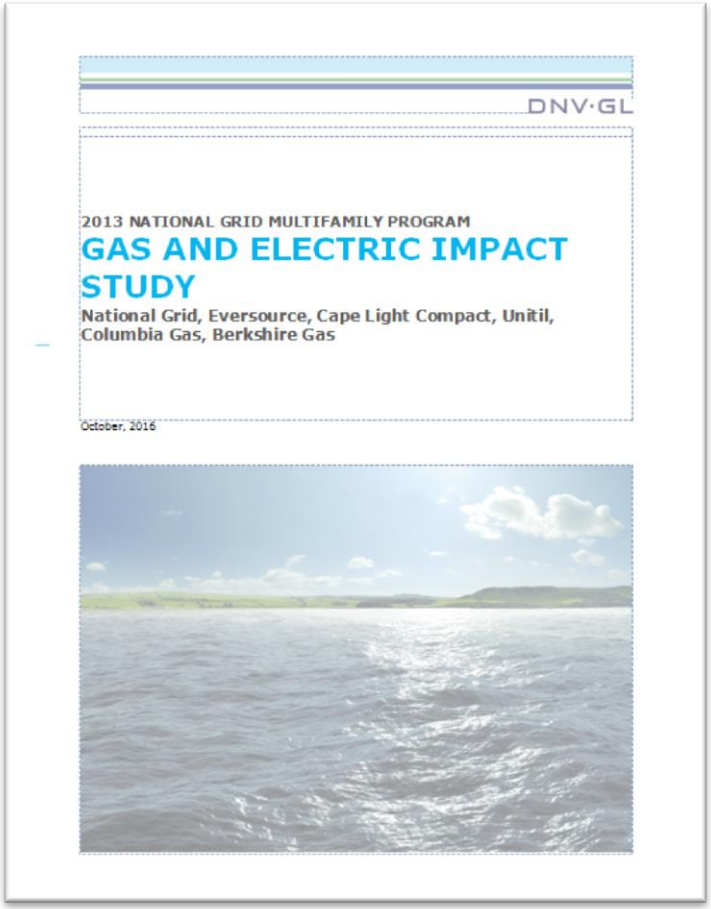
Multi-Family Evaluations

Eval #	Study	Process	Impact	Other	Status
1	Mass Save Multifamily Program Process Evaluation Report	✓			Complete (2015)
2	Multifamily Impact Evaluation		✓		Complete (2016)
3	Multifamily Program Improvement Strategies	✓	✓		Ongoing / Preliminary Results (3/29/17)
4	Census of Multifamily and Condos			✓	Ongoing
5	Multifamily Lighting Impact and Program Net-to-Gross Evaluation		✓	✓	Launching

Evaluation 2: Impact Evaluation

Gas realization rate of 86.2% applied to envelope, hot water and HVAC measures

"Given the difficulty in observing lighting savings due to its low savings signature, consider other evaluation methods in subsequent studies of this program when predominate [sic] savings is from lighting."



October 2016

Part 1, Evaluation 3: Program Improvement Strategies

Preliminary results

- ✓ Update lighting savings assumptions
  - HOU in-unit lighting
  - HOU common areas
  - In-service rate
- ✓ Highlighted need for strengthened project reporting and verification procedures

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Multifamily Program Improvement Strategies

Preliminary Results – Summary of Task 2b and 3 Findings

Prepared for:

The Electric and Gas Program Administrators of Massachusetts
Part of the Residential Evaluation Program Area

Submitted by:
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Part 2, Evaluation 3: Program Improvement Strategies, Other Questions

How do we expand comprehensiveness?

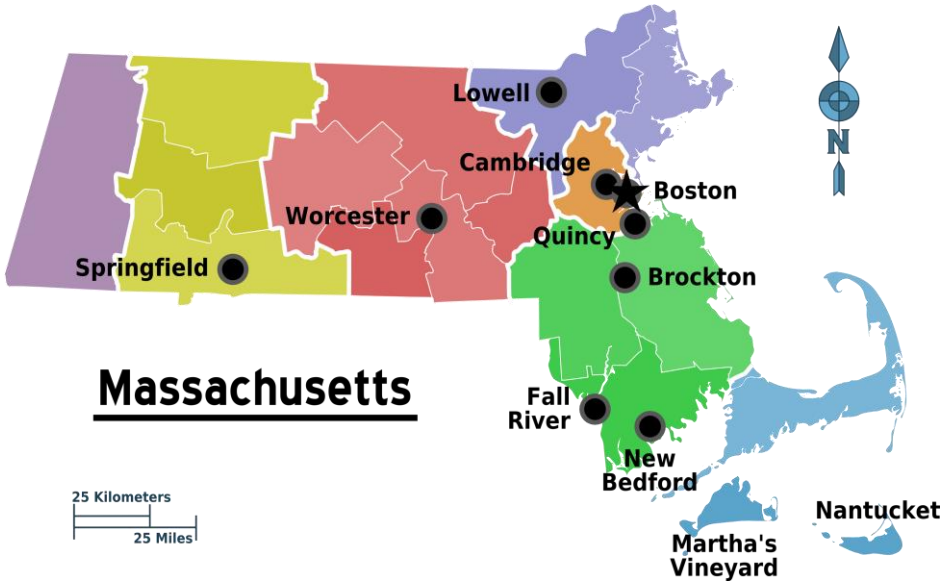
- Shift customer expectations to incorporate additional measures into projects
- Reinforce auditor training to identify and complete additional measure types

How do we continually improve?

