This Toolkit provides practical guidance and resources for residential energy efficiency programs to expand their understanding of evaluations and incorporate learning as a critical component of their analysis. By embedding learning into the evaluation process, programs are able to create a continuous cycle of planning and improvement that leads to greater overall program impact.

CONTENTS

INCORPORATING LEARNING INTO EVALUATION TO IMPROVE PERFORMANCE

Often, programs wait to evaluate performance until the end of an initiative when the results arrive too late to make meaningful changes. Unfortunately, this outcome is not a product of evaluations themselves, but rather a consequence of how we use and when we conduct them. Traditional program evaluations can be likened to a student's essay grade: a teacher may provide feedback that will improve performance on subsequent papers, but it is too late to improve that particular paper. Similarly, evaluation reports often provide the "grade" on whether or not a program was successful in meeting its goals after the fact.

However, critical steps exist between the first draft and a final grade: proofreading, external feedback, and editing. Similarly, a need exists for program evaluation and learning, stakeholder engagement, and improvement while a program is still in progress. The cycle of regularly-conducted reflection and adaptation places programs in an active learning role, with the tools to improve operations and influence the efficacy of their efforts.

Why Is This Toolkit Important for Residential Energy Efficiency?

This toolkit is for use by residential energy efficiency programs to expand their understanding of how to use evaluations and to learn from their program performance. This toolkit provides resources to conduct meaningful, targeted evaluations mid-program, and a framework for using the insights gained to make adjustments and achieve greater impact. This toolkit does not discount the importance of traditional, independent evaluations that are often conducted retrospectively. Rather, the steps and framework provided below create a roadmap for energy efficiency programs to carry out frequent, targeted evaluations and incorporate refinements during program implementation (see Figure A below). At its core, this toolkit is about making evaluations more nimble and adaptable by integrating learning so that programs can make adjustments more responsively, rapidly, and with greater overall program efficacy.

Figure A: Achieve Greater Impact with a Learning Approach
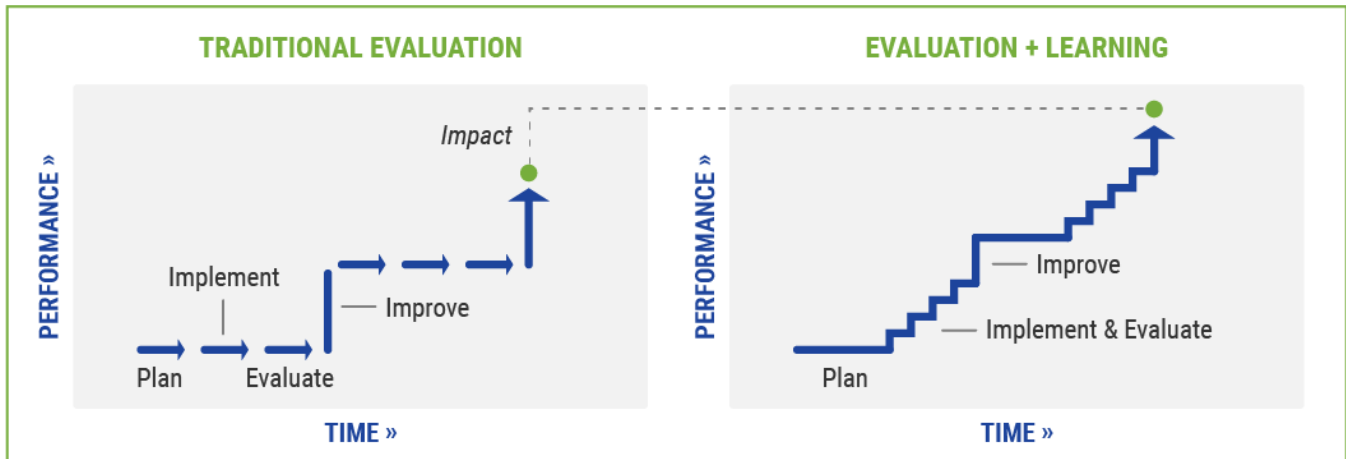
HOW TO BUILD A SUCCESSFUL EVALUATION

