



Opportunities for Home Energy Labeling & HELIX Use in Mid-Atlantic States

June 2020





Table of Contents

Introduction.....	4
Home Energy Labeling Information eXchange	4
What is HELIX?	4
Data Fields	5
HELIX Benefits.....	5
HELIX Uses	6
Customizable Label.....	6
Energy Estimator	6
Code Compliance.....	7
What the Mid-Atlantic looks like	7
Data in HELIX	7
State Residential Labeling Programs	8
How HELIX Can Help	9
Further Barriers and Pathways to Acceleration	10
Confidential Information Laws throughout the Region	10
Maryland:	10
Pennsylvania.....	10
HELIX Overcoming Barriers.....	10
RESO Compliant MLS.....	10
Recommendations.....	11
Conclusion	12
Resources	12



Acknowledgements

This brief reflects the invaluable contributions of multiple individuals.

We would like to recognize the brief's lead author, Bryan Evans, Residential Program Associate. Several NEEP staff served key roles in the development of the guide including:

Carolyn Sarno-Goldthwaite, Senior Director of Advanced Efficiency Solutions

Samantha Caputo, Senior Policy & Research Associate

Formatting and edits were provided by Lisa Cascio, Senior Public Relations Manager, and Victoria Salvatore, Marketing Associate.

NEEP would like to recognize and thank members of ClearlyEnergy, Lawrence Berkeley National Lab and the U.S. Department of Energy's State Energy Program (SEP) grant hosted by the Vermont Department of Public Service for the development of HELIX.

About NEEP

NEEP was founded in 1996 as a non-profit whose mission is to serve the Northeast and Mid-Atlantic to accelerate regional collaboration to promote advanced energy efficiency and related solutions in home, buildings, industry, and communities. Our vision is that the region's homes, buildings, and communities are transformed into efficient, affordable, low-carbon resilient places to live, work, and play.

Disclaimer: NEEP verified the data used for this brief to the best of our ability. This paper reflects the opinion and judgments of the NEEP staff and does not necessarily reflect those of NEEP Board members, NEEP Sponsors, or project participants and funders.

©Northeast Energy Efficiency Partnerships, Inc. 2020

Introduction

To achieve long-term emissions reduction goals, more states are undertaking necessary steps to identify and outline strategies to ensure greenhouse gas emission reductions by at least 80 percent by 2050. In the United States, buildings contribute roughly 40 percent of energy-related carbon emissions annually. In order to decarbonize our buildings to necessary levels, NEEP found in the [2018 Strategic Electrification Action Plan](#) that focusing on energy efficiency, distributed energy resources, and strategic electrification will help accelerate deep decarbonization. Embracing energy labels in households can be a tool to assist in reaching carbon reduction goals through transparency around energy usage and valuation of energy efficiency.

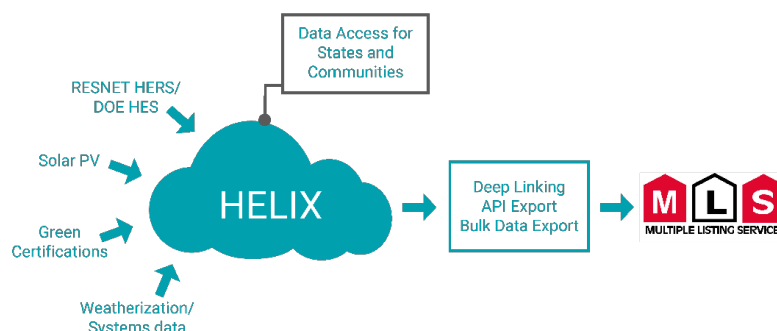
Policies across the region such as appliance standards, building codes, and programs that support building efficiency and retrofits will help drive deeper reductions. These will help inform and guide the region to advanced efficiency by educating consumers on the value of efficiency. An EnergyGuide label provides buyers with transparency to the estimated cost and energy to run appliances. Similarly, energy labels provide transparency towards the energy features and costs of a home, and offering this information to homeowners or potential buyers can drive the connection between energy efficiency and potential cost savings. Analyzing a home's level of energy efficiency and renewable attributes by providing measurable and easy to understand metrics and recommended efficiency improvements will help move the needle in widespread accessibility and increase in home energy literacy. Tied in with Home Energy Labeling Information eXchange ([HELIX](#)), a central repository to store home energy labels, certifications, and solar PV, the database can enable market integration on both a voluntary and mandatory scale.

