

# Energy-Plus-Health Playbook



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## Table of Contents

Executive Summary .....	6
Section 1: Introduction and Playbook Organization .....	10
1.1 Introduction.....	11
1.2 Playbook Organization .....	11
1.3 Methodology .....	12
1.4 Qualifications, Assumptions and Limiting Conditions .....	12
Section 2: Making the Case for Energy-Plus-Health Programs.....	13
2.1 Introduction.....	14
2.2 Health Industry Drivers for Energy-Plus-Health.....	14
2.3 Energy Efficiency Industry Drivers for Energy-Plus-Health .....	18
Section 3: Choosing the Energy-Plus-Health Program Model that is Right for You ..26	
3.1 Introduction.....	27
3.2 Tier 1: Basic Health & Safety Programs .....	28
3.3 Tier 2: Cross-Sector Referrals .....	32
3.4 Tier 3: Integrated Energy-Plus-Health Services .....	37
Section 4: Designing a Successful Energy-Plus-Health Program .....	42
4.1 Introduction.....	43
4.2 Understand Efficiency Program Priorities and Readiness for Energy-Plus-Health Programs.....	43
4.3 Conduct a Market Evaluation .....	43
4.4 Build Relationships and a Culture of Healthy Homes .....	44
4.5 Collaborate on Program Design .....	45
4.6 Train Program Collaborators and Facilitate Ongoing Communication .....	48
4.7 Program Evaluation and Reporting .....	49
4.8 Energy-Plus-Health Challenges and Mitigation Strategies.....	50
4.9 Legal Concerns Regarding Health Care Collaborations and Risk Mitigation .....	52
Section 5: Navigating Health Care Industry Partners as You Build Collaboration ...53	
5.1 Introduction.....	54
5.2 Health Delivery System Market Shift .....	54
5.3 Health Care Sector Providers .....	58
5.4 Coordinated Care Organizations .....	61

Section 6: Energy-Plus-Health Program Case Studies .....	64
6.1 Introduction.....	65
6.2 Tier 1: Columbia Gas of Ohio, WarmChoice®.....	65
6.3 Tier 2: Connecticut Children’s Healthy Homes Program .....	67
6.4 Tier 2: City of Fort Collins and Fort Collins Utility, Colorado.....	70
6.5 Tiers 2 and 3: Efficiency Vermont Healthy Homes Initiative .....	71
6.6 Tier 3: Washington State Weatherization Plus Health.....	73
6.7 Tier 3: North Berkshire Healthy Homes Initiative, Pittsfield, Massachusetts .....	74
6.8 Tier 3: New York State Healthy Homes Value-Based Payment Pilot .....	76
Section 7: Energy-Plus-Health Program Resources and Sample Materials .....	80
7.1 Introduction.....	81
7.2 Healthy Home General Resources .....	81
7.3 Healthy Home Marketing and Outreach Materials.....	81
7.4 Healthy Home Program Orientation and Training Materials .....	82
7.5 Program Application Forms .....	82
7.6 Healthy Home Program Participant Consent Forms.....	82
7.7 Healthy Home Evaluator and Assessment Inspection Forms.....	83
7.8 Healthy Home Collaboration and Partnership Agreements .....	83
7.9 Data Use Agreement .....	84
7.10 Healthy Home Contractor Tools and Training .....	84

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## Executive Summary

As the energy efficiency industry faces disruptive market changes, program administrators (PAs) seek new strategies for reaching and engaging low- and middle-income customers. In parallel, the health industry is undergoing structural changes to make the transition from a fee-for-service reimbursement system to payment models that are increasingly tied to outcomes. Many health care providers treating patients with chronic respiratory illnesses such as asthma and chronic obstructive pulmonary disorder (COPD) are testing new approaches that include in-home assessment of patients' housing conditions. Energy efficiency PAs have the technical knowledge and trained workforce to conduct the in-home assessments and upgrades needed to address substandard housing conditions that affect health.

The transformations taking place for both industries create new program design opportunities that target a shared barrier: unhealthy and substandard housing conditions that cause high energy burdens and compromise household health. By leveraging each other's resources, customer access, workforce, and policy frameworks, the energy and health industries can achieve mutually beneficial outcomes.

New collaborations nationwide are addressing these challenges by coordinating energy efficiency and health resources. This Playbook is designed to help energy efficiency PAs develop or expand healthy home programming, referred to as **Energy-Plus-Health** programs. Integrated Energy-Plus-Health programs offer PAs the opportunity to:

- Reach more customers and provide more extensive services,
- Increase participation in weatherization and residential retrofit programs,
- Improve the quality of life of low-income households and communities,
- Improve health outcomes and reduce health care utilization rates and costs, and
- Unlock new health-related funding streams to leverage utility ratepayer dollars for improved program outcomes.

This Playbook starts off in [Section 1](#) by describing how the document is organized, with the intent to make this a user-friendly, easy-to-follow guidebook that walks the reader through key concepts, steps, and options for developing and implementing Energy-Plus-Health programs.

## Making the Case for Energy-Plus-Health Programs

Understanding the drivers of the dynamic changes and challenges affecting the energy efficiency and health industries is essential to exploring the opportunities for coordinated program approaches. [Section 2](#) reviews these trends and offers rationales for both efficiency PAs and health care providers to make a defensible pitch to internal stakeholders, decision-makers, regulators, and health care partners for an Energy-Plus-Health program.

**Drivers for change.** A growing body of research demonstrates that energy efficiency retrofits can improve indoor environments, air quality and health outcomes, such as asthma, COPD, and other chronic respiratory conditions. Drawing on this body of research, training programs such as the Building Performance Institute's Healthy Home Evaluator certification and guidance from Weatherization Assistance Program's health and safety requirements are now giving weatherization and home energy contractors the tools to assess homes more holistically.

Several trends affecting the energy efficiency and health care industries are now coming together in ways that make this a favorable time to work together to improve both energy and health outcomes. Both the energy efficiency and health sectors face systemic challenges to — and emerging opportunities to improve—their existing customer and patient engagement levels and business models. Efficiency programs are increasingly focused on reaching low-income and hard-to-reach customers, while market changes are creating new pressures on ratepayer funding for energy efficiency programs that challenge the cost-effectiveness of residential programs. The health care industry is undergoing a dramatic transformation from a fee-for-service model to a value-based reimbursement structure, with increasing recognition of how the social determinants of health (SDOH) affect health outcomes. Increasing the effectiveness of in-home patient care encourages new collaborations for cross-sector engagement, prevention, and treatment of patients and their homes.

**New value streams for efficiency programs.** Energy-Plus-Health programs, particularly fully integrated programs, can unlock new value streams for the energy efficiency industry. States like Missouri, Maryland, and New York are now advancing changes to Medicaid rules to enable Medicaid payments for in-home assessments, providing models for replication in other states. Other states, including Connecticut, Massachusetts, Rhode Island, and Vermont recognize the value of non-energy impacts such as health and safety, in energy efficiency cost-benefit calculations, which allows for more robust program offerings.

## **Designing an Energy-Plus-Health Program**

The Playbook provides resources, program design guidance, and case studies to help efficiency PAs develop Efficiency-Plus-Health programs, engage community-based organizations (CBOs) and health partners, and understand health care system changes.

[Section 3](#) offers a three-tier assessment framework to help efficiency PAs understand which Energy-Plus-Health program model is the best fit for their goals and resources. The tiers vary in their level of complexity, collaboration, comprehensiveness, and impact.



### Tier 1: Basic health and safety

- Do no harm during or resulting from an energy retrofit (adhere to combustion safety and minimum health and safety standards)
- Certain measures packaged and delivered directly or through community partners, such as efficiency kits, direct install measures, and HVAC safety checks



### Tier 2: Cross-sector referrals

- Agreements between energy efficiency and community partners for systematized cross-sector referrals to local healthy home information and services
- Possible use of electronic tracking platforms such as [One Touch](#)
- Partners deliver their own program services for either energy efficiency or health, or PAs may contract with CBOs to deliver services



### Tier 3: Integration

- Formal collaboration integrates energy efficiency and healthy homes service delivery
- Targeting of households with health conditions for which energy efficiency upgrades offer a remediation strategy
- Health impact data collection and tracking
- Privacy and liability issues addressed through legal documents
- Opportunities for health care funds to cover efficiency measures are being explored in some markets.

[Section 4](#) offers in-depth program design steps and considerations for PAs who are committed to developing a Tier 2 or 3 program.

[Section 5](#) reviews health care industry trends, players, treatment models, and funding options to help efficiency PAs understand the industry and find opportunities for collaboration.

[Section 6](#) provides detailed case studies from seven states, with information on program designs, partnerships, and key lessons learned for Energy-Plus-Health programs across all three tiers.



Energy-Plus-Health Case Studies		
Tier 1	Tier 2	Tier 3
<ul style="list-style-type: none"> <li>Columbia Gas of Ohio WarmChoice®</li> </ul>	<ul style="list-style-type: none"> <li>Connecticut Children's Hospital Healthy Homes Program</li> <li>Fort Collins Utility and City of Fort Collins</li> <li>Efficiency Vermont - One Touch</li> </ul>	<ul style="list-style-type: none"> <li>Washington State Weatherization plus Health</li> <li>North Berkshire Healthy Homes Initiative, Center for EcoTechnology</li> <li>Efficiency Vermont Healthy Homes Initiative</li> <li>New York State Health Homes Value Based Payment Pilot</li> </ul>

## Sharing Resources and Lessons Learned

[Section 7](#) provides tools such as templates, partner agreements, training resources, and outreach materials to support development of Energy-Plus-Health programs. As early Energy-Plus-Health collaborations expand, sharing the tools that facilitate progress increases the likelihood of success. E4TheFuture funded the development of this Playbook to help efficiency PAs advance innovative partnerships that yield multiple energy and health benefits. PAs are encouraged to connect with each other to foster ongoing communication, collaboration, and learning as the Energy-Plus-Health market evolves.

# Section 1: Introduction and Playbook Organization



*This section provides an overview of the Energy-Plus-Health Playbook, and quick links to help readers easily navigate to the sections that are most relevant to them.*

Several trends affecting both the energy efficiency and health care industries are coming together in ways that open channels to work together more effectively to improve both energy and health outcomes. Both sectors face systemic challenges to—and emerging opportunities to improve—their existing customer and patient interactions and business models.

## 1.1 Introduction

New collaborations nationwide are addressing these challenges and opportunities by braiding together energy efficiency and health resources. **Energy-Plus-Health** collaborations and integrated programs offer efficiency program administrators (PAs) the opportunity to:

- Reach more customers and provide more extensive services,
- Increase participation in weatherization and residential retrofit programs,
- Improve the quality of life of low-income households and communities,
- Improve health outcomes and reduce health care utilization rates and costs, and
- Unlock new health-related funding streams to leverage utility ratepayer dollars for increased and improved program outcomes.

This Playbook is intended for use by energy efficiency program administrators (PAs) interested in developing or expanding healthy homes programming, referred to as Energy-Plus-Health programs. Every market and program will have unique opportunities and constraints, and efficiency PAs are encouraged to connect with each other to foster ongoing communication, collaboration, and learning as the Energy-Plus-Health market evolves.

The Playbook provides models primarily for low-income customers, since they experience the greatest health disparities. However, most of the program strategies and lessons learned are readily transferable to market rate sectors.

## 1.2 Playbook Organization

The Playbook is designed in sections to allow easy access to the most relevant resources.

<a href="#"><u>Section 1</u></a>	<b>Introduction and Playbook Organization:</b> This section provides an overview of the Energy-Plus-Health Playbook, and quick links to help readers easily navigate to the sections that are most relevant to them.
<a href="#"><u>Section 2</u></a>	<b>Making the Case for Energy-Plus-Health Programs:</b> For readers who are considering starting an Energy-Plus-Health program and want to understand the benefits that Energy-Plus-Health programs can offer – and how best to make the case for healthy homes programming to utility decision-makers, regulators, ratepayers, and other stakeholders.
<a href="#"><u>Section 3</u></a>	<b>Choosing the Energy-Plus-Health Program Model that is Right for You:</b> For readers who plan to develop Energy-Plus-Health programs and need support finding the right program model and tips for getting started. This section reviews three program tiers and helps readers determine which is the best fit for their situation.

<b><u>Section 4</u></b>	<b>Designing a Successful Energy-Plus-Health Program:</b> For readers who are committed to developing a Tier 2 or 3 program and want in-depth program design guidance.
<b><u>Section 5</u></b>	<b>Navigating Health Care Industry Partners as You Build Collaboration:</b> For readers who want in-depth information on health care industry trends, key health care providers and funders, and the emerging delivery and payment models that are opening new opportunities for Energy-Plus-Health collaborations.
<b><u>Section 6</u></b>	<b>Energy-Plus-Health Program Case Studies:</b> For readers interested in learning from real-world experience implementing Energy-Plus-Health Programs, including information on program designs, key partners, and lessons learned. Provides detailed case studies from seven states.
<b><u>Section 7</u></b>	<b>Energy-Plus-Health Program Resources and Sample Materials:</b> For readers seeking further resources, templates, and training and marketing materials to support development of Energy-Plus-Health programs.

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## 1.3 Methodology

The information and recommendations provided in this Playbook are based on a combination of interviews and case studies of Energy-Plus-Health programs, expertise from Tohn Environmental Strategies in program design and technical assistance to Energy-Plus-Health programs, feedback from expert reviewers, and VEIC’s direct experience designing and implementing Energy-Plus-Health pilot programs in Vermont. VEIC conducted five interviews and received feedback from six reviewers with expertise in the healthy homes and energy efficiency sectors.

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## 1.4 Qualifications, Assumptions and Limiting Conditions

VEIC, its contractors, and E4TheFuture shall not have any liability or responsibility to any individual or entity (“third parties”) with respect to any losses or damages caused or alleged to be caused, directly or indirectly, by the information contained in this Playbook. All information is provided for informational purposes only and should not be considered specific advice or recommendations for how third parties should engage in Energy-Plus-Health programming. In addition, the contents of this Playbook should not be considered legal or medical advice or a substitution for consultation with a licensed physician or an attorney.

## Section 2: Making the Case for Energy-Plus-Health Programs



*For readers who are considering starting an Energy-Plus-Health program and want to understand the benefits that Energy-Plus-Health programs can offer – and how best to make the case for healthy homes programming to utility decision-makers, regulators, ratepayers, and other stakeholders.*

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## 2.1 Introduction

Understanding the drivers of the dynamic changes and challenges affecting the energy efficiency and health industries is essential to exploring the opportunities for coordinated program approaches. This section reviews these trends and how to respond to them through integrated Energy-Plus-Health programming. It offers rationales for both efficiency PAs and health care providers to make a defensible pitch to internal stakeholders, decision-makers, regulators, and health care partners for an Energy-Plus-Health program.

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## 2.2 Health Industry Drivers for Energy-Plus-Health

### 2.2.1 Growing Evidence that Indoor Environments Affect Health

The U.S. Environmental Protection Agency (EPA) and U.S. Department of Energy (DOE) emphasize the importance of improving indoor air quality. People spend approximately 69% of their time inside a home, where the concentrations of some pollutants are often two to five times higher than typical outdoor concentrations.”<sup>1</sup>

According to the U.S. Department of Housing and Urban Development (HUD) and its federal agency partners, the U.S. Environmental Protection Agency (EPA) and the Centers for Disease Control and Prevention (CDC), there are eight core **healthy home** principles (see Figure 1).

A growing body of research in line with these principles demonstrates that energy efficiency retrofits help to achieve these principles, and how improving indoor air quality improves health outcomes, such as asthma, chronic obstructive pulmonary disorder (COPD), and other chronic respiratory conditions. Figure 2, on the next page, shows how different efficiency improvements affect health.



Figure 1: Eight healthy home principles.

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<sup>1</sup> E4TheFuture, 2016. "Occupant Health Benefits of Residential Energy Efficiency." <https://e4thefuture.org/wp-content/uploads/2016/11/Occupant-Health-Benefits-Residential-EE.pdf>. Prepared by: Tohn Environmental Strategies, National Center for Healthy Housing, & Three<sup>3</sup>, Inc.

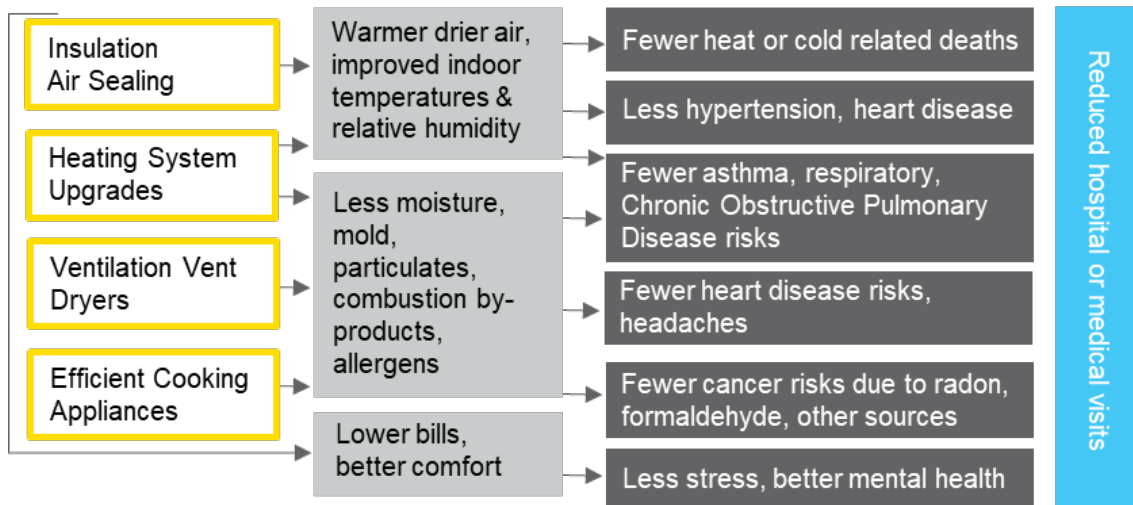


Figure 2: Occupant health and indoor environmental benefits of residential energy efficiency.<sup>2</sup>

DOE and the National Center for Healthy Housing (NCHH) published “Home Rx: The Health Benefits of Home Performance” after undertaking “an exhaustive literature review.” The review led authors to conclude that when weatherization projects include ventilation that is compliant with ASHRAE 62.2, researchers see improved respiratory health (especially among people who have existing illnesses like asthma), as well as improved indoor air quality from:<sup>3</sup>

- Reduced particulate matter from combustion by-products from cooking, heating (especially wood), environmental tobacco smoke, and candles.
- Reduced volatile organic compounds (VOCs; especially formaldehyde): chemicals off-gassing from building materials and household products.
- Reduced CO<sub>2</sub>: by-product of breathing, often an indicator in poor air quality and inadequate fresh-air ventilation; in high concentrations, causes drowsiness and productivity losses.
- Reduced radon: naturally occurring radioactive gas that can enter homes from the ground and water supply.

These positive outcomes “complement the energy cost savings and comfort improvements (temperature and humidity) frequently produced by home performance upgrades. In some studies, the health benefits...were shown to reduce both health-care utilization and costs.”<sup>4</sup>

Drawing on this body of research, training programs such as the Building Performance Institute’s Healthy Homes Evaluator

Poor indoor environmental conditions are associated specifically with asthma and chronic obstructive pulmonary disease (COPD), which combined are one of the five most costly medical conditions.

*“Asthma and Chronic Obstructive Pulmonary Disease Natural History, Phenotypes, and Biomarkers.”* Stefano Guerra. Centre for Research in Environmental Epidemiology (CREAL), IMIM-Hospital del Mar, CIBERESP, Barcelona, Spain; and Arizona Respiratory Center, University of Arizona, Tucson, AZ, USA. October 2010.  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2832909/>

<sup>2</sup> Ibid.

<sup>3</sup> Wilson, Jonathan, David Jacobs, Amanda Reddy, Ellen Tohn, Jonathan Cohen, and Ely Jacobsohn, 2016. *“Home Rx: The Health Benefits of Home Performance—A Review of the Current Evidence.”* Washington, DC: U. S. Department of Energy.  
<https://www.energy.gov/eere/buildings/downloads/home-rx-health-benefits-home-performance-review-current-evidence>.

<sup>4</sup> Ibid.

certification<sup>5</sup> and guidance from Weatherization Assistance Program’s health and safety requirements<sup>6</sup> are now giving weatherization and home energy contractors the tools to assess homes more holistically. In addition to conducting traditional energy audits, these trained and certified contractors can now comprehensively assess homes based on the eight healthy homes principles.