The steps below provide the focus, direction, and structure needed to ensure that your evaluation continues to progress upward. First, by asking the right questions at each step, you are better able to focus evaluations and target important aspects of the program for reflection and improvement. Next, identifying the data you will need to collect and factor into program design will save valuable resources and equip you to answer critical questions. Finally, more frequent, lighter-touch evaluations will allow you to make program adjustments to accelerate progress toward your goals. Together, these steps provide a strong basis upon which to conduct evaluation and learning activities and run a more responsive, effective program.
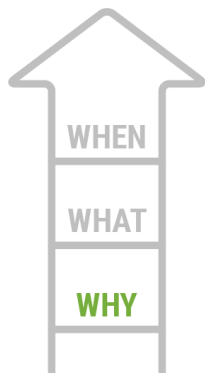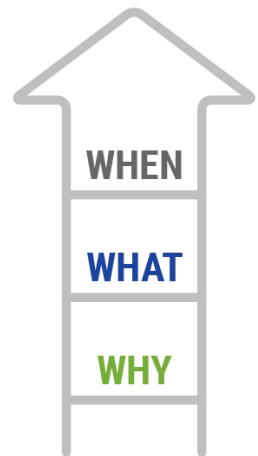
Why: Ask the Right Questions

To produce a meaningful evaluation, you must first identify the questions to evaluate how the program is currently functioning. This step will focus efforts and help you decide what aspects of the program to examine and why. Examples may include:

- **Effectiveness of partnerships:** Is partnering leveraging results and creating a more robust program?
- **Process improvements:** Did adding an energy advisor position improve customer satisfaction?
- **Marketing and outreach:** Did the targeted messaging campaign increase the number of homeowners asking for assessments?

Once you have developed a list of questions for evaluating performance, prioritize evaluation questions to 1) reflect the long-term goals of your program, 2) fit within available resources, and 3) answer in a chosen timeframe.

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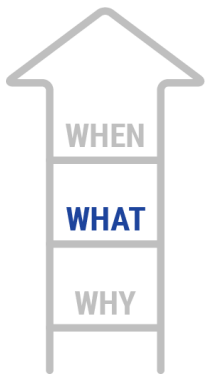
What: Have the Right Information

Once you have focused the evaluation by identifying key questions, the next step is to determine what data sources are needed to answer those questions. To ensure success and prevent gaps in data, establish data collection needs as early as possible, ideally during the program design phase. For example, if assessing how satisfied program participants are with contractors will be important, then incorporate ways to measure satisfaction (e.g., customer interviews, surveys) into program design. Collecting information during implementation, from upgrade type and energy consumption to customer satisfaction is less resource-intensive and more accurate than trying to collect data months or years after the fact.

Data is required to answer evaluation questions accurately. Different types of data, such as quantitative (e.g., demographic data, energy use, or number of participants) or qualitative (e.g., participant motivations, staff experiences, or barriers to participation) can provide different perspectives on the same topic. Here are four additional best practices to consider when designing your data-collection process:

- **Make Sure It's Accurate:** Many different options exist for collecting data. Use digital templates, checklists, and input forms as much as possible and add a review step to minimize error. If you want to evaluate energy savings due to program interventions, refer to the U.S. Department of Energy's Uniform Methods Project, which outlines a straightforward method for evaluating gross energy savings for many residential programs.

- **Get a Clear Picture:** Differentiate between program *activities* (conducting a workshop, providing information about the program), *changes in customer behavior* (signing up for an energy assessment, contacting a contractor), and *changes in outcomes* (reductions in energy use, creation of jobs) to articulate what types of information to measure.

- **Define Staff Responsibilities:** Clearly define the data being collected and who is responsible for each data collection point to provide staff with ownership and a clear understanding of responsibilities to avoid gaps.

- **Consider Unintended Consequences:** Sometimes programs measure what is easy rather than what is important. Identify whether your chosen metrics might create unintended consequences, such as incentivizing contractors to misreport information, or highlight a topic for which information is easily gathered at the loss of focusing on important outcomes that are harder to measure.

