RESIDENTIAL CUSTOMER PROFILE REPORT: 2013 - 2015

Executive summary

SAFER, SMARTER, GREENER
The 2013–2015 Residential Customer Profile report offers diverse views of participation, savings, and geographic dynamics within the Massachusetts Program Administrators’ (PAs’) residential energy efficiency programs.

The overall goals of the Residential Customer Profile project are:
- To integrate the PAs’ billing and tracking data into the MA Residential Evaluation Database
- To analyze this data to explore evolving trends and their implications in the residential energy efficiency landscape.

In its integration of diverse data sources, the Residential Customer Profile has the potential to show where they can focus their efforts, but what building characteristics and socioeconomic factors exist in each area of potential focus.

All data is presented in accordance with the Department of Public Utilities rules to protect individual customer confidentiality.

Additional PA data summaries, reports including the Commercial and Industrial Customer Profile reports for 2011–2016, and the most recent quarterly bill out and impact-adjusted PA data can be found online at www.MassSaveData.com and on the MA EEAC website at www.ma-eeac.org.

For the full 2013-2015 Residential Customer Profile, see http://ma-eeac.org/studies/

The cube to the left shows some possible permutations of the analysis. Based on the data collected and the ways that different datasets can talk to one another, these statistics can be calculated for each of these metrics at these various levels of granularity:

For instance, it’s possible to calculate account participation by end use for gas, or to calculate market penetration by program within a certain geographic region.

*Tracking does not include behavioral or upstream lighting accounts.
There are geographic differences in program participation and savings, within and across PAs. Each year, electric customers saved 2% to 4% of their consumption. For gas, customers saved 0.5% to 1.5%.

Electric customers saved the most energy through the Residential Products program, chiefly due to upstream lighting. However, savings per replaced bulb are likely to decrease over time as the lighting market changes, and LEDs become increasingly prevalent in homes.

The Home Energy Services initiative within the Whole House program helped a large number of customers participate and save energy. Customers in the larger cities participated less than in other areas of the state.

From 2013-2015, 14.5% of electric customers and 10.8% of gas customers participated in a PA program. Because upstream lighting data can’t be linked to individual customers, it’s likely that the actual electric participation rate is higher than 14.5%.

Low- and high-participation areas are not random, but vary according to their geography.

Census block groups with the highest proportion of low-income households saved energy at a rate similar to block groups with the lowest proportion of low-income households. However, there is substantial variation in savings from block group to block group across the population. Notably:

- The data only allows us to look at block groups as a whole, not at individual buildings or customers. We cannot extend block group attributes to individual customers.
- Block group analyses provide quantitative metrics. They do not yield insight into the effectiveness of program design, outreach strategies, PA efforts, or other qualitative factors.

Participation is more challenging to assess. Low-income populations are not demographically available at the building level, but at the level of the block group—a unique group of roughly 600 to 3,000 people covering a contiguous area. We divide block groups into 5 equal sub-groups, called quintiles, that help show what proportion of a given block group is below the poverty index, lives in rental properties, etc.

### DATA TYPES

#### PA-provided data

The PA’s customer billing and energy efficiency program tracking data form the foundation of the Customer Profile analysis. In order for the billing data and tracking data to “talk” to one another at the account level used in the Customer Profile, we must merge these two datasets together, matching accounts in the billing data to accounts in the tracking data. The table below shows the success rate of merging the 2013-2015 billing and tracking data.

<table>
<thead>
<tr>
<th>PA</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracking accounts</td>
<td>Merge success rate</td>
<td>Tracking accounts</td>
<td>Merge success rate</td>
</tr>
<tr>
<td>Cape Light Compact</td>
<td>10,165</td>
<td>90%</td>
<td>13,708</td>
</tr>
<tr>
<td>Eversource</td>
<td>62,580</td>
<td>79%</td>
<td>80,918</td>
</tr>
<tr>
<td>National Grid</td>
<td>99,023</td>
<td>66%</td>
<td>81,549</td>
</tr>
<tr>
<td>Unitil</td>
<td>497</td>
<td>94%</td>
<td>741</td>
</tr>
<tr>
<td>Electric Total</td>
<td>173,265</td>
<td>72%</td>
<td>176,948</td>
</tr>
</tbody>
</table>

*When an account number was not available in the tracking data, DNVGL used the physical address in the tracking data to spatially locate the data. This is a particularly important impact for programs, such as multifamily, that are captured by some PAs at the facility level only, and that can cross between residential and commercial/industrial sectors.

