



NYSERDA

Residential Remote / Virtual Energy Audit Stakeholder Webinar

May 21, 2019

Purpose Statement

- The purpose of this webinar is to share insights on the state of the market for platforms, tools and approaches that support remote and virtual energy audits in the residential sector.
- The information gathered during the webinar will help identify areas ripe for innovation and market-testing of remote and virtual energy audit solutions and will inform an upcoming NYSERDA solicitation.

Agenda

- Welcome
- State of the Market for Remote/Virtual Energy Audits
- Consumer Attitudes -- Survey Results
- Lightning Round Presentations: Available Tools and Solutions
- Guided Discussion
- Wrap-up and Next Steps

Today's Presenters

Presenter	Organization
Courtney Moriarta	NYSERDA
Richard Faesy	Energy Futures Group, Inc.
Scott Johnstone (Moderator)	VHB
Mark Brescia	ConEd
Ian Maddock	My Heat
Erik Solomon	National Fuel
Ryan Bauer	National Grid
Seth Little	CleaResult
Bryan Evans	Energy Estimator (NEEP)
Veronique Bugnion	Energy Estimator (Clearly Energy)
Adam Stenftenagel	Radiant Labs
Damian Hodkinson	Halco

Current State of the Market Solutions

Tools by Category Overview

- Remote energy audit
- Virtual energy audit (including behavioral)
- Customer Acquisition/Lead generation
- Special purpose tools (e.g. Google maps, Zillow, Hover)

Key Terms

Remote Energy Audit - Auditors conduct building assessments remotely using tools such as video conferencing, phones, or photos

Virtual Energy Audit - Software that collects and analyzes remotely available data sets to prospect for leads, develop a building model, pre-screen customers and/or develop preliminary energy efficiency recommendations

Customer Acquisition/Lead generation – Customers engage with a digital platform where they can get energy savings recommendations and be guided to marketplaces to purchase energy savings products or enroll in energy reduction programs

Current State of the Market

Special purpose tools (examples)

- **Google Earth** – Review home exterior details and orientation
- **Zillow** – Review home interior and exterior details, square footage, and other property characteristics such as age of home, heating fuel, and mechanical equipment
- **Hover** – Home measurement application that creates 3-D models from photos
- **NYSERDA's Faraday Customer Targeting Tool** – uses data sets from multiple public and program sources to target specific customer and housing types

Customer Attitudes Towards Remote / Virtual Audits - Survey Findings

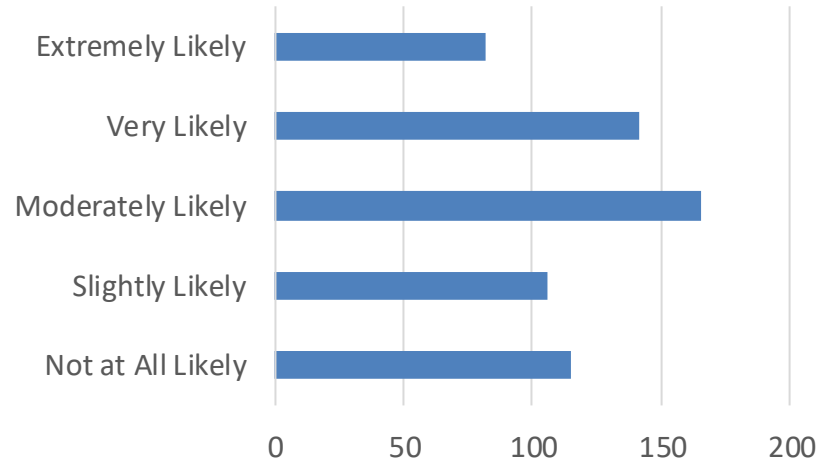
Objectives

- Test homeowners' receptiveness to a remote home energy audit
- Determine the appeal and concerns of a remote home energy audit

Methodology

- Online survey targeted to 600 homeowners in New York State, ages 25+
- **Survey conducted July 2019**

How likely would you be to complete a remote home energy audit in the next 12 months if it were available to you?

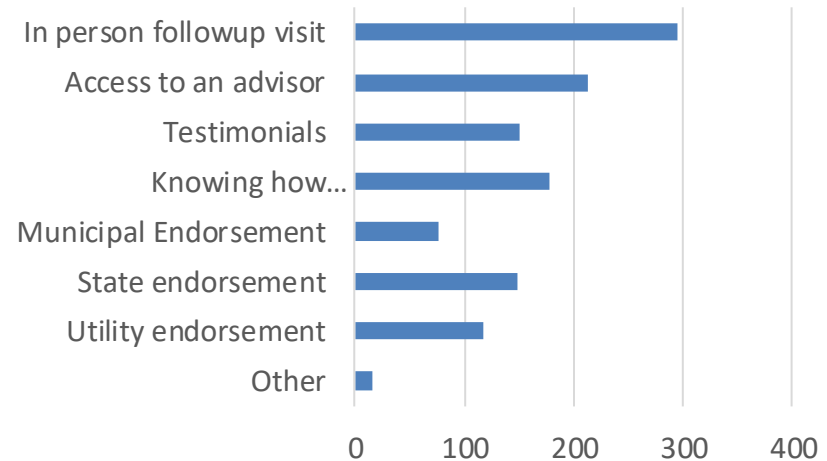


Customer Attitudes Towards Remote / Virtual Audits - Survey Findings

Which aspects of a remote home energy audit are appealing? (check all that apply)



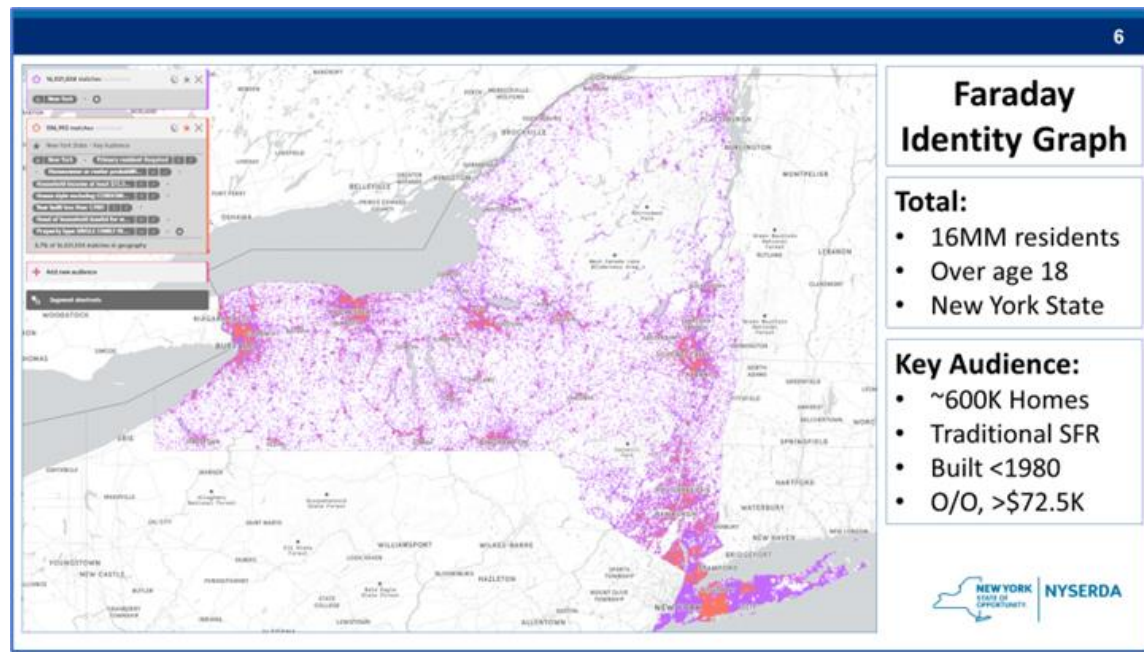
What would make you feel more confident about remote home energy audits? (check all that apply)



NYSERDA's Faraday Customer Targeting Tool

Faraday's Identity Graph (FIG)

- Searchable database
- Incorporates property, building, HVAC system, fuel type, ownership data
- Used for targeting high probability customer prospects



Faraday Customer Targeting – Identify Priority Customer Prospects

Produces lists of quality prospects which can be customized to program specifications for targeting:

- Neighborhood canvassing
- Direct mail
- Social media

first_name	last_name	address	city	state	zip	zip4	phone	score	fuel_type	latitude	longitude
MICHAEL	CHAMBERLIN	17 Amenia Union Rd	Amenia	NY	12501	5858	8453739846	94	OIL	41.81	-73.53
ALEXANDER	SHUNDI	292 Amenia Union Rd	Amenia	NY	12501	5811	8453738294	40	OIL	41.82	-73.51
FRANK	MARCOU	298 Amenia Union Rd	Amenia	NY	12501	5811	8453734377	78	OIL	41.82	-73.51
JEFFREY	ROMANOWSKI	329 Amenia Union Rd	Amenia	NY	12501	5840	8453738113	68	OIL	41.82	-73.51
PHILLIP	MILLS	616 Bangall Amenia Rd	Amenia	NY	12501	5001	8458681626	55	ELECTRIC	41.87	-73.64
JOHNNY	AGOSTINI	11 Broadway	Amenia	NY	12501	5402	8454538561	38	OIL	41.84	-73.56
SUSAN	MORFORD	85 Cascade Rd	Amenia	NY	12501	5102	8453739644	74	ELECTRIC	41.86	-73.56
PETER	DEISTER	97 Cascade Rd	Amenia	NY	12501	5102	8453739737	63	OIL	41.87	-73.56
MICHAEL	CEA	188 Clark Hill Rd	Amenia	NY	12501	5855		38	OIL	41.80	-73.51
JILL	STAIB	10 Depot Hill Rd	Amenia	NY	12501	5600	8457021262	12	OIL	41.85	-73.55
TRACY	SALLADAY	31 Depot Hill Rd	Amenia	NY	12501	5602	8457891045	96	OIL	41.84	-73.55
JENNIFER	O'BRIEN	6 Flood Dr	Amenia	NY	12501	5800	9146358379	2	ELECTRIC	41.84	-73.54
ANN	BUTLER	25 Folan Rd	Amenia	NY	12501	5204	8453739648	100	OTHER	41.87	-73.55
THOMAS	GIUSEFFI	56 Folan Rd	Amenia	NY	12501	5202	8453737306	78	OIL	41.86	-73.55
VERNON	STORM	13 John L Rd	Amenia	NY	12501	5611		80	ELECTRIC	41.85	-73.55
ELEANOR	MOODY	11 Lake Amenia Rd	Amenia	NY	12501	5415	8453739920	8	ELECTRIC	41.84	-73.57
ROBERT	ADAMS	36 Leedsville Rd	Amenia	NY	12501	5836		92	OIL	41.82	-73.51
ERIC	ESCHBACH	176 Leedsville Rd	Amenia	NY	12501	5837	8453739432	77	OIL	41.83	-73.51
HAROLD	HORR	318 Leedsville Rd	Amenia	NY	12501	5839	9142610966	96	ELECTRIC	41.84	-73.51
JEREMY	ELLER	425 Leedsville Rd	Amenia	NY	12501	5830	5712136678	80	OIL	41.85	-73.51
GEORGE	BUTTS	462 Leedsville Rd	Amenia	NY	12501	5820	8453739357	78	ELECTRIC	41.85	-73.51
VINCENT	PAVIA	468 Leedsville Rd	Amenia	NY	12501	5820		91	OIL	41.85	-73.51
ADRIAN	PARTRIDGE	483 Leedsville Rd	Amenia	NY	12501	5830		81	OIL	41.85	-73.51
JOHN	STEWART	501 Leedsville Rd	Amenia	NY	12501	5831	3143074458	76	OIL	41.85	-73.51
CRAIG	FRANK	12 Lincoln Ct	Amenia	NY	12501	5832	8453737784	99	OIL	41.84	-73.55
NEIL	NEWVINE	13 Lower Powder House Rd	Amenia	NY	12501	5561	8453739664	22	OIL	41.84	-73.56



