

Home Energy Management (HEMS) Validation Pilots

NYSERDA HEMS Pilot

National Grid MA&RI Smart Lighting Study

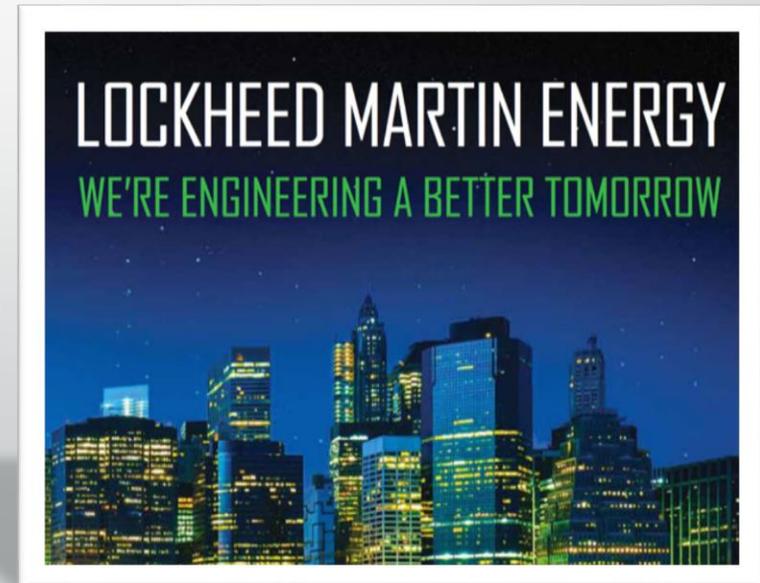


Brad Piper
Project Manager



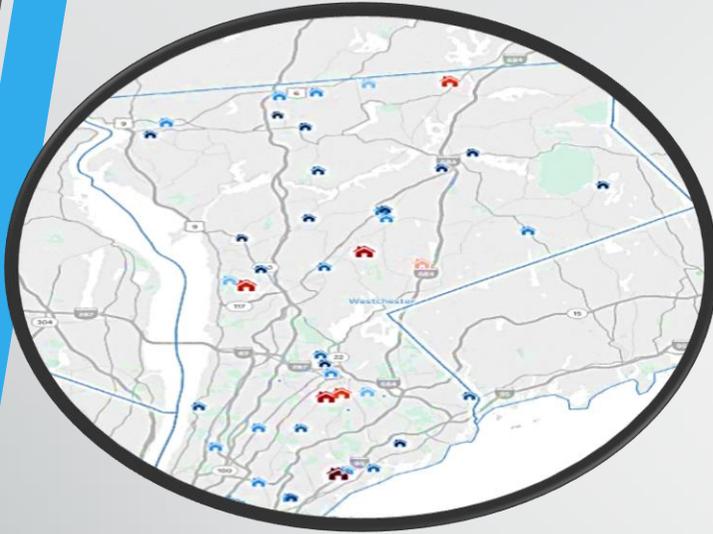
LM ENERGY'S HEMS HISTORY

- **Multiple Working Group Contributions (2010-)**
- **First Retail Program Incentive on HEMS (2011-12)**
- **Conducted Non-traditional Smart Home Manufacturer Survey For NYSERDA (2015)**
- **NYSERDA HEMS Validation Pilot (2016-2017)**
- **National Grid MA&RI Smart Lighting Study (2017-2018)**