*Upstream and behavioral data are included in this table.

<table>
<thead>
<tr>
<th>PA</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tracking accounts</td>
<td>Merge success rate</td>
<td>Tracking accounts</td>
<td>Merge success rate</td>
</tr>
<tr>
<td>Columbia</td>
<td>12,655</td>
<td>97%</td>
<td>12,292</td>
</tr>
<tr>
<td>Eversource</td>
<td>14,545</td>
<td>96%</td>
<td>12,603</td>
</tr>
<tr>
<td>National Grid</td>
<td>55,333</td>
<td>77%</td>
<td>50,996</td>
</tr>
<tr>
<td>Small Gas PAs</td>
<td>3,393</td>
<td>98%</td>
<td>3,155</td>
</tr>
<tr>
<td>Berkshire Gas Co.</td>
<td>2,073</td>
<td>85%</td>
<td>2,132</td>
</tr>
<tr>
<td>Liberty Utilities</td>
<td>1,193</td>
<td>38%</td>
<td>741</td>
</tr>
<tr>
<td>Unitil Gas</td>
<td>127</td>
<td>78%</td>
<td>282</td>
</tr>
<tr>
<td>Gas Total</td>
<td>85,926</td>
<td>83%</td>
<td>79,046</td>
</tr>
<tr>
<td>Grand Total</td>
<td>259,191</td>
<td>76%</td>
<td>255,994</td>
</tr>
</tbody>
</table>

The Emergency 911 geographic data is a detailed list linking address information (for houses, buildings, apartment blocks, etc.) to corresponding latitudes and longitudes. This source allows us to place nearly every PA customer at a precise geographic location, so we know where, geographically, program activity is occurring. It includes placing facility-level tracking data without account numbers, and C&I data for multifamily buildings served by C&I programs may be captured only at the facility level.

The MA Level 3 tax assessment data, and the American Community Survey data.

The MA Level 3 tax assessment data is collected by the US Census Bureau. It includes numerous details such as languages spoken, income, travel times, building age and building ownership. Notably, these data do not publicly available at the building level, but at the level of the block group—a unique group of roughly 600 to 3,000 people covering a contiguous area. We divide block groups into 5 equal sub-groups, called quintiles, that help show what proportion of a given block group is below the poverty index, lives in rental properties, etc.
ELECTRIC & GAS COMBINED

Combined electric and gas participant savings in 2014 and 2015 for all PAs (Boston inset map)

This map shows PA savings achieved by the population of electric and gas customers across Massachusetts, converted from kWh and therms to common units of MMBTU. Where applicable, it includes behavioral savings and all modeled upstream lighting savings, the latter of which substantially impacts savings in population-dense areas.

The map does not show consumption or savings for delivered fuels or municipal-served fuels, as this data is not available. This means that towns that heavily use delivered or municipal-served fuels, like much of Western Massachusetts, might look like they have higher savings than they actually do. All maps and scatterplots in this summary include C&I multifamily and Housing Authority savings and consumption.

2013-2015 electric and gas customer summary statistics by building type

- **1,487,820 Dth**
  - Gas: 8%
  - Electric: 0.86%
  - Population: 17%

- **317,196 Dth**
  - Gas: 4%
  - Electric: 0.56%
  - Population: 7%

- **29,582 Dth**
  - Gas: 2%
  - Electric: 0.44%
  - Population: 3%

- **616,741 Dth**
  - Gas: 4%
  - Electric: 0.57%
  - Population: 7%

**SINGLE FAMILY**
- n=663,244
- 10.95% Gas
- 20% Electric
- 9% Population savings
- 2% Account participation

**DUPLEX/CONDO**
- n=402,085
- 10.67% Gas
- 14% Electric
- 9% Population savings
- 4% Account participation

**MULTI-FAMILY**
- n=88,407
- 10.57% Gas
- 243% Electric
- 4% Population savings
- 4% Account participation

**MOBILE/OTHER**
- n=67,935
- 10.68% Gas
- 9% Electric
- 9% Population savings
- 9% Account participation

2015 gas and electric end uses*

**Gas end use**
- Hot water
  - 27,797 projects
  - 170,033 Dth savings
  - 21.2% of projects
  - 13.8% of savings

- TLC kits**
  - 12,192 projects
  - 889 MWh savings
  - 3.3% of projects
  - 0.2% of savings