- National literature review of best practices
- In-depth interviews for program implementation strategies

Evaluation 4: Census of Multifamily and Condos

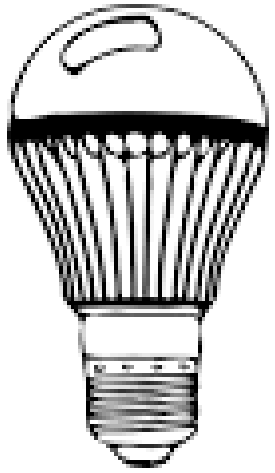
- Understand the full population of multifamily and condo properties
  - Geography
  - Number of units
  - Rental status
  - Delivered fuels
  - Occupant income
  - Program participation



- Assign premise identities and link to program activity

Evaluation 5: Lighting Impact & Net to Gross

- Lighting in-service rates will be updated in 2018
- Site visits will be conducted to confirm program changes
- Net-to-gross analysis



Looking Forward

Multi-Family Continuous Improvement

Lessons from Evaluation 3, Program Improvement

- Changes to lighting installation best practices
  - Switched to deemed savings for in-unit lamps using hours of use specific to Massachusetts Multi-Family
  - Discontinued installation of in-unit fixtures
  - Created new “EISA Exempt” category to more accurately track measure life of lamps
  - QA/QC processes being changed to “in-process” inspections to better capture pre and post conditions

Continuous Improvements, Continued

Additional Lessons from Evaluation 3, Program Improvement

- New vendor tools and trainings
  - e.g. building science, sales and marketing
- Improved program documentation
  - e.g. PA database improvements, new MF vendor manuals
- Improved program QA/QC policies
  - New processes for better communication between PPCs and QA/QC vendor
- New measures & offers
  - Duct sealing
  - CHP
  - Early retirement boilers, furnaces, central AC, washers

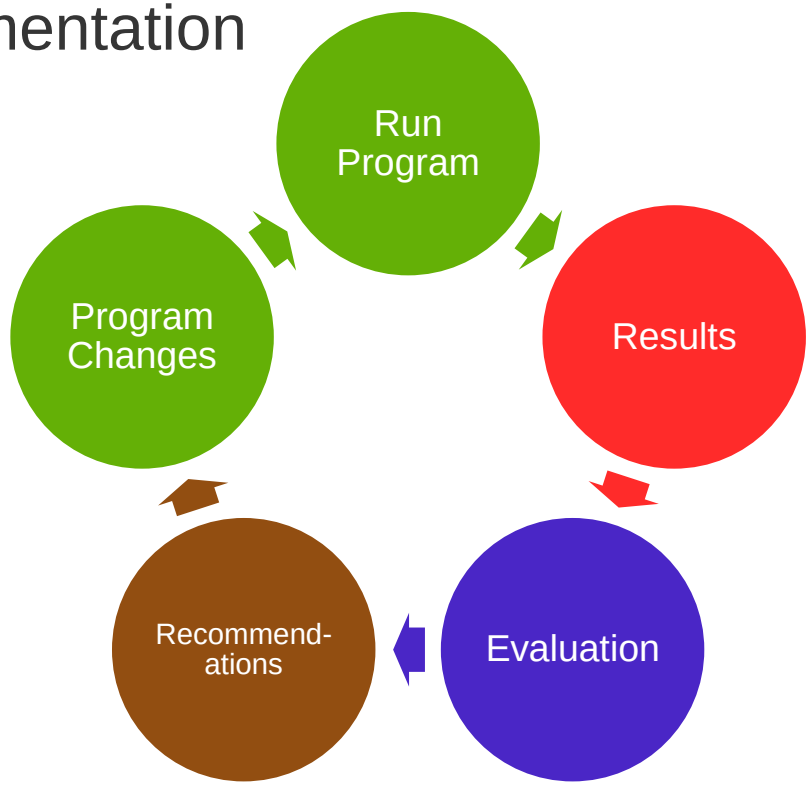
More to come as Evaluation 3 is completed!

Other Strategies

Utilize Evaluation 4, Census of Multi-Family and Condos to:

- Explore additional market segmentation
- Better targeted marketing

Utilize Evaluation 5, Lighting Impact & Net-to-Gross to understand how program changes are improving tracking and services



Thank you

mass save
BERKSHIRE GAS
BLACKSTONE GAS COMPANY
Cape Light Compact
Columbia Gas of Massachusetts
A NiSource Company
EVERSOURCE
Liberty Utilities
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