> ## MEASUREMENT & VERIFICATION 2.0: WHAT DOES IT MEAN FOR DATA?
>
> New innovations in advanced metering may provide opportunities to estimate energy use savings close to real-time with automated analytics and increased data granularity in terms of frequency, volume, and end-use detail. Most residential applications have used monthly data, but the concept also applies to hourly or 15-minute interval energy use. For more information on M&V 2.0, see the Measurement and Verification 2.0 Resources Section at the end of this toolkit.

For more information on identifying data needs and building data collection into your program design, visit DOE's Guide for Benchmarking Residential Program Progress. The Guide provides recommended residential program process metrics, describes approaches for using them effectively, and gives examples of peer benchmarks from residential energy efficiency programs for comparison.

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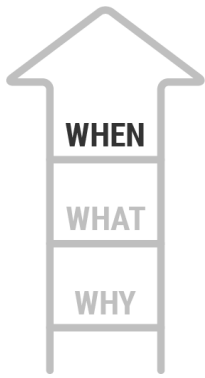
When: Conduct More Targeted, Lighter-Touch Evaluations

Assessing progress towards achieving goals or overcoming challenges in the present, rather than waiting for years to look back on performance, can help your program have a greater ultimate impact. A limited and targeted evaluation does not require a significant increase in time and resources—for example, you might conduct 20 interviews that represent key stakeholder groups rather than reviewing survey responses from all participants. Lighter-touch evaluations will be less comprehensive and often rely more heavily on qualitative, rather than quantitative, data. By conducting more targeted, light-touch learning exercises, your program can tackle specific questions today to help improve work starting tomorrow.

For some aspects of your program, it may be beneficial to learn about performance at regular intervals throughout the program's duration (e.g., if your program is evaluated annually, meetings should occur quarterly). Other changes take longer to appear, and in this case, you may wish to conduct an evaluation once mid-initiative (e.g., two years into a five-year initiative).

The steps described above are most effective when initiated during the program. However, all programs, even those mid-initiative, can incorporate these principles into their current operations to strengthen their evaluation and learning process. Once you have incorporated the foundational practices described above and gathered the information on the project's performance, the tool below will provide a structure to learn from your evaluation.

LEARNING FROM EVALUATIONS: A ROADMAP FOR IMPROVEMENT

The goal of the learning framework below is to ensure that evaluations result in meaningful change through learning, rather than gathering dust on a shelf. Organizations often fail to learn lessons because there is no structure for reflection and learning embedded in the evaluation process.

The evaluation and learning framework, as shown in Figure A, is a step-by-step process to lead teams through a group exercise to answer an overall evaluation question, and includes four steps:

1. **What:** Review Key Sources of Data
2. **So What:** Interpret Data and Results
3. **Now What:** Develop Your Hypotheses
4. **What Next:** Find Opportunities to Incorporate Improvements

Figure B: Making Evaluation a Learning Process
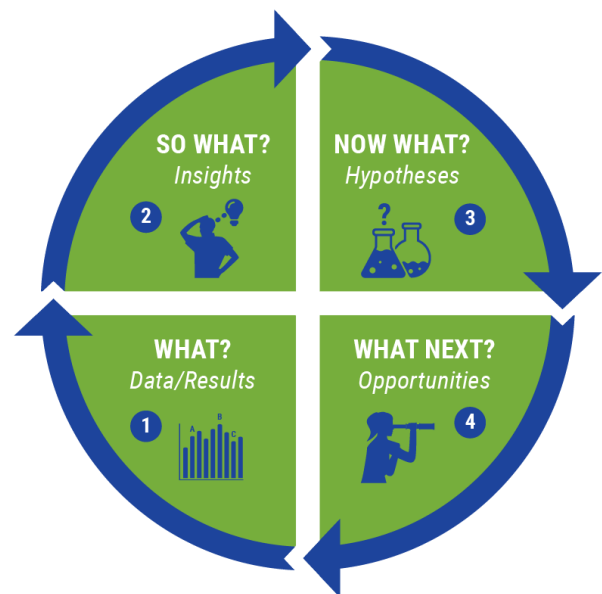
Source: U.S. DOE illustration based on concepts developed by Fourth Quadrant Partners, LLC, http://www.4qpartners.com

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A neutral facilitator may be helpful to conduct the exercise, though it is not a requirement. Involving the right people in the discussions (e.g., management, administrative staff, front-line staff, and/or contractors) is also important. Who you involve will depend on what you are trying to answer. Involving all key individuals will help ensure that lessons are fully learned by the group and translated into adjustments in processes that improve the efficacy of the program.