## 2.2.2 Increased Focus on Social Determinants of Health

The health care industry is undergoing a dramatic transformation from a fee-for-service model to a value-based reimbursement structure. Health care policy professionals and providers acknowledge that the existing fee-for-service payment and delivery infrastructure is not sustainable. “Health care will change more in this decade than it did in the past 50 years”<sup>7</sup> is a generally accepted observation that relates to both treatment and payment approaches.

Managing rising costs is a central goal for hospitals and health partners. The United States has the second-highest per-capita annual spending on health care of \$9,536, and “a small portion of the population is responsible for a very large percentage of total health spending.”<sup>8</sup> As shown in Figure 3, 5% of the U.S. population accounted for half of total health spending in 2016.<sup>9</sup>

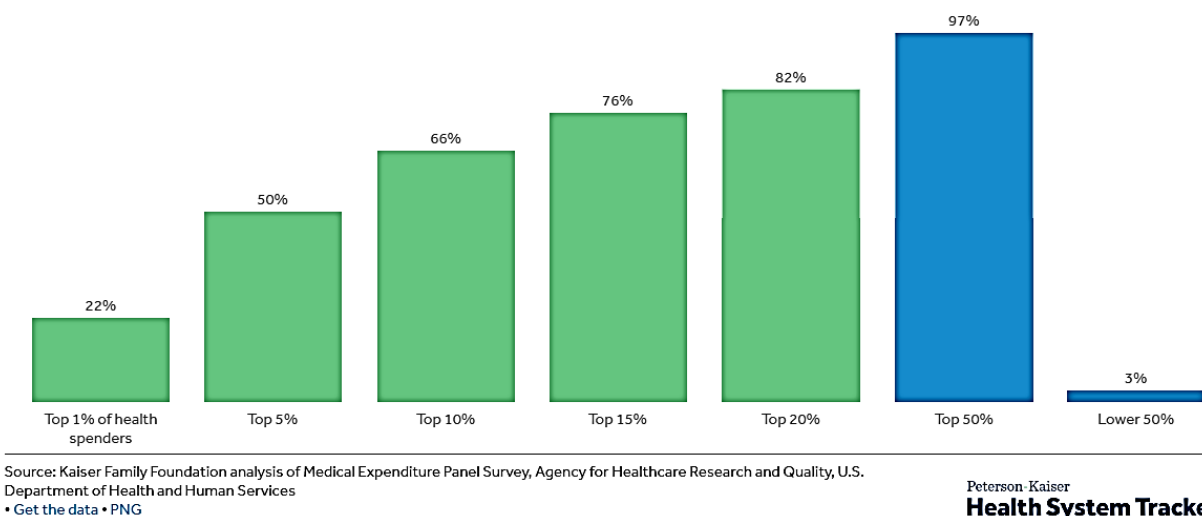


Figure 3: Health care spending by proportion of population.

<sup>5</sup> BPI Healthy Home Evaluator, <http://www.bpi.org/certified-professionals/healthy-home-evaluator>

<sup>6</sup> DOE, Weatherization Health and Safety Guidance, <https://www.energy.gov/eere/wipo/downloads/wpn-17-7-weatherization-health-and-safety-guidance>

<sup>7</sup> Bauer, Jeffrey, 2018. “Innovation and Health Reform: Wave of the Future?” 2018 VAHHS Annual Meeting. Montpelier, Vt.: 2018 Vermont Association of Hospitals and Health Systems. [https://vahhs.org/client\\_media/files/Annual%20Meeting/2018/Bauer.VAHHS.091418.PresentationSlides.pdf](https://vahhs.org/client_media/files/Annual%20Meeting/2018/Bauer.VAHHS.091418.PresentationSlides.pdf).

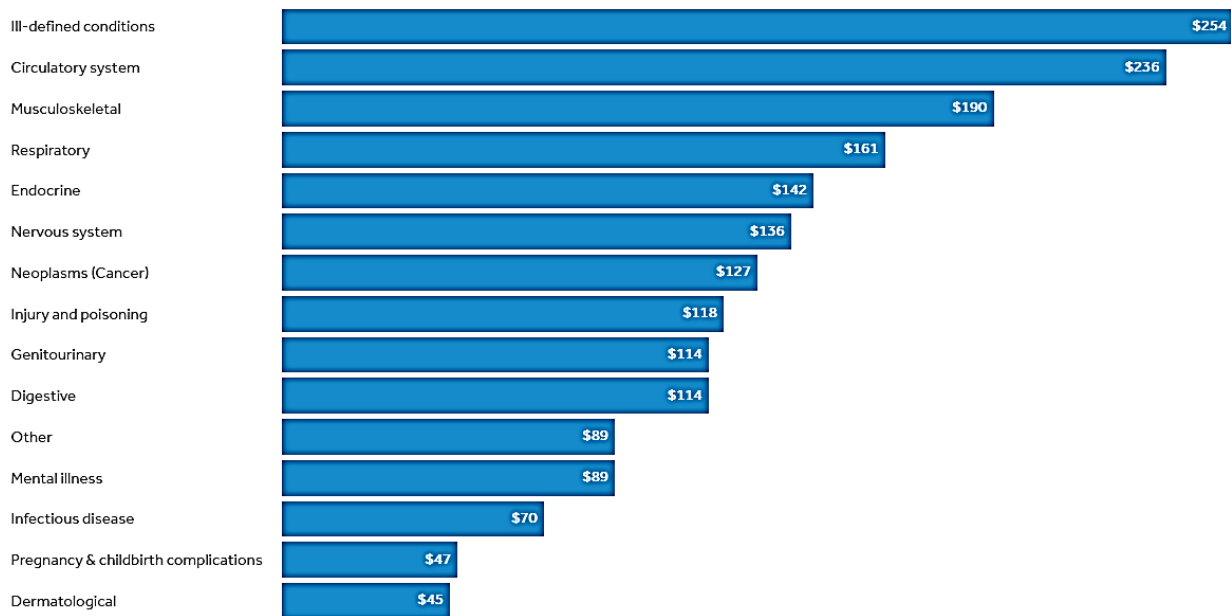
<sup>8</sup> Peterson-Kaiser Health System Tracker, “How do health expenditures vary across the population.” <https://www.healthsystemtracker.org/chart-collection/health-expenditures-vary-across-population/#item-medicare-spending-inpatient-care-peaks-age-92-hospice-peaks-age-100>

<sup>9</sup> Kaiser Family Foundation, “How Do Health Expenditures Vary Across the Population?” January 16, 2019. <https://www.kff.org/slideshow/how-health-expenditures-vary-across-the-population-slideshow/>



Moreover, Figure 4 shows respiratory illnesses as the fourth highest expenditure category.<sup>10</sup>

Total medical services expenditures in US \$ billions by disease category, 2013



Spending on dental services, nursing homes, and prescriptions that cannot be allocated to a specific disease not included above.

Source: Kaiser Family Foundation analysis of data from Bureau of Economic Analysis Health Care Satellite Account (Blended Account) and National Health Expenditure Data 

Peterson-Kaiser  
**Health System Tracker**

Figure 4: Health care spending by disease category.

The diminishing cost-effectiveness of in-hospital and in-office treatment for resolving chronic respiratory illnesses gives providers an incentive to consider new preventive care approaches. There is increasing understanding that social determinants of health (SDOH) present barriers to some patients' wellness when their social, economic and physical environments work against health care treatment plans.<sup>11</sup> To this end, health partners and practitioners are increasingly seeking to determine what factors in a patient's home may be contributing to the patient's illness, particularly in the area of respiratory illnesses such as asthma and COPD. With the growing understanding of medical conditions and treatments has come a revolution in care delivery infrastructure, with an expansion to home-based care models. Increasing the effectiveness of in-home patient care often relies on collaborations for cross-sector patient engagement, prevention, and treatment.

Energy efficiency programs can help to address health care challenges by:

- Providing knowledge and workforce capacity through networks of certified weatherization and home performance contractors, who can deliver in-home assessments and interventions through systematic delivery models supported by back-end quality assurance.

<sup>10</sup> Peterson-Kaiser Health System Tracker, "How much does the U.S. spend to treat different diseases?" <https://www.healthsystemtracker.org/chart-collection/much-u-s-spend-treat-different-diseases/#item-circulatory-ill-defined-conditions-check-ups-largest-category-spending>

<sup>11</sup> Housing and the built environment are one of the five social determinants of health, which also encompass economic stability, education, social and community context, and health.

- Conducting home assessments that generate insights on how the patient’s home environment may be exacerbating poor health conditions, such as respiratory illnesses and fall hazards.
- Managing health care costs by supporting preventive care through home improvement scopes of work that leverage funding streams from the energy efficiency industry.

[Section 5](#) provides more information on how cost and reimbursement models are changing in the health care sector, opening new opportunities for Energy-Plus-Health collaborations.

## 2.3 Energy Efficiency Industry Drivers for Energy-Plus-Health

Whole-house energy upgrade programs are a longstanding component of energy efficiency portfolios.<sup>12</sup> In residential markets, energy audit and retrofit programs are often delivered under the banner of the U.S. Department of Energy (DOE) Home Performance with ENERGY STAR® program. Low-income households<sup>13</sup> typically receive federal Weatherization Assistance Program (WAP) services from community action agencies and other providers. Utilities and energy efficiency PAs also directly deliver non-federally funded weatherization services to the residential market, and / or partner with WAP providers to enhance free weatherization services with electrical efficiency measures. Some efficiency PAs, such as those in Massachusetts and New York offer whole-house energy upgrade programs with enhanced incentives for moderate-income customers.<sup>14</sup>

Efficiency programs face a range of pressures that make it challenging to deliver residential retrofit programs. Energy-Plus-Health programs can help efficiency program administrators respond to these challenges by:

- Increasing participation in weatherization and residential retrofit programs, which helps PAs achieve their goals for energy savings, customer satisfaction, and low-income program participation.
- Enabling new health-related funding streams to stretch limited ratepayer dollars.
- Improving cost-effectiveness of residential retrofit programs by enabling fuller accounting of benefits.

### 2.3.1 Increasing Participation in Retrofit Programs

Whole-house energy upgrades are frequently a core part of residential energy efficiency portfolios, but they are challenging to deliver. Common customer barriers include:

- High project costs,
- Out-of-reach financing options,
- Lack of time or “hassle factor,” and
- Lack of qualified contractors trained in building science, including health and safety.

<sup>12</sup> Third-party administrators are non-utility energy efficiency program administrators charged with delivering efficiency programs on behalf of states, cities, or provinces. Well-known examples are Efficiency Vermont, Efficiency Nova Scotia, Energy Trust of Oregon, and Focus on Energy (Wisconsin).

<sup>13</sup> Depending on the jurisdiction, the low-income market segment is typically defined as households earning (1) less than 150 percent or 200 percent of the Federal Poverty Level, (2) less than 60 or 80 percent of the U.S. Department of Housing and Urban Development Area Median Income (HUD AMI), or (3) less than 60 percent or 80 percent of the U.S. Census Area Median Income (AMI).

<sup>14</sup> The moderate-income market segment is typically defined as households earning between 60 percent and 120 percent of HUD AMI.

- The need to complete basic home repairs, remediate hazards, or replace knob-and-tube wiring before weatherizing the home.

Comfort and health messaging can be an effective way to motivate customers to participate in efficiency programs. Recent research shows that customers care more about the comfort and health of their home than they do about saving energy; when the Shelton Energy Pulse study asked to choose one home improvement between comfort, beauty, health, and value, comfort was consistently the top choice.<sup>15</sup> A recent Shelton survey found that 60% of respondents believe telling someone that an energy efficient home is a healthier home is an effective way to get people to spend \$1,500 on efficient home features.

At the same time, many states are increasingly focused on reaching underserved customers and markets, such as low-and-moderate-income households. To address these barriers and achieve goals for energy savings and low-income participation, efficiency PAs are increasingly seeking new ways to engage their customers through collaboration with health and housing community-based organizations (CBOs) that act as trusted messengers.

### Exploring Mutual Benefits for Health Care and Energy Industries

National Grid of Rhode Island's (NGRI) 2019 Annual Energy Efficiency Plan describes the utility's intention to "engage with local and national stakeholders and thought-leaders to discuss the interplay of benefits between the health care and energy industries ...with a special emphasis on opportunities within the income-eligible population." National Grid is committed to working with partners to consider, "issues such as, the monetary value of health benefits from energy efficiency measures, delivery models for measures that drive both health and energy savings, and possible co-funding opportunities where appropriate."

The Narragansett Electric Company d/b/a National Grid RIPUC Docket No. 4888 2019 Energy Efficiency Program Plan. Attachment 1, page 19 of 43

Collaboration models for Energy-Plus-Health programs are described further in [Section 3](#) and [4](#).

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<sup>15</sup> Head, Lee Ann. Feb. 18, 2015. "Comfort is in the Eye of the Beholder". Shelton Group. <https://sheltongrp.com/posts/comfort-is-in-the-eye-of-the-beholder/>

## 2.3.2 Enabling New Health-Related Funding Streams for Efficiency Programs

Utilities and energy efficiency programs face a range of pressures to the conventional funding model, in which energy efficiency programs are funded using ratepayer dollars. As load growth flattens due to widespread adoption of energy efficiency and, in some regions, distributed renewable energy generation, utilities are challenged to spread costs across a smaller amount of retail sales. This leads to rising rates, and often concerns among utilities, regulators, and consumer advocates about the cost to ratepayers of energy efficiency programs. At the same time, many states face broader budget pressures, tempting legislatures to “raid” funds that were earmarked for energy efficiency programs. For example, in 2017, Connecticut legislators used \$175 million “from ratepayer-funded energy conservation programs to help solve the state’s massive budget deficit.”<sup>16</sup>

Residential efficiency programs face additional cost pressure due to rapid transformation of the lighting market. Energy-efficient lightbulbs have traditionally been a cornerstone of residential energy efficiency programs, but many efficiency programs plan to stop incentivizing LED bulbs by 2020 or 2021 because they have become widely adopted in the market. This has the effect of making residential programs even more expensive and less cost-effective because lightbulbs are low-cost relative to the savings delivered. This pressure on energy efficiency program budgets is at odds with the desire of many states to expand programming to low-income and hard-to-reach customers.

Energy-Plus-Health programs can address pressures on efficiency program budgets by tapping new funding streams from the health care sector, such as Medicaid payment contracts and community health benefit resources. Several states are now advancing changes to Medicaid rules to enable Medicaid payments for in-home assessments, providing models for replication.

Missouri Medicaid Code of State Regulations (CSR) establishes the rules governing Medicaid reimbursement. In 2018, the State began allowing in-home assessments in connection with asthma education and training of patients. The CSR contains the criteria for in-home assessments as a “thorough assessment of the home including, but not limited to, rodent excrement, mites, animal dander, insects, dust, mold ...structure deficiencies, ventilation and moisture conditions, conducting and recording basic air sampling procedures, and examination of the external environment of the home to identify and support the reduction of disease-causing agents leading to medical complications of asthma...with recommendations for remedial actions. In-home assessments for asthma triggers do not include remediation of issues identified in the home.”

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<sup>16</sup> Hartford Courant, “Federal Lawsuit Filed to Block State from Using Energy Conservation Funds to Solve Budget Deficit, May 16, 2018. <https://www.courant.com/politics/hc-news-energy-fund-raid-lawsuit-20180515-story.html>

Missouri changed its Medicaid rules and created new Medicaid billing codes to allow Medicaid to pay for in-home assessments for asthma patients by BPI Healthy Homes Evaluators.<sup>17</sup>

New York is currently undertaking a Healthy Homes Value-Based Payment Pilot, with the goal of developing a replicable model for implementing a healthy home<sup>18</sup> approach to residential building treatments under the Medicaid Value-Based Payment (VBP)<sup>19</sup> framework. By validating impacts such as health care cost savings and benefits to residents, as well as providing market development support such as specification of services and VBP contracting guidance for these interventions, the Pilot will facilitate the adoption of healthy homes treatments by Medicaid managed care organizations (MCO) as part of their Medicaid VBP Arrangements that incorporate social determinants of health. This pilot is described further in [Section 6](#).

With the health care industry opening opportunities for payment reform through innovation that delivers replicable, evidence-based programs, it is an opportune time for efficiency PAs to explore new funding streams in partnership with the health sector.<sup>20</sup> [Section 5](#) provides more information on how the cost and reimbursement models are changing in the health care sector, opening new opportunities for Energy-Plus-Health collaborations.

### 2.3.3 Improving Cost-Effectiveness of Efficiency Programs

Whole-house retrofit programs are expensive because they offer generous customer incentives, and involve complex, whole-home upgrades. Under cost-effectiveness tests that are commonly applied to energy efficiency programs, whole-house energy upgrade programs may not meet sufficient energy-savings-per-dollar-invested criteria to “screen.”

Challenges passing cost-effectiveness tests can sometimes limit the scope of whole-house retrofit programs that PAs can offer, such as incentive amounts or eligible energy efficiency measures. Documenting the non-energy impacts of programs is key to modifying cost-effectiveness tests. As stated by the American Council for an Energy-Efficient Economy (ACEEE), “Although efficiency has multiple benefits, states fail to include or undervalue many of the non-energy benefits that accrue to utilities, program participants, and society when evaluating cost effectiveness. Some of the most significant omissions are the health and environmental benefits that energy efficiency generates.”<sup>21</sup>

While a few jurisdictions currently account for occupant health benefits, particularly for low-income customers, most states do not, according to the Database of State Efficiency Screening

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<sup>17</sup> Missouri Rules of Department of Social Services Division 70, HealthNet Division. Chapter 3, Conditions of Provider Participation, Reimbursement and Procedure of General Applicability. Title 13—DEPARTMENT OF SOCIAL SERVICES. April 2018.

<sup>18</sup> A residential healthy homes intervention combines energy efficiency and weatherization measures (e.g., insulation and air sealing) with measures that address persistent respiratory health conditions such as asthma (e.g., ventilation, moisture/mold mitigation, carpet removal), and includes additional measures aimed at home injury prevention (smoke and carbon monoxide alarms, stair repair, electrical outlet covers). When implemented together, these interventions can improve occupant health, reduce energy bills and health care costs, and improve the comfort and safety of a home.

<sup>19</sup> New York State Medicaid is transitioning the managed care health care delivery system from a fee-for-service to a VBP model that links health care provider performance and reimbursement through a pre-determined set of value metrics related to both health outcomes and health care cost savings. To support local reinvestment, two of three VBP arrangement levels require incorporation of a community-based organization (CBO) engaging in work focused on the social determinants of health (SDH). Substandard housing is included among the recognized social determinants of health. The substandard housing determinant places energy efficiency and weatherization measures, when incorporated within a healthy home intervention, within the DOH value-based payment model.

<sup>20</sup> See NYSEDA Tier 3 case study, Section 6.

<sup>21</sup> “Cost-Effectiveness Tests: Overview of State Approaches to Account for Health and Environmental Benefits of Energy Efficiency.” ACEEE Topic Brief. December 2018. p.1.

Practices (DSESP).<sup>22</sup> Cost-effectiveness testing guidance provided by the [National Standard Practice Manual \(NSPM\)](#) recommends that, to the extent a state's policies require accounting for program participant costs, there should be symmetrical treatment in the accounting of participant benefits. Therefore, benefits such as improved health and comfort should be quantified, and even hard-to-quantify impacts should be accounted for to the extent possible. According to the NSPM, "using best-available information, proxies, alternative thresholds, or qualitative considerations to approximate hard-to-monetize impacts is preferable to assuming those costs and benefits do not exist or have no value."<sup>23</sup>

The cost-effectiveness test used most commonly by efficiency PAs and regulators is the Total Resource Cost (TRC) test. The TRC test weighs the costs of customer contributions and program incentives and administration costs against the value of avoided supply costs and non-resource impacts resulting from an efficiency program over the lifetime of the installed measures. When non-energy impacts are quantified in the TRC test, the benefit side of the calculation more fully captures the impacts of efficiency that benefit participants and society.

An increasing number of states are updating their cost-effectiveness tests to more fully value health-related indirect benefits, such as those associated with asthma and other COPD illnesses. The inclusion of these non-energy benefit values in cost-benefit analyses ensures that participant costs and benefits are treated symmetrically, consistent with the fundamental principles of the NSPM. As discussed in this Playbook, a number of studies are being conducted to quantify these health-related impacts. In some cases, inclusion of health benefits can allow programs to offer additional energy efficiency measures and capture additional savings that would not otherwise screen.

