NASEO RFI - Implementation Options for HOMES and HEEHR

Radiant Labs (in partnership with Snugg Home) authorizes NASEO to publish and distribute this response to the NASEO RFI on its website and through other means to the states and general public. We have included no confidential or proprietary information in our response.

Áðam Stenftenagel CEO





Category 2: Program Elements

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Radiant Labs builds large scale analysis of entire cities and states to help with program design and customer targeting as well as consumer facing tools for customer education and engagement. We've deployed our platform for cities such as Boulder, Berkeley and San Francisco as well as the state of NY for NYSERDA. Our platform helps programs understand the impacts of rebates, financing, contractor education, workforce development, and energy prices on the economics of home energy upgrades.

We build hourly energy models of all homes in a community, state, or utility territory and can do so with as little information as an address. Our analytics dashboard allows a state agency or consultant to filter by hundreds of data points such as income, disadvantaged communities, and building types. In addition the platform can be used for customer targeting down to the individual address level, highlighting the best homes for various improvement packages. In many areas, we have historical building permits that allow us to forecast equipment replacements, such as furnaces, on a home-by-home basis. This allows agencies to target homes proactively to minimize emergency replacements. These emergency replacements often result in poorer economics and the homeowner burning fossil fuels for another 15 years. If utility bills are obtained in bulk, models can be calibrated. Otherwise, the platform is fully virtual, with no observed data necessary.

The following are screenshots of our analytics platform. Monthly cash flow is the focus of these charts. Cash Flow Positive means the monthly payments on the loan for the improvements are less than the average monthly savings on the utility bills. The improvement package modeled here includes attic insulation, air sealing, heat pumps for space heating and cooling, and a heat pump water heater.

This first screenshot shows all 3 million single family homes in the state of New York and only 11% of them as cash flow positive when there are \$0 rebates and 7.5% interest financing.





Here is the same scenario but with 1.9% interest financing. Notice that the percentage of homes that are cash flow positive jumps from 11% to 51%.



Next we add a \$5,000 rebate. 71% of the homes in the state would be cash flow positive in this scenario.





This slide zooms in to Buffalo, NY and shows the disadvantaged communities (DAC) layer in light yellow overlayed with the homes and only DAC homes selected.



The final screenshot shows the customer targeting. We've selected only the homes that have a payback of less than 8 years. (We've blurred the customer names and addresses for privacy):

| | | | -100 | | A Cash Flow F |
|--|---|---|---|---|--|
| Peak Heating Load Threshold | Buffalo | Sion Chreiktows | # of bins: 20 | k (Years) | 100% |
| over 41 kBtur/hr - 22,486 | Gebblestone Di | stree | 12,000 - 11,000 - 10,000 - | | Avg Incremental Cost |
| less than 41 Kbtu/hr - 3 0 8,000 16,000 24,000 # Records | | Withester | 1000 - 00000 - 00000 - 0000 - 0000 - 0000 - 0000 - 0000 - 0000 - 0000 - 0000 - | (132 (132 | \$26,386 |
| Property Use | | | 3,000 - 2,000 - 1,000 - | 2807 265 336 555 555 163 34 | Avg Area (sqft) |
| SINGLE FAMILY 22,478 MULTI-FAMILY 9 | | | | | 1.890 |
| COMMERCIAL/INDUSTRIAL/GOVERNMENT 1 | # Rebate Amount | # Loan Interest Rate | # Loan Payments | # Installation Cost Adjustment | ., |
| MOBILE HOME 1 | | Use as whole number (for example 7.9% enter 7.90) | | | Total Incremental Cost |
| 0.0 5.0k 10k 15k 20k | 5000 S | - - 1.9 5 | 180.00 | 1.25 5 | |
| | 0 30000 | 0 20 | 12 360 | .5 2 | 590M |
| Heating Fuel | | | | | 0, |
| GAS - 22.319k | # Natural Gas cost/therm | # Fuel Oil cost/gallon | # Electricity cost/kWh | # Status Quo Replacement Cost Factor | Median Year Built |
| ELECTRIC - 0.12k OIL - 0.046k OTHER - 0.003k PROPANE - 0.001k | .5 5 <u>5</u> 2.1 <u>5</u> | 1.00 8 4 S | 0.04 0.50 0.14 | 0 2 | 1920 |
| 0k 4k 8k 12k 16k 20k 24k | | | | | Owner Occupancy % |
| Year Built | Target Customers | | | | 70% |
| < 1940s - 20.945k | OCCUPANT_NAME_FIRST OCCUPANT_NAME_LAST PROPERTY_ADDRESS Buffaic | | FULL \$ Improved Cash Flow HVAC_HEATING_FUEL NY 14206-1408 151.7 GAS | | /8% |
| 1950s - 1.308k | MIL MIL | B | uffalo NY 14214-2729 145.29 | GAS | Total Assessed Value (\$) |
| 19008 - 0, 133K | MIL MIL | Bu | falo NY 14210-2121 157.53 | GAS | |
| 1990s - 0.033k | 1967 7988 | Buffalo | NY 14206-2033 75.23 | GAS | 1 1 R |
| 1970s - 0.02k | | Buffal | NY 14214-1109 115.56 | GAS | 1.1D |
| 2000s - 0.012k | | Buffalo NV | 4207-2827 83.32 | GAS | |
| 2010s - 0.002k | | Buffalo | NY 14211-2531 90.41 | GAS | Avg Assessed Value (\$) |
| 0k 4k 8k 12k 16k 20k | NO.009 10912 | Buffa | o NY 14210-1633 154.49 | GAS | |
| | Domain Million | Buffalo | Y 14206-3223 104.51 | GAS | \$50.175 |
| County | MIL MIL | Buffalo N | Y 14207-2142 74.93 | GAS | <i>voo,iiio</i> |



This is a view of our consumer facing tool called Domo. It is a DIY interface for homeowners that provides a detailed long term cash flow analysis for home energy retrofits and will include all potential rebates and incentives available through HOMES and HEERH as well as any available utility or local rebates. A Domo roadmap can be deployed for every targeted home in our analytics platform and we can push those leads to contractors.





Category 3: Indication of Vendor Interest

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Services available to aid in the execution of HOMES and HEEHRA:

- Hourly energy modeling of every address in a state deployed through our data analytics dashboard that assists in program design and customer targeting.
- Model multiple SEO defined improvement packages for all addresses in the state
- Consumer education and engagement through our virtual audit tool Domo