1. INTRODUCING: HOMETOWN ENERGY CHAMPIONS

The textboxes throughout this section provide examples that illustrate each of the framework steps using a fictional city-led program, the Hometown Energy Champions (HEC). Throughout the first three years of the program, HEC increased the amount of energy efficiency assessments and home energy upgrades they conducted in the community, but the total numbers of assessments and upgrades were low. HEC decided to use a structured learning and evaluation process to examine the following question: *How can HEC increase program participation across all segments of the community?*

HEC formed a team of managers, staff, contractors, and other program partners who participated in a learning exercise to answer that key question, as described in the following textboxes and in Appendix A.

What: Review Key Sources of Data

First, come to the discussion with a clear idea of the questions that you intend to answer and all the relevant pieces of information needed to answer those questions as described in the data portion of the toolkit in the previous section. The data you bring to the discussion includes evaluation findings, but may also incorporate stories and past experiences of discussion participants. Referencing your data, begin to identify examples of success and failure, highlight defining moments, and compare stories. The goal of this step is to identify what worked and what did not based on the available facts, but avoid providing interpretations of the "why" it worked or did not at this stage in the process – that comes next.

2. WHAT: HOMETOWN ENERGY CHAMPIONS ASSEMBLES DATA ON PROGRAM PARTICIPATION

To answer the question of increasing program participation, HEC compiled available data before the learning exercise, including quantitative (e.g., population demographics, GIS data on location of participants, and participant characteristics) and qualitative data (e.g., community member interviews, staff stories, and contractor feedback). During the exercise, program managers, staff, and program partners summarized the data and shared anecdotal information about program participation.

Participants documented the following data and stories:

- Median incomes of program participants were higher than for the overall community.
- Rates of program participation were highest in the Northeast area of the service territory, and lowest in the Southwest. These corresponded with wealthier and poorer areas of the service territory.
- In surveys, homeowners most often identified costs of upgrades and access to financing as barriers to completing upgrades.

So What: Interpret Data and Results

Data provide the cornerstone to evaluate program performance, but are meaningless without a process for interpretation. For this step, mine the data and stories by highlighting what was similar, different, or surprising. Ask, "So what does this mean? "As you move through this process, group similar information in categories, and identify patterns in the data and stories. You may choose to compare metrics from your program with similar metrics from another program to help understand your program's performance.

3. SO WHAT: HOMETOWN ENERGY CHAMPIONS INTERPRETS THE MEANING OF THE DATA

Once HEC collected the data and stories about program participation, participants talked about what the data meant for the key question about program participation. Management, staff, and program partners identified a few explanatory insights:

- HEC's marketing, messaging, and service offerings have been more effective at reaching higher income homeowners, as well as homeowners in the Northeast service area.
- HEC may not have sufficient incentives and financing options to overcome barriers to completing home energy upgrades, especially for low-to-moderate income homeowners.

### Now What: Develop Your Hypotheses

Once participants identify a set of insights based on data and stories, transition from a retrospective conversation to thinking about the future. Ask, "Given what we've learned, what will make us successful in the future?" Think of this step as the experimental phase. Use the *"If this [action], then [expected result]"* format to create testable hypotheses and organize your thinking. The hypotheses you choose will create an actionable path forward for addressing your question and improving the likelihood of future success.