Virtual and Remote Energy Assessments

SURVEY RESULTS

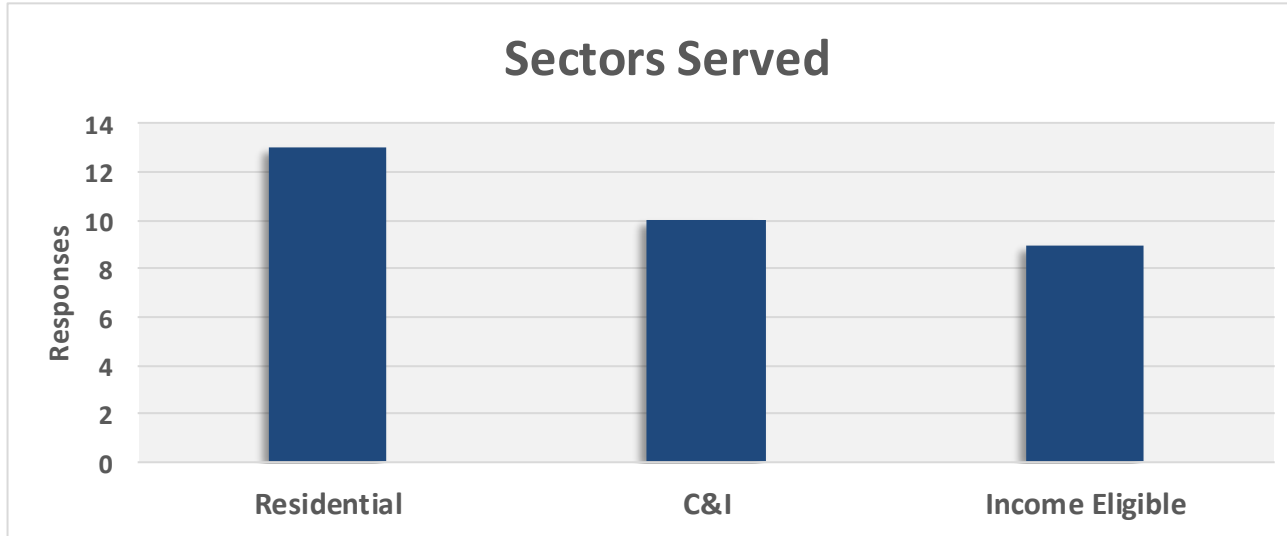
Energy Futures Group and Optimal Energy

Overview of Survey Goals and Process

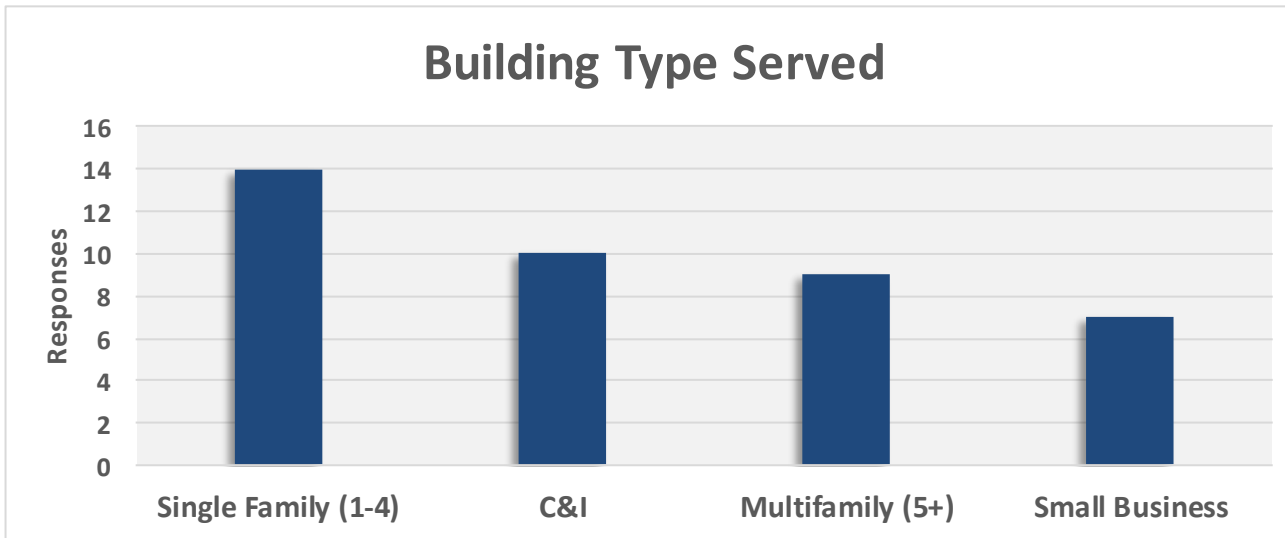
- COVID-19 has halted in-premises programs, so there is an opportunity for virtualization of assessment processes
 - Already in the plans due to loss of lighting, but COVID accelerated research
- Survey gathered information on “virtual” and “remote” energy assessments
 - What exists?
 - What could be on the horizon for residential, low-income and C&I energy efficiency programs?
- Survey was sent to 28 firms and received 19 responses
- Respondents were split into “remote” and “virtual” assessments and questions were aimed at the specific type of assessment they provide

Company	Assessment Type	Sector
Avangrid	Remote	Residential, Income Eligible
Center forEcoTechnology	Remote	Residential, C&I
CLEAResult (RI - LI)	Remote	Income Eligible
CMC Energy Services	Remote	Residential, Income Eligible, C&I
Ecosystem Energy Services	Remote	C&I
Eversource	Remote	Residential, Income Eligible
Performance Systems Development	Remote	Residential, C&I
RISE Engineering	Remote	Residential
Sealed	Remote	Residential
Advanced Energy Intelligence, LLC	Virtual	C&I
ClearlyEnergy, NEEP	Virtual	Residential
Energy Hippo	Virtual	C&I
EnergyXSolutions	Virtual	Residential, Income Eligible, C&I
Home Energy Analytics, Inc.	Virtual	Residential
InversEnergySoftware	Virtual	C&I
MyHEAT Inc.	Virtual	Residential, Income Eligible
Oracle/Opower	Virtual	Residential, Income Eligible
SourceOne	Virtual	C&I
Stream	Virtual	Residential, Income Eligible, C&I

