



RESIDENTIAL CUSTOMER PROFILE STUDY

**Presented to the Massachusetts EEAC
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► February 17, 2016

OBJECTIVE AND CONTEXT

- ▶ **Study Objective: to provide stakeholders and other interested parties with a greater understanding of the performance of the combined residential sector programs**
- ▶ **This is first stab at RCP and includes only one year of data (2013)**
 - C&I profile studies have been done for several years, each year improving and expanding on the scope
- ▶ **RCP study expected to be an annual study, like the C&I one**

APPROACH



- ▶ **Assemble a database of every residential customer of PAs in Massachusetts using CIS account data**
 - Put all into standardized addresses
 - Link gas accounts to electric accounts across PAs
- ▶ **Link 2013 program participation tracking data for every residential program to standardized addresses**
 - Program tracking data for every incentive program
 - Sales data for upstream programs
 - Behavioral program participant data
 - At present, does not include savings from other fuels—fuel oil, propane, wood
- ▶ **Aggregate participation to US Census block-groups and use Census data to characterize participants' demographics (e.g., income, home ownership status)**

MAIN STUDY TAKEAWAYS



- ▶ **RCP allows us for the first time to link participants across fuels, PAs, and programs and by extension to identify non-participants**
- ▶ **RCP starts to provide an accounting of distribution of programs to customers by geography and other key characteristics, and its value will be enhanced when we have multiple years of data and better estimation models**
- ▶ **Process of assembling and analyzing this important RCP data is challenging—with many improvements needed—as well as time consuming and costly**