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<sup>22</sup> Database of State Efficiency Screening Practices, <https://nationalefficiencyscreening.org/state-database-dsesp/>

<sup>23</sup> "National Standard Practice Manual for Assessing Cost-Effectiveness of Energy Efficiency Resources." Prepared by The National Efficiency Screening Project. Edition 1 Spring 2017. <https://nationalefficiencyscreening.org/>

In Illinois, the state's major utility, Commonwealth Edison (ComEd) has identified the need for new program designs as a driver due to declining avoided costs, and to align with the state's policy goals. The Illinois Future Energy Jobs Act (FEJA 2017) recognizes a full range of benefits of energy efficiency and other clean energy resources, including health benefits. ComEd is actively researching how to integrate health impacts into new program designs and partnerships.<sup>24</sup> The utility is collaborating with healthy homes partners and evaluators to document health outcomes of energy efficiency improvements for multifamily residents with asthma (see callout).

For PAs that are positioned to propose cost-benefit analysis modifications, there is now a robust body of primary research available that documents the value of health and safety benefits from low-income weatherization and efficiency.

ACEEE recently published an "Overview of State Approaches to Account for Health and Environmental Benefits of Energy Efficiency," which identifies eighteen states and the District of Columbia as jurisdictions that either monetize or use a proxy to attribute value to the "societal environmental and/or public health, or the participant health benefits of energy efficiency."<sup>25</sup>

Because of the Washington State Weatherization Plus Health program findings (see [Section 6](#)), the State of Washington adopted a cost-benefit test that recognizes the participant health benefits of "measures identified through the Weatherization Manual priority list" and considers them cost-effective. The cost-benefit framework allows utilities to "fully fund repairs, administrative costs, and health and safety improvements associated with cost-effective low-income conservation measures...utilities may [also] exclude low-income conservation from portfolio-level cost-effectiveness calculations."<sup>26</sup>

For the jurisdictions that recognize the indirect impacts of efficiency in cost-benefit calculations, most are using non-energy impact proxies that include consideration of health and/or safety, among others. Nine states currently recognize health benefits specifically, including:<sup>27</sup>

ComEd Illinois is currently experimenting with models to develop and validate scalable approaches to collaborate with the health care industry for the purpose of informing the IL cost-effectiveness test. With partners such as Green & Healthy Homes Initiative and Presence Health System, ComEd is designing and conducting joint health-energy assessments and upgrades in income-eligible multifamily buildings focused on asthma triggers and efficiency opportunities. In partnership with the Illinois Institute of Technology and Elevate Energy, ComEd is also comparing the effectiveness of three approaches to upgrading residential mechanical ventilation systems in existing homes to reduce indoor pollutants.

*Jim Fay, Energy Efficiency Planning & Measurement, ComEd, presentation at the "Illinois Non-Energy Impacts" workshop, Home Performance Conference 2019*

<sup>24</sup> "Non-Energy Impacts (NEI) Research: The Utility Perspective." Jim Fay, Energy Efficiency Planning & Measurement, ComEd. 2019 National Home Performance Conference. April 2, 2019.

<sup>25</sup> "Cost-Effectiveness Tests: Overview of State Approaches to Account for Health and Environmental Benefits of Energy Efficiency." Cassandra Kubes, 2018. Washington, DC: American Council for an Energy-Efficient Economy (ACEEE): 4. <https://aceee.org/topic-brief/he-in-ce-testing>.

<sup>26</sup> Ibid. p. 6

<sup>27</sup> Ibid. p.4

Rhode Island	Vermont	Connecticut
National Grid's 2019 Resource Plan proposes that, "Other quantifiable non-resource or non-energy impacts may be created as a direct result of Least Cost Procurement efforts and, are therefore appropriate for inclusion in the RI Test. Non-energy impacts may include—but are not limited to—labor, material, facility use, health and safety..." <sup>28</sup>	A 15% non-energy impacts "add" to avoided-cost calculations is included in the state's societal cost-effectiveness screening tool. This NEB adder supports the implementation of comprehensive programs, such as Home Performance with ENERGY STAR® and the Heat Saver Loan which include measures beyond only energy-saving technologies.	The <i>2019-2021 Conservation &amp; Load Management Plan</i> contains 2018 Evaluation Recommendations supporting investment in original research to estimate medical and health impacts, <sup>29</sup> which supports the CT healthy homes partnership work described in the Tier 2 case study.

In Massachusetts, program administrators focused on monetizing NEIs that include health and safety. This was achieved in 2016 through groundbreaking research from efficiency program evaluators, NMR, Inc. and Three<sup>3</sup>, Inc., which quantified health improvement values associated with air sealing, insulation, HVAC system servicing and replacements, duct sealing, and pipe wrap.<sup>30</sup> Along with the measures monetized by Three<sup>3</sup>, NMR also assigned a health value for programmable thermostats in the Massachusetts *Technical Reference Manual* (TRM) for the health impacts of thermally regulated home environments.

Using a pre-and post-project survey approach, comprehensive findings show a statistically valid pattern of improvements in health, financial stability, higher attendance at work and school, and other positive outcomes, like a reduction in hospital and physician visits.<sup>31</sup> Three<sup>3</sup>'s 2016 report contains three levels of specific monetized values for multiple outcomes. Table 1. presents the first level, which estimate NEI values of health benefits based on "observed monetizable outcomes attributable to weatherization and highly reliable cost data."<sup>32</sup>

<sup>28</sup> "Rhode Island 2019 Energy Efficiency Resource Plan, Attachment 4, Rhode Island Test, Draft." The Narragansett Electric Company d/b/a National Grid. p.11.

<sup>29</sup> "2019-2021 Conservation & Load Management Plan." 2018. Eversource Energy, United Illuminating, Connecticut Natural Gas Corporation, and Southern Connecticut Gas: 228. <https://www.ct.gov/deep/lib/deep/energy/conservationloadmgmt/final-2019-2021-clm-plan-11-19-18.pdf>.

<sup>30</sup> "Massachusetts Special and Cross-Cutting Research Area: Low-Income Single-Family Health- and Safety-Related Non-Energy Impacts (NEIs) Study." Prepared by: Beth A. Hawkins, Dr. Bruce E. Tonn, and Erin M. Rose, Three<sup>3</sup>, Inc.; Greg Clendenning, and Lauren Abraham, NMR Group. Prepared for: Massachusetts Program Administrators. August 5, 2016. p. 17.

<sup>31</sup> Ibid, p.xii.

<sup>32</sup> Ibid, p.xi.



Table 1: Value of benefits per unit.

Annual Per Unit Benefit*			
	Household Annual NEI Value	Societal NEI Value	Total NEI Value
Reduced asthma symptoms	\$9.99	\$322.01	\$332.00
Reduced cold-related thermal stress	\$463.21	\$33.73	\$496.94
Reduced heat-related thermal stress	\$145.93	\$27.00	\$172.93
Fewer missed days at work	\$149.45	\$37.36	\$186.81

These health value data required access to state-specific health and cost data for a well-defined population receiving services in order to monetize health NEIs at the measure level.

Jurisdictions with cost-benefit analyses applied at the program or portfolio levels may require different methods to quantify health NEIs. The acceptance by Massachusetts and Rhode Island regulators of these values signals an opportunity for PAs, evaluators, and regulators to recognize value for indirect health benefits. Three<sup>3</sup> recently replicated this study in Knoxville, Tennessee and is conducting similar research in multifamily housing.

Using Three<sup>3</sup>'s methodology, the Vermont Department of Health assessed Medicaid trends to predict the impacts on health care utilization of whole-building retrofits for low-income Vermont households. The Department concluded that the value of reduced health care utilization and energy costs for Vermont outweighs the initial, one-time investment in weatherization (Wx). "Wx also benefits public health by reducing fine particulate emissions from heating systems. The estimated 10-year value of energy and health benefits is at least \$24,757 per household, or about three times the initial cost. Larger benefits are expected if Weatherization Plus Health (Wx+H) services are offered to people with existing chronic health conditions."<sup>33</sup>

While Vermont Department of Health's predictive data may not have an immediate impact on the cost-effectiveness test methodology used by regulators for Efficiency Vermont's energy efficiency portfolio, it might inform policy and program design opportunities for the state's Energy-Plus-Health collaborations. Going forward, this could lead to future cost-benefit adjustments that create opportunities to serve more low-and-moderate-income households.

<sup>33</sup> Vermont Department of Health, Weatherization + Health: Health and Climate Change Co-Benefits of Home Weatherization in Vermont, December 2018. [http://www.healthvermont.gov/sites/default/files/documents/pdf/ENV\\_CH\\_WxHealthReport.pdf](http://www.healthvermont.gov/sites/default/files/documents/pdf/ENV_CH_WxHealthReport.pdf)

# Section 3: Choosing the Energy-Plus-Health Program Model that is Right for You






*For readers who plan to develop Energy-Plus-Health programs and need support finding the right program model and tips for getting started. This section reviews three program tiers and helps readers determine which is the best fit for their situation.*

### 3.1 Introduction

This Playbook offers a three-tier framework for energy efficiency program administrators (PAs) interested in creating Energy-Plus-Health programs. While not every Energy-Plus-Health program fits neatly into a tier, the framework is intended to help PAs determine which program model is the best fit for their goals and resources. The three program tiers represent a continuum in their level of complexity, collaboration, comprehensiveness, and impact:

- Tier 1 programs are the simplest to design and deliver but achieve modest health impact. These programs focus on doing no harm by offering basic health and safety measures through light engagement with community-based partners that may or may not combine efficiency measures with healthy home principles.
- Tier 2 programs are more complex but provide greater benefits by offering cross-sector referrals between efficiency, health, and housing partners to proactively address needs and deliver responsive services, particularly for low-and-moderate-income households.
- Tier 3 programs are the most resource-intensive to design and deliver but offer the greatest potential for positive impact through fully integrated Energy-Plus-Health services. They can support improved health outcomes for households with chronic respiratory illness and unlock new funding streams from the health sector.

 <b>Tier 1: Basic health and safety</b>	 <b>Tier 2: Cross-sector referrals</b>	 <b>Tier 3: Integration</b>
<ul style="list-style-type: none"> <li>• Best option for PAs who lack the time and resources to build external partnerships or develop new programs</li> <li>• Supports PA goals to “do no harm”</li> <li>• Many existing residential retrofit and weatherization programs fit in Tier 1</li> </ul>	<ul style="list-style-type: none"> <li>• Best option for PAs who have healthy home resources available and are willing to invest in a referral network, but are not ready to invest in learning about the needs of the health care sector and building a full partnership with them</li> <li>• Supports PA goals for community and low-income impact</li> <li>• Usually doesn’t require major changes to existing efficiency programs</li> </ul>	<ul style="list-style-type: none"> <li>• Best option for PAs who are willing to make a significant investment to understand the needs of the health care sector and develop a mutually beneficial cross-sector partnership</li> <li>• Supports quantification of health-related non-energy impacts for inclusion in cost-effectiveness screening.</li> <li>• Supports PA goals to develop new health-related funding streams</li> <li>• May require approval by regulators or other oversight bodies</li> </ul>

For each Tier, the Playbook includes the following information:

- Overview and list of program elements
- Program example
- Summary of program benefits
- Tips for getting started with a program
- Links to helpful resources and tools

## 3.2 Tier 1: Basic Health & Safety Programs



### 3.2.1 Overview

Tier 1 programs seek to “do no harm” by meeting minimum health and safety guidelines when installing energy efficiency measures during home energy upgrades. Tier 1 programs can also be delivered by Community-Based Organizations (CBOs) that offer energy efficiency incentives or promotions to customers without formally partnering with an efficiency PA. Home Performance with ENERGY STAR® programs delivered by efficiency PAs and low-income weatherization programs (usually delivered by CBOs such as Community Action Agencies) usually meet Tier 1 requirements by including basic health and safety checks and remediation during delivery of home energy assessments and retrofits.

Tier 1 Required Elements	Tier 1 Optional Elements	Elements Not Usually Present in Tier 1 Programs
<ul style="list-style-type: none"> <li>• Do no harm health and safety checks during energy assessments and retrofits</li> </ul>	<ul style="list-style-type: none"> <li>• Health and safety messaging included in program marketing</li> <li>• Certain measures packaged and delivered directly or through community partners, such as efficiency kits, direct install measures, and HVAC safety checks</li> <li>• Health-related non-energy impact adders in cost-benefit tests</li> </ul>	<ul style="list-style-type: none"> <li>• Dedicated funding from Medicaid or other health funding sources to pay for in-home assessments for eligible patients</li> <li>• Formal referral and tracking systems between efficiency and health or housing providers</li> <li>• Comprehensive in-home assessments addressing energy and health</li> </ul>

### 3.2.2 Roles of Key Stakeholders



#### Energy Efficiency Program Administrator

- Delivers efficiency measures directly or through contracts
- Work meets “do no harm” and minimum code standards
- Best practice combines building shell, HVAC and electrical efficiency measures for whole-house approach



#### Community-Based Organization(s)

- May deliver PA's efficiency services
- Finds value in integrating efficiency program offerings into other service offerings
- Well-positioned to leverage other funding for hazard remediation and/or home repairs



#### Home Energy Contractor

- Implements efficiency measures, may be delivered in combination with other home improvement offerings
- Have training and expertise to meet “do no harm” standards

### 3.2.3 Tier 1 Program Example

#### WarmChoice®

Columbia Gas of Ohio's (CGO) WarmChoice program offers a “do no harm” strategy, delivered via four community-based organizations in 64 of Ohio's 88 counties. WarmChoice serves 2,000+ customers annually. The organizations leverage CGO's ratepayer-funded program resources to treat homes holistically on a case-by-case basis. Contractors check for mold, mildew, gas leaks, carbon monoxide, and anything else that could be aggravated by or prevent building weatherization. Under certain circumstances, this covers disturbance of asbestos and lead-based paint. CGO occasionally pays for reasonable repairs and refers households with lead hazards to a lead-based paint hazard abatement program. Electricity utilities cover electrical efficiency measures; other home repair funding comes from local donations, Community Development Block Grant funding, or other sources leveraged by the CBO delivering WarmChoice.

### 3.2.4 Benefits of Tier 1 Programs for PAs

- ✓ Linking energy efficiency to a “do no harm” standard prevents unintended adverse health effects from efficiency measures and services.
- ✓ Formalizing the health and safety approach to energy efficiency program design underscores the message to customers and stakeholders that energy efficiency resources are an important component of healthy homes. Promoting the increased comfort and healthier living environments created by energy efficiency programs helps to motivate and engage customers.
- ✓ Adding energy efficiency resources to the toolkits of CBOs that are coordinating housing and/or weatherization services can increase energy savings and program impact.
- ✓ For residential retrofit programs that are subject to a cost-benefit test, promoting a non-energy impact adder that recognizes the health and safety benefits of energy efficiency can also support additional program spending on minor repairs that reduce deferral rates, increase customer participation, and help achieve low-income spending metrics.
- ✓ For residential retrofit programs that have a goal to be cost-effective but may not be subject to a cost-benefit test, health and safety investments can capture residential savings that would otherwise be unattainable. Columbia Gas of Pennsylvania contracted with the Applied Public Policy Research Institute for Study and Evaluation (APPRISE) to assess the extent to which health and safety issues prevent major efficiency measures from being installed, causing weatherization project deferrals, and whether the investments in repairs would be cost-effective.<sup>34</sup> Based on their analysis of job costs related to health and safety issues, and the resulting savings enabled by those investments, APPRISE concluded that, “when there are good opportunities for energy saving, a significant amount can be spent on health and safety remediation. Because the high savings can be achieved, the job will still be cost-effective. Given the increasing prevalence of health and safety barriers in low-income weatherization jobs, it is important for program managers to assess where such additional spending is warranted and make these investments when significant cost-effective savings can be realized.”<sup>35</sup>

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<sup>34</sup> “Health and Safety Investments to Increase Energy-Saving Opportunities.” By Jacqueline Berger, APPRISE and Deb Davis, Columbia Gas of Pennsylvania. Presented at the 2018 American Council for an Energy-Efficient Economy (ACEEE) Summer Study on Energy Efficiency in Buildings, August 15, 2018. <http://www.appraiseinc.org/wp-content/uploads/2018/08/13-409-Berger-seconddraft-PDF.pdf>

<sup>35</sup> Ibid, p. 11

### 3.2.5 Getting Started with a Tier 1 Program

<b>Marketing and Outreach</b>	<ul style="list-style-type: none"><li>• Ensure program marketing and outreach materials emphasize how the current program meets health and safety standards and delivers healthy homes benefits, such as thermal regulation, ventilation, and safety.</li><li>• Align outreach materials with messages about increased comfort and healthier living environments.</li></ul>
<b>Training</b>	<ul style="list-style-type: none"><li>• Dedicate funding to train program implementers and contractors on basic health and safety standards and deliver efficiency improvements that are broadly related to healthy home principles.</li><li>• Address topics such as smoke detectors and CO alarms, whole-house and spot ventilation standards, combustion safety checks, moisture and mold remediation, use of intumescent coatings on exposed spray polyurethane foams, and addressing knob-and-tube wiring, asbestos, lead, radon, and other hazards.</li></ul>

### 3.2.6 Tier 1 Tools & Resources

A variety of tools and resources, including training resources for contractors and customers and sample marketing materials, are available to support efficiency PAs interested in developing Tier 1 programs.

<b><u>Section 6</u></b>	<b>Energy-Plus-Health Program Case Studies:</b> For readers interested in learning from real-world experience implementing Energy-Plus-Health Programs, including information on program designs, key partners, and lessons learned. Provides detailed case study of the CGO WarmChoice program.
<b><u>Section 7</u></b>	<b>Energy-Plus-Health Program Resources and Sample Materials:</b> For readers seeking further resources, templates, and training and marketing materials to support development of Energy-Plus-Health programs.

## 3.3 Tier 2: Cross-Sector Referrals



### 3.3.1 Overview

Tier 2 programs build new or strengthen existing collaborations between efficiency PAs and CBOs to create strong referral systems. These referrals engage entities that seek to meet energy, health, or housing needs through delivery of education, home energy upgrades, housing repairs, or social services.

Tier 2 Required Elements	Tier 2 Optional Elements	Elements Not Usually Present in Tier 2 Programs
<ul style="list-style-type: none"> <li>• Do no harm health and safety checks during energy assessments and retrofits</li> <li>• Agreements between energy efficiency and community partners for systematized cross-sector referrals to local healthy home information and services</li> <li>• System to track referrals made among energy, health, and housing partners</li> <li>• Partners deliver their own program services for either energy efficiency or health, or PAs may contract with CBOs to deliver services</li> </ul>	<ul style="list-style-type: none"> <li>• Use of electronic tracking platforms such as <a href="#">One Touch</a></li> <li>• Coordinated marketing between CBOs and efficiency PAs to reach target customers and communities</li> <li>• Energy or healthy homes coaching to strengthen customer engagement</li> <li>• Health-related non-energy impact adders in cost-benefit tests</li> <li>• Testing and remediation of asbestos, mold and radon hazards</li> </ul>	<ul style="list-style-type: none"> <li>• Fully integrated healthy homes service delivery</li> <li>• Comprehensive in-home assessments conducted by BPI-certified Healthy Home Evaluators</li> <li>• Dedicated funding from Medicaid or other health funding sources to pay for in-home assessments for eligible patients</li> </ul>



### 3.3.2 Roles of Key Stakeholders



#### Energy Efficiency Program Administrator

- Delivers efficiency measures directly or through contracts
- Work meets “do no harm” and minimum code standards
- Best practice combines building shell, HVAC and electrical efficiency measures for whole-house approach



#### Home Visiting Programs: Energy, Health, Housing

- Assess household needs for health, housing repairs, well-being and energy efficiency needs
- Coordinate referrals to multiple entities that agree to participate in a formal referral network



#### Community-Based Organization(s)

- May deliver PA's efficiency services
- Finds value in integrating efficiency program offerings into other service offerings
- Well-positioned to leverage other funding for hazard remediation and/or home repairs



#### Home Energy Contractor

- Implements efficiency measures, may be delivered in combination with other home improvement offerings
- Have training and expertise to meet “do no harm” standards

### 3.3.3 Tier 2 Program Example

#### Vermont Healthy Homes Initiative

Efficiency Vermont's Healthy Homes Initiative is a partnership with the state's WAP partners and CBOs coordinated through the state Office of Economic Opportunity through the electronic platform for healthy home resources, One Touch. The program has combined Tier 2 and 3 strategies to survey 2,300 single-family homes and refer 20% of One Touch energy homes to health or housing partner services. At the Tier 2 level, Efficiency Vermont has developed an internal roadmap for integrating healthy home principles into their residential program design and fostered awareness of the connections between health, indoor environmental quality, and energy efficiency in Vermont. Program staff have also leveraged data to support One Touch, quantifying health-related non-energy benefits of weatherization retrofits for low-income customers and developing new procedures for measuring and reporting pre- and post-efficiency program indoor air quality measurements. Efficiency Vermont has expanded the One Touch program to new consumer markets, fostered new organizational partnerships, and identified health and indoor environment products that provide opportunities for home efficiency improvements.