The purpose of this brief is to identify the opportunity for HELIX in the Mid-Atlantic by examining home energy labeling programs and solar PV use across the Mid-Atlantic region. By understanding the data, the HELIX team can work to capture this information and integrate with local multiple listings services (MLS). By understanding local home energy labeling programs and how they have been implemented, we can present the benefits of HELIX in the Mid-Atlantic as a tool that will help states and communities achieve public policy goals and achieve a decarbonized residential building stock.

Home Energy Labeling Information eXchange

What is HELIX?

Supported by the U.S. Department of Energy (U.S. DOE), HELIX's goal is to improve the transparency of energy efficiency in the residential building sector and to provide states with a central repository to support state and local policies. This database is designed to automatically populate multiple listing services (MLS) or portals like Trulia and Zillow with home energy information of various energy data fields such as home energy labels, certifications, and solar PV data.





HELIX is a secure, open-source data platform that allows for a more accurate valuation of a home's energy-efficient and renewable attributes. The database stores information in Real Estate Standards Organization (RESO)-compliant third-party verified fields, allowing for a more streamlined integration into MLS.

During the inception of HELIX, it was piloted in New England and New York. After a successful pilot with the New England Real Estate Network (NEREN), HELIX was integrated to auto-populate the Power Production fields for solar PV in Vermont, New Hampshire, and northern parts of Massachusetts. NEREN covers all of New England, but active mainly in the states where solar is provided from HELIX. As HELIX continues to expand in the Northeast, NEEP is interested in expanding the pilot region to the Mid-Atlantic with the goal of expanding HELIX to be a replicable, open-sourced model that can be used across the nation.

Data Fields

Home energy labels and certifications can be added to HELIX via a file upload or an application programming interface (API) that pulls data from a state's certification or energy efficiency program database, or by utilizing the numerous national certification registries across the U.S. To help states gain control of user experience, HELIX has been built as a customizable tool to fit to a state's specific needs and data portfolio. If an entity has state-specific certifications, such as Efficiency Vermont's Residential New Construction Program and Massachusetts Home Energy Scorecard, it can be uploaded into HELIX. In response to the increase of residential solar PV adoption, HELIX was expanded to support solar PV data.

Current Labels in HELIX

National Data Providers:

ENERGY STAR Certified Homes	Zero Energy Ready Home
HERS Index	EarthCraft
NGBS New Construction	Green Addendum
Home Energy Scores (HES)	Indoor airPLUS
LEED for Homes	

State-Specific Data Providers:

Efficiency Vermont Residential New Construction Program
Massachusetts Home Energy Scorecard
State Solar Data Providers (i.e. MassCEC, Energy Action Network (VT), Connecticut Green Bank, and NH PUC, and D.C. Public Service Commission)

This list is growing, contact us to add data into HELIX

HELIX provides a solution as both a database and mechanism for automatically populating residential green data fields in MLS listings through an API, bulk data export, or a deep link. Since HELIX is customizable in how it stores and displays home energy data, states can utilize it to serve specific state and local community needs from customized reporting to program management.

HELIX Benefits

Transparency During Real Estate Transactions: Homebuyers are increasingly asking about energy costs and efficiency attributes during the home buying process. In addition, advancement of technologies that create more efficient homes causes confusion in how to properly value solar PV and efficiency attributes. HELIX eliminates that confusion and provides transparency in the market by making home energy information accessible to MLS and real estate listings to increase buyer/seller confidence and inform buyers of operational costs.

Increased Economic Development: As homeowners purchase new appliances and undertake energy renovations, energy efficiency is becoming more integral. These investments in energy efficiency measures lead



to economic growth through increased workload at companies like home performance contractors, energy auditors, weatherization installers, HVAC technicians, and many other technical professions.