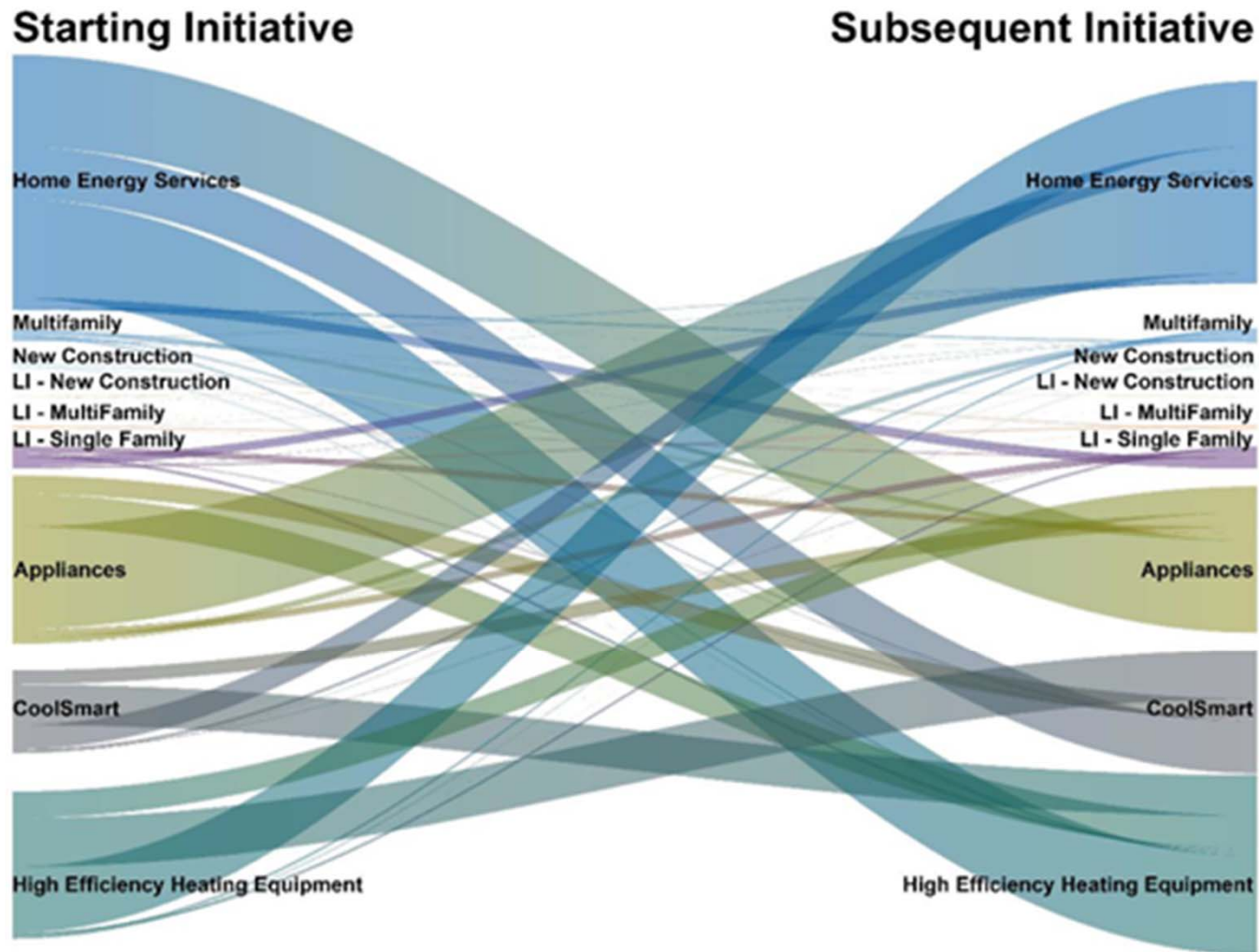
PARTICIPATION AND DISTRIBUTION STUDY FINDINGS

LINKING PARTICIPANTS



- ▶ **RCP gives us the first count of statewide participation**
 - In 2013, there were 200,523 unique participating premises (excluding upstream lighting, behavioral, and oil); there are 2,798,764 premises are served by PAs in MA
 - Linkage at premise eliminates double counting by fuel type or multiple programs
 - Future years need to clarify differences between premise and unique addresses; mostly an issue in counting multi-family
- ▶ **RCP also identifies premises that have participated in more than one program**
 - 15,386 (8% of 200,523 participating premises) participated in multiple programs in 2013
- ▶ **RCP identifies addresses that have not participated**