The need for fall prevention support among Weatherization Assistance clients was identified through a Tier 2 referral partnership. It spurred greater collaboration between the Vermont Department of Health, a hospital, a local weatherization agency and the PA to design a Tier 3 pilot to integrate fall prevention measures at the time of energy upgrades. This was modeled after a CT study which documented that "significant reductions in falls and fall risks can be obtained by integrating home assessments conducted by an occupational therapist working with an energy auditor and home repairs overseen by energy weatherization programs... [A]dded injury prevention home assessment with modifications/repairs...in 35 homes were associated with significant reductions in falls from baseline to 6 months post-intervention from 94% to 9% and with calls for assistance from 23% to 3%."<sup>36</sup>

### 3.3.4 Benefits of Tier 2 Programs

- ✓ Referral networks can increase efficiency program participation in target markets, such as low-income and hard-to-reach customers, by leveraging existing referral-partner-customer relationships to provide warm leads to efficiency programs.
- ✓ Formal referral networks can build a broader web of stakeholders who understand and can promote the value-add that energy efficiency brings to the community.
- ✓ Partnerships with housing and health partners can help to address residential retrofit deferrals by leveraging partner-provided resources to address housing conditions that prevent program participation.

<sup>36</sup> "Incorporating Injury Prevention Into Energy Weatherization Programs." Ellen Tohn, MCP; [AQ] Jonathan Wilson, MPP; Tracy Van Oss, DHSc, MPH, OTR/L; Michael Gurecka. Journal of Public Health Management and Practice. Copyright © 2018 Wolters Kluwer Health, Inc. All rights reserved

- ✓ Engaging customers through initial home assessments tailored to their specific needs can increase the likelihood that they accept services from other providers participating in the formal referral network.
- ✓ Collectively, partners can reduce duplicative administration costs for customer recruitment and engagement, avoid duplicative application processes for customers, and streamline implementation through coordination of service delivery.
- ✓ Data collected can be used to generate valuable customer insights and demonstrate benefits to public health and other policymakers, spurring development of Tier 3 integrated services.
- ✓ CBOs can support higher customer engagement in energy efficiency programs and reduce participation barriers. Leveraging or working with CBOs and others that can support, fund, and/or complete home repairs to address the conditions that require deferred work will help expand the reach of energy efficiency programs.
- ✓ For residential retrofit programs that are subject to a cost-benefit test, promoting a non-energy impact adder that recognizes the health and safety benefits of energy efficiency can also support additional costs for minor repairs that reduce deferral rates, increase customer participation, and assist with meeting low-income spending metrics.

### 3.3.5 Getting Started with a Tier 2 Program

<b>Training</b>	<ul style="list-style-type: none"> <li>• Support costs of BPI Healthy Homes Evaluator training for energy contractors.</li> <li>• Consider supporting in-depth training in non-lead hazard remediation work, such as mold and asbestos, as a strategy that may build local workforce skills and capacity for reducing barriers to weatherization.</li> <li>• Consider offering trainings to customers and health/housing partners in how energy efficiency can improve indoor environments and reduce conditions that exacerbate respiratory illnesses to begin building a culture of healthy homes through energy efficiency.</li> </ul>
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<b>Referrals</b>	<ul style="list-style-type: none"> <li>• If not already in use, establish an automated system for delivering and managing referrals to ensure timely referral transmission and follow-up.</li> <li>• Talk to social service agencies, housing rehab programs, public health offices, and health care sector partners to broaden referral systems.</li> <li>• Analyze referral data for program impacts, community needs, and opportunities for Tier 3 collaborations that target people with overlapping energy and health risks such as poor respiratory health or injury hazards.</li> </ul>
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### 3.3.6 Tier 2 Tools & Resources

A variety of tools and resources, including training resources for contractors and customers and sample marketing materials, are available to support efficiency PAs interested in developing Tier 2 programs.

<a href="#"><u>Section 4</u></a>	<b>Designing a Successful Energy-Plus-Health Program:</b> For readers who are committed to developing a Tier 2 or 3 program and want in-depth program design guidance.
<a href="#"><u>Section 5</u></a>	<b>Navigating Health Care Industry Partners as You Build Collaboration:</b> For readers who want in-depth information on health care industry trends, key health care providers and funders, and the emerging delivery and payment models that are opening new opportunities for Energy-Plus-Health collaborations.
<a href="#"><u>Section 6</u></a>	<b>Energy-Plus-Health Program Case Studies:</b> For readers interested in learning from real-world experience implementing Energy-Plus- Health Programs, including information on program designs, key partners, and lessons learned. Provides detailed case studies of Tier 2 programs offered by the City of Fort Collins, Colorado, Connecticut Children’s Hospital, and Efficiency Vermont.
<a href="#"><u>Section 7</u></a>	<b>Energy-Plus-Health Program Resources and Sample Materials:</b> For readers seeking further resources, templates, and training and marketing materials to support development of Energy-Plus-Health programs.

## 3.4 Tier 3: Integrated Energy-Plus-Health Services



### 3.4.1 Overview

Tier 3 programs coordinate advanced healthy-home interventions with energy efficiency retrofits and intentionally target specific populations with health issues exacerbated by poor indoor environments. Such initiatives deploy trained health professionals alongside energy efficiency healthy home professionals to optimize services to residents while tracking health and energy-related program impacts.

The most comprehensive programs integrate delivery of the eight principles of healthy homes (dry, clean, safe, well ventilated, pest-free, contaminant-free, maintained, and thermally controlled) through:

- ✓ Auditors and contractors certified in BPI’s Healthy Home Evaluator credential for home performance professionals or the WAP’s health and safety guidelines, and
- ✓ Community health workers or other trained home health visitors who deliver patient education and who coordinate with and refer patients to energy efficiency programs.

Tier 3 Required Elements	Tier 3 Optional Elements
<ul style="list-style-type: none"><li>• Formal partnership between efficiency PA and health providers to integrate or braid service delivery</li><li>• Screening and targeting of patients with health conditions for which integrated efficiency and health retrofits offer a remediation strategy</li><li>• In-home visits by community health workers or other health professionals</li><li>• Comprehensive in-home assessments conducted by BPI-certified Healthy Home Evaluators</li><li>• Health impact data collection and tracking</li><li>• List of eligible repairs and services and consistent delivery protocols</li><li>• Protection of client health information</li></ul>	<ul style="list-style-type: none"><li>• Dedicated funding from Medicaid or other health to pay for in-home assessments for eligible patients</li><li>• Coordinated marketing between CBOs and efficiency PAs to reach target customers and communities</li><li>• Health-related non-energy impact adders in cost-benefit tests</li></ul>

### 3.4.2 Roles of Key Stakeholders



#### Energy Efficiency Program Administrator

- Delivers efficiency measures directly or through contracts
- Work meets “do no harm” and minimum code standards
- Best practice combines building shell, HVAC and electrical efficiency measures for whole-house approach
- Provides training and quality control for contractors that follow BPI, DOE-WAP, or EPA assessment and expanded action standards



#### Health Care Providers

- Creates systematic customer identification, health-related eligibility screening and direct referral to program
- Implements in-home health-specific services using community health workers or equivalent
- Provides quality assurance for health-related implementation services
- Tracks, evaluates and documents health-related outcomes
- Contributes to funding and supports exploration of other funding opportunities



#### Contractors – Healthy Home Assessors

- May deliver PA's efficiency services
- Conduct audits and assessments for energy efficiency and expanded action protocols
- Finds value in integrating efficiency program offerings into other service offerings
- May be well-positioned to leverage other funding for hazard remediation and/or home repairs
- May assess for hazards such as asbestos, mold, radon



#### Contractors – Healthy Home and Energy Upgrade Service Providers

- Implements efficiency measures, may be delivered in combination with other home improvement offerings
- Have training and expertise in BPI, DOE-WAP, or EPA protocols for home energy upgrades plus expanded options established by Tier 3 program design
- BPI Certified Healthy Homes Evaluators conduct audits

### 3.4.3 Tier 3 Program Example

#### Washington State Weatherization Plus Health

A statewide Weatherization Plus Health model supports low-income energy programs working with community health workers to deliver integrated services to clients with asthma that is not well controlled, resulting in urgent health care use. In Pierce County, the weatherization program, in collaboration with County Healthy Homes Partnership, delivered home repairs and 1-3 community health worker visits in 48 homes to 73 residents with respiratory health concerns. One year later, 66% of clients with asthma reported their asthma was better controlled, 80% reported an improved quality of life, and evaluators documented fewer asthma emergency department visits or hospitalizations. The program was funded by a state legislation appropriation which expanded the low-income residential weatherization program to include healthy homes improvements.

### 3.4.4 Benefits of Tier 3 Programs

- ✓ Tier 3 programs support goals to reduce state Medicaid expenses associated with housing-related health issues such as asthma, COPD, and home injuries. Energy-Plus-Health programs have documented reduced emergency department or urgent care use, which can lower state Medicaid spending. Training the existing energy efficiency workforce in home modifications and repairs that prevent falls and support faster hospital discharges or address respiratory risks like asthma and COPD can result in significant reductions in health care use, health cost and deaths. For injury prevention work, these savings are magnified when costs are avoided for recovery in rehab facilities.
- ✓ Collaborations that deliver both energy and health services support a client base that is most in need of services and often overlaps across sectors, increasing participation by low-and-moderate-income customers in both energy and health services.
- ✓ Braiding resources increases efficiency program impact and stretches available funding and may unlock new sources of program funding from the health sector.
- ✓ Integrated programs advance policy goals that recognize the value of non-energy health, safety, and comfort impacts. Energy-Plus-Health pilot projects can provide data to quantify the health benefits of efficiency for inclusion in the PA's cost-benefit test.
- ✓ Existing efficiency program data tracking and reporting tools often meet the rigorous customer information management and privacy standards required for health data.

### 3.4.5 Getting Started with a Tier 3 Program

<b>Data</b>	<ul style="list-style-type: none"><li>• Develop standardized protocols and document outcomes to build body of data demonstrating success.</li><li>• Use data to demonstrate to health care payers the impact of leveraging efficiency programs to address high risk patients, population health, and the SDOH.</li><li>• Use collected data to demonstrate the health benefits of efficiency programs for recognition in the jurisdiction’s cost-benefit test.</li></ul>
<b>Program Design</b>	<ul style="list-style-type: none"><li>• Bring health provider partner and payer to the design process to ensure targeting high risk clients from the health perspective.</li><li>• Ensure energy workforce has sufficient health training (e.g., Healthy Homes Evaluator) and protocols exist for health-related home repairs incorporated with efficiency work.</li><li>• Consider offering trainings to customers and community partners in how energy efficiency can improve indoor environments and reduce conditions that exacerbate respiratory illnesses, to begin building a culture of healthy homes through energy efficiency.</li><li>• Expand partner pool to continuously increase package of services for comprehensive environmental and household health treatments.</li><li>• Integrate emerging efficiency technologies into program design meeting new efficiency program goals.</li></ul>
<b>Communicate</b>	<ul style="list-style-type: none"><li>• Open conversations about sustainable reimbursement mechanisms from health payers (e.g. Medicaid and private insurers) to pay for integrated program delivery.</li><li>• Share program findings through formal and informal communication and publications to accelerate Energy-Plus-Health programming in other markets.</li></ul>

### 3.4.6 Tier 3 Tools & Resources

A variety of tools and resources, including training resources for contractors and customers and sample marketing materials, are available to support efficiency PAs interested in developing Tier 3 programs. The following resources may be particularly useful:

<b><u><a href="#">Section 4</a></u></b>	<b>Designing a Successful Energy-Plus-Health Program:</b> For readers who are committed to developing a Tier 2 or 3 program and want in-depth program design guidance.
<b><u><a href="#">Section 5</a></u></b>	<b>Navigating Health Care Industry Partners as You Build Collaboration:</b> For readers who want in-depth information on health care industry trends, key health care providers and funders, and the emerging delivery and payment models that are opening new opportunities for Energy-Plus-Health collaborations.



**Section 6**

**Energy-Plus-Health Program Case Studies:** For readers interested in learning from real-world experience implementing Energy-Plus- Health Programs, including information on program designs, key partners, and lessons learned. Provides detailed case studies of Tier 3 programs in Massachusetts, Vermont, New York, and Washington State.

**Section 7**

**Energy-Plus-Health Program Resources and Sample Materials:** For readers seeking further resources, templates, and training and outreach materials to support development of Energy-Plus-Health programs.

# Section 4: Designing a Successful Energy-Plus-Health Program



*For readers who are committed to developing a Tier 2 or 3 program and want in-depth program design guidance.*

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## 4.1 Introduction

This section provides in-depth program design guidance for PAs who are interested in developing a Tier 2 or 3 Energy-Plus-Health program. While [Section 3](#) provides a general framework for Tier 2 and 3 programs, each program will be highly customized depending on local goals, stakeholders and partners, available resources, and other factors. This section provides guiding questions and recommended program design steps to help PAs develop successful Energy-Plus-Health programs that are tailored to local conditions.

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## 4.2 Understand Efficiency Program Priorities and Readiness for Energy-Plus-Health Programs

The following questions can help PAs evaluate current efficiency program offerings and understand opportunities for deeper healthy homes services:

- ✓ What are the program's goals and strategies?
  - ✓ What are our current program and customer challenges and barriers?
  - ✓ What current program offerings connect to the eight principles of healthy homes? Do we currently deliver whole-house energy retrofits that address health and safety?
  - ✓ What new products or services can we offer that further the eight principles of healthy homes? How do they fit within the program strategy or address program barriers?
  - ✓ What services can be incorporated into existing programs?
  - ✓ What common healthy-home issues have program contractors and implementers identified? Have program implementers struggled to support customers in remediating those issues?
  - ✓ Do we have the capacity to lead or participate in a collaborative process to design and deploy an integrated Energy-Plus-Health program including new data collection and tracking systems?
  - ✓ Are our contractors and implementation vendors interested in expanding the services provided to include health-related repairs?
  - ✓ Do we have an existing contractor network that with relevant training or interest in added training, certification (BPI Healthy Homes Evaluator), and skill building to deliver expanded services?
  - ✓ Do we have buy-in from decision-makers and regulators to expand program offerings to include health? Can we make the case for an Energy-Plus-Health pilot to quantify non-energy impacts and other benefits?
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## 4.3 Conduct a Market Evaluation

If an efficiency program desires deeper engagement in a healthy homes program, meeting with the health care community to explore the following questions will offer market information and

context for program design. [Section 5: Navigating Health Care Industry Partners](#) provides further information on health industry players, trends, and funding opportunities.

The following questions can help PAs identify key health industry stakeholders, needs, and priorities:

- ✓ Which community-based organizations and governmental programs address one or more of the principles of healthy housing, provide related services, and / or serve customers our programs would like to target? These might be local aging-in-place service providers, housing rehab and repair agencies, in-home care providers, weatherization programs, community health teams, in-home asthma program providers, or neighborhood associations.
- ✓ Who are the local health care providers and how do they organize themselves as an industry?
- ✓ What are the local health care industry's pain points and challenges with regard to care coordination, access to community resources for patient support, and cost pressures?
- ✓ What goals have been established by industry regulators and providers to address these pain points?
- ✓ Which are the most expensive patient populations for the targeted health care providers?
- ✓ Are there population characteristics that lead to high hospital readmission rates or more emergency department (ED) visits? Common populations include those with one or more of the following criteria: low-income, elderly, children, asthma, COPD, cystic fibrosis, high probability for trips and falls or accessibility issues, heat and cold thermal stress. Often these populations can be identified through community health needs assessments, as explained in [Section 5](#).
- ✓ What additional patient populations are likely to significantly benefit from energy efficiency retrofits?
- ✓ What local, regional, or state organizations identify patient populations, and what health conditions are those groups highlighting now? Examples are asthma coalitions, public health departments, senior safety, and climate and health committees.
- ✓ What niche can our organization fill for the identified market and possible partners, and how could this market and partners help resolve our program challenges and customer problems?

Once the opportunity has been defined, the following are the additional steps to building a Tier 2 or 3 Energy-Plus-Health program. These are not comprehensive instructions, but rather complementary tasks for successful program development.

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## 4.4 Build Relationships and a Culture of Healthy Homes

Energy efficiency programs that build relationships within the health care system at multiple levels have the most long-term success and resiliency. The following tactics have proven successful in engaging the health community:

- ✓ Join health and housing industry conversations by meeting with health care partners, community-based organizations, and local and national councils to gain a deeper understanding of their worlds.
  - ✓ Attend health and housing industry-specific association meetings and conferences for quick immersion and partner identification.<sup>37</sup>
  - ✓ Locate any Health Impact Assessments performed by local or state public health offices to learn more about the health department's priorities.
  - ✓ Leverage existing account management relationships with hospitals to identify internal hospital champions.
  - ✓ Request introduction to the appropriate hospital departmental representatives for expanding the energy efficiency discussion to explain the social determinants of health, and how hospital patient homes could be part of the patient wellness issue.
  - ✓ These representatives are often found in coordinated care or community health departments and clinics, and/or are physician specialists treating patients with symptoms associated with healthy homes goals (pulmonologists, for example, and pediatricians).
  - ✓ Engage hospital human resources departments to provide employee-centered residential energy efficiency training and services. Such workshops raise staff awareness of the opportunities in their own homes, so that staff begin to think about opportunities in patient homes as well.
  - ✓ Build a culture of awareness about healthy and energy-efficient homes in the greater community by leveraging existing efficiency program marketing and outreach activities to provide information on healthy homes.
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## 4.5 Collaborate on Program Design

Next, PAs should work closely with health partners to determine which services the Energy-Plus-Health program will offer to target populations, and how the offerings will be delivered, tracked, evaluated, funded, and scaled. These decisions are best made with customer-centered design strategies and with full consideration of budgets, resources, timelines, and existing or new infrastructure.

### 4.5.1 Define Energy-Plus-Health

Given the variability in stakeholder needs, market conditions and available resources, and program goals, the program definition of Energy-Plus-Health will be market-specific. Providing a clear program-specific definition for a healthy home is important to ensure:

- ✓ Transparency in program marketing.
- ✓ Mutual understanding across all stakeholders and customers of what the program does and does not deliver when compared to the [eight principles of healthy homes](#).
- ✓ Risk mitigation.

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<sup>37</sup> The [American Council for an Energy-Efficient Economy](#) launched a new conference in 2018, Conference on Health, Environment, and Energy, bringing together energy efficiency and health care professionals.

## 4.5.2 Identify and Engage Target Populations

Based on the program’s definition of Energy-Plus-Health and stakeholder needs, a target population can be defined. Programs often target hard-to-reach customers meeting one or more of the following criteria:

- ✓ Demographic qualifiers (energy burden, household income, housing tenure, housing characteristics, Census tract or geographic location, age, etc.).
- ✓ Patients served by a health care provider network.
- ✓ Patients with one or more potentially costly housing-related health issues such as trips and falls, asthma, chronic obstructive pulmonary disease (COPD), or cystic fibrosis that can be lessened by improvements in indoor environmental quality with high potential for providing short- and long-term reductions in health care spending to demonstrate program value.
- ✓ Additional market-specific identifiers important to program collaborators (such as defined in a [Community Health Needs Assessment](#)).

Programs with health care provider-led patient engagement and direct referrals tend to have the highest rates of patient enrollment. Equally important is a process for non-health care program partners to provide customer referrals to the program.

## 4.5.3 Customer-Centered Program Design

Using customer-centered program design (also known as human-centered design) enables programs to:

- ✓ Place the customer in the center of the design process, and
- ✓ Improve the end-product or service by directly addressing the needs of the customer.

Multiple customers may be considered in Energy-Plus-Health program design including:

- ✓ The primary customer—the patient/energy rate payer, and
- ✓ Secondary customers—the utility/efficiency program funder, the health care payer and/or health practitioners, and/or additional program collaborators seeking to receive a benefit from the program in exchange for resources provided.

## 4.5.4 Program Delivery

Energy-Plus-Health programs can take a range of forms based on local goals and resources. Some programs may be led by the efficiency PA while others are coordinated by the health partner. Efficiency PAs, CBOs, and health care providers may each play the following roles:

- ✓ Deliver customer referrals, engagement, and enrollment.
- ✓ Provide funding for outreach, marketing, implementation, data collection, tracking, and reporting.