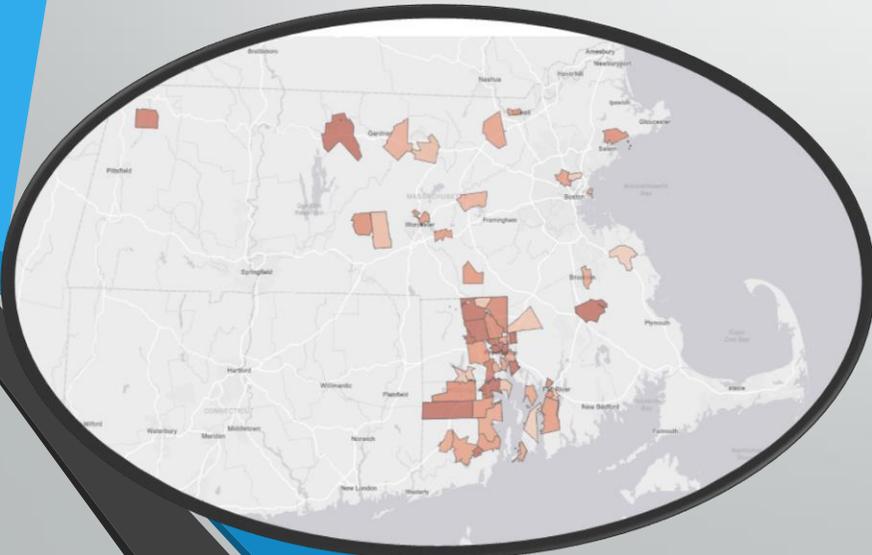


PILOT OVERVIEW'S



NYSERDA

- 50 homes Between Albany and Westchester Counties
- Whole Home Power Monitor, Smart Switches, Outlets, Lamps and Thermostats; Room Level and Whole Home Level Occupancy Sensors
- Test and Evaluate Baseload Simulation Validation Methodology
- **Completed**



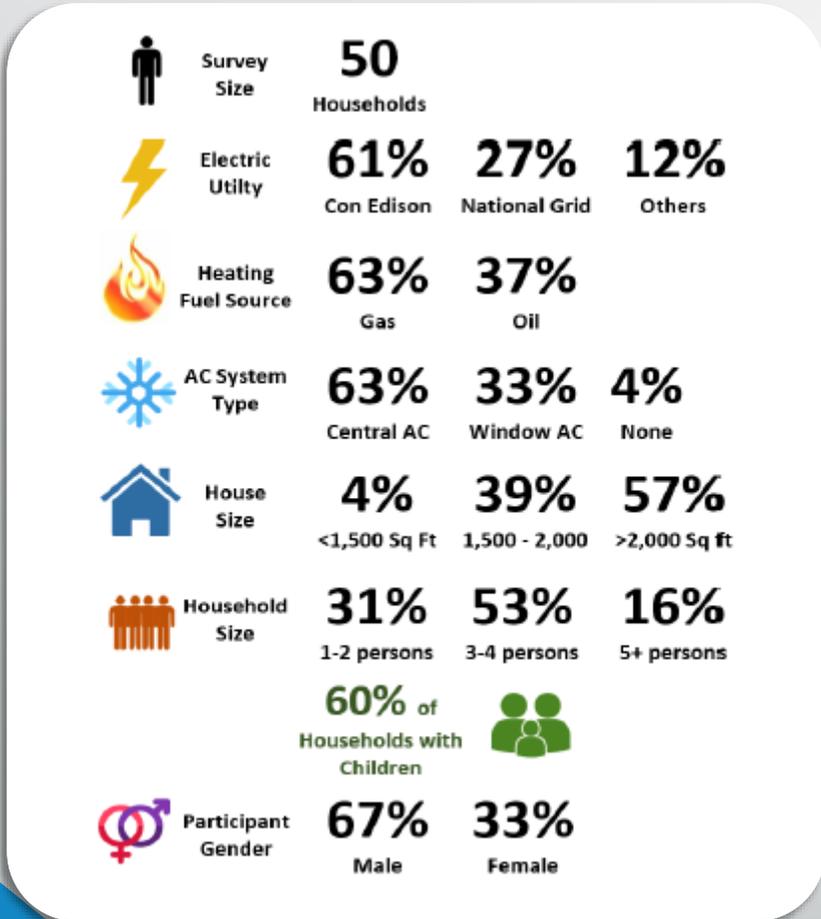
National Grid

- 85 Homes Between MA and RI
- Connected Lamps, Light level (lux) sensors; Room Level and Whole Home Level Occupancy Sensors
- Test and Evaluate Baseload Simulation Validation Methodology
- In Home and Electronic System Trainings
- 12 Month Observation Period
- **In Progress**

