



NYSERDA

Residential Statewide Baseline Study

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**NYISO Load Forecasting Task Force Meeting
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Agenda

Project Details

Project Objectives

- Baseline Study
- HVAC Market Assessment
- Residential Short Term Potential Study

Sample Design

Methodology

Primary Data Collection, Sources

Data Collection Activities

Survey and On-site Inspection
Completions

Application of Study Results and Data

Questions

Project Details

NYSERDA led this statewide evaluation effort collaborating with the NYS DPS and E² Working Group

- Data collection launched: October 2013
- Data collection completed: November 2014
- Draft results: December 31, 2014
- Publication of final report and data: Summer 2015

Project Objectives

Conduct a statewide study across a broad range of residential customer segments and energy uses to:

- establish a current baseline for calculating program energy savings and other impacts,
- estimate the influence of NYSERDA's and other New York State program administrators' activities on the market, and
- support program planning in New York State.

Three major components include:

- Baseline Study
- HVAC Market Assessment
- Residential Potential Study

Baseline Study

Collected up-to-date information of equipment types, fuel use by type (natural gas, kerosene, fuel oil, propane), vintages, and efficiency; and information on building characteristics, demographics, attitudes, behaviors, participation in energy efficiency programs, and market barriers.

Data collected on-site:

- Heating and Cooling Systems and Water Heaters
- Building Shell Characteristics and Air Leakage Assessment
- Lighting and Plug Loads
- Renewables
- Home Energy Rating (new construction)

HVAC Market Assessment

Establish baseline conditions and characterize the market for HVAC, and domestic water heaters (DWH) including common practices for installing and servicing equipment.

Primary Data Collection:

- HVAC Contractors (n=60)
- Manufacturers (n=2)
- Distributors (n=2)

Secondary Data Collection:

- High Efficiency Heating Equipment (HEHE) Gas Impact Study
- D&R International Sales Data – 2013
- Distributors (n=10)

Residential Short Term Potential Study

Explore opportunities not yet identified that are cost-effective in NY over the next 3 to 5 years (short term). Base year 2013.

Types of Potential:

- Technical
- Economic
- Achievable

The potential study results can inform development of residential offerings in subsequent programs.

Methodology

Segments and Definitions:

- Single Family: 1- to 4-unit structures (existing and new construction)
- Multifamily (sub-metered existing and new construction)
 - Low-rise: 4+ units, 4 stories or less
 - Multifamily High-rise: 5+ units, 5 stories or more
- Analysis: 90/10 Confidence and Precision, by design
 - Statewide and Climate zone
 - 10 Economic Development Regions, where possible
- Sources:
 - Utility Data: requested a random sample of residential accounts in various ranges of annual kWh from each utility
 - NYS Department of Taxation and Finance: supplemented sample with new construction

Primary Data Collection—Sample Sources

- **Single Family Households and Tenants:** A random sample of residential accounts from all major electric utilities in New York State. Additional new construction sample identified through NYS Tax Assessment rolls
- **Property Owners and Managers:** A sample of property owners provided by tenants who responded to the web/telephone survey along with online research
- **HVAC Market Actors:** A sample of HVAC contractors stratified by size, small (one to ten employees) and large (over ten employees) companies, from findthecompany.com
- **2013 HVAC Distributors Sales Data:** Provided by D&R International from Heating, Air Conditioning, and Refrigeration Distributors International (HARDI)

Data Collection Activities

Telephone and Web surveys

- Primarily non-participants: Homeowners, Tenants, Property Owners or Managers

On-site Inspections

- Single Family (Verify telephone/web survey data and observe building characteristics)
 - Existing Construction: conducting blower door tests
 - New Construction: HERS Rating
- Multifamily (Existing and New Construction)
 - Verify telephone/web survey data and observe building characteristics

HVAC Market Actors

- Primary Data Collection: HVAC Contractors
- Secondary Data: HEHE Gas Impact, D&R HARDI

Single Family Household and Tenant Data Collection by climate zone, method, and construction type

Climate Zone	Telephone and Web Surveys			On-Site Inspections		
	Existing Construction (before 2012)	New Construction (2012 and after)	Overall Statewide	Existing Construction (before 2012)	New Construction (2012 and after)	Overall Statewide
Climate zone 4	489	22	511	120	11	131
Climate zone 5	1,021	481	1,502	223	124	347
Climate zone 6	813	156	969	175	47	222
Total state	2,323	659	2,982	518	182	700

Single Family Household and Tenant Data Collection by region and method

Single Family Household and Tenant Completions		
Region	Telephone and Web Survey	On-site Inspections
Southern Tier	250	70
Capital District	416	98
Mohawk Valley	305	66
Mid-Hudson	348	67
Long Island	231	53
New York City	201	63
Western NY	328	76
Finger Lakes	347	76
Central NY	258	61
North Country	298	70
Total	2,982	700

- Over two-thirds of the survey completes were web-based

Application of Study Results

- Inform program design and implementation (baselines, eligible measures, etc)
- Identify opportunities by geography, demographics and housing characteristics
- Inform NYS Code
- Establish defensible baselines for evaluation of program energy savings and other impacts
- Replicate the study to measure market change over time
- Assist with program design
- Feeds into potential study
- Informs as to the current standards and industry best practices
- Utility load forecasting (e.g., energy, peak, load shape)

Questions?

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