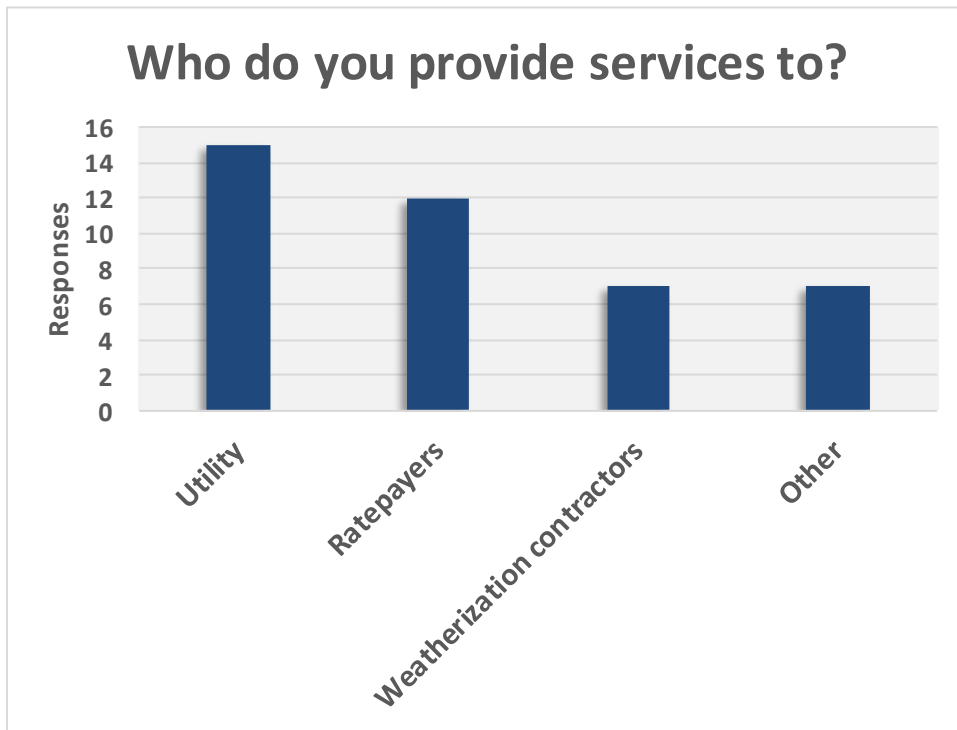
Results



Results

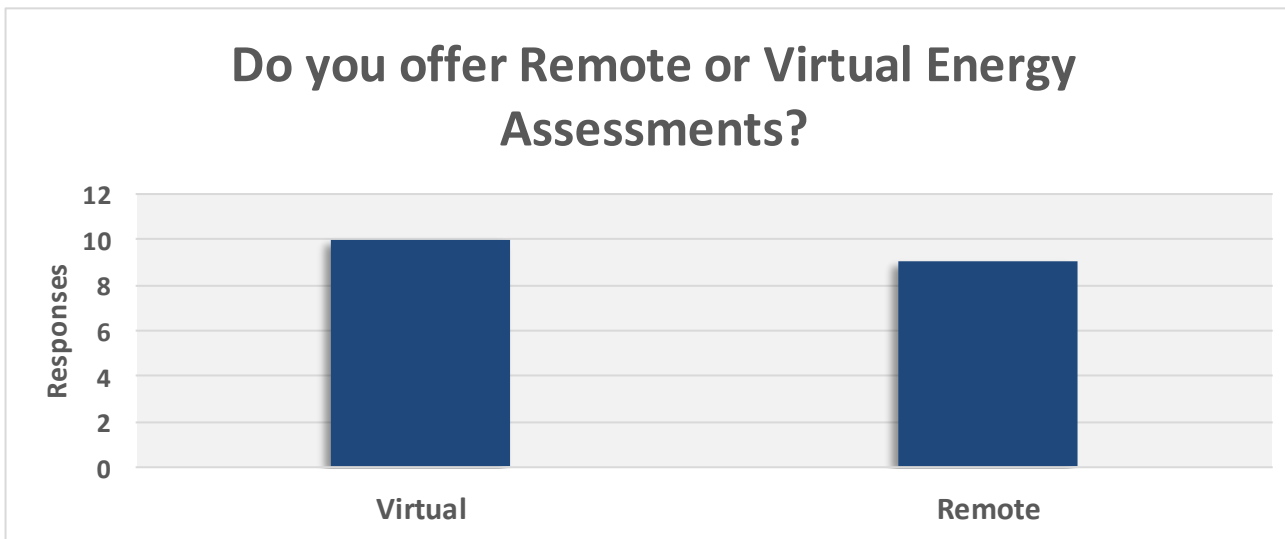


Results

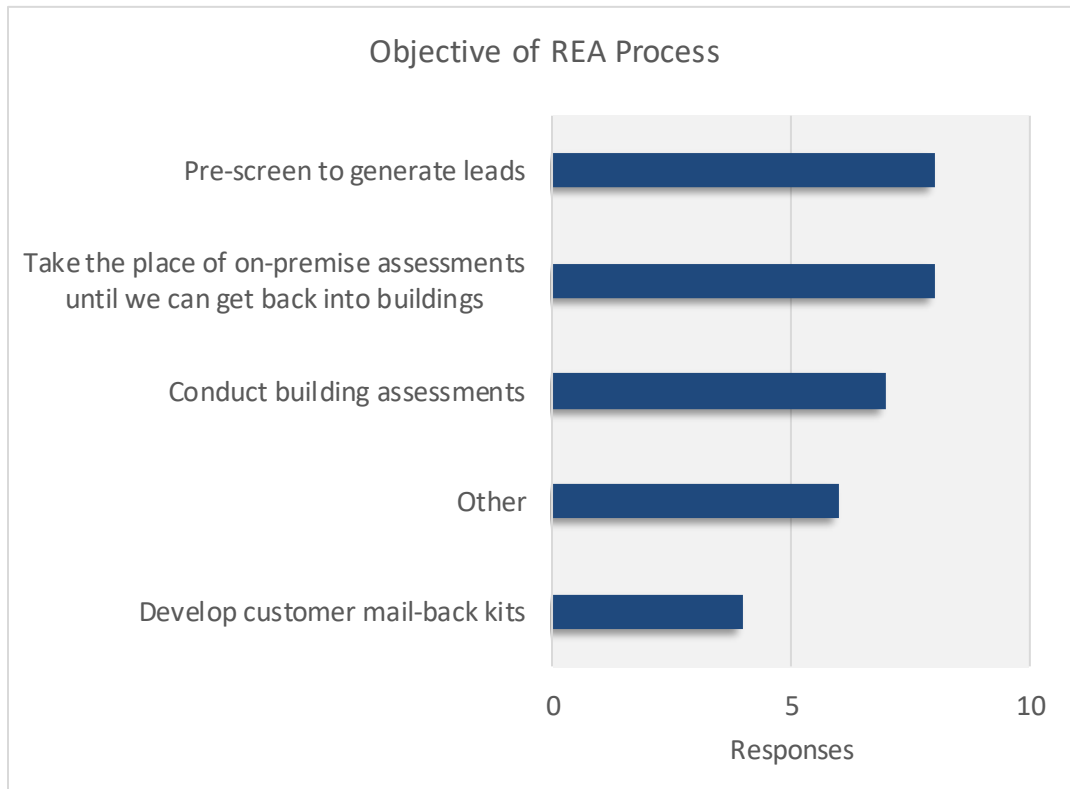


- “Other” responses included:
 - Utility program implementers and incentive providers
 - MUSH market
 - Governments and municipalities
 - End user/building owner
 - Service organizations

Results



Results – REA Respondents

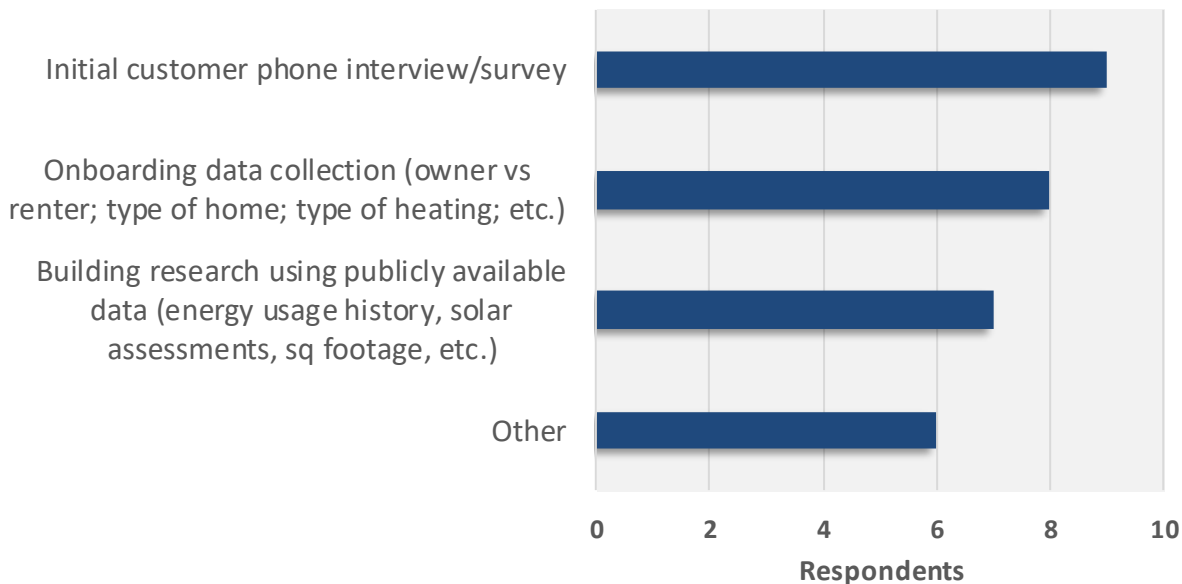


- “Other” responses included:

- Provide information for customers to do energy saving projects
- Sign project agreements with homeowners
- Help utilities save time and money by targeting the homes that have the most potential energy loss

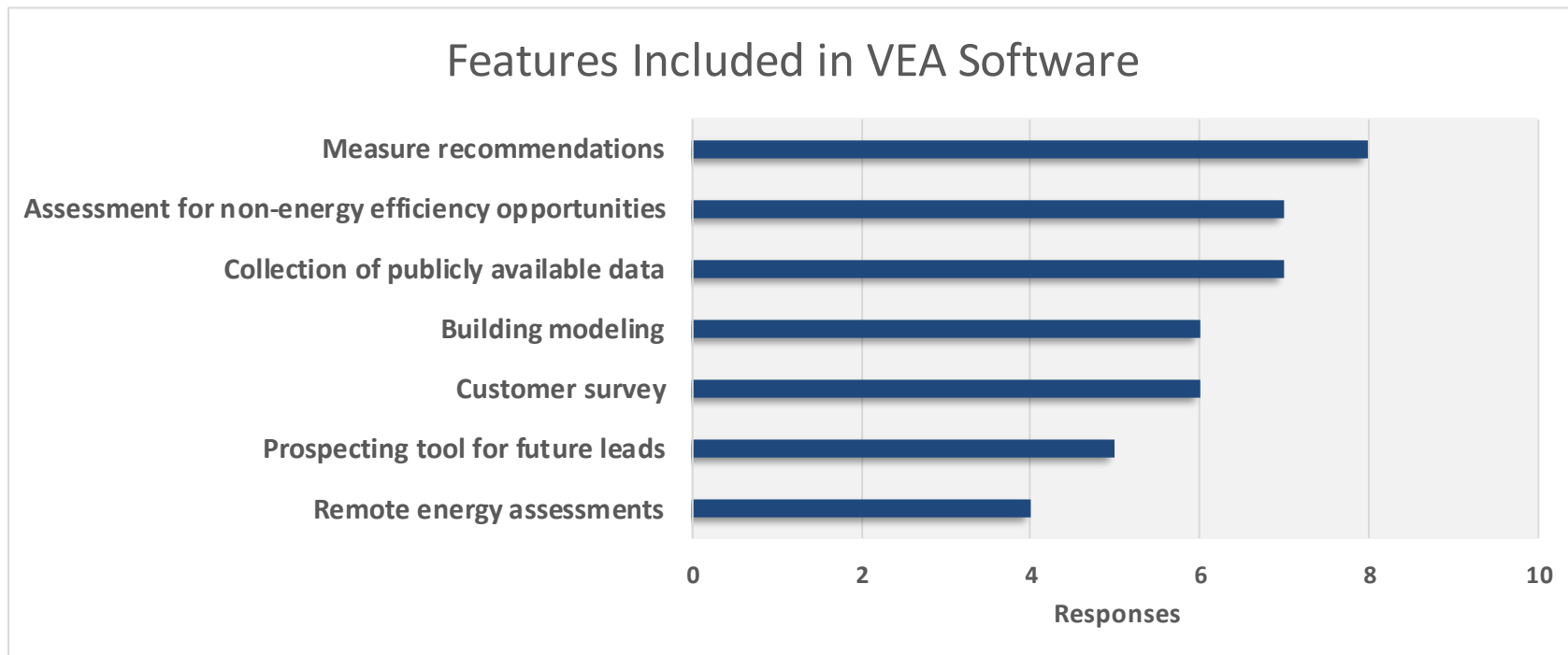
Results – REA Respondents

Pre-REA Data Collection Methods



- “Other” responses included:
 - Commercial Building Asset Score data collection from facility manager for C&I and multifamily
 - Photos of specific items in the home
 - Collect and process high resolution thermal data via aircraft (VEA?)