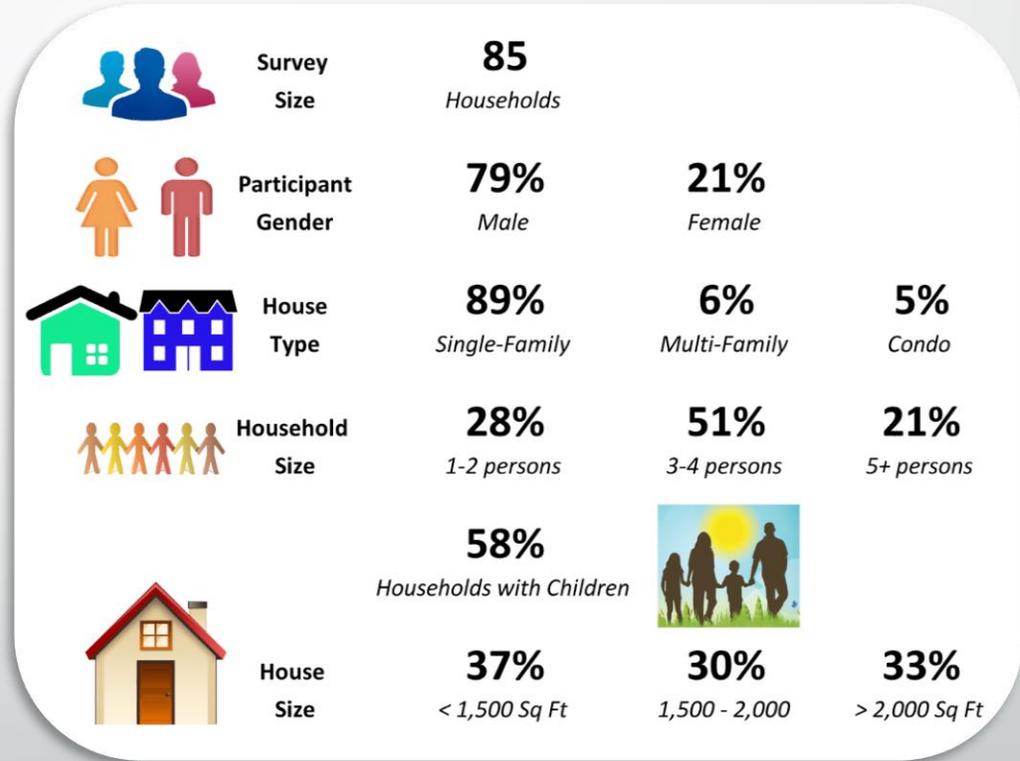


PILOT DEMOGRAPHICS

NYSERDA



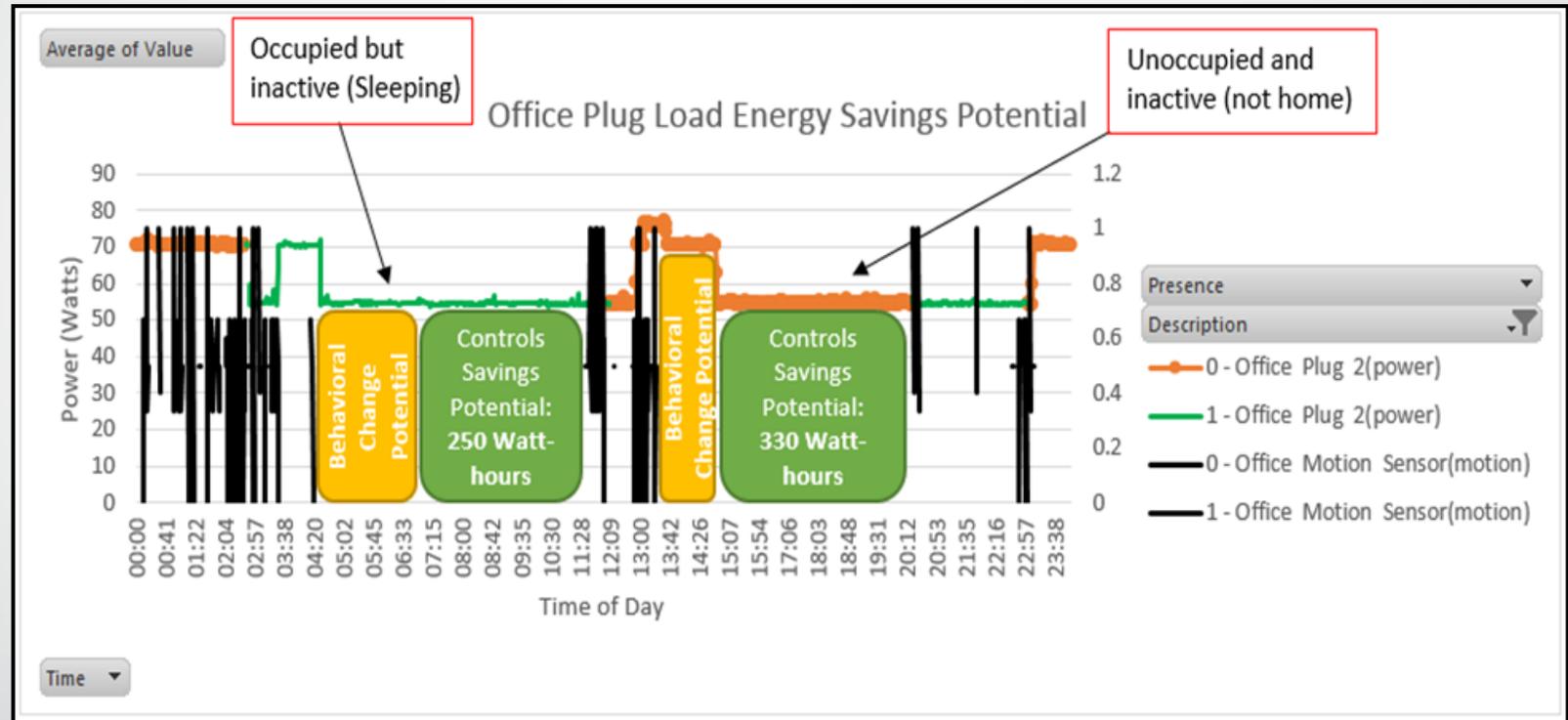
National Grid





DATA COLLECTION & MANAGEMENT