- Hot water
  - 24,346 projects
  - 7,353 MWh savings
  - 6.6% of projects
  - 1.4% of savings

**Electric end use**
- Refrigeration
  - 17,324 projects
  - 18,226 MWh savings
  - 29.6% of projects
  - 86.6% of savings

- Lighting
  - 109,678 projects
  - 18,226 MWh savings
  - 29.6% of projects
  - 86.6% of savings

- HVAC
  - 41,390 projects
  - 18,226 MWh savings
  - 29.6% of projects
  - 86.6% of savings

*Note that percentages do not add up to 100%, because “skewer/missing” and “other” measures are excluded from this graphic.
Participants 13,700
931,260
131,747
2014
1,774
137,607
99,024
3,155
761,384
70,200
Participants 81,550
Participation rates are likely to be conservative, since households that participated in an efficiency program only through an in-store distribution chain, such that stores sell customers efficient bulbs, fixtures, etc. at a discount. While these upstream lighting sales result in sizeable savings for the PAs, these sales are only captured at the store level, and the data is not available to tell us which individual purchase don't get counted as participants.

Additionally, customers who participate through multifamily programs often get counted at a master meter level rather than individually. This is another way that participation numbers can look lower than they actually are.

Electric and gas contribution ratios over time

In 2014, corresponding to the redevelopment effort, the block group encompassing Assembly Row is bright red, with a contribution ratio exceeding 10. This means that the block group contributed much more to statewide savings than it did to statewide consumption.

Combined contribution ratio, 2015 (MMBTU; Somerville in inset map)

In 2015, the same block group is blue, with a contribution ratio below 0.5. This means that the block group contributed much less to statewide savings than it did statewide consumption. Here, we see that the savings captured by such a large effort in one area doesn't get repeated in the following year.

Year-over-year change in contribution ratio from 2014 to 2015 (Somerville in inset map)

As the map above shows, the same trend plays out across the state. An individual block group's contribution ratio for a given year is not necessarily representative of that block group's performance over time. Developing longer time series may help identify areas that are consistently under- or over-contributing to statewide savings relative to consumption.
**ELECTRIC SUMMARY**

**Savings and consumption by block group poverty rate**

**Combined 2014 & 2015 electric savings by poverty range**

<table>
<thead>
<tr>
<th>Quintile poverty range</th>
<th>2014 and 2015 electric MMBTU consumption</th>
<th>2014 and 2015 electric MMBTU savings</th>
<th>Qunintile population average savings ratio</th>
<th>Quintile poverty range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Low poverty ratio</td>
<td>27,334,002</td>
<td>392,292</td>
<td>1.44%</td>
<td>Zero to 9.5</td>
</tr>
<tr>
<td>2</td>
<td>25,593,294</td>
<td>348,991</td>
<td>1.36%</td>
<td>9.5 to 17.0</td>
</tr>
<tr>
<td>3</td>
<td>22,953,947</td>
<td>296,784</td>
<td>1.29%</td>
<td>17.0 to 27.2</td>
</tr>
<tr>
<td>4</td>
<td>19,230,317</td>
<td>236,847</td>
<td>1.23%</td>
<td>27.2 to 43.4</td>
</tr>
<tr>
<td>5 - High poverty ratio</td>
<td>14,230,743</td>
<td>206,944</td>
<td>1.45%</td>
<td>43.4 to 100</td>
</tr>
<tr>
<td>Grand Total</td>
<td>109,342,103</td>
<td>1,481,859</td>
<td>1.36%</td>
<td></td>
</tr>
</tbody>
</table>

The above table summarizes population savings within each quintile. The highest two savings ratios are found in the quintiles with the highest poverty ratio and the lowest poverty ratio, respectively. This could be related to a possible correlation between low-income and multifamily buildings, and further, to the PAs’ low-income and multifamily programs. Graphics on this page do not include upstream lighting or behavioral savings.