4. NOW WHAT: HOMETOWN ENERGY CHAMPIONS DEVELOPS HYPOTHESES TO TEST

HEC developed a set of hypotheses that would lessen the financial burden on homeowners and expand its messaging to other audiences, including low-to-moderate income homeowners. These hypotheses included:

- *If we make more financing options available to low-to-moderate income households,* such as discounts on energy efficiency assessments and on-bill financing for upgrades, then more homeowners may participate in the program and complete home energy upgrades.
- *If we tailor marketing messages for low-to-moderate income households,* such as by emphasizing cost savings and examples that relate to that audience, then we may increase program participation.
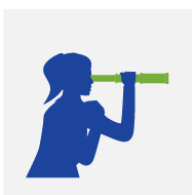
What Next: Find Opportunities to Incorporate Improvements

Finally, identify opportunities to test hypotheses in the real world and improve your program. Design the tests to allow you to identify whether or not the changes lead to real improvements. When possible, look at existing work or scheduled events to apply lessons learned to activity

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that is already planned. For example, your program could identify ways to test marketing approaches at an upcoming event or incorporate new ideas for service delivery into an upcoming meeting with contractors.

At the end of the discussion about opportunities, identify the individuals or teams responsible for implementing the changes into program operations. The goal of this exercise is to learn from the data and insights, and translate that into action—don't let those opportunities sit on a shelf! Once you have tested the hypotheses in the real word, evaluate their performance. Ask, "Did our solutions lead to our desired results?" By repeating the process, you create a cycle of continual improvement in which you are constantly learning, reflecting, and strengthening the program.

WHAT NEXT: HOMETOWN ENERGY CHAMPIONS IDENTIFIES OPPORTUNITIES TO TEST ITS HYPOTHESES

In the learning exercise, HEC next identified near-term opportunities where it could test its hypotheses about how to improve program participation by changing financing options and marketing for low-to-moderate income households, as follows.

- Meet with the utility and financial partners to discuss options for improving financing options for energy upgrades, such as on-bill financing.
- Distribute marketing materials with new messaging oriented to low-to-moderate income households at an upcoming community event in the Southwest region.

For more information on best practices for measuring your improvements and benchmarking performance, visit DOE's Guide for Benchmarking Residential Program Progress.

CONCLUSION

In the fast-paced residential energy efficiency environment, programs must be nimble and adaptable. Consider program performance as a flight headed to a final destination: it would not be wise for the pilot to set the coordinates and never update the flight path based on feedback received. Similarly, it is not advisable for programs to only learn, evaluate, and improve performance at the end of an initiative or once they are so far down a path that adjustments cannot be made. This toolkit provides a starting point for program managers to understand and apply best practices and tools, and conduct evaluations in a manner that informs organizational decisions at a faster pace than traditional evaluation approaches. The resources on the following pages provide additional examples, templates, tools, and guidance to produce more effective evaluations.

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RESOURCES

Better Buildings Residential Program Solution Center

- [Evaluation and Data Collection Overview Handbook](#)
- [Program Design & Customer Experience - Assess & Improve Processes Handbook](#)

Evaluation Databases

- California Measurement Advisory Council (CALMAC), [CALMAC Database](#)
- California Public Utilities Commission, [The Database for Energy Efficient Resources (DEER)](#)
- Northeast Energy Efficiency Partnerships, [Repository of EM&V Studies, Reports, and Evaluations, Online Database](#) (Last Updated: 2016)

Manuals and Methods for Data Collection

- Consortium for Energy Efficiency, "[Principles of Evaluation](#)" Report (2011)
- E4TheFuture, "[The National Standard Practice Manual](#)" Manual (2017)
- Focus on Energy, "[Wisconsin Focus on Energy Technical Reference Manual](#)" Technical Reference Manual (2015)
- National Grid, "[New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs –Residential, Multi-Family, and Commercial/Industrial Measures Version 3.1](#)" Technical Reference Manual (2015)
- Northeast Energy Efficiency Partnerships "[Mid-Atlantic Technical Reference Manual Version 5.0](#)" Technical Reference Manual (2015)
- Northeast Energy Efficiency Partnerships, "[Net and Gross Savings Principles and Guidance](#)" Guidance (2016)
- UIL Holdings Corporation and Eversource Energy, "[Connecticut Program Savings Document 11th Edition](#)" Technical Reference Manual (2015)
- U.S. Department of Energy, "[Evaluation and Data Collection: Identify Processes and Tools for Collecting and Assessing Program Data](#)" Webpage
- U.S. Department of Energy, "[Uniform Methods Project: Determining Energy Efficiency Savings for Specific Measures](#)" Technical Protocols Guidance (2013)