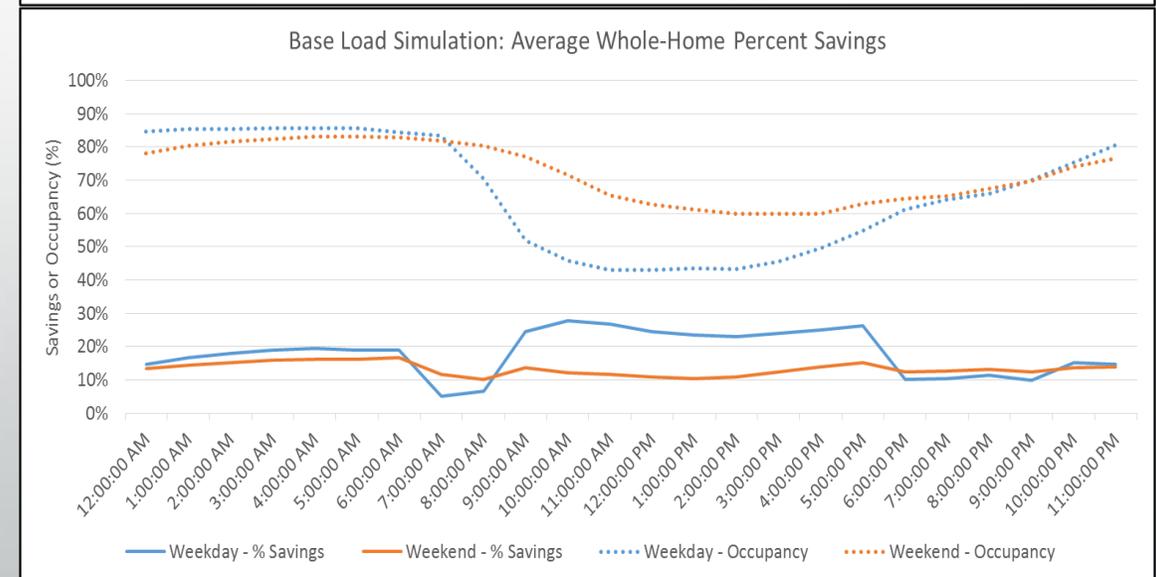
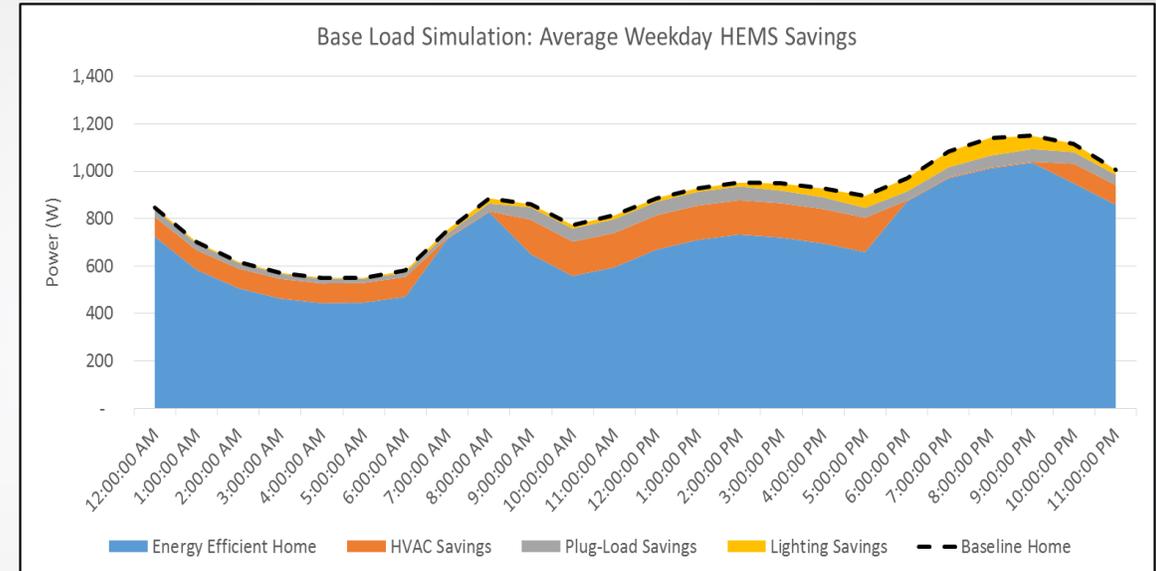
- Collection
- Storage
- Sorting and Syncing Multiple Data Streams
- Calculations