Policy & Management Tool: Providing access to a central repository of residential data provides a host of benefits to better understand the housing market. It allows states to develop programs and policies to support market transformation. The HELIX database can help track residential program implementation and assist utilities in attributing energy savings to program expenditures for installed energy efficiency measures. This data can also help inform program management and future program planning.

HELIX Uses

Customizable Label

HELIX can create customizable labels for state and local programs and for scores and ratings that come from national programs such as the HERS rating or U.S. DOE's Home Energy Score. A home's listing with verified labels can compare other homes on an apples-to-apples basis and make the efficiency of the home and its estimated energy costs more transparent to highlight the value it brings to the market.

HELIX was used to customize and generate the Vermont Home Energy Profile ([VHEP](#)), a tool to provide home buyers, real estate professionals, and homeowners with information on a home's efficiency and energy usage. The home energy label compiles a report on a home's estimated energy usage, estimated costs, and efficiency. The three components of the profile will demonstrate total energy use to a common unit of energy (MMBtu), generate expected energy costs with current fuel prices, and will feature the U.S. DOE Home Energy Score to describe the home's efficiency. The profile compares the home's energy features with a home that has low energy use, a home up to date on Vermont's energy code, and a high energy use home. It also provides resources and recommendations for next steps. Vermont will utilize HELIX as a repository to store the VHEP. HELIX can develop a new template or use the VHEP as a template for other states who do not have a statewide label.

Energy Estimator

NEEP and ClearlyEnergy¹ developed a joint tool called *Energy Estimator – Powered by HELIX & ClearlyEnergy*. Energy Estimator, which is built from HELIX, utilizes data stored in HELIX and ClearlyEnergy's automated energy modeling (AEM) tool to supplement information from publicly-available tax assessor databases. This cost-effective solution generates a baseline cost estimate broken down by fuel type as a way to provide education and transparency to homeowners. The energy performance estimates can provide the first look into a home's efficiency and motivate more homeowners to take next steps such as an in-home audit. Benefits include:

- Online cost and savings report that includes links to incentives, professionals, product sites, etc.
- Support for voluntary labeling and energy efficiency disclosure ordinances at the state level
- State-specific customizable profiles and layouts
- Method to identify retrofit and upgrade candidates, creating a pipeline of work for efficiency contractors
- Effective method to screen homes to identify green mortgage candidates and advance real estate programs
- Ability to eliminate concerns around cost and time with the virtual audit component

¹ [ClearlyEnergy](#) is the software developer of HELIX and has been an integral part throughout the development and implementation phases with tool development and refinement

- Document compliance with energy codes and find opportunities for energy efficiency and electrification
- Provide opportunities to improve energy code effectiveness and code advancements

Code Compliance

The International Energy Conservation Code (IECC) is updated every three years and serves as the national model energy code. It becomes mandatory when adopted by a state and requires compliance by all new construction projects.

One of the pathways for code compliance under the 2015 and 2018 IECC is the Energy Rating Index (ERI) pathway that relies on the Home Energy Rating System (HERS) index. The HERS index is a nationally recognized, asset-based energy model to measure the energy efficiency of a home that allows homeowners to compare similar homes on an apples-to-apples basis. Of the available home energy labels, the HERS rating is favored by home builders as HERS rater's home assessments require compliance documentation. Additionally, the HERS index can generate greenhouse gas emission (GHG) values as a tool output which, if included on a label, can support a GHG policy objective.² On a statewide basis, HELIX can be used as the registry and database of new construction projects and retrofits. HELIX can analyze, report, provide quality assurance, and be a useful mechanism to support code compliance and manage building registries.

The following table discloses which states will use HERS as a compliance pathway, given their current code status and ongoing code adoption status. As HELIX compiles HERS scores, states can utilize the database to track code compliance and examine the impacts on residential new construction energy code adoption by correlating permit starts.