Results – VEA Respondents



Key Takeaways - REA

- 9 out of 19 respondents provide REAs
- Most use REAs as a way to generate leads and to take the place of on-premise assessments while those are unavailable
- REAs are using technology that customers already have access to – Smart phones, tablets, and computers
- 4 of the 9 REA providers surveyed provided a customer kit – some of which included lighting, smart strips, showerheads, and aerators
- Most of the REAs last about 1-2 hours with the customer
- Most utilize property tax assessor and/or utility data, which can be supplemented with Google Maps or other tools
- This is new territory for most providers; some have piloted REAs, but there is not a lot of widespread experience

Opportunities - REA

- Greater use of customer kits to provide energy improvements without entering the home
- Many people have the availability to spend an hour on the phone for an audit right now – a great time to line up future projects
- Create a pipeline of projects
- Make in-premise programs more cost-effective by assessing weatherization barriers (e.g., mold, asbestos, lead etc.) before rolling the truck

Key Takeaways - VEA

- 10 out of 19 respondents provide VEAs
- VEAs may require a longer lead time to establish, but once set up can assess buildings rapidly
- C&I VEAs primarily look at utility data and interval (smart or AMI meter) data at the building level, then most are supported with some basic customer input about their building
- Most residential VEAs involve a simple customer questionnaire supplemented by utility or tax assessor building information to generate recommendations or pre-screen customers

Opportunities - VEA

- VEAs are accessible – designed to be used and understood by the average person and generate an equally understandable report
- There are multiple VEA approaches and options to be considered, some of which may be complimentary
- Some VEAs have a track record for verification of results
- As lighting savings go away, VEAs may provide an opportunity to prospect and screen for eligible customers cost-effectively

Con Edison Remote Audit Experience by Sealed

- Con Edison Weatherization Program
 - Pilot launched 2018
 - Rebate plus optional financing paid back with energy savings
 - Local contractor network administered by Sealed
 - Single Family residential, owner occupied, detached homes
 - Primarily Westchester gas heating customers
 - 2020 expansion territory-wide and to central AC with delivered fuel heating customers
- Currently testing remote scope verification
- Early feedback is that homeowners value the convenience and safety of a remote energy audit

“To have somebody come here and measure...it just wouldn't work in these times...”

The beauty of this and the ease of interaction with Sealed is that they're able to do everything remotely.”

- Dan Ricci, Sealed Customer

Remote Processes

Remote processes were a key part of program delivery prior to COVID-19

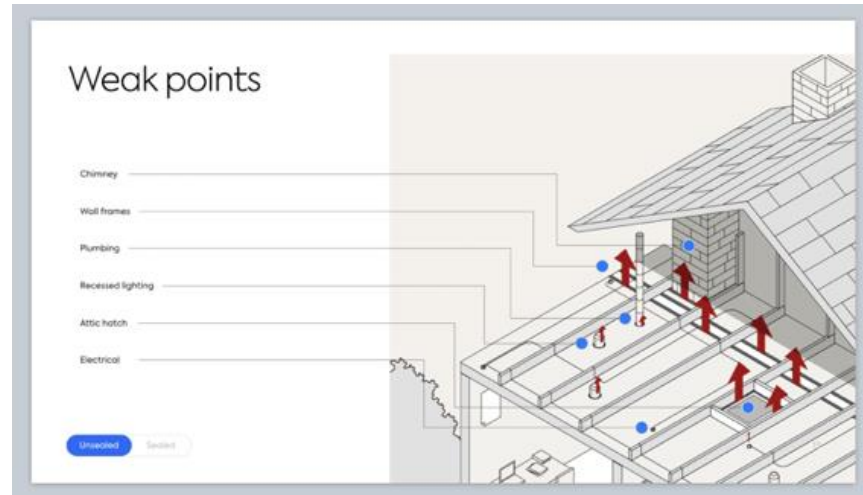
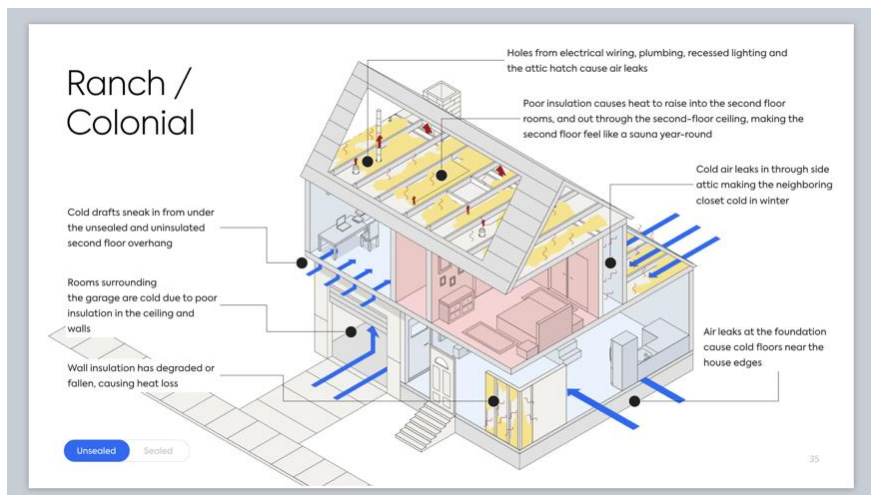
1. **Qualify** – Online eligibility quiz and solution design questionnaire
2. **Consult** – Speak to a Sealed representative by phone to learn more and share additional details of the home
3. **Propose** – Sealed Solution Architect presents a custom upgrade plan, created from online questionnaire, initial call, energy usage history analysis, and remote measurements
4. **Verify** – Homeowners confirm their scope of work by taking pictures of their home in an online, guided experience
5. **Waitlist to Install** – Homeowners sign a project agreement that will be installed when it is safe to do so

Unchanged

Updated in response to COVID-19

Remote Education


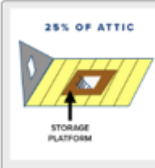
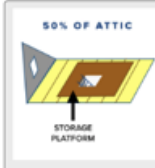
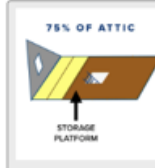
- Leverage educational content to demonstrate core building science principles
 - Visit sealed.com/home-tour

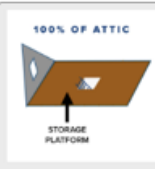


Remote Project Scoping





- Sealed creates an initial upgrade plan and estimate by combining customer-submitted data from the initial questionnaire, energy history analysis, and remote house measurement via google maps

4 → How much of your attic is currently used for storage? *

 <p>NO STORAGE</p>	 <p>25% OF ATTIC</p>	 <p>50% OF ATTIC</p>	 <p>75% OF ATTIC</p>
A No storage	B 25%	C 50%	D 75%

 <p>100% OF ATTIC</p>
E 100%

10 → What kind of water heater do you have? *

			
A No tank - heated by the boiler	B Tank connected to boiler (water heated by boiler)	C Standalone tank (fires up itself)	D Not sure

Remote Sales



- Sealed Solution Architects provide personalized recommendations to each homeowner based on pain points, remote scoping, and budget
- Solution Architects can adjust scope in real time to provide homeowners with different project options
- Project integrates available incentives and financing options

Left: Sealed Solution Architect, Will, scoped an insulation project by measuring the attic square footage on google maps, and walks a homeowner through his analysis of the house



Remote Verification

- Prior to COVID-19, homeowners received a “Verification Visit” from a contractor to confirm scope similar to a traditional in-home energy audit
- Now interested homeowners can verify their scope remotely
- Homeowners leverage an online remote verification guide to take the pictures Sealed and contractor partners need to finalize a project agreement

13 → Climb into the **attic space(s)**. Take photos showing each side of each attic space and the attic floor.

Be sure to shine a light in the attic and use flash so the photos are visible. Make sure to capture where the roof meets the attic floor.

We are hoping to see how much insulation you currently have and what other equipment is currently in the attic space(s). Be sure to capture any storage areas, ductwork and lighting.

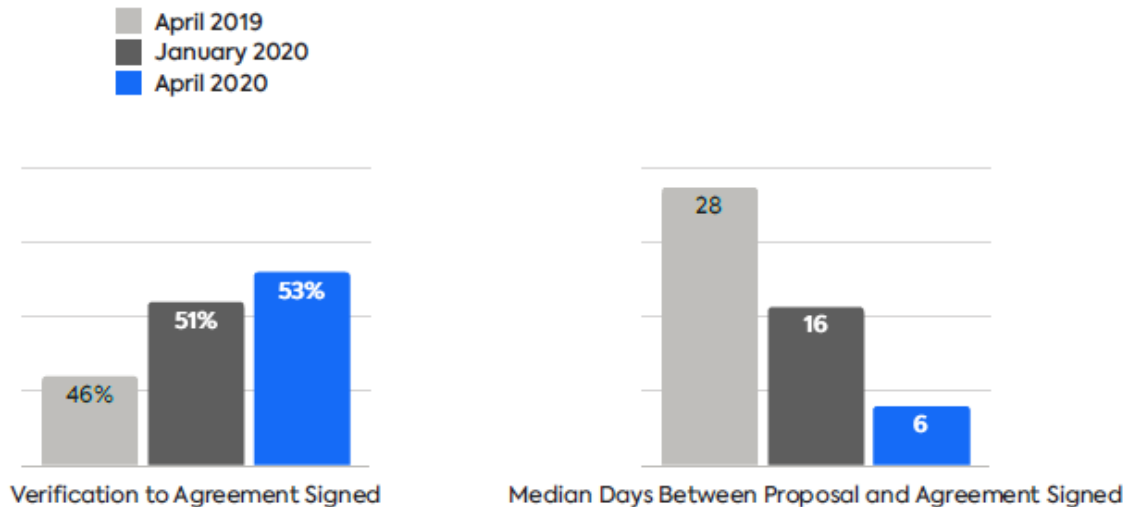


A Next: kneewalls

Remote Effectiveness

Remote processes continue to be effective

1. Key conversion rates from verification to agreement signed have remained steady with in-home versus remote process
2. Time from proposal to agreement signed has improved by > 60%
3. Sealed has received high quality pictures from the remote verification process