Roles will ultimately be market-specific and may vary based on partner capacity and skills.

## 4.5.5 Program Funding

Potential sources of seed and/or long-term funding for Energy-Plus-Health programs include:

- ✓ Efficiency program research and development (R&D) funds.
- ✓ Utility merger settlements or rate cases.
- ✓ Program partners.
- ✓ Philanthropists (utility and health).
- ✓ Government grants.
- ✓ State budget allocations.
- ✓ Industry sponsors.
- ✓ Customers.
- ✓ Health payers.

Energy-Plus-Health programs seeking long-term sustainable funding through health care operational funds, Community Benefits Funding, Pay for Success investment frameworks, Medicaid waivers, or other health care reimbursement models (as described in [Section 5](#)) will need to include health market-specific design considerations during program development, such as:

- ✓ Specific certifications for in-home assessors and contractors, such as the BPI Healthy Home Evaluator certification.
- ✓ Specific targeted populations or illnesses.
- ✓ Reporting requirements for health-based reimbursement.

[As discussed in Section 2.2.3](#), changes to cost-effectiveness tests can support a broadening of programs beyond incentives and rebates for health-related efficiency measures. PAs with program cost constraints can partner with local health departments, lead-hazard abatement programs, or community-based organizations with a healthy homes mission to lay the groundwork for long-term coordination of an Energy-Plus-Health program.

#### **4.5.6 Program Spending**

The following tips are recommended to maximize program impact while stretching available dollars:

- ✓ Ensure a wide range of energy efficiency, indoor environmental quality and basic housing rehab/repair measures are eligible to be covered by the available funding.
- ✓ Set maximum and average target spending levels per home.
- ✓ Provide a stepped program that delivers basic energy efficiency services and a light-touch healthy homes service to all eligible customers, followed by a deeper healthy homes touch for customers who have specific health conditions that will benefit from more expensive interventions.

#### **4.5.7 Program Integration and Scalability**

Consider the following during program design to enable long-term program participation and scalability:

- ✓ Potential for early wins to showcase program benefits.

- ✓ Integration of with existing healthy homes programs such as in-home asthma intervention programs.
- ✓ Integration of tracking and reporting metrics into the existing processes of health and efficiency implementation providers.
- ✓ Systematic implementation processes across all providers.
- ✓ Program consistency and applicability across PA and health provider service territories.

PAs with clear goals for long-term Energy-Plus-Health strategy results will easily identify additional design elements specific to their market during the discovery phase of program development.

#### 4.5.8 Health Considerations for Retrofit Materials

Evidence regarding the health concerns associated with some retrofit materials during production, installation and/or use is growing. Given that Energy-Plus-Health programs may target more chemically sensitive populations and populations that are more likely to become chemically sensitive once exposed to new materials, it is important to include considerations for material evaluation in program design. The following resources provide industry-wide guidance for identifying materials of concern and acceptable alternative products with lower risk factors:

- ✓ [A Guide to Healthier Upgrade Materials](#)<sup>38</sup>
- ✓ [Declare](#)
- ✓ [BuildingGreen](#)
- ✓ [HomeFree](#)
- ✓ [The Red List](#)

Additional tips for materials include:

- ✓ Provide clear language in program disclosures and through in-home education to inform customers of possible risks associated with materials of concern,
- ✓ Provide fresh material samples to customers prior to installation to identify any immediate reactions customers may have, and
- ✓ Follow all manufacturer and industry association best practices for materials storage and installation to reduce risk of chemical off-gassing due to improper installation techniques.

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## 4.6 Train Program Collaborators and Facilitate Ongoing Communication

Good program designs involve representatives from all partner sectors and customers. However, the program design phase rarely includes all individuals necessary for full program implementation because partner representatives may change. After finalizing program design, training the delivery team is critical for consistent and successful program delivery. Training may need to be repeated if staff change and new partner representatives join the collaborative later.

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<sup>38</sup> Energy Efficiency for All, Making Affordable Multifamily Housing More Energy Efficient: A Guide to Healthier Upgrade Materials, <http://www.energyefficiencyforall.org/resources/making-affordable-multifamily-housing-more-energy-efficient-guide-healthier-upgrade>



Training tips include:

- ✓ Cover the why and how of healthy homes through energy efficiency.
- ✓ Use explicit process flows to teach the why and how of the program.
- ✓ Offer interdisciplinary training with delivery team members, allowing for additional program refinements that emerge from the training process.
- ✓ Offer technical training for implementation staff, including worker safety, hazard identification and remediation, healthy home principles, and health-specific certifications such as asthma certified educator and motivational interviewing.
- ✓ Use experiential learning techniques in the classroom *and* field providing opportunities for role-play and hands-on demonstration.
- ✓ Record appropriate elements of the training and maintaining program updates in a central location to provide on-going training throughout the program implementation phase to accommodate new team members onboarding.
- ✓ Send program detail reminders throughout the program delivery phase as the span between customer enrollment and project completion can be long.

Regularly scheduled check-in meetings can support continued team engagement, program progression and integration of lessons learned during implementation. Meetings need not be long, in-person, or include the full team, but consistency and ensuring the most essential team members are present are important.

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## 4.7 Program Evaluation and Reporting

Tracking, reporting, and evaluation of program outcomes is dependent on stakeholder priorities and program goals. Common metrics include:

- ✓ Referral status and completion of services.
- ✓ Program measures, costs, timelines.
- ✓ Health outcomes using medically validated tools such as pre- and post-project health surveys and tests.
- ✓ Air quality and environmental quality testing pre- and post-intervention.
- ✓ Energy and carbon impacts.
- ✓ Customer satisfaction.

Reviewing project-specific and program outcomes achieved to date throughout program implementation can allow for mid-program modifications to improve overall program delivery and results.

To accelerate development of Energy-Plus-Health programs industry-wide, it is essential to report on program results and lessons learned to industry associations and stakeholders. Submittals of reports and issue papers to public health, medical, and energy industry journals can help further identify relevant metrics and methodologies, and funding sources for programs.

## 4.8 Energy-Plus-Health Program Challenges and Mitigation Strategies

Many lessons have already been learned about common challenges for Energy-Plus-Health programs. Table 2 summarizes possible program challenges and mitigation strategies.

Table 2 Mitigation strategies for common Energy-Plus-Health challenges.

Program Challenges	Mitigation Strategies
Delayed or insufficient customer enrollments	<ul style="list-style-type: none"> <li>• <a href="#">Customer-centric program design</a></li> <li>• Develop targeting strategy to identify patients/clients through health care partners, community organizations, energy programs, housing partners, and public health offices; tailor engagement strategies based on customer-type (renter vs homeowner, low-income vs moderate-income, etc.).</li> <li>• Engage health care partner through education and training in energy efficiency services and products (i.e., if they improve their own home they are more likely to experience the benefits of better indoor environments).</li> <li>• Provide partners (especially health care providers) specific answers to Frequently Asked Questions from customers receiving information about the program and during program participation; provide partners with resources for referring customers to PA for answers.</li> </ul>
Customers with housing-related health issues not meeting <i>all</i> eligibility requirements	<ul style="list-style-type: none"> <li>• Create a stepped program design providing basic Energy-Plus-Health offerings to all customers, with deeper options to eligible customers</li> <li>• Offer multiple program pathways to allow for variable income levels and health conditions (for example), without detracting from results of each program option.</li> </ul>
Customer health risks and co-morbidities <sup>39</sup> potentially influencing program outcomes	<ul style="list-style-type: none"> <li>• Design program with partners based on desired outcomes and establish requirements for existing health conditions that address co-morbidities.</li> <li>• When funding is limited, target eligible patients with specific illnesses for deeper program offerings.</li> <li>• Health partner screens for unacceptable health conditions that could (a) pose additional risks to patient health (such as overall health picture too poor to undergo home remediation) or (b) skew program results (such as smoking) when program evaluation methods do not adequately account for impacts of co-morbidities on program results.</li> </ul>
Customer readiness and follow-through impacts on program success	<ul style="list-style-type: none"> <li>• Qualified program partner delivers self-managed care and behavior counseling to prepare eligible customers for program participation.</li> <li>• Develop clearly written scopes of work including customer responsibilities, and review verbally with customer, who gives written consent.</li> <li>• Follow-up with customer at 3, 6, and 12 months post-intervention by health care provider (in clinic, home, or phone) and energy partner to ensure behavior persistence regarding health and home modifications, such as green cleaning, medication adherence, ventilation system use and maintenance and thermostat operation.</li> </ul>
Protecting customer privacy and HIPAA requirements	<ul style="list-style-type: none"> <li>• Obtain legal approval of customer consent forms and partner MOUs (see <a href="#">Legal Concerns Regarding Health Care Collaborations and Risk Mitigation</a>).</li> <li>• Create secure customer data portal with anonymized data sharing.</li> <li>• Create secure communication systems for partner tracking and reporting.</li> </ul>

<sup>39</sup>Co-morbidity is the simultaneous presence of two chronic diseases or conditions in a patient.

Program Challenges	Mitigation Strategies
<p>Managing the complexity of combining multiple resources that each have differing application requirements, potential overlaps in program scopes of work, and complex program timelines</p>	<ul style="list-style-type: none"> <li>• Identify opportunities to streamline systems to meet funding and program application requirements.</li> <li>• Integrate into customer consent forms approval language for sharing non-health information—such as approval for one program to disclose customer financial information to another program so the customer submits financial documentation just once.</li> <li>• Choose a designated, centralized resource coordinator to oversee approvals of and implementation of scopes of work. Coordinator functions.</li> <li>• Ensures all program participation consent forms and evaluation tools are completed and reported.</li> <li>• Manages scheduling of and hand-off between program partners for home repair services and client health support.</li> <li>• Coordinates any financial and payment administration tasks, as needed.</li> <li>• Is easily accessible for contact/inquiry from the customer and all implementation service providers.</li> <li>• Coordinator oversees onboarding of new collaboration partners and representatives that join after initial program launch, often due to team member turn over or program expansion. Provides orientation and re-trainings during multi-year implementation cycles to ensure all stakeholders understand individual roles and responsibilities and meet established accountability commitments.</li> </ul>
<p>Project prioritization on limited budgets</p>	<ul style="list-style-type: none"> <li>• Maintain clear boundaries for project scope of work and processes for prioritization of services within a residence, and projects across the program, with built-in flexibility for meeting complex housing issues.</li> <li>• Integrate ongoing evaluation systems for project costs and impacts into overall prioritization and selection process.</li> <li>• Adopt specific criteria and processes for integrating external resources into project delivery.</li> </ul>
<p>Inconsistencies in project implementation</p>	<ul style="list-style-type: none"> <li>• Establish clear guidelines for care standards that achieve systematic health care engagement and in-home visitation/follow-up processes, integrated into health care tracking and reporting systems.</li> <li>• Ensure qualified service implementation providers are (e.g. WAP partners or BPI Healthy Home Evaluators) available during program delivery period, trained on unique program processes.</li> <li>• Create and implement systematic assessment, measure prioritization, and measure implementation processes with quality assurance procedures.</li> </ul>
<p>Extended program timeline</p>	<ul style="list-style-type: none"> <li>• Discovery and customer-centered program design: anticipate 6-12+ months for these phases.</li> <li>• Program implementation: 18–24 months. Anticipate extended timeline (6+ months) from customer enrollment to project completion, longer (12 months) when braiding in external resources; add another 12 months post-project completion for full project outcome evaluation.</li> <li>• Program refinement and evolution should be ongoing throughout program delivery cycle, ideally documented with scheduled program evaluation intervals.</li> </ul>
<p>Long-term program funding / reimbursement</p>	<ul style="list-style-type: none"> <li>• Identify and engage funding prospects early to ensure program design aligns with funding requirements.</li> <li>• Braid multiple programs that have existing long-term funding mechanisms through formal agreements with dates as far into the future as possible.</li> <li>• Establish quality data tracking and reporting systems to validate and document program challenges, solutions, benefits and outcomes.</li> </ul>

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## 4.9 Legal Concerns Regarding Health Care Collaborations and Risk Mitigation

Cross-sector collaborations among regulated industries require stepping into unfamiliar territory and mitigating risk. When delivering residential programs, energy efficiency programs should limit risk exposure associated with entering and working in customers' homes. Broadening a program design to include health information is likely to raise red flags for legal counsel, risk management, and regulatory departments. PAs should become familiar with the internal and external legal and regulatory pathways for successful program design. Common issues include: customer consent, health information privacy, disclosure, data security, avoiding misrepresentation to customers and collaborators, doing no harm, and managing adverse or unexpected program impacts.

Existing programs in New York and Vermont have created replicable mechanisms to mitigate risk. Success factors include thoughtful consideration of program design, clear program guidelines and training for implementers, customer consent at a sixth-grade reading level (including language translation services), well-documented scopes of work and agreements, and ensuring that health care partners are the sole entity to collect and view health-related data.

Program administrators have well-established procedures and protections for providing in-home assessments, installing retrofit measures, and protecting customer utility data. Similarly, health care entities have strict compliance systems in place for HIPAA requirements that protect patient health data. Program partners should document mutually agreed-upon provisions in Memorandums of Agreement to mitigate risk.

Many energy efficiency programs already have customer data protection and communication systems that are sufficient for an Energy-Plus-Health program. Even so, the organization should review the maturity of these systems to determine if they can protect customer information and meet best-practice guidelines for secure data tracking, reporting, and communications.

Not all program partners and subcontractors will have the same level of security measures in place. This is another good reason for formal agreements between partners that include documentation of processes and training, to ensure mutual understanding and compliance with issues like security. Each organization launching an Energy-Plus-Health program should evaluate its security measures for compatibility with the program design. It is important that any security needed for the program remain effective in the long term, accommodating orientation, training, and staff turnover so that compliance is institutionalized. Most important, every program should assess its own specific risks and seek legal counsel to mitigate them.

# Section 5: Navigating Health Care Industry Partners as You Build Collaboration



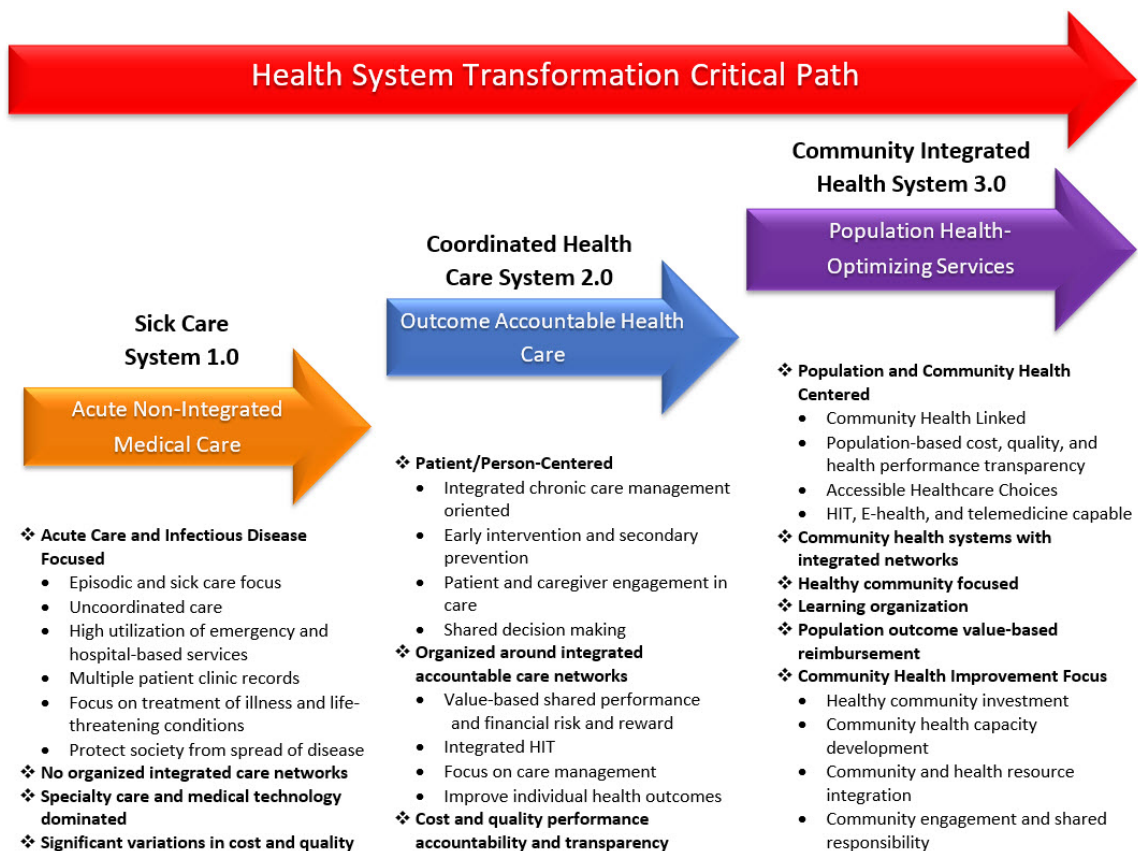
*For readers who want in-depth information on health care industry trends, key health care providers and funders, and the emerging delivery and payment models that are opening new opportunities for Energy-Plus-Health collaborations.*

## 5.1 Introduction

This section provides PAs with an understanding of the most relevant health care topics essential for Energy-Plus-Health collaborations.

## 5.2 Health Delivery System Market Shift

The health care industry is in a rapid state of change. In addition to redesigning payment structures and delivery systems, knowledge of diseases and treatments is also advancing, opening new doors of collaboration between energy efficiency, housing, and health care. Figure 5 illustrates a high-level overview of the health system transformation. Many health care systems are in the process of moving from System 1.0 to 2.0, with a goal of getting to 3.0 within 5 years. Innovative 2.0 systems are testing 3.0 models and are an excellent fit for Energy-Plus-Health partnerships.



Source: Adapted from CMMI

Figure 5: Health system transformation critical path.<sup>40</sup>

<sup>40</sup>Neal Halfon, Peter Long, Debbie I. Chang, James Hester, Moira Inkelas, and Anthony Rodgers, "Applying A 3.0 Transformation Framework To Guide Large-Scale Health System Reform, Health Affairs," November 2014. <https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2014.0485>.

Health care system transformation includes payment reform. Sick Care System 1.0 is covered by a fee-for-service reimbursement model involving health insurance payments for services rendered. The system rewards patient volume and quantity of services but does not address patient outcomes from those services.<sup>41</sup> Under the fee-for-service model, a sick person generates more revenue for the health care team than does a healthy person, but resources to administer treatments do not deliver positive outcomes in proportion to the dollars invested.

Coordinated Health Care System 2.0 and Community Integrated Health System 3.0 require a value-based payment model to reinforce the systems' design and to reward all parties for quality outcomes, which motivates preventive considerations like indoor environmental conditions.

The Brookings Institute published a "Beginners' Guide to New Health Care Payment Models,"<sup>42</sup> summarized here. Three commonly proposed value-based care models are:

- Accountable care organizations (ACOs).
- Bundled payments.
- Patient-centered medical homes.

### **5.2.1 Accountable Care Organizations**

ACOs are groups of providers—primary care, specialty care, hospitals, clinics, etc.—that together share responsibility for overall quality, cost, and care for a large patient population. The providers coordinate care to decrease overall costs and look for ways to reduce redundant services and overlapping care. The providers continue to bill or track these cases as if working with a fee-for-service model. This allows them to align total ACO costs with health quality benchmarks. If the total ACO costs are higher than the established target, the ACO can be penalized, and if the costs are lower with benchmarks met, the ACO might receive a share of the cost savings. This shared-target model encourages providers to work together to meet their patient population health and cost targets.

ACOs identify and coordinate care treatment of patients in high-cost risk categories, such as full onset chronic illness with rising risks and complex costs from active, catastrophic conditions. Patients in lower-risk categories are deemed to be healthy and perhaps only in the early stages of or in a stable chronic illness. Lower-risk patients can be treated through preventive health measures and health assessments. Healthy homes programs can serve patients in all risk categories; those in the higher-risk categories are likely to deliver the most cost-effective outcomes in the short-term.

### **5.2.2 Bundled Payments**

Under bundled payments, the provider estimates the total cost of all care services a patient will receive per episode in a given period for a specific problem (like joint replacement).<sup>43</sup> The provider receives the bundled fees for these services, minus 2-3%. If the provider can deliver all treatment for less cost than the bundled reduced fee, the provider can keep the difference. If the treatment requires more reimbursement than the bundled reduced fee, the provider must absorb

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<sup>41</sup>USC-Brookings Schaeffer Initiative for Health Policy, "The beginner's guide to new health care payment models," July 23, 2014. <https://www.brookings.edu/blog/usc-brookings-schaeffer-on-health-policy/2014/07/23/the-beginners-guide-to-new-health-care-payment-models/>

<sup>42</sup> Ibid.