	DE	MD	NH	NJ	NY	Penn	D.C.	WV
Current Code Status	2012 IECC	2018 IECC	2015 IECC	2018 IECC	2015 IECC	2015 IECC	2012 IECC	2009 IECC
Code Adoption Status	2018 IECC under review	Review and update every 3 years	Review and proposes revisions to codes	Updates on code cycle	Adopted 2018 IECC Effective May 2020	Review of 2018 IECC; cannot adopt until 2021	Reviewing 2015 IECC & IgCC with a zero-energy appendix	N/A

What the Mid-Atlantic looks like

Data in HELIX

HELIX currently has data for all 12 states in the Northeast and Mid-Atlantic region and the District of Columbia, and is working to integrate HELIX into more local MLS. HELIX continues to update and add new data sources to the database including U.S. DOE's Home Energy Score, Passive House, and state- or local-specific certifications and labels. In addition, as solar PV and water heating continues to expand and decrease in price, it will be important to capture this data in home energy labels and programs.

² <https://empress.naseo.org/Data/Sites/21/media/documents/defining-label-components.pdf>

	HERS Index	EnergyStar Certified	DOE Zero Energy Ready Home	NGBS	LEED	Solar	Total
New York	21,023	2,772	109	555	510		22,630
New Jersey	23,874	4,920	12		415		25,654
Pennsylvania	22,087	2,412	163	15	659	In Process	22,404
Maryland	38,839	13,910	21	136	435		40,856
Delaware	13,018	2,333	144	59	5		13,282
West Virginia	890	468			3		890
D.C.	1,532				384	4,902	1,532

State Residential Labeling Programs

HELIX and Energy Estimator can be leveraged as a policy management tool to increase the value of energy efficiency programs. Additional data retrieved from these programs can be uploaded into HELIX such as New Jersey Natural Gas (NJNG) Home Energy Scores. Improving accessibility to home energy information in MLS real estate listings can help drive participation in programs. HELIX can be used to evaluate program components such installed energy efficiency measures which can help build strategic planning for future program planning and implementation.

State	History	Current
Delaware		ENERGY STAR certifications via Energize Delaware's Home Performance with ENERGY STAR Program (HPwES)
D.C.		DOEE's EnergySmart program offers home energy audits using ENERGY STAR criteria. The Clean Energy DC plan calls for zero energy design standards for new smaller residential buildings by 2022.
Maryland	Passed EmPOWER Maryland Energy Efficiency Act of 2008 that established the goal of energy usage and peak demand reduction by 2015. From 2016 and beyond, the PSC continued to require utilities to establish programs that promote energy efficiency and energy conservation.	EmPOWER Maryland electric utilities offer Home Performance with ENERGY STAR and ENERGY STAR Certification for new homes and utilize HERS ratings. Montgomery County requires mandatory time of sale energy bill disclosure
New Jersey	In 2009, the SAVEGREEN Project was launched offering rebates and incentives to participate in Home Performance with ENERGY STAR	In 2012, Home Energy Score added to the energy assessment offered by NJ Natural Gas as a part of the SAVEGREEN Project
New York	Home Energy Rating Disclosure project : Ithaca-based NYSERDA pilot 2014-2016 using the Residential Energy Score	NYSERDA pilot : Launched the second phase of its multi-year Home Energy Rating Pilot in August 2019 (Home Energy Score and Pearl Certification)

		Truth in Heating Law : Energy bill disclosure required upon request by potential tenant for rental units or buyers for homes for sale
Penn.	State discussions of legislation, but no statewide programs of yet.	The PA DEP promotes ENERGY STAR and HES.
West Virginia	Since 2013, has been working to pass legislation that would permit the development of a state-wide energy labeling program.	

How HELIX Can Help

The National Association of State Energy Officials (NASEO) released the collaborative report, [Residential Energy Labeling: Strategies for Scalability](#), which discussed national efforts, the status of residential labeling, and strategies to build out labeling programs. In the report, many state energy offices and other labeling organizations highlighted the need to increase the value of energy efficiency in the real estate market through program elements such as a database for tracking numerous state-wide labels and integration into the MLS system.

Having a central database for data collection is vital and will provide a valuable source of information to relevant stakeholders. The HELIX database compiles all of these labels and certifications to allow for a more accurate valuation of a home based on its energy-efficient and renewable attributes. States will be able to use HELIX to auto-populate home energy information to the local Multiple Listing Service.