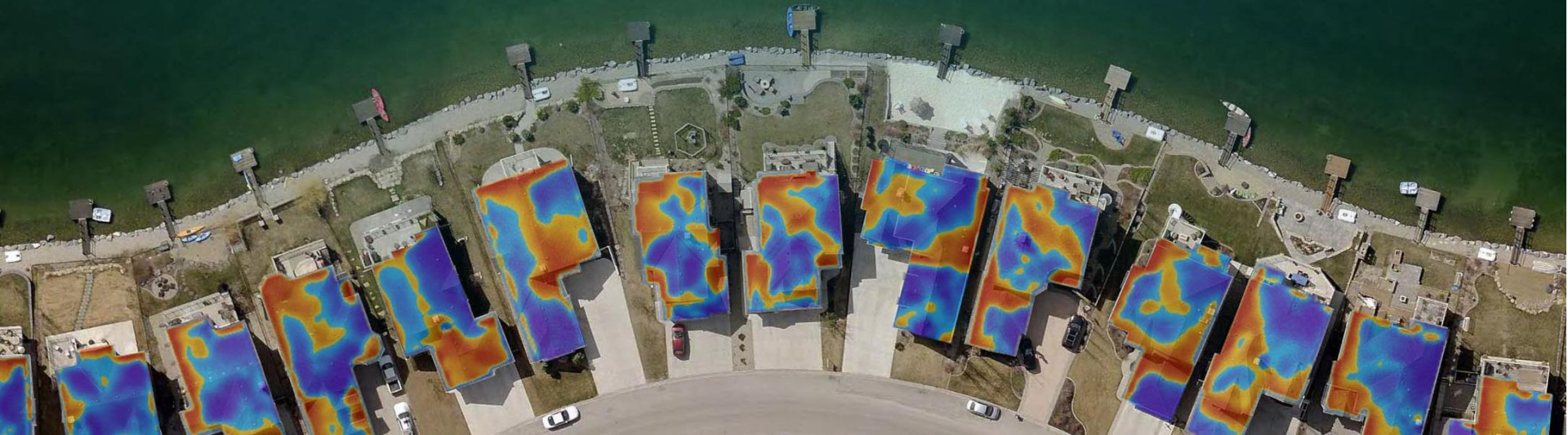


Based on Sealed sales data for proposals presented in April 2019, January 2020 and April 2020 to date. April 2019 and January 2020 represent in-home verification data and April 2020 represents remote verification data.



NYSERDA Remote Audit Stakeholder Webinar

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Thermal Data Collection

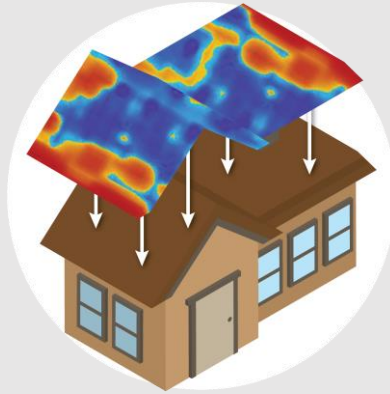


Platform Overview



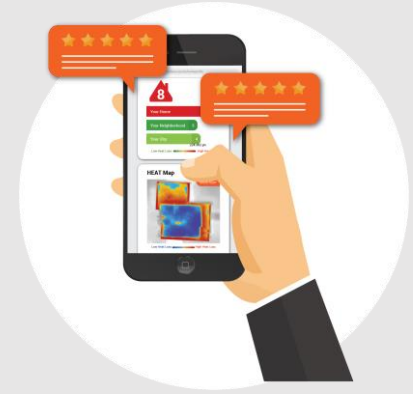
Raw Thermal Data

identify personalized thermal attributes for each building in a city



Processing of Thermal Data

and development of personalized HEAT Maps & HEAT Ratings



Online Interactive Profiles

Presented with links to local efficiency programs

Touch-free Remote Engagement Solution



Platform
Overview



Contract
Negotiation



Remote Data
Collection



Data Processing,
Platform Delivery &
Integration



Contactless,
Homeowner
Engagement

Popular Uses of MyHEAT Data



Targeting Specific
Homeowner
Segments



Behavioral
Randomized
Control Trial



Non-pipe /
Non-wire
Alternatives

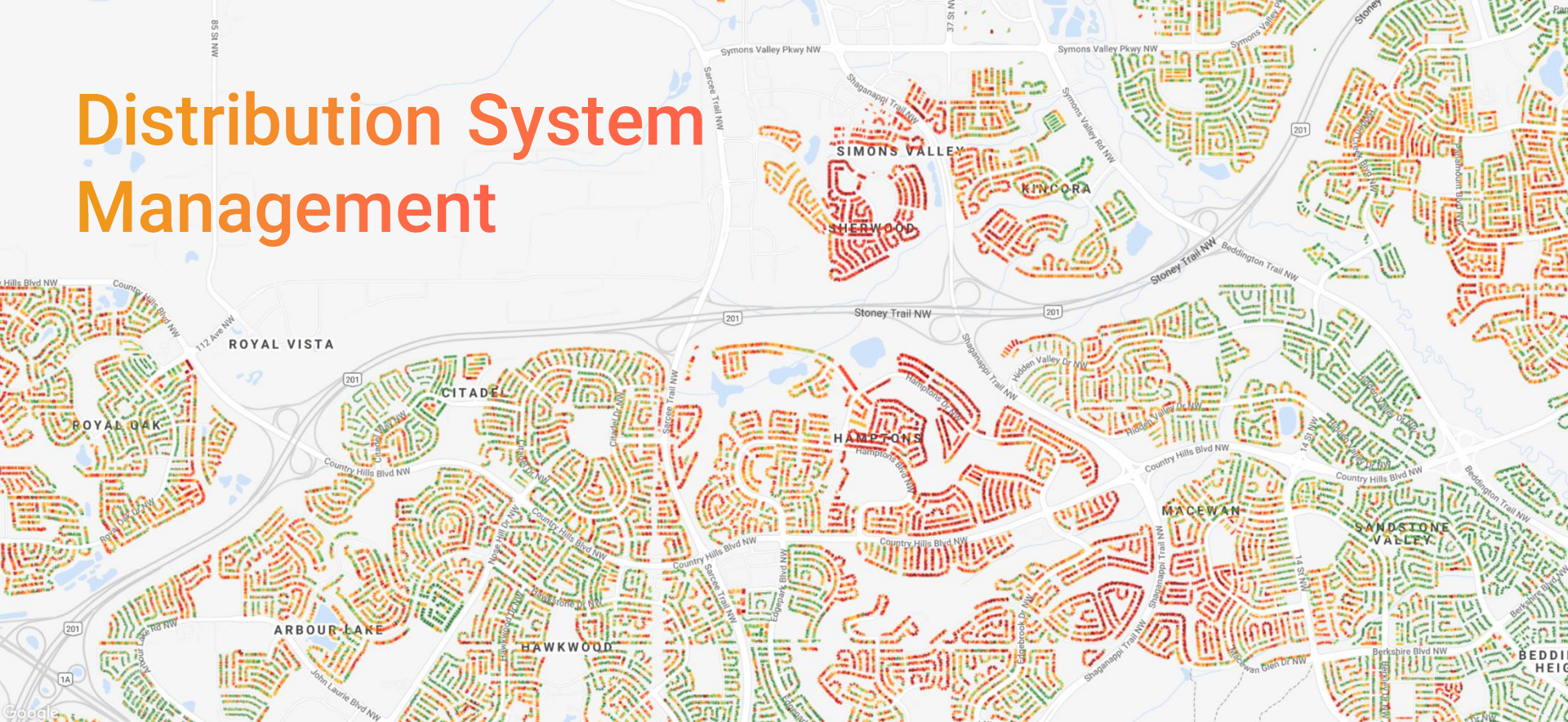


Locating Vegetation
on Transmission Lines

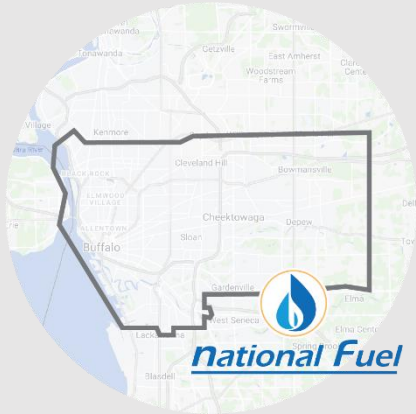


Economic
Recovery Tool

Distribution System Management

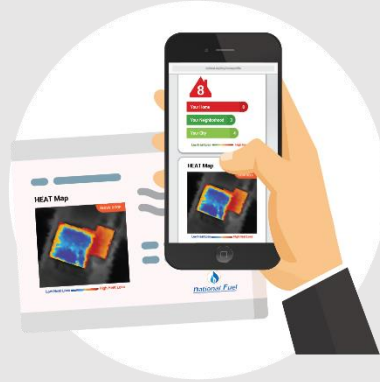


MyHEAT Partnerships



MyHEAT + National Fuel Gas Distribution

Thermal data collection for ~160,000 households in Buffalo, New York with a project launch in fall 2020



Program Implementation

Accounts in collection area will be analyzed and homes will be sorted into outreach groups to be targeted with specific messaging developed by MyHEAT



Program Design & Evaluation

Program participation and consumption reduction will be tracked and evaluated for each group with a Randomized Control Trial

Homeowner Perception – Customer Survey

A US NE Gas and Electric Utility recently conducted a customer survey highlighting MyHEAT in preparation for a regulatory filing. Response from over 1,000 customers indicated that:



74% said that MyHEAT would be beneficial in helping them identify home heat loss.



79% would be likely to access their MyHEAT info on the utility platform.



97% said MyHEAT would either increase or maintain their current opinion of their utility provider.