**Scatterplot of combined 2014 & 2015 block group contribution ratio by poverty rate**

This scatterplot illustrates electric contribution ratio in 2014 and 2015 relative to poverty ratio for block groups across Massachusetts. It shows:
- The 4,364 electric PA-served block groups in Massachusetts, divided equally into 5 quintiles, and ranked by lowest to highest proportion of households in poverty
- Each block group’s contribution ratio for 2014-2015. The scatterplot illustrates the variability within quintiles, the existence of outlier points, and the similarities between block groups across adjacent quintiles, particularly when the block groups fall near the quintile breakpoints.

**Combined 2014 & 2015 electric contribution ratio by census block group (Boston in inset map)**

This contribution ratio map shows that individual block group contribution ratios vary greatly within PA service territories, and even within towns. Boston includes areas with no contribution ratio (like the Fenway, Boston Commons, and the industrial part of Chinatown) as well as block groups with contribution ratios exceeding 1, like the Mission Hill area.

**Savings and consumption by block group renter rate**

**Combined 2014 & 2015 electric savings by poverty range**

<table>
<thead>
<tr>
<th>Quintile renter ratio</th>
<th>2014 and 2015 electric MMBTU consumption</th>
<th>2014 and 2015 electric MMBTU savings</th>
<th>Quintile population average savings ratio</th>
<th>Quintile renter range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Low renter ratio</td>
<td>27,576,491</td>
<td>390,433</td>
<td>1.42%</td>
<td>Zero to 10.2</td>
</tr>
<tr>
<td>2</td>
<td>27,253,216</td>
<td>362,412</td>
<td>1.33%</td>
<td>10.2 to 24.7</td>
</tr>
<tr>
<td>3</td>
<td>21,932,356</td>
<td>291,582</td>
<td>1.33%</td>
<td>24.7 to 44.7</td>
</tr>
<tr>
<td>4</td>
<td>18,247,570</td>
<td>228,168</td>
<td>1.25%</td>
<td>44.7 to 66.6</td>
</tr>
<tr>
<td>5 - High renter ratio</td>
<td>14,344,213</td>
<td>209,465</td>
<td>1.46%</td>
<td>66.6 to 100</td>
</tr>
<tr>
<td>Grand Total</td>
<td>109,355,846</td>
<td>1,482,061</td>
<td>1.36%</td>
<td></td>
</tr>
</tbody>
</table>

The above table summarizes population savings within each quintile, as defined by the proportion of renter-occupied households. Even when accounting for common areas that might be under CBP rate codes, block groups with the highest proportion of renter-occupied households used less than half the energy used by block groups with the lowest proportion of renter-occupied households. This could partially be due to many rental spaces, like apartments, being smaller than many single-family homes. Graphics on this page do not include upstream lighting or behavioral savings.

**Scatterplot of combined 2014 & 2015 block group contribution ratio by renter rate**

This scatterplot illustrates electric contribution ratio in 2014 and 2015 relative to renter ratio for block groups across Massachusetts. Higher block group renter ratios indicate more renter-occupied households.

The scatterplot shows variability within quintiles. It also shows that as the proportion of renters increases, so does the prevalence of outlier contribution ratios. As the bottom map shows, block groups with the highest renter ratios tend to exist in large cities, where rental homes are more likely to be in multi-unit buildings. Many of these building owners participate in energy efficiency by treating multiple units at one time. This approach can cause spikes in contribution ratio and outlier points for individual block groups over the short term.

**Geographic location of block groups in renter ratio Quintile 5 (Boston in inset map)**

This map shows the geographic location of block groups with the largest proportions of rental households, the 5th quintile from the table and scatterplot above.

The map illustrates that these block groups are closely correlated with the largest cities, as well as the military base on Cape Cod.
These two charts show time series of electric participation rates, including upstream data, and electric savings rates.