For example, in 2015 as part of the Energize CT Home Energy Solutions Program, Connecticut launched the nation's first statewide Home Energy Score and labeling program. The program offers the U.S DOE Home Energy Score as an option for customers in exchange for their permission to release the data to MLS listings. In order to properly implement the program, a system must be in place to transmit the data directly to sellers trying to market these homes. HELIX served as that central database, acting as a conduit for incorporating this data into local MLS while providing appropriate data security and privacy protections.

HELIX & Energy Estimator

In the Energy Metrics to Promote Residential Energy Scorecards in States (EMPRESS) [policy guidebook](#), a state energy office-led project to advance home energy labeling, the group outlined six critical elements for successful labeling initiatives.

- 1) Create a start-up and implementation plan
- 2) Define label components
- 3) Determine a software & IT path
- 4) Train Professionals
- 5) Educate real estate professionals and appraisers
- 6) Link labels with multiple listing services (MLS)

NEEP can work with states and communities in the Mid-Atlantic to advance public policy goals and program strategies through technical assistance and disseminating knowledge and best practices. In conjunction with HELIX and Energy Estimator, NEEP can assist with completing these critical elements. By working with Vermont for over 28 months on both its statewide and capital city's labeling initiatives and ordinance, respectively, NEEP



has a model for other jurisdictions. Taking advantage of lessons learned from jurisdictions that have already experimented with labeling initiatives can help streamline Mid-Atlantic efforts.

Further Barriers and Pathways to Acceleration

Confidential Information Laws throughout the Region

Across the region, states have different confidentiality laws regarding access to customer utility information based on privacy concerns. The inability to gain access to this data has created a barrier to realizing the many benefits of home energy information and labels, particularly around solar PV information. HELIX looks to address confidentiality laws and ways to access solar PV data. Below are examples of confidentiality laws from select Mid-Atlantic states.

Maryland:

Title 4: [Maryland's Public Information Act \(PIA\)](#)

Summary: Under the PIA, the public has the right to access state and local government agency records without unnecessary cost and delay. It is similar to the federal Freedom of Information Act (FOIA) which applies to independent federal regulatory agencies and executive branch agencies. The Maryland Public Service Commission is an independent administrative agency within the state government. Some records are kept confidential such as personal information (addresses).

Pennsylvania:

A list of all of solar facilities registered in the PA Alternative Energy Portfolio Standards (AEPS) program is publicly available on the AEPS website. In order to protect individual homeowner's information, the report contains key data points aside from addresses. To access this data, a formal request must be submitted to the PA PUC under the Right to Know Law (RTKL). The PA PUC determines access to requesters.

HELIX Overcoming Barriers

States have various ways to integrate data into HELIX for their use, whether solar PV data is publicly-accessible or considered confidential information from the data provider. NEEP can submit a data request through several pathways, including via a public database, via a public FOIA request through utilities and state agencies, or through a utility provider with a non-disclosure agreement (NDA). In the case of utilities, it is critical for HELIX to map out access pathways around utility customer information including addresses. For example, an NDA has to be established with a utility or electric provider to maintain the data securely and privately. The data in HELIX then goes to an MLS only when a real estate agent is populating a listing. Additionally, as an extra layer of privacy, homeowner authorization is necessary.

RESO Compliant MLS

In order for the home energy data to be effectively utilized by the real estate industry, the receiving MLS and likely the MLS's tax data aggregator must have implemented the RESO GreenVerification Fields. This ensures that data is sent, received, and viewed in the standard format as it was originally intended. Additionally, privacy protections in HELIX are implemented at the certification/label level to ensure homeowners who opt-out of information sharing will not have their information shared with MLS and other parties.

HELIX can work directly with MLS to make this data available to the real estate market. Displayed in the table below are select MLS and the MLS that are RESO compliant. They are targets to accelerate the pathway for MLS integration. The bold font indicates a top 20 national MLS.

	New York	New Jersey	Pennsylvania	DC, WV, MD, & DE
Select MLS	NY State MLS , Central NY Information Service (CNYIS)	Bright MLS , Garden State MLS , NJ MLS	Bright MLS , Central Penn MLS, West Penn MLS	Bright MLS
RESO Compliant	CYNIS	Bright MLS, NJ MLS	Bright MLS, Central & West Penn MLS,	Bright MLS
Data Aggregators	CoreLogic, CRS Data, The Warren Group, Realport, and Black Knight Inc.			