<sup>43</sup> Ibid.

the difference. Bundled payments thus encourage care teams to work together to avoid redundancy or unnecessary complications through improvements in patient care coordination and management. Providers also gain flexibility to aggregate the costs and reimbursements across a patient population so that higher cost treatments can be balanced with reductions in care delivery for other patients.

### 5.2.3 Patient-Centered Medical Homes

Patient-centered medical homes overlay existing funding models with monthly payments for enhanced coordination among a team of physicians, nurses, nutritionists, social workers, psychologists, and relevant specialists. The team builds strong relationships with each other, the patients, and the patients' caregivers. The total savings from the coordinated care and subsequent improvements in health are expected to be lower than the established monthly payments received by the patient-centered medical home. This approach predicts that coordination and integrated treatment approaches will avoid duplication and unnecessary services. The presence of a more comprehensive support network also enhances the patient's likelihood of success.

The restructured payment and treatment models described in this section use upstream, evidence-based interventions that create opportunities to consider the social determinants of health to varying degrees. Value-based payment models greatly increase the potential for success because they fundamentally shift expenses for care from acute treatment to disease prevention, with the goal of reducing costs while improving outcomes.

### 5.2.4 Pay for Success

Pay for Success (PFS) is social services reimbursement model that is similar to health care-driven value-based payment structures. PFS uses private or foundation program related investments to provide up-front capital to fund social services with quality and effectiveness guarantees, as shown Figure 6, with repayment from government entities based on outcomes.

The Pay for Success model creates public-private partnerships with government, service providers and impact investors to address chronic social issues. In 2018, the Social Impact Partnerships to Pay for Results Act (the Results Act) was enacted as part of the Bipartisan Budget Bill. The Results Act appropriated \$100 million overseen by the US Treasury Department to launch Pay for Success initiatives over a 10-year period.<sup>44</sup>

The PFS model is also known as *social impact bonding*. PFS' primary value is that it shifts financial risk away from service providers and government payers, toward investors that receive payment from service providers (or government) based on the savings from more efficient service delivery. Several healthy homes collaborations are exploring this model as a sustainable reimbursement mechanism for in-home interventions and associated population health outcome metrics. The Green and Healthy Homes Initiative currently has fourteen PFS projects in development to address the social determinants of health through evidence-based interventions and offers a wealth of tools online.<sup>45</sup>

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<sup>44</sup> Green & Healthy Homes Initiative, Innovative Financing and Pay for Success, <https://www.greenandhealthyhomes.org/services/innovation/>

<sup>45</sup> Ibid





Figure 6: The pay-for-success model, with cycles for outcomes and role of investors.<sup>46</sup>

### 5.2.5 How New Health Care Funding Supports Innovation

National trends in health-care delivery systems and managed care payment approaches that change the Fee-for-Service model began before the Affordable Care Act (ACA), but the ACA furthered the momentum for state flexibility to experiment with emerging models. With legacy fee-for-service payment models, some states are experimenting with programs that link patients with services to improve home conditions, such as in-home asthma intervention programs, with reimbursement for those in-home services covered by the health care payer. Any variation of managed care that delivers in-home services opens opportunities to integrate healthy homes services that can improve health outcomes for chronic disease worsened by housing conditions.

The [Centers for Medicare and Medicaid Services \(CMS\) Innovation Center](#) allows states to create demonstration projects to support innovative health care payment and service delivery models. The type of demonstration project is determined by the state’s plan submitted to CMS. State health departments, Medicare and Medicaid officers, and CMS are resources for

<sup>46</sup> Nonprofit Finance Fund, What is Pay for Success? <https://www.payforsuccess.org/learn/basics/#what-is-pay-for-success>. Adapted for VEIC use in this Playbook.

identifying local pilot projects and opportunities for healthy-home energy efficiency programming. The [National Center for Healthy Housing](#) and [Green and Healthy Homes Initiative](#) also offer a plethora of healthy homes reimbursement tools and case studies on their websites. If a state does not include healthy homes approaches in its current demonstration plan, the groundwork can be laid to build support for inclusion of healthy homes programming in successive state CMS plans.

## 5.2.6 Identifying the Entry Point to Health Care

Energy-Plus-Health programs can explore a range of possible entry points to the health care industry. Working at more than one level of the health care system will reveal the optimum pathways to partnership and ensure long-term sustainable collaboration. Common points of engagement are:

- ✓ Health care providers,
- ✓ Hospitals,
- ✓ Federally qualified health centers and community health clinics,
- ✓ Nursing homes,
- ✓ Home health agencies and service providers,
- ✓ Progressive primary and specialty care physician practices,
- ✓ School nurse associations,
- ✓ Coordinated care organizations,
- ✓ Accountable care organization,
- ✓ Managed care organization,
- ✓ Medical homes,
- ✓ Health payer organizations including government and private payers that deliver health care coverage,
- ✓ Government: Medicare, Medicaid, Federal and Military, and/or
- ✓ State and local public health departments.

Due to system variability, infrastructure mapping is best done through a local health provider market analysis. Additional explanations for the roles the above health care actors fulfill is provided below.

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## 5.3 Health Care Sector Providers

### 5.3.1 Hospitals

Hospitals are likely partners for Energy-Plus-Health programs and the type of partnership the hospital can offer will be dependent on the business framework of the hospital. As explained in *Amplifying the Impact of Partnerships*, payer and provider organizations represent six profiles: “Innovators, Academics, Current-state Optimizers, Mission-driven Experimenters, Operational

Philanthropists, and Stepping Toward Value.”<sup>47</sup> The hospital profiles in this resource can help PAs assess which ones might be responsive to Energy-Plus-Health program value statements.

One approach for engaging hospitals is to educate their employees about implementing home performance projects in their own homes. Hospitals serve as major employers and healthy staff are critical to hospital operations. Offering employee trainings regarding basic energy efficiency principles and incentive programs can entice medical personnel to experience the benefits of weatherization and efficiency in their own homes as a way to understand benefits for patients.

Engaging hospitals at multiple levels increases potential for program success. Suggested entry points include:

- Human resource departments that might promote energy efficiency program offerings and/or trainings to the employees;
- Population health officers, community health workers, or equity officers that seek opportunities to integrate community resources into overall patient wellness strategies. These employees have an outward-facing role to build resources and are likely to demonstrate interest in funding healthy homes programming through partnerships to apply for grants or simply leverage funding; and
- Executive directors concerned with cost, particularly if for hospitals that have their own ACO or managed care plan. The population health, equity, and community health officers can help collaboratives build the case to request executive-level support for pilot or demonstration projects that document health outcomes from Energy-Plus-Health programs.

Common engagement points include boards of directors, c-suite executives and departmental managers, specialty physicians, and community health teams and care coordinators. It can be helpful to remind hospitals of their own industry’s indoor air quality standards for medical facilities to help highlight its importance.

### **5.3.2 Community Health Needs Assessments and Community Health Benefits Funds**

To qualify for tax exemption as charitable organizations, nonprofit hospitals must engage in activities that benefit their communities. These are known as *hospital community benefits*. Community benefit activities “help build the capacity of the community to address health needs and often address the ‘upstream’ factors and social determinants that impact health, such as education, air quality, and access to nutritious food.”<sup>48</sup> These activities must comply with Internal Revenue Service (IRS) regulations; paying for housing rehabilitation work for vulnerable populations is an example of an eligible community benefit.

The ACA introduced new requirements that introduced the need for tax-exempt hospitals to conduct a [community health needs assessment](#) (CHNA) at least once every three years, which

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<sup>47</sup> Garg, P., and Schrader, C., “Amplifying the Impact of Partnerships: A Simple Framework to Help Engage Payers and Providers.” Oliver Wyman, 2018.

<sup>48</sup> Community Benefit Insight, Community Benefit Spending 101, <http://www.communitybenefitinsight.org/?page=info.cb101>

offer broad public comment opportunities and lead to widely available results.<sup>49</sup> The hospital must then adopt an implementation plan, basing the strategies on the CHNA.<sup>50,51</sup>

Many CHNAs identify population health concerns related to asthma and COPD, but often overlook housing deficiencies as a platform for reducing chronic respiratory illnesses, due to limitations in the types of health and community data collected and analyzed. Public comment periods are opportunities for energy efficiency and weatherization programs to educate CHNA administrators about complementary data sets that highlight housing quality as a social determinant of respiratory health, safety, and fall prevention for households facing these risks. Inclusion of housing conditions in CHNAs can support requests for community benefit funds to improve housing.<sup>52</sup>

### 5.3.3 Community Health Teams

Patient-centered medical homes (PCMHs) and nonprofit hospitals commonly deploy community health teams (CHTs), to assess patients' needs, coordinate community-based support programs, and provide multidisciplinary care.<sup>53</sup> Some non-PCMH health-care provider systems are beginning to adapt tools like CHTs for improving care coordination. Depending on CHT directives and metrics, CHTs can be a strong partner for delivering healthy homes programming. Some CHTs already provide in-home services that complement energy efficiency services. These can enhance program design and impact.

### 5.3.4 Community Health Workers

Community health workers (CHWs) are public health workers with a deep connection to the community they serve. They work for government agencies, nonprofit organizations, faith-based groups and health care providers to reduce persistent disparities in health care and health outcomes across the community. The CHW care delivery model lends itself well to a partnership that relies on the CHW as the trusted messenger, who can engage households to achieve mutual goals shared by energy efficiency and healthy homes programs to sustain household behavior changes.

The Seattle-King County Healthy Homes Project relied on a CHW strategy to conduct environmental assessments that identified significant moisture problems in 77% of the homes participating in a study of 274 low-income children with asthma. However, the research team “did not usually accomplish some of these interventions (e.g., installation of ventilation fans, installation of vapor barriers and ventilation of moist crawl spaces), given the resource constraints of this project.”<sup>54</sup> This is a case where a collaborative effort with a weatherization or energy efficiency partnership could have brought building science expertise from the energy

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<sup>49</sup> Ibid

<sup>50</sup> Affordable Care Act, [Patient Protection and Affordable Care Act of 2010 \(ACA\)](#).

<sup>51</sup> In addition to having CHNAs, nonprofit hospitals are also required to have a financial assistance policy, limit hospital charges, and prohibit making collections before making reasonable efforts to determine whether an individual is eligible for assistance under the financial assistance policy.

<sup>52</sup> National Center for Healthy Housing, n.d. “Hospital Community Benefits: Opportunities for Healthy Homes.” [https://nchh.org/resource-library/HCF\\_APHA\\_techbrief2\\_community%20benefits\\_FINAL.pdf](https://nchh.org/resource-library/HCF_APHA_techbrief2_community%20benefits_FINAL.pdf)

<sup>53</sup> Ibid

<sup>54</sup> “The Seattle–King County Healthy Homes Project: Implementation of a Comprehensive Approach to Improving Indoor Environmental Quality for Low-Income Children with Asthma.” James Krieger, Tim K. Takaro, Carol Allen, Lin Song, Marcia Weaver, Sanders Chai, and Philip Dickey. *Environmental Health Perspectives* • VOLUME 110 | SUPPLEMENT 2 | April 2002. This project preceded the Washington State Weatherization Plus Health pilot effort described in the Case Studies, which achieved positive outcomes by leveraging more resources to implement all technologies and strategies needed.

efficiency sector to a health care challenge, using energy efficiency resources to improve outcomes.

In Vermont, CHW staff employed by participating hospitals provide the initial in-home visit for Energy-Plus-Health pilots, engage the patients, and screen them for eligibility while also delivering needed self-managed care coaching based on healthy homes principles. The CHWs also track and report all health care data for the Energy-Plus-Health pilot under data sharing agreements that comply with privacy requirements.

### **5.3.5 Additional Health Care Providers**

Many types of health care providers exist within any given community and can be included in a market map in the market assessment phase. Which providers are ideal to target will depend on the PA's goals and the variations of community-based health care models present locally. For example, Efficiency Vermont initiated pilots with hospitals, with customer referrals also coming from specialty care physician practices and school nurse associations.

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## **5.4 Coordinated Care Organizations**

### **5.4.1 Managed Care Organizations**

Some states contract managed care organizations (MCOs) to administer health benefits and services to Medicaid beneficiaries. State population health metrics drive these services with a goal to reduce health disparities within the state and avoid hospital readmissions. To achieve these goals, MCO contracts can incorporate in-home intervention programs and other components. MCOs can count certain quality improvement activities as a medical expense through certain cost-benefit analyses. This represents another opportunity for Energy-Plus-Health collaborations to introduce the program design and supporting data to the MCO and seek support for incorporating healthy homes interventions in treatment approaches for asthma.

### **5.4.2 Accountable Care Organizations and Medical Homes**

Accountable care organizations and medical homes are explained in [Section 5.2.1](#).

### **5.4.3 Health Funding Sources**

A range of public and private health payment sources may be positioned to support Energy-Plus-Health programming. As described below, a combination of these can help to support PA program efforts.

#### **5.4.3.1 Public: Medicaid and Children's Health Insurance Program**

Medicaid offers health care coverage to low-income children and adults, and the [Children's Health Insurance Program \(CHIP\)](#) provides health care coverage to the children of families that cannot afford private coverage and make too much to qualify for Medicaid. CHIP's public health initiatives allows states to use a portion of their administrative dollars for flexible activities, with no waiver required. "States have the option to draw down federal matching funds at the

enhanced CHIP rate for certain non-coverage expenditures so long as those expenditures do not exceed 10% of the total amount that a state spends on CHIP health benefits.”<sup>55</sup>

States and the federal government pay into the Medicaid and CHIP programs. While each state must meet minimum requirements of care as established by the federal government, each state has their own version of Medicaid and CHIP in their CMS-approved plans. Tracking Energy-Plus-Health program impacts on Medicaid and CHIP costs can provide compelling data to support long-term program funding.

Health Services Initiatives (HSI) are available to states with a Medicaid State Plan Amendment (see below) to improve the health of low-income children eligible for CHIP and/or Medicaid and may be used to serve children regardless of income. [Maryland](#) used the HSI to establish an in-home asthma prevention program serving households participating in lead paint abatement and healthy homes programming.

## Medicaid State Plan Amendments and Waivers

The Medicaid state plan is an agreement between a state and the federal government. It articulates ways in which the state will administer its Medicaid program. A state plan amendment (SPA) or a waiver can allow changes to Medicaid programs. Each has a unique purpose, requirements, and submission processes, and both can expand a state’s Medicaid program to include healthy homes services.

When a state wants to amend the plan, CMS must review and approve the SPA request from the state’s authorizing agency(ies). SPA changes must comply with all federal rules, but do not have to be budget neutral. A SPA, for example, can establish reimbursement schedules for community health workers for administering preventative services.

Waiver requests are another option to allow a state to test a new service or policy approach that does not comply with the existing Medicaid program requirements. Waivers address how services are delivered, such as who qualifies, who provides services, and how services are paid for.

There are four major types of waivers and demonstration projects. The one most relevant for advancing healthy homes programs is the Social Security Act’s [Section 1115 Research and Demonstration Project waiver](#). The Section 1115 waiver allows a state to receive permission to test, pilot, or demonstrate a new policy or new services by expanding eligibility to individuals not already covered by Medicaid or CHIP. It also allows a state to provide services not typically covered by Medicaid, or to test changes to the delivery of health care services. For example, for patients with lower respiratory disease, a waiver might allow a program to alleviate in-home triggers with energy efficiency services.

Like the SPAs, 1115 waiver projects do not have to be budget neutral (other types of waivers do have to be budget neutral). Waivers are approved for five years, with an optional extension of three more years, at the discretion of CMS.

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<sup>55</sup> Cindy Mann, Kinda Serafi, and Arielle Traub. “Leveraging CHIP to Protect Low-Income Children from Lead.” Prepared for Robert Wood Johnson Foundation and Woodrow Wilson School of Public & International Affairs, Princeton University. January 2017.

## **Medicaid Early and Periodic Screening, Diagnostic, and Treatment Benefit**

The Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) benefit ensures that Medicaid-enrollees under age 21 receive preventive, acute care, and diagnostic and treatment services as commonly addressed within the scope of a well-child visit. Federal regulations do not limit the health education provided under EPSDT to clinical settings and can support services (such as in-home health management training) deemed “medically necessary” for those under 21 years of age.

### **5.4.3.2 Public: Public Health Departments**

Health department services and jurisdictions vary by state. In general, health departments seek to advance community health through population health data tracking, planning and program development, promotion of local health coverage, setting and enforcing standards and providing non-clinical health services. The American Public Health Association (APHA) began a Health in All Policies framework in the past decade that many states adopted to undertake Health Impact Assessments that identify priority health conditions. Chronic respiratory illnesses consistently emerged as one of the highest needs. In states and localities where health departments have undertaken these Assessments, Tier 3 Energy-Plus-Health programs are finding value in partnering with public health departments on program design, outreach, evaluation, and funding.

### **5.4.3.3 Private Health Payers**

There are numerous private health payer organizations. Many private insurance companies have a philanthropic or community fund that provides grants and resources to support community-based outreach and implementation efforts that improve health outcomes. Examples include: Aetna Foundation, Blue Cross Blue Shield (Blue Fund and state specific), Cigna Foundation, Humana Foundation, Kaiser Permanente, MVP Health Care Corporate Giving, Tufts Health Plan Foundation, and UnitedHealth Care Community Plan. These funds may be a resource for Energy-Plus-Health program funding, resource leveraging and outreach.

### **5.4.3.4 Local Innovation Grants**

Program administrators can look for additional resources in their local community to support healthy homes collaborations. These opportunities will emerge as PAs join the local conversation and establish relationships. These might be local, regional, and national health care industry-specific associations; organizations; and councils that can provide valuable insights into the local health care landscape. Connecting with a state’s department of health can be a good first step in entering these high-value networks.

# Section 6: Energy-Plus-Health Program Case Studies



*For readers interested in learning from real-world experience implementing Energy-Plus-Health programs, including information on program designs, key partners, and lessons learned.*



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## 6.1 Introduction

Case studies include the following programs:

Tier 1:

- [Columbia Gas of Ohio WarmChoice®](#)

Tier 2:

- [Connecticut Children’s Hospital Healthy Homes Program](#)
- [Fort Collins Utility and City of Fort Collins](#)
- [Efficiency Vermont—One Touch](#)

Tier 3:

- [Washington State Weatherization plus Health](#)
  - [North Berkshire Healthy Homes Initiative](#)
  - [Efficiency Vermont Healthy Homes Initiative](#)
  - [New York State Healthy Homes Value-Based Payment Pilot](#)
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## 6.2 Tier 1: Columbia Gas of Ohio, WarmChoice®

### 6.2.1 Background and Key Partners

Columbia Gas of Ohio (CGOH) designed the WarmChoice® program over 30 years ago to help low-income homeowners offset rising energy prices. The program goal was to reduce arrearages because the Home Energy Assistance Program (HEAP) payments were insufficient to prevent increasing arrearage amounts from causing high disconnect rates. CGOH implements WarmChoice through contracts with four community-based organizations that serve a combined total of 64 out of Ohio’s 88 counties, which include:

- [Mid-Ohio Regional Planning Commission](#)
- [NeighborWorks® Toledo Region](#)
- [Corporation for Ohio Appalachian Development](#)
- [Ground Level Solutions](#)

These organizations leverage multiple resources to address comprehensive energy retrofits and CGOH was one of the first utilities to partner with existing low-income weatherization networks for delivery of services.<sup>56</sup>

From the beginning, WarmChoice contained a health and safety component so that each assisted home is checked for mold, mildew, gas leaks and appliance safety, carbon, and any material condition that weatherization would aggravate to result in an unhealthy home environment. The program covers the costs of: “diagnostic energy inspection, gas appliance safety checks, furnace and water heater repairs or replacement, and whole home energy

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<sup>56</sup> “Building Better Energy Efficiency Programs for Low-Income Households.” Rachel Cluett, Jennifer Amann, and Sodavy Ou. March 2016. American Council for an Energy Efficient Economy, Report Number A1601. p.16

conservation measures (attic, wall, floor, duct and water heater insulation, duct and air leakage sealing). Also, a \$750 incentive is available for furnace replacements by multifamily property owners. WarmChoice can reduce customer bills by an average of 30%, and all customers are left with safe gas heating equipment and a more comfortable home.”<sup>57</sup>

## 6.2.2 Program Design

The WarmChoice weatherization project deferral rate is very small, in the 1-2% range. This may be attributed to the more recent decision by CGOH to add funding to support identification and a certain degree of remediation of asbestos and radon hazards, and to cover health and safety repairs like roofing, up to ten thousand dollars if the thermal savings opportunity is very high. This is handled on a case by case basis and uses rate-based funding from two prior customer rate filings associated with early program launch decades ago, and more recent energy efficiency portfolio programs.

