



Low-Income (LI) Sector EM&V: *Update and Non-Energy Impacts (NEIs)*

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- **Recent evaluation studies**
- **Planned evaluation studies**
- **Low-income single family (LISF) health- and safety-related non-energy impacts (NEIs) study (Aug 2016)**

Recent LI Evaluation Studies



- **Multifamily (MF) impact evaluation (Oct 2015)**
 - Billing analysis of 217 facilities
 - Average gas savings of 21%, resulting in a realization rate of 80%
 - 97% realization rate for common area lighting
 - Produced deemed savings estimates for MF measures (lighting, water heating, appliances) as well as secondary impacts (water savings)
- **Single-family (SF) impact evaluation (June 2012)**
 - Produced gross per-unit energy savings estimates by measure and primary fuel type
- **Process evaluations (June 2011 and June 2012)**
 - Assessed and recommended improvements to program processes (e.g., more process standardization or streamlining between PAs and CAP agencies)

Planned LI Evaluation Studies



- **Process evaluation (*potential* research topics)**
 - Data management
 - Participation patterns by region and group
 - Recruitment and implementation
 - Funding

- **Market assessment**
 - Focused on medium to large multifamily buildings
 - Current practices and improvements for
 - Identifying and recruiting building owners
 - Optimization of participation and savings in terms of timing, technical support, and financial incentives

LISF Health and Safety NEI Study



- Adapted the methodology developed in a 2014 USDOE evaluation of its Weatherization Assistance Program (WAP)
- Assessed the extent to which the NEIs being quantified overlap with, augment, or supersede the NEIs previously evaluated in a 2011 study
- Larger, more robust national occupant survey allowed for better detection of infrequent health events and potential mortality avoidable by weatherization
- Results supported by supplemental evidence from the literature and previous NEI study

By NEB category (Annual NEI value per housing unit)	2011 Study	2016 LISF NEI Study
Health Benefits (asthma, thermal stress, work days)	\$19	\$769 (\$172 w/o avoided death benefit)
Thermal Comfort	\$101	\$120
Improved Safety (fires and CO)	\$45	\$94 (\$6 w/o avoided death benefit)
By Key EE Measure (Annual NEI value per housing unit)		
Weatherization	\$10	\$551
Heating System Replacement	\$50	\$308

Source: Three3, Inc. and NMR Group, Inc. *Massachusetts Special and Cross-Cutting Research Area: Low-Income Single-Family Health- and Safety-Related Non-Energy Impacts (NEIs) Study*. August 5, 2016.

LISF Health and Safety NEI Study: Program Impacts



- Big boost in LISF initiative's cost-effectiveness to consider for program design in the 2019-21 Plan; but
- Introduces a significant disparity in NEIs between LISF and LIMF ⇒ **PAs initiating a similar NEI study for LIMF**

Total Resource Cost (TRC) Test Costs and Benefits (in \$millions)	Low-Income Single Family Retrofit Initiative (2016)			
	Electric		Gas	
	Preliminary	Evaluated	Preliminary	Evaluated
Total Costs*	\$29.1	\$29.1	\$17.5	\$17.5
Total Energy and Other Resource Benefits	\$49.5	\$47.0	\$17.3	\$17.3
NEIs	\$15.7	\$34.6	\$9.5	\$29.3
BCR	2.24	2.81	1.53	2.66

Source: 2016 PY Report Statewide Data Tables.

* Total Costs include program costs, performance incentive, and participant costs.

Thank you