Measurement and Evaluation 2.0

- Ellen M. Franconi et al., "[The Status and Promise of Advanced M&V: An Overview of "M&V 2.0" Methods, Tools, and Applications](#)" Report (2017)
- Jason Kusper et al., "[M&V 2.0: Hype vs. Reality](#)" ACEEE Brief (2016)
- Natural Resources Defense Council, "[Putting Your Money Where Your Meter Is the Opportunity For Pay-For-Performance Efficiency Programs To Increase Energy Savings](#)" Report (2017)
- Northeast Energy Efficiency Partnerships, "[Auto M&V Industry Brief: How Fast is the EM&V Paradigm Changing](#)" Report and Database (2015)

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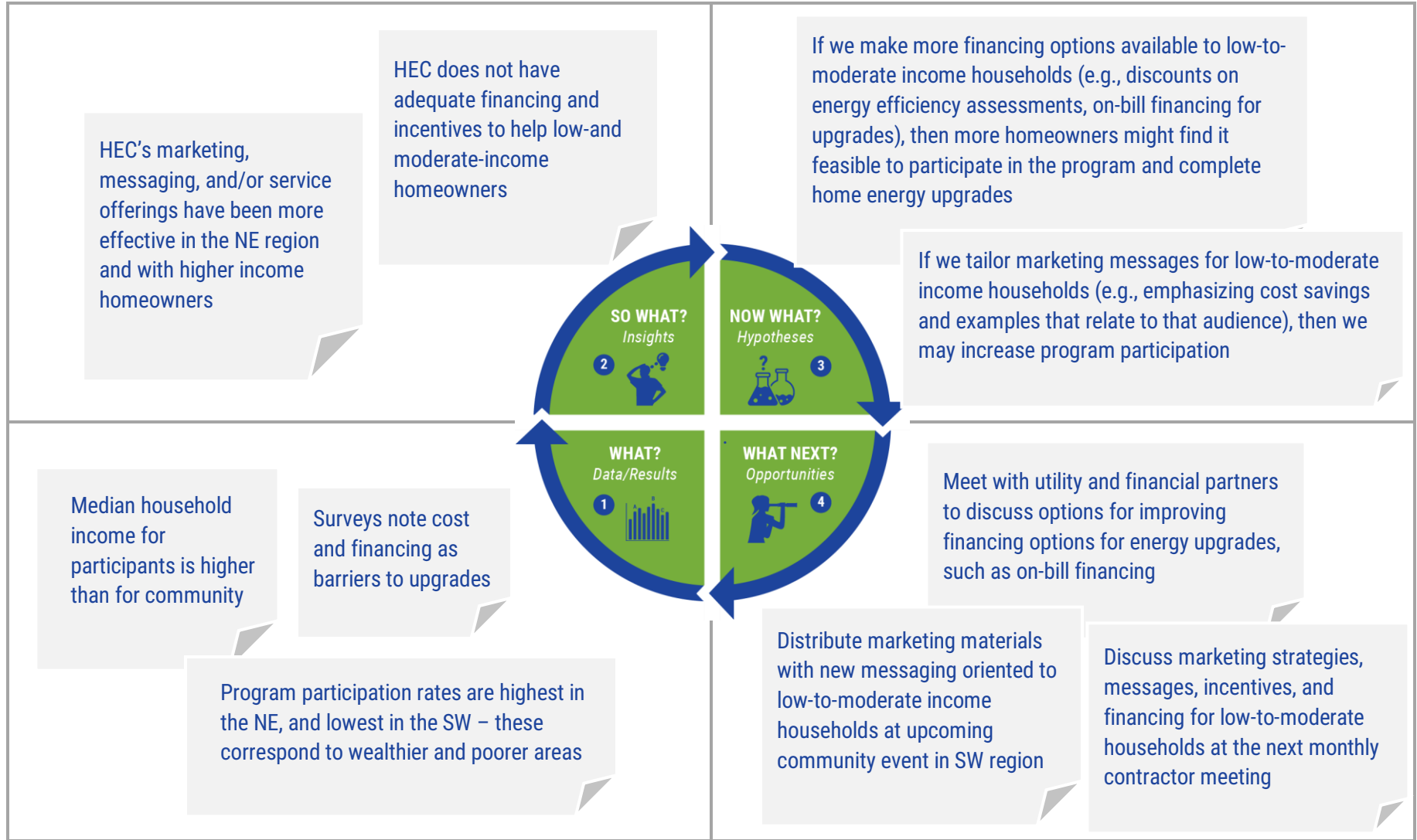## Emergent Learning