CGOH’s community-based program implementers have a network of private and nonprofit contractors that conduct audits and assessments, hazard remediation, and weatherization work. WarmChoice implementers will only undertake projects where the work can be done in a lead-safe manner and have strong referral networks to lead-hazard abatement programs. Program implementers are also well-positioned to package multiple funding sources to improve all substandard housing conditions possible when delivering WarmChoice services.

WarmChoice implementers have a strong referral network with Ohio Healthy Homes and the Breathing Association. The Breathing Association became particularly engaged in energy efficiency issues when customers were coming to them for help with chronic respiratory illnesses that required oxygen machines. The Association secured the ability to administer the Low-Income Home Energy Assistance Program and then began referring customers to WarmChoice program implementers. In recognition of opportunities to strengthen its partnership healthy homes programs, CGOH offers philanthropic support as well.

## 6.2.3 Lessons Learned

CGOH’s WarmChoice Team Leader Adrian Andrews indicates that there are some important considerations when attempting to braid energy efficiency and healthy homes goals:

1. Focus on whole-house retrofits, not just gas efficiency and try to align program requirements to make delivery easy for program implementers.
2. Housing conditions must be addressed first if program wants to reach its savings goals.
3. While not quantified or substantiated with data, CGOH sees non-energy benefits that include housing stability, comfort and health.
4. Partnering with community organizations creates robust referral networks and can happen on many levels—CGOH is also working with the Meals-on-Wheels organization that has a visiting nurse who can deliver efficiency materials while in customers’ homes.

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<sup>57</sup> American Gas Association, WarmChoice Weatherization and Home Performance Solutions Programs, [https://www.aga.org/sites/default/files/warm\\_choice\\_weatherization\\_and\\_home\\_performance\\_solutions\\_programs\\_-\\_columbia\\_gas\\_of\\_ohio\\_-\\_final.pdf](https://www.aga.org/sites/default/files/warm_choice_weatherization_and_home_performance_solutions_programs_-_columbia_gas_of_ohio_-_final.pdf)

In the end, Andrews reports that, “the ability to do this work comes back to the utility and what the leadership views as its mission, which allows us to do a lot. We have a strong leadership that believes in giving back and building the community.”

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## **6.3 Tier 2: Connecticut Children’s Healthy Homes Program**

### **6.3.1 Background and Key Partners**

Eversource CT, United Illuminating, Connecticut Natural Gas, and EnergizeCT serve as energy efficiency PAs administering the Home Energy Solutions (HES) and, for income qualified customers, the Home Energy Solutions-Income Eligible (HES-IE) programs, which deliver standardized home performance services statewide. HES and HES-IE provide a home energy performance evaluation that includes the direct installation of energy saving items such as LED light bulbs and hot water saving measures as well as caulking to keep homes more comfortable and reduce drafts. The assessment also identifies additional energy-saving measures for deeper savings. Financing is available at 0% interest for up to 36 months and rebates to help offset the cost for these measures are also available. HES-IE customers may qualify for incentives that cover the cost of installation for these add-on measures up to their full cost of installation. The HES-IE program also cost shares with community action agency programs that administer weatherization assistance projects.

In 2017, HES and HES-IE program data showed that about 20% of properties receiving energy assessments failed to meet health and safety standards for energy efficiency interventions and were being deferred due to the presence of asbestos hazards, vermiculite, moisture issues, or carbon monoxide leaks.<sup>58</sup> The majority of deferrals fell in the HES-Income Eligible (HES-IE) market segment. The program administrators were interested in identifying resources to remove the barriers causing deferrals.

### **6.3.2 Program Design**

The NSTAR and Eversource merger in 2015 made funds available to the Department of Energy and Environmental Protection (DEEP). DEEP authorized Eversource Connecticut and United Illuminating to target \$1.5 million to address the HES-IE deferrals. The two utility partners jointly implemented the Clean Energy Healthy Homes Initiative to remediate specific hazards causing weatherization deferrals in low-income homes. The joint program was designed to be seamless for both customer bases, with Eversource taking the lead to deliver identical services to both utilities’ customers.

Eversource recognized that vendors needed training to identify the specific hazard that prevented a blower door test, such as asbestos, mold, and/or vermiculite. The utility trained vendors to identify at least one hazard, then document and report the specific barrier or they would not get paid for the home visit. Once hazards were identified, Eversource needed a contractor pool to perform a scope of services that included hazard testing, scope of work development, and remediation work. It was soon clear that the marketplace lacked contractors

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<sup>58</sup> Connecticut Green & Healthy Homes Pre-Feasibility Analysis Report. Prepared by the Green & Healthy Homes Initiative for Connecticut Green & Healthy Homes Partners. June, 2018. p. 9.

with the skills to deliver a comprehensive package of services. Instead, contractors recommended breaking the environmental testing and clearance component apart from the remediation, repair, and disposal work. Eversource received and accepted four bids submitted from the three environmental hazard firms and a single remediation contractor.

This initiative allowed Eversource to build relationships with environmental services firms and a contractor network that performs remediation work. The Hartford region now has a robust group of trained weatherization contractors to identify and document all barriers to implementation. After the weatherization vendor identifies the barriers and the utility obtains a signed participation form from the customer, an environmental technician tests for and confirms conditions that require remediation and develops the scope of work. If the scope of work is approved by the utility, the remediation contractor then proposes and completes a scope of work, notifies the environmental technician upon job completion, and the environmental technician re-tests. A clearance certification allows for final payment from Eversource and UI to the remediation contractor. This report also goes to the weatherization vendor so that implementation of energy efficiency measures can proceed.

The Eversource and United Illuminating Healthy Homes pilot inspired Connecticut Children's Medical Center's Healthy Homes Program's director, Marcus Minor-Smith, to formalize a referral partnership that would "integrate health and safety interventions, lead hazard control, energy efficiency interventions, and housing rehabilitation for property owners by coordinating resources in an efficient manner to produce healthy homes."<sup>59</sup> The Connecticut Children's Healthy Homes Program grew out of a 2015–2017 effort by the Hartford-based Local Initiatives Support Corporation (LISC) to convene cross-sector partners in affordable housing and residential energy efficiency to discuss stronger coordination and referrals. These meetings established relationships and mutual goals between affordable housing organizations, energy efficiency program administrators from Connecticut utilities, and the Connecticut Children's Medical Center's lead-hazard abatement and healthy housing program. LISC recognized the synergies between affordable housing, energy efficiency, and lead-hazard abatement programs and leveraged these cross-sector relationships to build collaboration.

Several years prior to formalizing referral partnership into the Building for Health initiative, Connecticut Children's Healthy Homes Program was exploring opportunities for cross-sector partnerships with Eversource and UI with mixed results. Smith had worked in affordable housing development and finance and brought the energy efficiency lessons he learned to Connecticut Children's. There, he found it natural to discuss with medical personnel the evidence that shows how energy efficiency magnifies and intensifies health outcomes by improving air quality and decreasing asthma outbreaks. Through conversations with his colleagues, Smith explained the value for Connecticut Children's clients in forming collaborative partnerships with affordable housing providers and utilities.

Now that the Eversource and UI funding for remediation activities has been expended, Smith is finding that fewer resources mean fewer opportunities to leverage weatherization funding for lead-hazard abatement and healthy housing customers. As a new strategy, Connecticut

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<sup>59</sup> Connecticut Children's Hospital, Healthy Homes Program, <https://www.connecticutchildrens.org/community-child-health/community-child-health-programs/healthy-homes-program/>

Children's and Eversource are creating a stronger referral mechanism so that renters especially, who receive lead-hazard abatement and healthy housing work through Connecticut Children's, will automatically receive a healthy homes assessment and be referred to the utilities for any energy efficiency upgrades (and commensurate utility bill cost reduction) available. To formalize referrals, Smith is working with Tohn Environmental Strategies to implement One Touch, an electronic mechanism that logs referrals to multiple services for each household, with automatic notifications that the agency receiving the referral followed up.

### 6.3.3 Lessons Learned

With grant funds expended, Eversource and UI are no longer accepting new remediation projects and are analyzing program data before seeking new funding sources. Initial data and learnings from the Eversource and UI Healthy Homes pilot include:

1. Energy efficiency savings are unlikely to justify spending much on remediation due to cost-effectiveness constraints. Eversource indicated that there are changes pending to Connecticut's cost-effectiveness test which will consider non-energy health benefits, and this may re-open the opportunity to invest in remediation work.
2. Cost of remediation averaged around \$20,000, but some projects with multiple barriers including mold are as high as \$58,000 dollars. Initially, the program had a \$10,000 cap per home but the utilities learned that mold remediation can be very costly to properly fix and prevent water from re-entering again.
3. Knob and tube wiring is also expensive to replace. The program is looking into the savings opportunities from weatherization to determine if the cost-benefit test can work to pay for deactivating or removing the knob and tube and bringing homes up to code.
4. For 50 homes completed, the program found that most of the health and safety barriers were asbestos (34%), mold (26%); and vermiculite (20%) with the remainder including two or more of these hazards as well as a small number of homes with pests.
5. Contractor training is central to the program's success. Contractors need liability protection from making a bad situation worse and are not necessarily familiar with or trained to recognize and handle hazardous materials.
6. Eversource and UI are developing their own protocols for contractors by developing guidelines on how to weatherize buildings after a hazard is remediated. For example, blower door tests must avoid traces of remnant contaminants from being released after remediation.
7. Eversource will document what weatherization work was done for the 50 homes remediated by the Clean Energy Healthy Homes Initiative and calculate the savings and cost per MMBtu.

Early learning from the Building for Health cross-referral collaboration with Connecticut Children's Hospital includes:

1. Lead and healthy homes clients have energy needs, which confirms the value proposition of the referral system.
2. Streamlining income qualification requirements for referrals to energy programs for clients in designated neighborhoods coming from other low-income programs can help reduce intake challenges.
3. Training may be needed to ensure that energy programs understand the range of health referrals and how to identify home conditions triggering a referral. Field based cross training may be useful.

4. Project coordination could be helpful in ensuring a comprehensive alignment of work across multiple programs, and to allow for a smooth transition of a project from one program to the next.
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## 6.4 Tier 2: City of Fort Collins and Fort Collins Utility, Colorado

### 6.4.1 Background and Key Partners

In June 2011, the City of Fort Collins' Sustainability Services Area founded a Healthy Homes program with a mission to create a healthier community and safe home environments. Selina Lujan, the Program Coordinator for the City of Fort Collins' Healthy Homes program notes that 10 years earlier the City initiated conversations about the impacts of indoor air quality with the American Lung Association (ALA) and attended Healthy Homes trainings facilitated by the ALA. The City distributes an air quality survey to the community approximately every five years. It asks about respiratory ailments, and the results have consistently revealed that one in four households reports that a family member has a respiratory illness, and that the illness is an issue for them.

Over time, the City has modified the ALA training framework to meet local needs. It has also created a program model using the NHCC and federal government guidelines to train community volunteers to become Master Home Educators. People with this designation are specialists in each of the eight principles of a healthy home. Upon request, the volunteer Master Home Educators conduct healthy homes assessments and discuss with the community low-cost or no-cost steps their members can take to improve indoor air quality.

### 6.4.1 Program Design

Healthy Homes assessors use a 2-hour Master Home Educator Checklist to examine conditions and ask questions. They then give the resident recommendations, a radon test kit, a natural all-purpose cleaner, and if needed, a carbon monoxide detector or fire alarm. The assessment's goal is to reduce exposure to home pollutants that might be causing a negative respiratory reaction. Those pollutants might be cleaning chemicals, biological pollutants, particulate matter—and to prevent home safety hazards by identifying needs for fire escape plans, fire alarms, and carbon monoxide detectors. The Master Home Educators also use an infrared camera during the walk-through to identify major air sealing and insulation gaps and moisture problems. To mitigate the program's liability, the household is required to sign a disclosure form.

Program staff will follow up on recommendations, remind residents to put the completed radon kit in the mail, and ask if they need additional resources. One of the benefits of the assessment is a coupon for a reduced energy audit fee. The program documents an educator's findings related to energy, combustion safety, or ventilation concerns and deficiencies. The educator might advise that a more comprehensive assessment from a professional energy auditor could make a significant difference. The resident also receives a referral to the Efficiency Works™ Home (EWH) program.

Following the Healthy Homes assessment, the resident can call the Fort Collins Utilities' (FCU) EWH program and enroll. EWH is a regional residential efficiency program administered by Platte River Power Authority on behalf of the four equity partner cities. The program has a customer enrollment service that documents the referral source as the Healthy Homes program. Kim DeVoe at FCU explained that EWH was a 2014 regional outgrowth of Fort Collins Utilities Home Efficiency Program (HEP), which began in 2009. DeVoe attended the City's nascent Healthy Homes training and conversations with the American Lung Association, because he was working on indoor air quality issues to be addressed by the City's Green Building Code amendments. He was also creating the building science-based installation standards for the HEP. Since 2011, DeVoe has been a subject matter expert, training others on moisture and ventilation identification and mitigation for the Fort Collins Healthy Homes program.

The Healthy Homes program has assessed more than 900 homes since 2011. In 2018, it was one of four recipients of the U.S. Secretary of Housing and Urban Development's Award for Healthy Homes.

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## **6.5 Tiers 2 and 3: Efficiency Vermont Healthy Homes Initiative**

### **6.5.1 Background and Key Partners**

Efficiency Vermont was created by VEIC as the nation's first statewide energy efficiency utility. Its purpose is to transform the way Vermonters use energy—for better living. This original objective continues to benefit all Vermonters, support the State's energy goals, and expand the local economy while protecting the environment. Through collaborations with state agencies, contractors, product distributors and suppliers, nonprofit organizations, and consumers, Efficiency Vermont offers electrical and thermal energy efficiency programs and services that include training, technical assistance, and financial support. The revenue to support these activities comes from a system benefit charge on electric utility bills and revenue from the auction and sale of energy efficiency savings on the ISO New England Forward Capacity Market and Regional Greenhouse Gas Initiative market.

Efficiency Vermont participates in a Tier 2 healthy homes approach by contracting with the state's five regional federal and state weatherization assistance program (WAP) partners to install electrical efficiency measures at the time of weatherization. This partnership also delivers energy coaching that includes health and safety information and coordinated referrals for housing rehab, health, social service, and energy efficiency needs. In 2015, the state Office of Economic Opportunity (OEO), which oversees the federal and state weatherization assistance program, agreed to coordinate a formal and centralized referral process among the WAP partners, Efficiency Vermont, and community-based organizations through One Touch—the electronic platform that connects families to resources for lead-based paint hazard remediation, asthma, smoking cessation, early child development, and more. Over 2,300 single-family homes have participated in the One Touch survey program and 20% of One Touch energy home visits resulted in a referral to a health or housing partner offering services.

In 2016, NeighborWorks of Western Vermont (NWWVT), a local homeownership and housing rehab center participating in Efficiency Vermont's Home Performance with ENERGY STAR® program, began another Tier 3 program by leveraging Efficiency Vermont's energy efficiency program incentives, Rutland Regional Medical Center's in-home asthma program supported by the Department of Health and a grant from RRMC's community benefits fund to deliver integrated home energy and rehab program services for 55 patients identified by the hospital with asthma, COPD or home mobility concerns. This project design formed the basis for Efficiency Vermont's Tier 3 healthy homes pilot project launched in 2018.

In early 2017, Efficiency Vermont undertook a Healthy Homes Opportunity Assessment to engage Vermont's health care community beyond facility-related energy efficiency. The Assessment explored collaboration opportunities to resolve some of Vermont's residential energy efficiency challenges related to indoor environmental air quality. The Opportunity Assessment identified market barriers and areas where Efficiency Vermont could fill a need in meeting potential partner goals while advancing Efficiency Vermont's mission and meeting key program performance indicators.

As a result of the Opportunity Assessment, Efficiency Vermont leveraged its partnerships with the Weatherization Assistance Program, Department of Health, other community organizations, and hospitals to establish a healthy homes program budget and secured funding from each partner.

The outcomes of Efficiency Vermont's Tier 2 and 3 program strategies include:

- ✓ An internal roadmap for integrating healthy home principles and resources into all of Efficiency Vermont's residential program designs and services, and document the specific process for each program/housing type to enable market-wide consistency and transparency (Tier 2 and 3)
- ✓ An emerging culture of healthy homes in Vermont raising awareness with consumers, health care providers and contractors on the connections between indoor environmental quality, energy efficiency and health (Tier 2 and 3)
- ✓ Expansion of the initial pilot to standardize the collaboration among health care providers, weatherization programs, and Efficiency Vermont using a [Weatherization Plus Health](#) approach targeting customers with chronic respiratory illness or fall hazards to improve housing quality, indoor air quality, and health outcomes, with formal tracking mechanisms (Tier 3)
- ✓ Leveraging of existing industry research to quantify the health-related non-energy benefits of low-income weatherization retrofits (Tier 2)
- ✓ Expansion of One Touch to new partner organizations and consumer markets (Tier 2)
- ✓ Identification of health- and indoor environmental quality-specific products with opportunities for energy efficiency improvements such as oxygen concentrators, whole-house balanced ventilation and advanced kitchen ventilation (Tier 2 and 3)
- ✓ Evaluation of existing program data for indoor environmental quality metrics and the creation new tracking procedures for measuring and reporting pre and post energy efficiency intervention indoor air quality measurements. (Tier 2 and 3).



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## 6.6 Tier 3: Washington State Weatherization Plus Health

### 6.6.1 Background and Key Partners

In 2015, the state legislature expanded the rules for the low-income residential weatherization program to include healthy homes improvements and appropriated \$4.3 million to this Weatherization Plus Health (Wx+H). This program builds upon decades of work conducted by the Opportunities Council and the King County Housing Authority to deliver healthy homes programs with energy upgrades. Administered by the Department of Commerce, Wx+H offers supplemental funding to organizations providing low-income weatherization services to offer health-related repairs through a basic program delivering a minimum set of repairs and an enhanced program targeted to individuals with respiratory concerns, such as asthma.

In the enhanced program, administered through a competitive grant program, weatherization agencies were encouraged to collaborate with health partners for client referrals, incorporate home based health supports through community health workers, and offer more extensive repairs (flooring, plumbing, roof repair, or replacement, gutters/downspouts, comprehensive cleaning, fall prevention, dehumidifiers, crawlspace sealing). Eight agencies offered the enhanced Wx+H program. Three of the eight partnered with public health agencies or clinics to deliver community health worker (CHW) visits and the remaining grantees worked with community health partners on consultation and referrals. Roughly 1 in 4 (23%) completed projects resulted from community partner referrals; the remaining referrals came from weatherization agency/organization clients.

### 6.6.2 Program Delivery and Results

Wx+H funded services were provided to 254 households. In addition to weatherization measures, 65% received dust mite covers, walk-off mats, HEPA vacuums, and smoke detectors. Of the higher-cost measures, the most commonly installed measure was carpet removal and replacement with low-VOC flooring. Other higher-cost measures such as advanced ventilation, plumbing repairs, roof replacement, pest mitigation, and mold and moisture abatement were installed in approximately 15% of comprehensive projects. The median total cost for a comprehensive Wx+H project was \$14,244, the median unit cost for the *plus health* measures was \$3,075.<sup>60</sup>

Utility funds support roughly 35% of core energy upgrade work and eligible health and safety repairs. The pilot documented significant need and demand for Wx+H services among existing weatherization clients. Evaluators estimate that between at least 20% and in some communities as high as 40% of Washington weatherization clients are medically vulnerable, and low-income residents in Washington state are twice as likely to have asthma when compared to residents with incomes greater than \$75,000.<sup>61</sup>

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<sup>60</sup> Washington State University, 2018. The Washington State Weatherization Plus Health Pilot: Implementation and Lessons Learned

<sup>61</sup> Washington Department of Health, 2013. *Asthma and Socioeconomic Status in Washington*.