**Electric account participation**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape Light Compact</td>
<td>5.6%</td>
<td>7.3%</td>
<td>7.3%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Eversource</td>
<td>6.3%</td>
<td>6.0%</td>
<td>9.1%</td>
<td>6.3%</td>
</tr>
<tr>
<td>National Grid</td>
<td>14.4%</td>
<td>15.0%</td>
<td>5.2%</td>
<td>14.4%</td>
</tr>
<tr>
<td>Unitil</td>
<td>1.6%</td>
<td>3.5%</td>
<td>3.6%</td>
<td>5.3%</td>
</tr>
</tbody>
</table>

The chart below shows the number of accounts, the participation rate, and the savings achieved statewide from 2013-2015. While this includes upstream savings, which contribute greatly to portfolio savings, the data is not available to show upstream participants in the participant count. Savings from behavior/feedback programs are not included here.

**Number of unique accounts, participation rate, and savings achieved 2013-2015**

<table>
<thead>
<tr>
<th>Initiative</th>
<th>2013 Participation</th>
<th>2014 Saving</th>
<th>2015 Saving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape Light Compact</td>
<td>222,061</td>
<td>7.3%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Eversource</td>
<td>1,329,330</td>
<td>4.6%</td>
<td>3.5%</td>
</tr>
<tr>
<td>National Grid</td>
<td>1,577,323</td>
<td>3.5%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Unitil</td>
<td>41,627</td>
<td>1.5%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

- **2013**
  - **Cape Light Compact**: 222,061 accounts, 7.3% participation, 7.3% savings.
  - **Eversource**: 1,329,330 accounts, 4.6% participation, 3.5% savings.
  - **National Grid**: 1,577,323 accounts, 3.5% participation, 3.7% savings.
  - **Unitil**: 41,627 accounts, 1.5% participation, 1.7% savings.

- **2014**
  - **Cape Light Compact**.
  - **Eversource**.
  - **National Grid**.
  - **Unitil**.

- **2015**
  - **Cape Light Compact**.
  - **Eversource**.
  - **National Grid**.
  - **Unitil**.

- **2013-2015**
  - **Cape Light Compact**: 5.6% participation.
  - **Eversource**: 6.3% participation.
  - **National Grid**: 14.4% participation.
  - **Unitil**: 1.6% participation.

**Electric cross-initiative participant movement, 2014-2015**

This figure shows how customers moved from one initiative to another in 2014 and 2015. The left column shows the first initiative customers participated in (lead), and the right column shows what initiative they participated in afterward (lag). Thicker lines between initiatives indicate more customers participating.

**Cross-initiative movement**

**Electric cross-initiative participant movement, 2014-2015**

- **Lag**: These categories are not specified in the image.

**Electric savings**

- **Cape Light Compact**.
- **Eversource**.
- **National Grid**.
- **Unitil**.

**Electric account participation**

- **Cape Light Compact**.
- **Eversource**.
- **National Grid**.
- **Unitil**.

**Electric savings**

- **Cape Light Compact**.
- **Eversource**.
- **National Grid**.
- **Unitil**.

*Unitil's account participation appears lower than other PAs. This is due to missing account data in the tracking system. Notably, Unitil's savings are consistent with the other PAs, suggesting no substantial differences in actual participation.
GAS SUMMARY
Savings by block group

Combined 2014 & 2015 gas savings by census block group (Boston in inset map)

This map shows gas savings across Massachusetts for 2014-2015, by census block group. The map includes savings from behavior/feedback programs. It illustrates higher savings in Boston’s commuter towns and the northern portion of the 495 loop.

Areas in dark blue with no calculated savings ratio are likely to be areas with no customers (e.g., cemeteries, lakes) or block groups within PA-served towns that are not actually part of the gas distribution network.

Combined 2014 & 2015 gas contribution ratio by census block group (Boston in inset map)

As with the electric contribution ratios, the combined 2014 and 2015 gas contribution ratios vary greatly within PA service territories, and even within towns. The contribution ratios do not include behavioral data for gas PAs with behavioral programs.