- Fourth Quadrant Partners, "Emergent Learning Tables: An Emergent Learning Tool for Growing Know-How Together" Article (2016)
- Marilyn Darling, et al., "Emergent Learning: A Framework for Whole-System Strategy, Learning, and Adaptation" Article (2016)
- Marilyn Darling, David Meador, & Shawn Patterson, "Cultivating a Learning Economy" Article (2003)

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APPENDIX A: HOMETOWN ENERGY CHAMPIONS LEARNING EXERCISE EXAMPLE

The table below is a sample learning exercise that the hypothetical program Hometown Energy Champions might have conducted with its team and partners to walk through the evaluation and learning framework. The boxes represent sticky notes.

Question: How can HEC increase program participation across all segments of the community?

HEC's marketing, messaging, and/or service offerings have been more effective in the NE region and with higher income homeowners

HEC does not have adequate financing and incentives to help low-and moderate-income homeowners

If we make more financing options available to low-to-moderate income households (e.g., discounts on energy efficiency assessments, on-bill financing for upgrades), then more homeowners might find it feasible to participate in the program and complete home energy upgrades

If we tailor marketing messages for low-to-moderate income households (e.g., emphasizing cost savings and examples that relate to that audience), then we may increase program participation

SO WHAT? *Insights* 2

NOW WHAT? *Hypotheses* 3

WHAT? *Data/Results* 1

WHAT NEXT? *Opportunities* 4

Median household income for participants is higher than for community

Surveys note cost and financing as barriers to upgrades

Program participation rates are highest in the NE, and lowest in the SW – these correspond to wealthier and poorer areas

Meet with utility and financial partners to discuss options for improving financing options for energy upgrades, such as on-bill financing

Distribute marketing materials with new messaging oriented to low-to-moderate income households at upcoming community event in SW region

Discuss marketing strategies, messages, incentives, and financing for low-to-moderate households at the next monthly contractor meeting

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APPENDIX B: LEARNING EXERCISE TEMPLATE

Use the template below to capture your team's thinking and walk through each of the four steps in the evaluation and learning framework to identify the question your program is answering. You may complete this process electronically, print the template out to complete by hand, or re-create the process on a white board with markers or sticky notes. Groups should complete the exercise together.