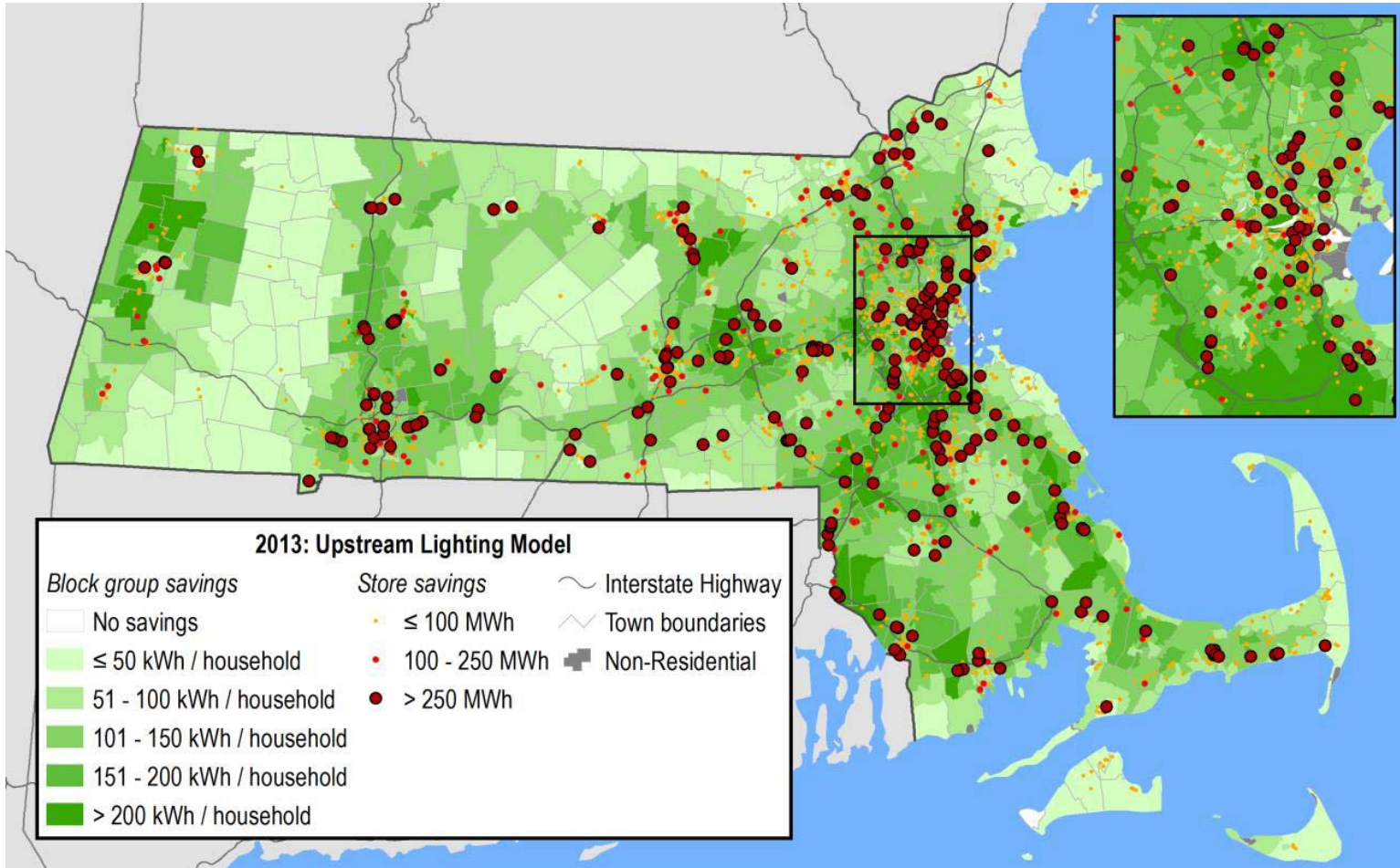
CROSS-INITIATIVE PARTICIPATION MOVEMENT



CROSS PARTICIPATION LESSONS

- ▶ **HES is serving as the largest entry point for multi-initiative participants with 35% starting with HES and going on to other programs**
- ▶ **However, results also show that other programs, particularly HEHE and CoolSmart are gateways to HES**
- ▶ **The HEAT Loan appears to be a major contributor to creating multiple-initiative participants**

FIRST ATTEMPT AT MODELING UPSTREAM LIGHTING DISTRIBUTION

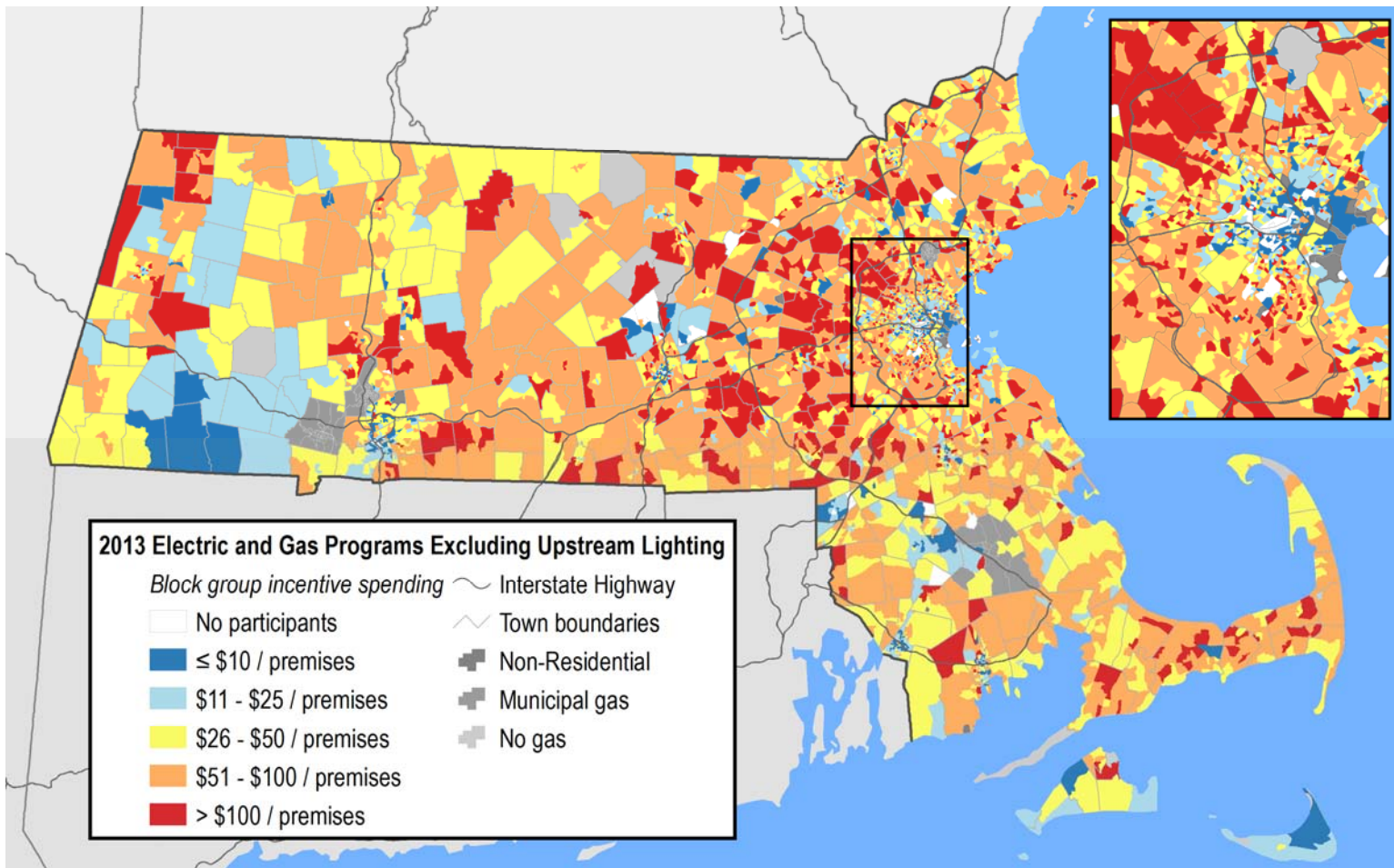


UPSTREAM LIGHTING INITIATIVE SAVINGS IN 2013



- ▶ **Upstream lighting represents a huge amount of residential savings, yet we currently have no idea who is buying lights**
- ▶ **Data included in study**
 - Sales data on qualified lights sold at each participant store
 - We interviewed 917 households on light buying habits—store type, travel mode and travel time
- ▶ **Data not yet included in study**
 - Sales data of qualified lights at non-participant stores
 - Sales data of non-qualified lights