Several of the areas in Boston with no calculated contribution ratio, shown in dark blue, correlate to the downtown steam loop and academic campuses. Areas north-west of Boston have slightly higher contribution ratios than areas in the southern portion of the state.

The following two charts show time series of gas participation rates and savings rates.

Gas account participation

<table>
<thead>
<tr>
<th>Year</th>
<th>Columbia</th>
<th>2014</th>
<th>2015</th>
<th>2013-2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>4.1%</td>
<td>3.8%</td>
<td>4.1%</td>
<td>8.2%</td>
</tr>
<tr>
<td>2014</td>
<td>4.8%</td>
<td>5.0%</td>
<td>5.0%</td>
<td>9.5%</td>
</tr>
<tr>
<td>2015</td>
<td>5.5%</td>
<td>7.3%</td>
<td>9.2%</td>
<td>12.1%</td>
</tr>
<tr>
<td>National Grid</td>
<td>5.2%</td>
<td>7.3%</td>
<td>9.5%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Berkshire</td>
<td>2.7%</td>
<td>6.2%</td>
<td>6.2%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Liberty</td>
<td>2.6%</td>
<td>5.7%</td>
<td>6.3%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Unitil Gas</td>
<td>0.8%</td>
<td>2.1%</td>
<td>2.7%</td>
<td>4.7%</td>
</tr>
</tbody>
</table>

Gas savings achieved

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>0.8%</td>
<td>1.9%</td>
<td>1.1%</td>
<td>3.1%</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>1.0%</td>
<td>1.1%</td>
<td>1.1%</td>
<td>3.1%</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>1.1%</td>
<td>1.1%</td>
<td>1.1%</td>
<td>3.1%</td>
<td></td>
</tr>
<tr>
<td>National Grid</td>
<td>0.7%</td>
<td>0.9%</td>
<td>0.9%</td>
<td>0.9%</td>
<td></td>
</tr>
<tr>
<td>Berkshire</td>
<td>0.9%</td>
<td>0.9%</td>
<td>0.9%</td>
<td>0.9%</td>
<td></td>
</tr>
<tr>
<td>Liberty</td>
<td>0.4%</td>
<td>0.5%</td>
<td>0.4%</td>
<td>0.9%</td>
<td></td>
</tr>
<tr>
<td>Unitil Gas</td>
<td>0.5%</td>
<td>0.7%</td>
<td>0.7%</td>
<td>0.7%</td>
<td></td>
</tr>
</tbody>
</table>
The next map shows the results of the hot spot analysis we conducted on gas participation by census block group, using a five-mile search radius. The hot spot analysis compares each block group to its neighbors, and identifies block groups with comparatively higher or lower participation than we would see with a random spatial distribution (hot spots and cold spots).

The analysis identified gas participation hot spots north and west of Boston, and a smaller hot spot southeast of Boston. It identified gas participation cold spots in Boston and several of the other large population centers. The electric hot spot analysis found similar trends, suggesting that the relative high and low participation rates in certain areas cannot be linked to a particular fuel or PA, but are likely influenced by these areas’ block group characteristics.

Hot spot analysis: 2014 and 2015 combined block group gas participation (5-mile radius); Boston in inset map

While viewing this map, it is important to keep in mind that in and of themselves, higher or lower participation rates in a particular area are not necessarily indicators of program performance. It is entirely possible, for instance, for a block group with a low participation rate to be substantially outperforming expectations for its demographic.

Number of unique gas accounts, participation rate, and savings achieved 2013-2015

*Unitil’s account participation appears lower than other PAs. This is due to missing account data in the tracking system. Notably, Unitil’s savings are consistent with the other PAs, suggesting no substantial differences in actual participation.

Cross-initiative movement

This figure shows how customers moved from one initiative to another in 2014 and 2015. The left column shows the first initiative customers participated in (lead), and the right column shows what initiative they participated in afterward (lag). Thicker lines between initiatives indicate more customers participating.

Gas cross-initiative participant movement, 2014-2015

While viewing this map, it is important to keep in mind that in and of themselves, higher or lower participation rates in a particular area are not necessarily indicators of program performance. It is entirely possible, for instance, for a block group with a low participation rate to be substantially outperforming expectations for its demographic.
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