In partnership with Natural Resources Canada

Behavioural Results – Program Participation



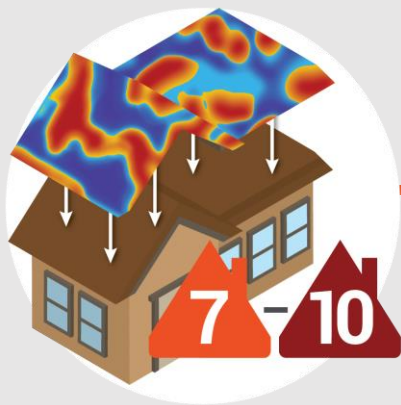
MyHEAT imagery led to **25% higher participation** in the weatherization rebate program



The imagery also motivated **19% more online rebates** for other home upgrades

In partnership with Natural Resources Canada

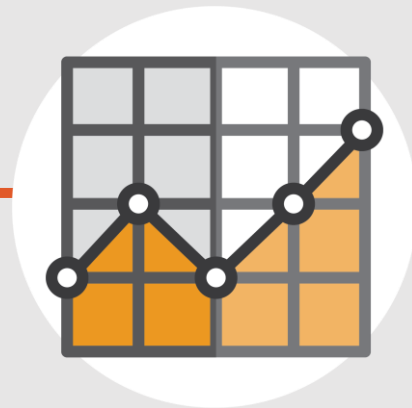
Behavioural Results – Consumption



3.9% ↓

per \$150 of estimated savings

VS.



1.8% ↓

Remote / Virtual Energy Audit Program

nationalgrid

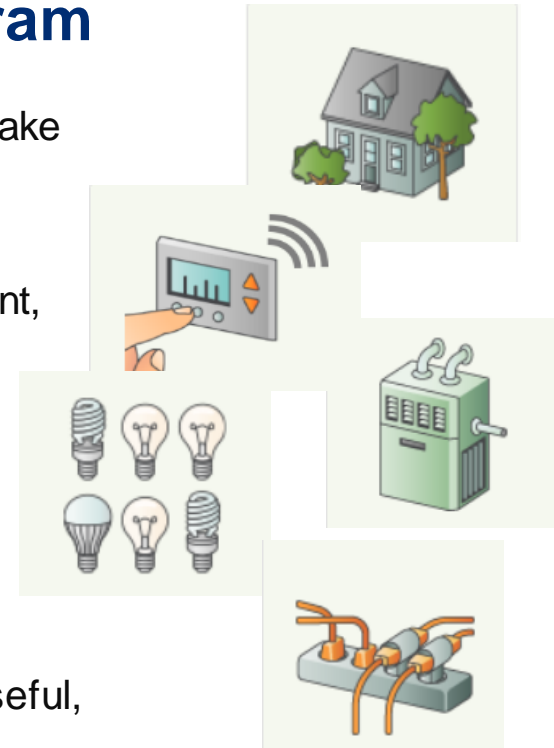
- National Grid is an electric, gas and clean energy delivery company serving more than 20 million people throughout NY, MA and RI.
- National Grid is transforming its electric and gas networks with smarter, cleaner and more resilient energy solutions designed to meet the goal of reducing greenhouse gas emissions.
- The company's energy efficiency portfolio provides a variety of programs to help commercial and residential customers save energy, money and the environment.

uplight

- Uplight is the leading provider of end-to-end technology solutions dedicated solely to serving the energy ecosystem. More than 80 utilities around the globe use Uplight solutions to power their customer energy experience.
- Uplight creates a more sustainable future by empowering customers — bringing together all of the pieces of customer energy action management.

Remote / Virtual Energy Audit Program

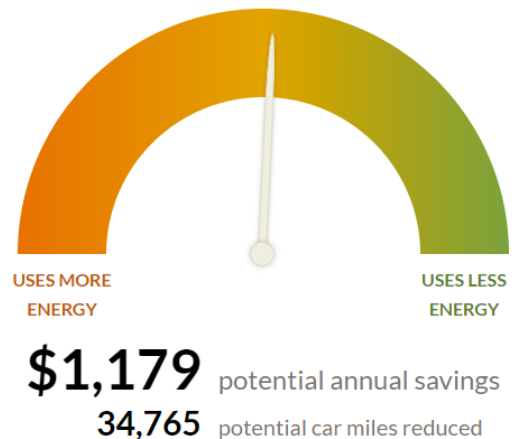
- The **Online Home Energy Assessment** allows customers to take a fast and easy 5-10 minute survey – at home – without any outside contact
- Customers learn about their home, heating & cooling equipment, appliances, lighting, electronics and energy use behaviors
 - Structure: Age, size, insulation, windows
 - Heating & Cooling: Heat type, age of furnace and A/C
 - Appliances: Dryer, stove, fridge, water heater
 - Usage: Lighting, electronics, showers, T-stat set points
- National Grid, acting as a home energy advisor, is providing useful, actionable outreach and education for energy management



Remote / Virtual Energy Audit Program

Results Page

- Unique Home Energy Profile
 - Specific energy saving recommendations
 - Behavioral usage “Tips” (low cost/ no cost)
 - Potential annual dollar savings
 - Targeted promotion EE programs
 - A push to online marketplace
-
- The program is currently in market in Upstate NY (2017) and Downstate NY (2019).
 - Targeted to residential customers who own or rent.
 - Market penetration is generally low as marketing has not been aggressive. However, when an email blast goes out participation spikes. And the survey completion rate is an impressive 93%.



Virtual Assessment - Overview



What is it?

CLEARResult's Virtual Assessment is a live augmented reality (AR) remote support approach enabling:



Remote energy advisor-guided home assessments



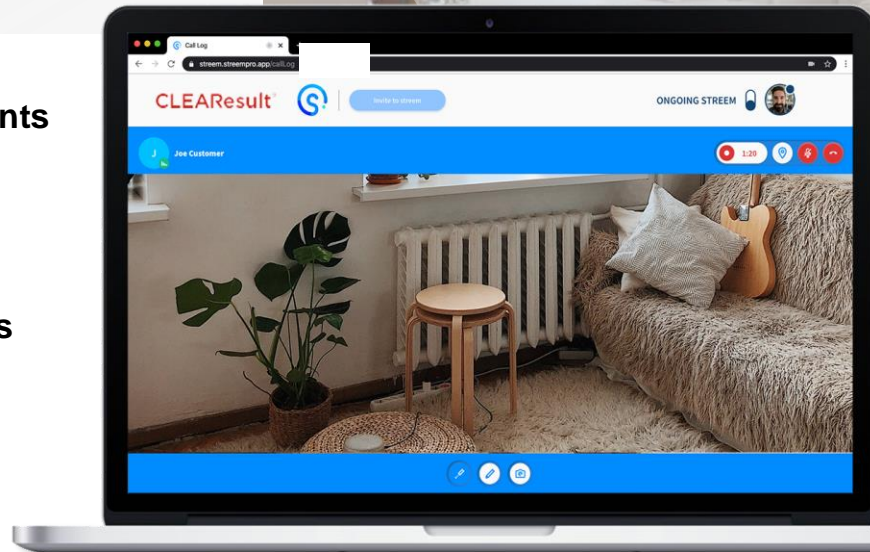
Safe direct customer engagement



Faster EE initiative rollouts for Program Partners



Lower costs for everyone



Virtual Assurance - Overview

What is it?

Virtual Assurance removes the time between installation and inspection, enables lower program costs, and increases convenience for customers.

It can be coordinated with onsite contractors at the conclusion of work if needed, or totally remote if preferred.

Virtual inspections are ideal for detecting and preventing fraud and are well-suited for all field installations. Using built-in collaboration tools, our expert inspectors can:



Remotely view any in-progress installation



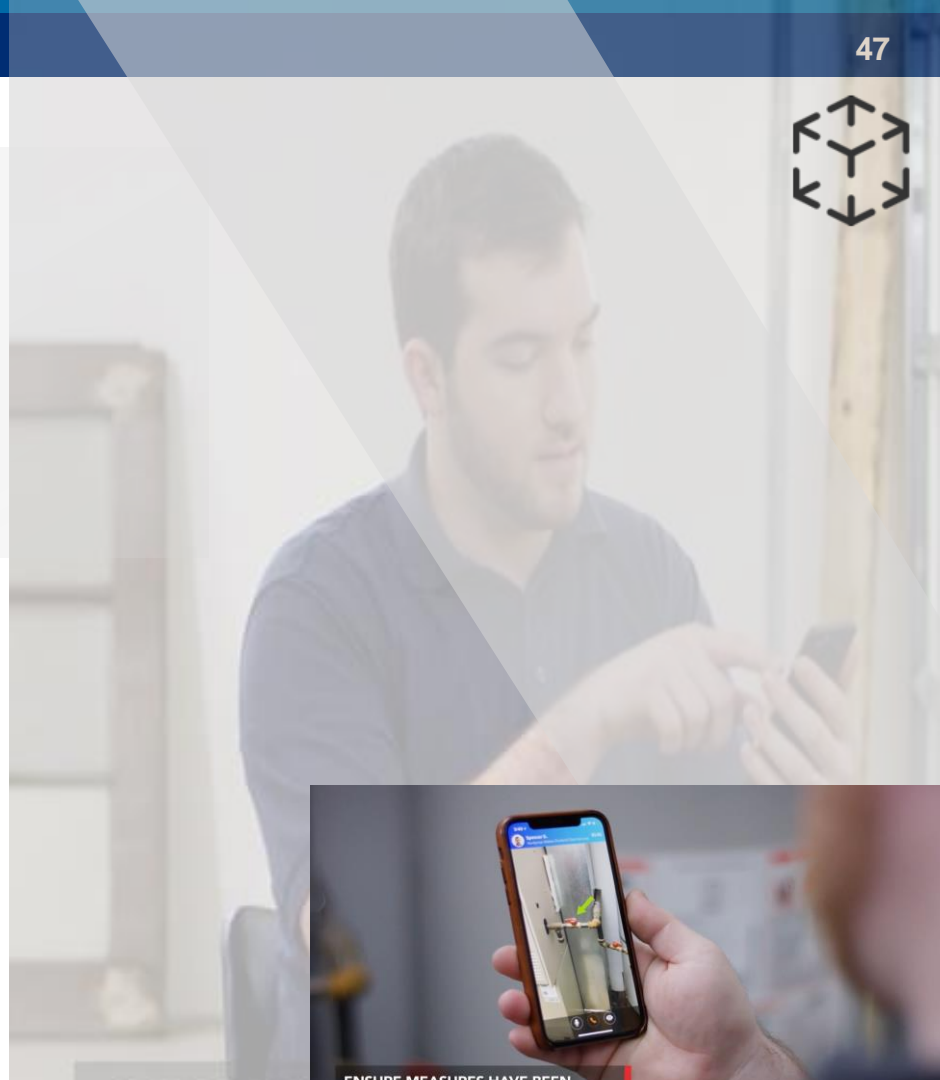
Guide the participating contractor through the inspection