Although NEEP has hosted various outreach and educational trainings to real estate professionals, MLS integration on a voluntary basis has been slow. Real estate professionals are a key component in getting traction with MLS as they can leverage their role as paying members to influence updates to the MLS system and incorporate home energy information. NEEP is working through barriers with MLS integration and has continued to engage with MLS, data aggregators, state energy offices, utilities and real estate professionals across the region and beyond to help overcome this challenge.

Recommendations

- 1) Strategic targeting and collaboration with key players who can help streamline processes, discuss priorities and challenges, disseminate knowledge and lessons learned across the region are vital for ongoing success. As stated earlier, NASEO assembled representatives from state energy offices, residential energy efficiency organizations, and U.S. DOE to discuss the topic of residential labeling. This can entail building a coalition to navigating program implementation, challenges on data access, and MLS integration.
- 2) Increased advocacy from stakeholders (policymakers, real estate professionals). Advocates can help push policymakers to change confidential information laws to streamline solar PV data integration (i.e. New York and New Jersey). Moving to a more efficient, cost effective economy requires greater investments in energy efficiency, renewable energy, and education. Policymakers can jumpstart these opportunities.
- 3) Prioritizing Bright MLS, along with other regional and local MLS, as they cover a majority of Mid-Atlantic states. If states partner together and indicate interest in transparency of home energy information, this may influence Bright MLS. Streamlining the integration of a multi-state MLS will help achieve advanced accessibility of home energy labels through HELIX. Additionally, educating real estate professionals about available data can lead members to encourage their local MLS to take advantage of HELIX. .
- 4) Working with major data aggregators such as CoreLogic, who covers approximately 65 percent of the MLS market, can enable HELIX to be integrated into other markets. Collaboration with national data aggregators will help streamline back-end services of MLS system infrastructure and data/analytics.

Conclusion

Residential energy disclosure policies and programs are growing throughout the nation with states recognizing the value that labels bring to the energy efficiency industry and residential market. Education is key for advancing building decarbonization as we can't improve upon what we haven't measured. The market for buying and selling homes is evolving as consumers increasingly seek energy-efficient homes. Promoting transparency around home energy information with home energy labels brings many benefits including better informed consumers regarding the efficiency and comfort of their homes, their operational costs, and cost-saving opportunities.

Many states, particularly in the Northeast, have seen the impact home energy labeling programs and initiatives can provide for homeowners and buyers. Accompanied by HELIX, real estate professionals and Multiple Listing Services (MLS) will be able to access home energy information. Auto-populating real estate listings with labels and certificates will promote the value of efficiency and decarbonizing homes. This process will raise consumer awareness around energy costs, appliances integration, and other measures to improve the performance of a home. This can aid policymakers to support energy reduction goals in their state.

With successful initiatives from Vermont (Vermont Home Energy Profile) and Massachusetts (Home Energy Scorecard), there are opportunities for home energy labeling programs and state-specific labels for Mid-Atlantic states. HELIX provides a solution for supporting policy management by having this data in one secure place that can be used to track compliance, provide state or utility attribution, and generate a customized energy label/scorecard. Although residential labeling and state energy labels/scorecard initiatives are not an easy process, NEEP's [Regional Residential Energy Labeling Action Plan](#) offers plan to achieve this and identifies roadblocks and strategies for solving them.

Resources

[HELIX Webinars](#): Webinars are located at the bottom under *Additional Resources*

[Bringing Home Energy Information to Real Estate: A Toolkit \(U.S. DOE\)](#): This toolkit helps readers navigate the resources, lessons learned, and best practices developed through the Home Energy Information Accelerator

[Home Energy Labeling & Its Benefits](#): Resources and documents to help local and state officials interested in implementing home energy labeling programs and/or policies

[Residential Energy Labeling: Strategies for Scalability](#): Discusses the status of residential energy labeling and proposes strategies for scaling labeling programs across the nation by NASEO and various State Energy Offices

[National Association of State Energy Officials \(NASEO\): Home Energy Labeling](#)

[Capturing the Sun: A Roadmap for Navigating Data-Access Challenges and Auto-Populating Solar Home Sales Listings](#)