DISTRIBUTION OF ELECTRIC AND GAS INCENTIVES 2013



INTERPRETING THE INCENTIVES DISTRIBUTION MAP

- ▶ **The different colors in the map represent different distribution of incentive amounts across the state shown by Census blocks**
- ▶ **Differences occur for many different reasons, e.g.:**
 - Gas is not available everywhere—especially in western Massachusetts and towns with municipal providers
 - Usage variances—opportunity for savings varies, with bigger homes typically using more energy
 - Home ownership rates—renter incentives are generally lower due to lower opportunity and lower participation
- ▶ **Results should be interpreted cautiously and with consideration of all of the above, notes from the next slide, and more**

DISTRIBUTION ANALYSIS ISSUES

► **First year data issues limit usefulness**

- Missing fuel oil savings
- Premise definition does not mesh with PAs participant definition
- Lumpiness of some programs (MF in particular) distorts results—better to look at effects over several years

► **Ecological fallacy**

- “The impulse to apply group or societal level characteristics onto individuals within that group”
- If a block-group has 50% of households in poverty, and there were 20 program participants, we do not know what % of 20 are in poverty

► **Still working out best ways to present results**

- Raw total doesn't reflect opportunity—areas with no gas will have lower savings than areas with gas
- Ratios (participation/customer, savings/consumption, or incentives/bills) provide better measure of distribution use



CONSULTANTS' RECOMMENDED FUTURE USES OF RCP

DEVELOP PROGRAMS THAT TARGET NON-PARTICIPANTS

- ▶ **There are good reasons to focus on recruitment of non-participants**
 - Bringing in non-participants is necessary if MA to reach overall savings goals
 - Most non-participants are not free-riders
 - Equity considerations
- ▶ **With multi-year RCP data, PAs can easily identify non-participants**
 - Program marketing and segmented offerings can be directed to them
 - Metrics that reward recruitment are easily verified
- ▶ **Successful efforts will be harder and more costly to implement**
 - More marketing—they are not coming to us, we must get to them
 - More barriers to overcome before they're willing and able to participate

USE RCP DATA TO ENHANCE SERVICES FOR SPECIFIC CUSTOMER GROUPS

- ▶ **Linkage of participation data with Census data (at Census block level) over multiple years will provide data-based insights on program participation by key demographic criteria**
 - Ownership type (renter, owner)
 - Income
 - Dwelling vintage
 - English language proficiency
 - Location

- ▶ **These insights can be used to enhance targeting of and design of specific offerings for those groups to increase their participation**

HOW RCP CAN ASSIST MULTIFAMILY PROGRAM

- ▶ **Inability to identify accounts as part of a multi-family building has made impact evaluation difficult**
 - Because of interactive effects, billing analysis requires that a whole building analysis, using all usage data, be assembled
 - Several utilities lack a flag identifying an account as multi-family
 - Problem exacerbated because some accounts are commercial
- ▶ **Standardized addresses can be used to identify all accounts at a unique address**
- ▶ **Having this ability should enhance multi-family whole building implementation efforts**
 - Whole building projects will have better access to whole building energy use
 - Can help facilitate benchmarking

DEVELOPING THE RCP DATABASE IS LABOR INTENSIVE AND EXPENSIVE

- ▶ **RCP cost \$535,000, budget for 2016 is \$750k-\$1 million**
 - From study: "required several thousand hours of labor to merge files from each of the PAs and multiple implementation vendors, information from independent databases developed with different rules and structures, and third-party data"
- ▶ **Res and C&I now have the same EM&V data contractor--DNV GL project manager who has been leading C&I will now also be leading Res**
- ▶ **Developing a mechanism to house and use this important information on an ongoing basis (e.g., a statewide database) could result in significant efficiencies and increased analysis capabilities**

NEXT STEPS



- ▶ **Plan and conduct Residential Customer Profile Study with 2014 data**
 - Include all fuels savings and participation
 - Link all multi-family accounts to property
 - Estimate the distribution of Upstream Lighting participation
 - Kickoff for 2014 held 2/16; some 2013-2015 results expected by end of this year
 - Work with LEAN and the PAs to identify and use better sources of low income participation data
- ▶ **Continue discussions with PAs on using RCP data to increase participation and savings from existing and new program participants**



QUESTIONS?

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Full report available at <http://ma-eeac.org/wordpress/wp-content/uploads/Residential-Customer-Profile-Study2.pdf>

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