Correct issues in real time



Capture the required data for the program

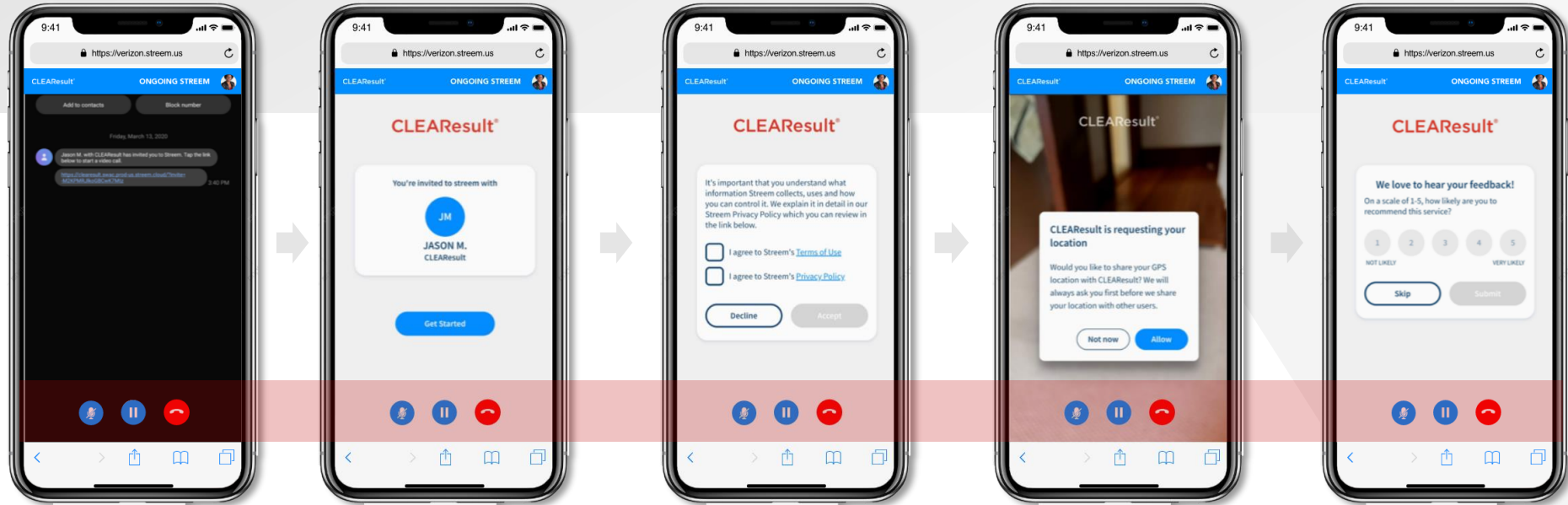


Virtual Assessment – New Solution



Virtual Assessment is a new solution that respects customer privacy and choice.

Customers are in control every step of the way, with the ability to **pause video or audio** at their fingertips at all times.



SMS Link

Invitation to Stream

Permissions

Request to allow GPS

Feedback

Virtual Assessment – The Tech



Powerful, Built-in Tools for Virtual Advisors



Laser Pointer

Enables pointing and movement-based gestures that appear on the customer's screen in real time.



QuickDraw™

Allows advisors to draw temporary shapes and lines highlighting physical objects, outlining areas, or indicating movements.



Streamshot™

Enables full-res photos with embedded depth and scale data for later analysis—and automatically transcribes any model and/or serial numbers in the shot, saving time and data entry costs.

Location Tracking



Customers are prompted to optionally enable GPS permissions that, if accepted, grant advisors access to their exact location and estimated street address.

Automatic Call Logging



All data collected during a call—including a full video recording—goes into a convenient multimedia call log for easy review and quality assurance.

Virtual Assessment – A Remote Solution

CLEAResult's Virtual Assessment is the most advanced remote expertise platform on the market powered by true augmented reality features.

FEATURE		VIRTUAL ASSESSMENT	OTHERS
True AR	Computer vision identifies and maps objects in a space, creating a shared experience within the customer's environment for improved collaboration	✓	NO
Spatial Mapping	Creates an accurate & interactive 3D mesh of the facility (via iOS app)	✓	NO
3D Intelligent Photos	Review, markup, & store spatial maps w/ remote measurements & more, AR data, object & character data—all captured in the high-resolution image	✓	NO
Custom Machine Learning	Computer vision is trainable—can recognize custom objects, products, & context	✓	NO
OCR & Object Recognition	Recognizes objects and captures serial/model numbers automatically	✓	NO
AR Walkthroughs	Guides customers with AR instructions that anchor to their environment	✓	NO
Mobile AR	A full AR experience, directly through a mobile phone browser	✓	NO

Energy Estimator

Presented By Northeast Energy Efficiency Partnerships (NEEP) and ClearlyEnergy

Northeast Energy Efficiency Partnerships

A non-profit, regional energy efficiency organization with the mission to ensure all homes, buildings, and communities are healthy, efficiency, and affordable places to live, work, and play.



ClearlyEnergy

"We believe in empowering you with a clear and informative platform to understand and simplify energy choices"

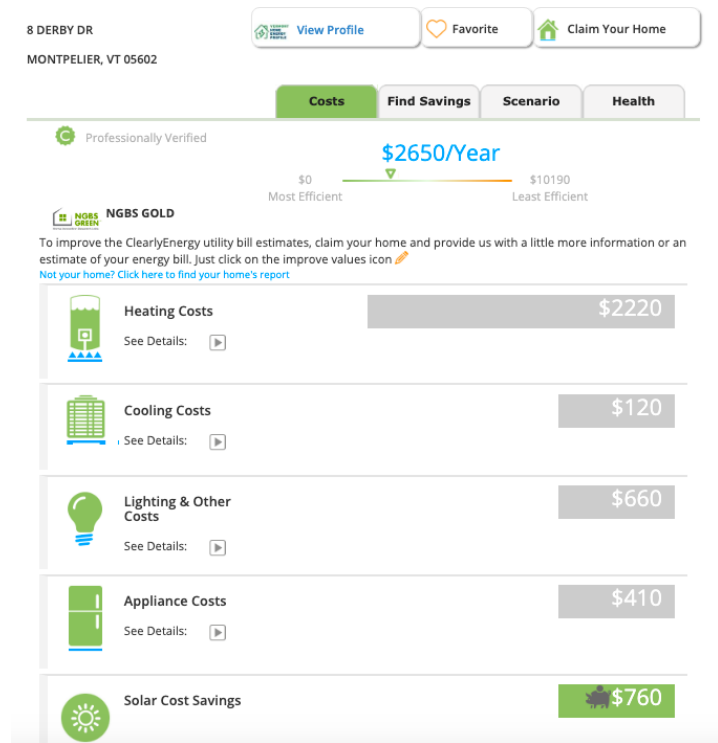


In 2019, NEEP & ClearlyEnergy jointly developed - Energy Estimator

Energy Estimator – Powered by HELIX & ClearlyEnergy

- Virtual energy audit performed jointly by homeowner and contractor:
 - Interactive and educational tool
- Automated baseline estimate uses tax assessor data (age, size, type, primary fuel, ac...) & HELIX for solar and home certifications
 - Adding home energy features and/or utility bill data refines baseline estimate
 - Zip code level utility data
- Targeted improvement recommendation logic
- Energy profile pdf highlights energy features

Provides a scalable solution for homeowners to make more informed decisions about the full costs of operating home



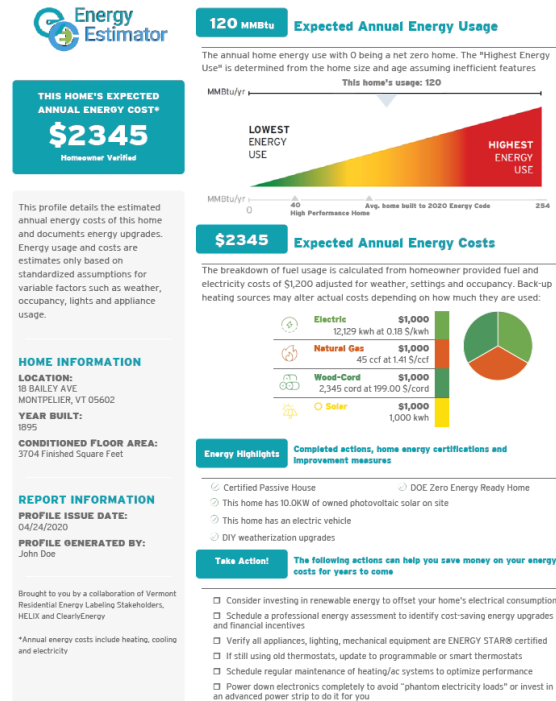
Key Product Features and Functionality

Allows for contractors and homeowners to work together to collect home system information and /or bill data to gauge efficiency of the home

Product Features:

- Secure login, home claim, and lock process
- Intuitive, easily understood audit questions
- Interface to share energy profile and web access with customers
- Interaction with HELIX to recognize work the home has already done - saving time
- Custom savings page with links to incentives, professionals, product sites, etc.
- MLS ready with HELIX integration (opt-out available)

Energy professionals can review audited homes, share the customized energy report with homeowners and proceed to contracting.