Question:
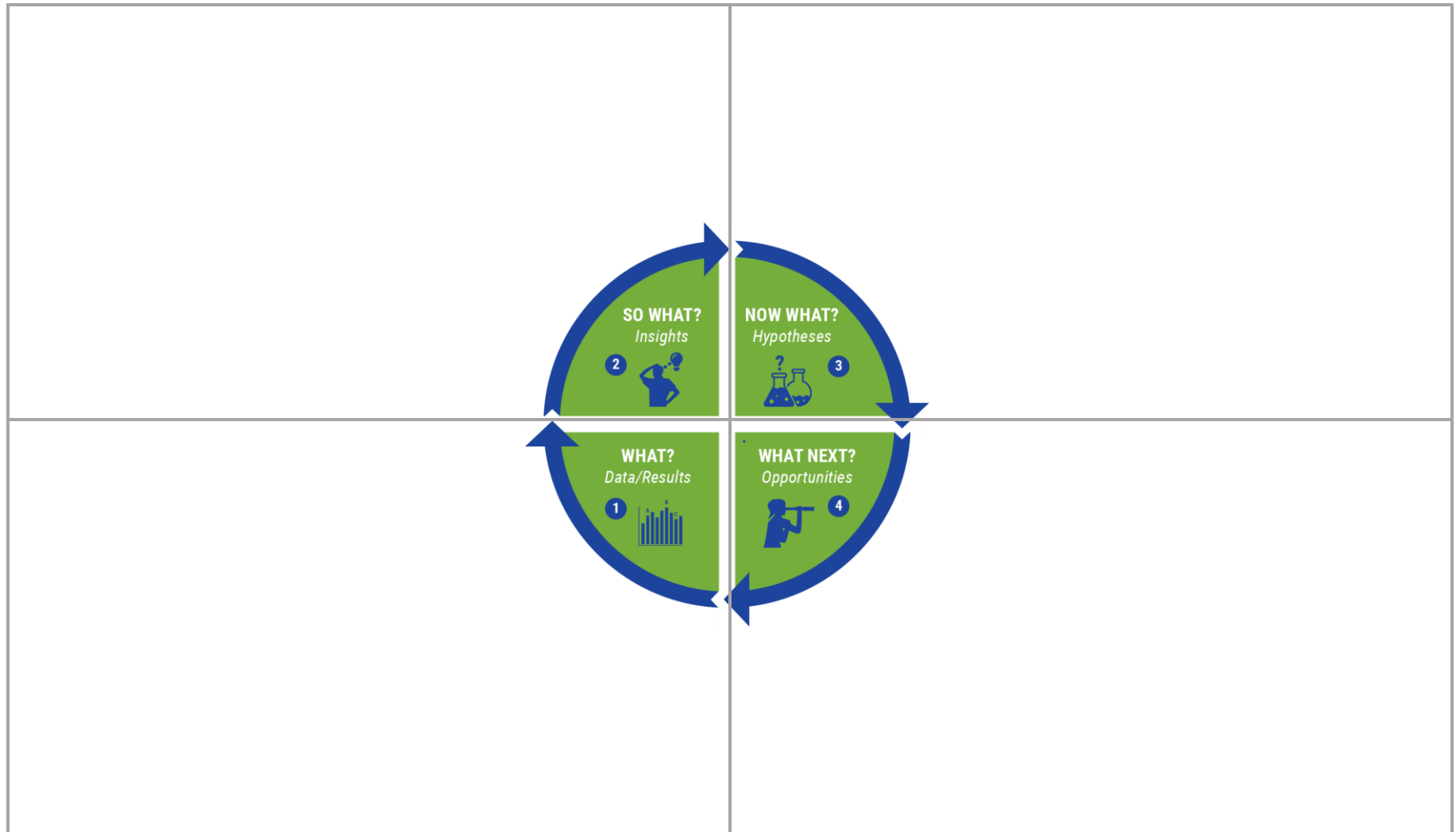
ABOUT THE BETTER BUILDINGS RESIDENTIAL NETWORK

The Better Buildings Residential Network connects energy efficiency programs and partners to share best practices and learn from one another to increase the number of homes that are energy efficient.

Network membership is free and open to all organizations that are committed to accelerating the pace of residential energy efficiency upgrades. More than 300 members include state, and local governments, utilities, program administrators and implementers, businesses, nonprofit organizations, and financial institutions.

Benefits to membership in the Better Buildings Residential Network include: Recognition in social and other media, case studies, toolkits, and publications; Speaking opportunities; Member initiatives that produce tool kits; Tools, templates, resources, and proven solutions shared by members; Access to networking opportunities; and Updates on the latest residential energy efficiency trends.

The Better Buildings Residential Program Solution Center is a robust online collection of nearly 1,000 examples, strategies, and resources from a $500 million energy efficiency grant program funded by the U.S. Department of Energy, Home Performance with ENERGY STAR® Sponsors, and others.

To date, the Better Buildings Residential Network has completed five has produced the following toolkits: Community-Based Social Marketing, Designing Incentives, Partnerships, Social Media, and Training. In addition to these resources, the network hosts weekly peer exchange calls that bring together state and local government agencies, utilities, program implementers, tradespeople, businesses, nonprofit organizations, financial institutions, and others to increase the adoption of energy efficiency practices, discuss similar needs and challenges, and identify effective strategies to reduce costs and increase benefits to homeowners.

To join contact bbresidentialnetwork@ee.doe.gov. For more information go to www.energy.gov/eere/bbrn.

This document was prepared for the U.S. Department of Energy by Ross Strategic under subcontract to Allegheny Science & Technology.

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