DATA CONTINUED

- 37% savings for connected loads
- 16% whole home electricity savings
- Simple payback of 7-12 years





NYSERDA FINDINGS

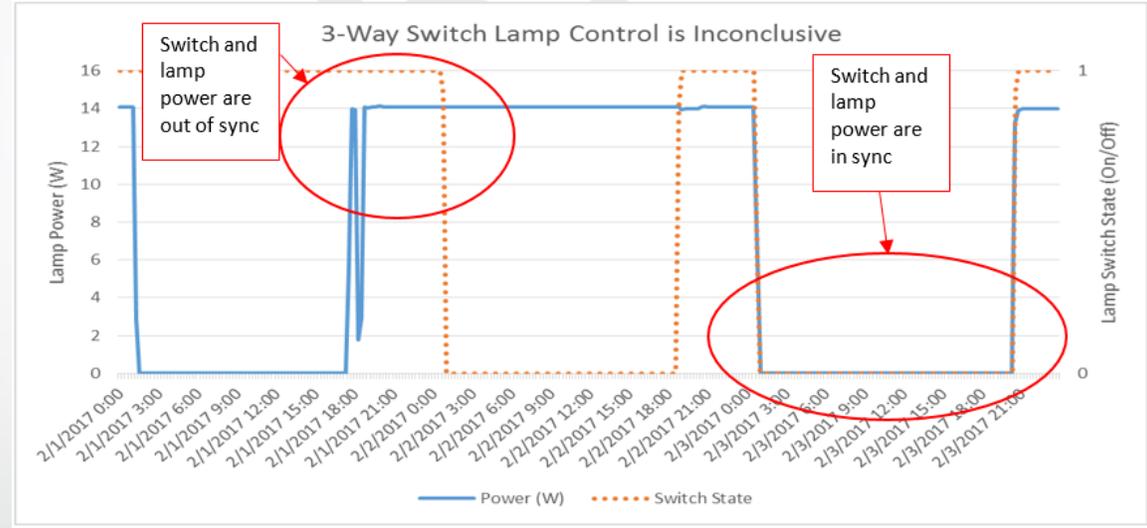
Potential Whole Home and Individual Savings

Smart Device	Electricity Savings (kWh/year)	Heating Fuel Savings (Therms/year)	Cost Savings (\$/year)	Assumptions
Smart Thermostat	688	52	\$174	No existing setback controls
Smart Outlets	341		\$58	15-minute occupied delay
Smart Lamps or Switches	212		\$36	Controls only
Total HEMS Savings	1,241	52	\$268	



LESSONS LEARNED and ADAPTIONS

- Third Party Manufacturer Integrations
 - Reliability, up time and long term effects on savings
- Customer Relationships
 - The More Advanced The System, the Deeper The Relationship
- Lamp Status
 - Addition of LUX Sensors
- Lamp vs Switch Data
 - Reported to Industry
- Smart Lamp Standby Power
 - Much Lower Impact Than Anticipated





ON THE HORIZON

- **Current Implementation of Smart Lighting Pilot in MA &RI**
- **Long Term System/Measure Connectivity?**
- **Future HEMS Programs, Retail, Direct Install**
- **Revisit Savings Calculation Methodology, to Account For Smart Technologies Impact on Traditional Program Measures**
- **Work With EPA On Recently Announced Smart System Spec/Program**

WHATS NEXT?





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