State of the Product in the Market

Status

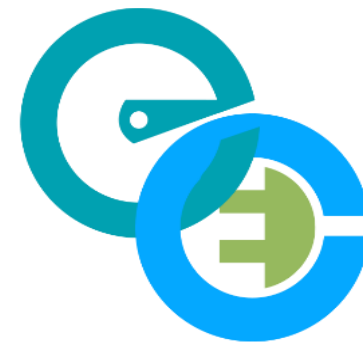
Energy Estimator is ready for market deployment, no setup time

Target Customer

Home energy auditors, contractors, utilities, state and local governments, program administrators, & real estate professionals

Market Penetration

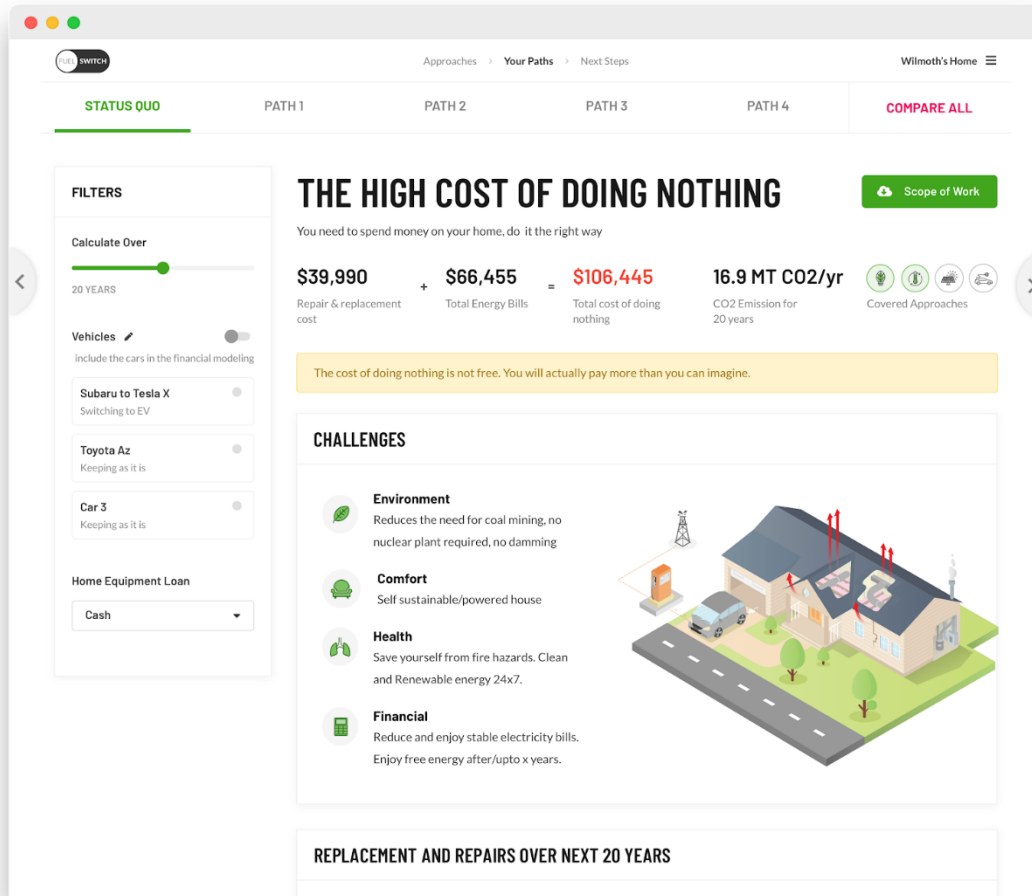
- Montpelier Energy Disclosure Ordinance
- VT voluntary energy assessment and labelling
- Being Considered in CT for Home Energy Solutions
- HELIX tracks solar & certifications across Northeast and Mid-Atlantic





Data analytics, customer targeting, and implementation tools for reducing greenhouse gas emissions.

Cost-benefit analysis for global carbon reductions



Homeowner Roadmap for Electrification

Homeowners need to understand the true cost of maintaining a fossil fuel powered lifestyle.

Approaches > Your Paths > Next Steps

Wilmoth's Home

STATUS QUO PATH 1 PATH 2 PATH 3 **PATH 4** COMPARE ALL

FILTERS

Calculate Over
20 YEARS

Vehicles
Include the cars in the financial modeling

Subaru to Testa X
Switching to EV

Toyota Az
Keeping as it is

Car 3
Keeping as it is

Home Equipment Loan
Cash

VERIFIED

MY HOUSE AND CAR WITH SOLAR

This path is the one we discussed in person. It make sense if you plan to sell your Subaru and buy a Model X

\$17000 20 years savings

10 years Payback Period

16 t/yr CO2 Emission Reduction

Scope of Work

Covered Approaches

Congratulations! By choosing this package you are helping break our dependence on foreign oil.

BENEFITS

- Pearl Certification**
[What is pearl certification?](#)
- Environment**
Reduces the need for coal mining, no nuclear plant required, no damming
- Comfort**
Self sustainable/powerd house
- Health**
Save yourself from fire hazards. Clean and Renewable energy 24x7.
- Financial**
Reduce and enjoy stable electricity bills.
Enjoy free energy after/upto x years.

Homeowner Roadmap for Electrification

Every address has an hourly energy model attached to it with multiple scenarios of electrification improvements and associated savings and cash flow analysis.

Status of the tool

- The DIY version of this tool for homeowners is currently in development
- Version 1 has been in use by our sister company Fuel Switch in Boulder, CO as a sales and marketing tool
- The DIY version will allow homeowners to look up their own address, fill in details about their home and lifestyle, and generate their own roadmap for electrification
- The roadmap can be shared with installation contractors to help generate a work proposal



Many NYSERDA contractors already use Snugg Pro for in home audits. It can easily be used for remote audits as well.

www.snuggpro.com/blog



Halco Virtual Audit overview



Remote Audit Process

1. Lead intake

- a. Gather basic homeowner information
- b. Offer remote or onsite audit
- c. Send homeowner links to Survey and Hover Applications

1. Auditor review

- a. Auditor & Homeowner video chat
 - i. Gather information about homeowner goals & needs
 - ii. Review some possible options
 - iii. Gather additional missing information
- b. Build scope
- c. Sign agreement

Remote Audit Process

We cannot do diagnostic testing without visiting the home!

We need to make **some assumptions**:

- a. Air leakage
- b. Health & Safety concerns such as gas leaks and combustion appliance operation

Then we verify...

Project is moving forward:

- a. If diagnostic data is required for equipment, we schedule a short testing only visit
- b. Otherwise, we do testing on the install day, prior to any installation work

The Survey



Welcome to you Halco Virtual Home Energy Assessment

Start press Enter

12 → First we need proof of your income (Choose what one of these you can use to verify your income)

- A HEAP Or Snap award letter
- B Social Security statement or SSA-1099 form
- C 1099 Form for any pension or disbursed income
- D 4 Weeks of pay stubs
- E Income tax return (Most Recent)

21 → Now lets spend a few minutes on your home. Which of the following best describes your living situation?

A I own my home

B I rent my home



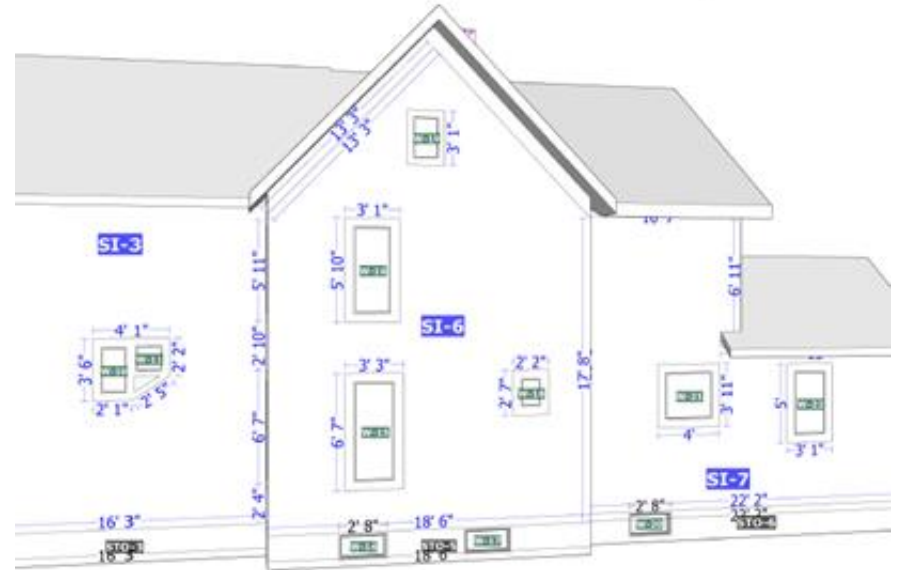
Homeowner Pictures

The results



Exterior Measurements

Facade	Area	Inside Corners	Outside Corners	Openings	Shutters
SI-1	56 ft ²	1	2	2	0
SI-2	310 ft ²	0	2	8	12
SI-3	289 ft ²	3	1	2	0
SI-4	22 ft ²	3	1	2	0
SI-5	8 ft ²	1	1	0	0
SI-6	363 ft ²	0	2	4	0
SI-7	279 ft ²	1	3	2	0
SI-8	26 ft ²	1	1	1	0
SI-9	38 ft ²	1	1	0	0
SI-10	77 ft ²	1	2	0	0
SI-11	8 ft ²	1	1	0	0
SI-12	334 ft ²	1	3	3	0
SI-13	101 ft ²	0	2	1	0
SI-14	100 ft ²	1	2	1	0
SI-15	13 ft ²	0	4	2	0
SI-16	210 ft ²	5	1	1	0



Roof Facets

Roof	Length
Ridges (RI)	93' 4"
Hips (H)	9' 9"
Valleys (V)	75' 7"
Rakes (RA)	160' 4"
Eaves (E)	150' 1"
Flashing (F)*	37' 2"
Step Flashing (SF)*	37' 2"
Transition Line (TL)	-



Roof Measurements



Facet	Area	Pitch
RF-1	18 ft ²	8/12
RF-2	18 ft ²	8/12
RF-3	289 ft ²	10/12
RF-4	352 ft ²	10/12
RF-5	38 ft ²	1/12
RF-6	157 ft ²	14/12
RF-7	137 ft ²	12/12
RF-8	156 ft ²	14/12
RF-9	349 ft ²	10/12
RF-10	3 ft ²	3/12
RF-11	15 ft ²	3/12
RF-12	135 ft ²	12/12

Results

ROUNDTABLE DISCUSSION – QUESTION 1

- Where are the biggest opportunities for innovation and market testing around remote / virtual energy audits?

ROUNDTABLE DISCUSSION – QUESTION 2

- How can remote / virtual audits support an effective sales process and robust levels of energy efficiency measure adoption?

ROUNDTABLE DISCUSSION – QUESTION 3

- What are the gaps *in the market* created by or not addressed by moving to remote / virtual energy audits?

ROUNDTABLE DISCUSSION – QUESTION 4

- What elements of an energy audit cannot be accomplished remotely and must be done in the field?

ROUNDTABLE DISCUSSION – QUESTION 5

- How do we balance support for proprietary solutions while moving toward open source standard protocols?

NEXT STEPS

- NYSERDA will release a solicitation within weeks based on feedback gathered today

THANK YOU

Questions or Comments can be directed to:

resmarket@nyserda.ny.gov