<https://www.doh.wa.gov/Portals/1/Documents/Pubs/345-333-AsthmaAndSocioeconomicStatusInWashingtonState.pdf>

Health outcome data are available from one enhanced program delivered by the Pierce County weatherization program, which collaborated with the Pierce County Healthy Homes Partnership to deliver energy upgrades, healthy homes repairs, and community health worker visits (1–3) in 48 homes to 73 residents with respiratory health concerns (71% with asthma and 29% with COPD). One year after receiving services, 65% of clients reported fewer respiratory symptoms (47% report *significant* improvements in asthma symptoms), 70% reported an improved quality of life, and evaluators documented asthma related emergency department visits and hospitalizations.<sup>62</sup>

The program implementation report concluded that:

- Many existing low-income weatherization clients are medically vulnerable
- Investments in Wx+H measures result in significant and positive health outcomes
- Considerable non-energy benefits are likely to meet or exceed measure costs.<sup>63</sup>

The Wx+H program expanded its reach to work with 15 weatherization agencies in 2018-19.

### 6.6.3 Lessons Learned

Lessons learned from the Wx+H program include:

1. Weatherization program requirements for rental property owner participation make it challenging to serve rental units, limiting the potential to serve some patients with respiratory issues.
2. Weatherization providers partnering with medical or public health/community health workers were more comfortable and effective in addressing the client needs related to respiratory conditions than local agency staff. However, developing health partnerships requires significant effort; funding to support partner development is essential to build bridges for integrated programs.
3. Programs could benefit from access to standardized tools to conduct healthy homes assessments, prioritize home repairs, provide client engagement and support particularly on respiratory issues.
4. Some high-need households require repairs that exceed the household \$4,000 cap; allowing agencies to manage Wx+H to an average cost per unit would be beneficial.

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## 6.7 Tier 3: North Berkshire Healthy Homes Initiative, Pittsfield, Massachusetts

### 6.7.1 Program Origin and Key Partners

In 2017, the [Center for EcoTechnology](#) (CET) became interested in leveraging the energy efficiency workforce to help improve home environmental conditions and occupant health outcomes. As a nonprofit helping people and businesses save energy and reduce waste, they were drawn to the opportunity to engage with health care partners to improve the lives of patients struggling with respiratory issues such as asthma and chronic obstructive pulmonary disease (COPD). CET also wanted to explore how to integrate energy and healthy homes work and identify potential health care resources to support such efforts. CET is a lead vendor for the

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<sup>62</sup> Washington State University, 2018. The Washington State Weatherization Plus Health Pilot: Implementation and Lessons Learned

<sup>63</sup> Ibid.

Mass Save program for market-rate homes, which provides no cost energy audits, and manages multiple energy programs.

CET engaged the Berkshire Community Action Council, which provides weatherization services to low-income clients through the federal and state weatherization assistance program, to provide energy audits and upgrades to low-income homeowners.

To engage health care partners, CET leadership reached out to senior leaders at Berkshire Health System (BHS), who were interested in programs that might help address high rates of asthma and COPD and associated emergency department usage. As a result, BHS's pulmonology department became a key partner, identifying patients who could benefit from the Energy-Plus-Health services and providing support to track changes in health outcomes.

While local energy utilities did not participate directly in the project due to liability concerns, utility incentives and funding were key ingredients to support the home energy work. One utility has expressed interest in how this program could help engage customers and document the non-energy benefits of efficiency work and remains engaged in developing future efforts.

This pilot project was supported by E4TheFuture and the US Environmental Protection Agency with financial and technical assistance totaling \$85,000. CET dedicated significant additional resources to develop and implement the program. Funding was used to support staff, develop tools and protocols, and complete healthy homes repairs in a small number of homes to determine if the approach was feasible and of value to partners.

## **6.7.2 Pilot Program Delivery**

BHS's pulmonology department identified and referred patients with frequent asthma or COPD emergency department visits or hospitalizations to CET, which provided an energy audit and healthy homes assessment. In low-income homes, the BCAC conducted the energy audit. Healthy homes evaluations were conducted in three homes. The participants received educational reports, with repair recommendations and healthy home strategies to address symptom triggers. The healthy homes repairs were recommended in two homes, and one home did not need repairs.

Recommendations for one moderate income home included \$11,809 of energy work, \$8,763 of which was supported by utility incentives, and \$7,000 of healthy homes repairs (gutters, replace carpet, Heat Recovery Ventilator—HRV) for a total of \$18,809 in Energy-Plus-Health repairs. However, this work was not installed because of mold and moisture issues discovered in the crawlspace which would require an additional \$19,000 to repair. To date, CET has been unable to secure the additional funds needed to proceed.

The second, a low-income home, received \$4,753 of energy efficiency work supported by the weatherization program and \$6,614 of healthy homes repairs (replace carpet; HRV) for a total of \$11,367 in Energy-Plus-Health repairs. CET will follow up at three, six, and twelve months to assess patient health status and both homes' energy use. CET is working to scale this demonstration program into a larger pilot effort that would produce a greater amount of quantitative data on the costs and health and energy outcomes of its approach.

### 6.7.3 Lessons Learned

Lessons learned from the North Berkshire Healthy Homes Initiative include:<sup>64</sup>

1. Time is needed to build relationships among energy and health partners and to develop program workflows and protocols (e.g., patient consent, data sharing, referrals pathways).
2. While the value proposition of reaching added customers may be compelling to utilities, concerns related to liability can prevent their direct engagement. Nonetheless, community-based partners can deliver utility programs through contractual relationships providing utility incentives to healthy home customers while allowing utilities to maintain a risk-acceptable separation from the health aspects of the program.
3. Hospital patient referrals are most successful when initiated by a trusted medical provider (nurse, doctor) as opposed to having the hospital provide the energy program a list of patients who could benefit from the program. Patients with COPD pose unique challenges as many were too sick to participate in the program.
4. Do not assume all local hospitals provide pediatric asthma care. When possible consider partnering with a hospital that provides such care because families with children struggling with asthma can be a highly motivated group eager to enroll in these types of programs
5. Once a referral is made, at least six months is needed to enroll a household, conduct the assessment, and complete repairs.
6. To avoid delays, pre-identify contractors who can provide the range of healthy homes repairs. This was challenging as the team was not certain in advance of the assessments what type of repairs would be needed, and work required flooring, gutter and grading contractors in addition to the weatherization contractors that typically participate in utility energy efficiency programs.
7. Develop standard tools for healthy homes assessments and prioritization of repairs, to help streamline decision making and establish client expectations.
8. It was difficult to identify housing rehab funds to support the healthy homes repairs; energy funds are available to support the core energy work in low-income and market-rate homes.

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## 6.8 Tier 3: New York State Healthy Homes Value-Based Payment Pilot

### 6.8.1 Overview

The New York State Healthy Homes Value-Based Payment Pilot (Pilot) will seek to develop a replicable model for implementing a healthy homes approach to residential building treatments under the Medicaid Value-Based Payment (VBP)<sup>65</sup> framework. By validating impacts such as health care cost savings and benefits to residents, as well as providing market development support such as specification of services and VBP contracting guidance for these interventions,

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<sup>64</sup> Center for EcoTechnology, The North Berkshire Healthy Homes Initiative: Phase 1 Report, November 2018. See automatic download at: <https://www.cetonline.org/CETHealthyHomeReport>

<sup>65</sup> New York State Medicaid is transitioning the managed care health care delivery system from a fee-for-service to a VBP model that links health care provider performance and reimbursement through a pre-determined set of value metrics related to both health outcomes and health care cost savings. To support local reinvestment, two of three VBP arrangement levels require incorporation of a community-based organization (CBO) engaging in work focused on the social determinants of health (SDH) Substandard housing is included among the recognized social determinants of health. The substandard housing determinant places energy efficiency and weatherization measures, when incorporated within a healthy homes intervention, within the DOH value-based payment model.

the Pilot will facilitate the adoption of healthy homes treatments by Medicaid managed care organizations (MCO) as part of their Medicaid VBP Arrangements that incorporate social determinants of health. Doing so addresses avoidable medical costs associated with asthma and household injury, while providing improved standard of care. It also encourages third party capital investment in the demonstrated services upon MCO adoption of healthy homes interventions within the value-based payment social determinants of health framework beyond the Pilot.

The Pilot will be planned and implemented in partnership with the New York State Department of Health (DOH). The Pilot will be funded through NYSERDA's Clean Energy Fund,<sup>66</sup> estimated at approximately \$10M. In addition, NYSERDA will advise intervention planning and facilitate implementation related to energy and housing measures. The DOH Office of Health Insurance Programs will secure MCO participation in the Pilot and oversee all VBP contracting activities. The DOH Office of Public Health will advise intervention planning and facilitate implementation related to asthma trigger reduction measures and asthma care management services. The DOH Center for Environmental Health will advise Pilot intervention planning related to home injury prevention measures. Evaluation of Pilot activities will be undertaken cooperatively by NYSERDA and the DOH Office of Public Health.

In tandem with Pilot activities, NYSERDA will provide market supports in order to adequately prepare for the adoption of healthy homes interventions into the Medicaid managed care health care delivery system as standard business practice beyond the Pilot. NYSERDA will prepare a measure list and service delivery specifications for healthy homes interventions that address asthma and home injury. Credentialing/training needs that foster a network of qualified home contractors will be identified to ensure market preparedness. Additional market supports will include toolkit-style guidance for incorporating healthy homes interventions into Medicaid value-based payment contracts that address substandard housing as a social determinant of health.

## 6.8.2 Barriers Addressed

New York State Healthy Homes Value Based Payment Pilot activities address a number of barriers that exist at the intersection of energy and health.

- *Limited funding stream for low-income energy efficiency services.* Validating cost savings of healthy homes interventions will provide an evidence base that supports a long-term outcome of Medicaid funding healthy homes interventions as a sustainable funding model.
- *Lack of access to energy efficiency services for low-income households.* Managed care organization adoption of healthy homes interventions as part of the value-based purchasing social determinants of health framework would expand energy efficiency services to New York residents who might not otherwise be exposed to the opportunity.
- *Fragmented delivery of health, housing, energy programs and services across New York State.* Pilot activities will assess best practices for operationalizing healthy homes interventions for improved and more efficient service delivery.

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<sup>66</sup> The Clean Energy Fund (CEF) is a 10-year, \$5 billion funding commitment comprised of ratepayer dollars to support Governor Andrew M. Cuomo's Reforming the Energy Vision (REV), a strategy to build a clean, resilient, and affordable energy system for all New Yorkers. CEF reduces the cost of clean energy by accelerating the adoption of energy efficiency to reduce load while increasing renewable energy to meet demand.

- *Substandard housing (e.g. poor air quality and other environmental deficits).* Healthy homes interventions provide residential measures that improve energy efficiency and health outcomes for residents and create a healthier, safer, and more comfortable home environment.
- *Quality of care for asthma patients.* The Pilot provides a model for improved standard of care for Medicaid members with poorly controlled asthma.
- *New York State Medicaid costs incurred.* By taking a preventative approach to asthma and unintentional household injury, the Pilot addresses high costs to New York State Medicaid for emergency department and hospitalizations related to asthma and unintentional household injury.
- *Lack of access to community health resources.* Healthy homes interventions in the context of the Pilot include an in-home education component that provides information about health-related resources in a resident's local community.
- *Medicaid Value-Based Payment reform uptake.* The Pilot provides an opportunity for managed care organizations (health plans) to incorporate healthy homes interventions under VBP arrangements. Market support activities including contracting guidance and specifications to deliver healthy homes interventions will provide managed care organizations with needed tools to support future independent uptake.

### 6.8.3 Referrals

The Pilot aims to serve 500 Medicaid member homes, targeting residents with persistent asthma that is not well controlled. The Pilot will prioritize, but not be limited to, providing services to children age 0 to 17 and the dwellings in which they reside. Referrals for the Pilot will come from participating MCOs, recruited by DOH Office of Health Insurance Programs. Participating MCOs will identify their attributed Medicaid member population. Informed consent will be obtained from interested eligible members.

### 6.8.4 Intervention

Pilot participant households will undergo a full intervention, which includes a robust suite of services that include:

- Residential energy and environmental assessment
- Energy efficiency measures (e.g. envelope improvements, electric load reduction, heating system repair/replacement, ventilation)
- Asthma trigger reduction measures (e.g. mold remediation, carpet removal, integrated pest management, furnace filters)
- Household injury prevention measures (e.g. smoke alarms, carbon monoxide detectors, stair/railing repair)
- Home skilled nursing visits, multiple (e.g. In-home education related to asthma medication self-management)
- Community health worker support (e.g. supplemental education, guidance on Pilot processes)
- Resident education, connection to local services, and post-remediation follow-up (e.g. In-home education related to dwelling measure optimization, referrals to or information about available local services not supported by the Pilot)

### **6.8.5 Timeline**

Pilot planning is currently in progress. Pilot activities are expected to be active in the field in 2019.

# Section 7: Energy-Plus-Health Program Resources and Sample Materials



*For readers seeking further resources, templates, and training and marketing materials to support development of Energy-Plus-Health programs.*



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## 7.1 Introduction

This section shares a variety of sample documents that Energy-Plus-Health programs have created or modified to meet their specific and local circumstances. These outreach materials, consent forms, partnership agreements and checklists are intended to spark ideas for materials that target different audiences and serve different purposes. The documents are organized to approximate program implementation processes. Some of the links in this section automatically download a pdf document.

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## 7.2 Healthy Home General Resources

The following are general healthy homes resources and links to deepen understanding of the health impacts of efficiency programs and opportunities for coordinated programs.

- ✓ [BPI Healthy Homes Evaluator](#)
  - ✓ [Massachusetts Asthma Prevention and Control](#)
  - ✓ [Community Health Worker Protocol Manual and Program Summary](#)
  - ✓ [National Center for Healthy Housing](#)
  - ✓ [eLearning Modules Building Systems to Sustain Home-Based Asthma Services](#)
  - ✓ [Green and Healthy Homes Initiative](#)
  - ✓ [One Touch: Creating Energy Efficient and Health Homes](#)
  - ✓ [EPA Retrofit Protocols](#)
  - ✓ [EPA Asthma Home Visit Programs](#)
  - ✓ [Department of Energy \(DOE\) Weatherization Assistance Program](#)
  - ✓ [HUD Healthy Homes](#)
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## 7.3 Healthy Home Marketing and Outreach Materials

Cross-sector collaboration can align each partner's message to effectively engage customers for whom indoor environments and substandard housing create challenges for both their health and for participating in energy efficiency programs. Included in this section are a range of marketing materials used by programs to build awareness in the community and with community partners:

- ✓ [Fort Collins Healthy Homes Poster](#)
- ✓ [Contra Costa Energy Efficiency & Health Guide for Public Health and Health Care Professionals](#)
- ✓ [U.S Department of Housing and Urban Development: Lead and Healthy Homes Outreach](#)
- ✓ [University of Rochester Medical Center, Environmental Health Sciences Center: Healthy Homes](#)

- ✓ [Efficiency Vermont Healthy Home Tips for Customers](#)
  - ✓ [Efficiency Vermont Healthy Home Quick Reference for Health Care Providers](#)
  - ✓ [Efficiency Vermont Healthy Home Pilot Program Info Sheet](#)
  - ✓ [Efficiency Vermont Healthy Home Pilot Program Flyer](#)
  - ✓ [Efficiency Vermont Healthy Home Energy Visit Leave-behind](#)
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## 7.4 Healthy Home Program Orientation and Training Materials

Trainings can demystify energy efficient technology to improve health partners' knowledge about the upgrades that efficiency programs offer and how they can improve health outcomes. These documents offer program design information, as well as a sample training module developed by an energy efficiency program administrator to deliver to and introduction to healthy homes for health care practitioners, contractors and consumers.

- ✓ [Center for Disease Control EXHALE Matrix](#): The EXHALE technical package represents a select group of strategies based on the best available evidence to control asthma. It is a resource to inform decision-making in communities, organizations, and states by identifying strategies with the greatest potential impact on controlling asthma.
  - ✓ [Connecticut Clean Energy Healthy Homes Initiative Implementation Procedures for Contractors](#)
  - ✓ [National Safe and Healthy Housing Coalition – Meetings and Events Archive](#)
  - ✓ [National Center for Healthy Housing features links to additional energy-plus-health pilot research projects](#)
  - ✓ [North Berkshire Healthy Homes Initiative Project Manual](#)
  - ✓ [Efficiency Vermont Customer Support Healthy Home Questions](#)
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## 7.5 Program Application Forms

Sample program applications are provided in order to explore common information requested by energy efficiency program administrators and prospective healthy homes partners. Best practice is to streamline all application information to reduce paperwork burden on customers.

Link to:

- ✓ [City of Burlington, Vermont Lead Program—household application and rental property owner application](#)
  - ✓ [Connecticut Efficient Healthy Homes Initiative Customer Application](#)
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## 7.6 Healthy Home Program Participant Consent Forms

Consent forms describe the program to the customer and define the terms and conditions to which the customer agrees. The customer gives partners permission to implement activities necessary to perform services and housing retrofit work, as well as protects client confidentiality. Some consent forms include agreements to receive education about home health hazards. If rental units are included in the project, the Clear Corps sample below has specific language for multifamily property owners.

- ✓ [Center for Ecotechnology \(CET\) Healthy Homes Energy Participant Consent Form](#)
  - ✓ [Clear Corps Participation Agreement](#)
  - ✓ [Connecticut Clean Energy & Healthy Homes Letter to Initiate Assessment Agreement](#)
  - ✓ [Fort Collins MHE Interview Assessment Checklist and Agreement](#)
  - ✓ [VHCB Authorization of Release of Information](#)
  - ✓ [Efficiency Vermont Healthy Homes Pilot Consent Form](#)
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## 7.7 Healthy Home Evaluator and Assessment Inspection Forms

The following are checklists that incorporate recommendations from both the energy efficiency sector and the healthy homes sector, based on the healthy home principles.

Link to:

- ✓ [Fort Collins MHE Walkthrough checklist](#)
  - ✓ [National Center for Healthy Homes and Fort Collins Maintenance Checklist](#)
  - ✓ [Indiana Healthy Homes Alliance Healthy Homes Checklist](#)
  - ✓ Vermont One-Touch
    - [Survey Questions](#): provides a sample of the One-Touch household survey conducted by any in-home visiting partner.
    - [Referral Guide](#): includes a list of the partners participating in Vermont One-Touch
  - ✓ [NeighborWorks Toledo WarmChoice® Customer Information Sheet—What to Expect](#)
  - ✓ [Children’s Mercy Hospital Kansas City Tell Us About Your Home—Household Assessment Form for work covered by state Medicaid program](#)
  - ✓ [Efficiency Vermont Healthy Home Pilot Monitoring Protocol](#)
  - ✓ [Efficiency Vermont Healthy Home Environmental Assessment Form](#)
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## 7.8 Healthy Home Collaboration and Partnership Agreements

To protect customer data, which may include health information, Energy-Plus-Health collaborations are experimenting with different templates for Agreements that establish terms,

conditions and uses of protected health information by one or more of any non-health partners within the collaboration.

Information about and templates for Business Associate Agreements can be found here, and some programs use this as a starting place then modify templates to meet local need:

- ✓ [U.S. Department of Health & Human Services Sample Business Associate Agreement Provisions](#)
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## 7.9 Data Use Agreement

The Data Use Agreement offers a template for data sharing between partners with language that binds parties to the Agreement to compliance with the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and associated regulations. This Agreement is necessary if the collaboration is tracking health outcomes, and a best practice even if data is anonymized.

- ✓ [Data Use Agreement Sample from Asthma Regional Council of New England](#)
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## 7.10 Healthy Home Contractor Tools and Training

Worker training, certification, and implementation of healthy home principles are essential building blocks to successful Energy-Plus-Health programs.

- ✓ [Building Performance Institute, Inc. Healthy Home Evaluator](#)
- ✓ [Department of Energy \(DOE\) Weatherization Assistance Program](#)
- ✓ [DOE Weatherization Assistance Program Health & Safety Plan Template 2017](#)
- ✓ [EPA Asthma Home Visit Programs](#)
- ✓ [EPA Retrofit Protocols](#)
- ✓ [Green and Healthy Homes Initiative](#)
- ✓ [National Center for Healthy Housing](#)
- ✓ [NCHH eLearning Modules Building Systems to Sustain Home-Based Asthma Services](#)
- ✓ [One Touch: Creating Energy Efficient and Health Homes](#)

### 7.10.1 Contractor Training Module

- ✓ [Healthy and Efficient Homes for Contractors presentation](#)
- ✓ [Contractor Booklet:](#)
  - Lesson Plan
  - Handouts
  - Quiz Game
  - Surveys and Course Evaluation

## 7.10.2 Contractor Disclaimer and Limitation of Liability

Contractors performing healthy homes assessments can use disclaimers to specify the intent of the evaluation and subsequent report, and to limit contractor liability related to any claims that go beyond the scope of work.

- ✓ [Healthy Home Evaluation Contractor Disclaimer and Limitation of Liability](#)