



Home Remedies: Connecting Housing and Health for Stronger Communities

Creating Healthy Housing

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Richmond, VA

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Breaking the Link Between Unhealthy Housing and Unhealthy Children



The Burden of Unhealthy and Energy Inefficient Homes

30M families live in unhealthy homes

Homes with environmental hazards are making their residents sick

14.4M missed days of school each year

Asthma is the top reason students miss school

14.2M missed days of work each year

Collateral burden of sick children is missed days of work for parents and caretakers

\$51B+ spent on asthma

\$31B+ spent on slip & fall injuries

\$50.9B+ spent on lead poisoning

Over \$100B in taxpayer funding is spent each year to address the impact of these hazards

Low income families spend 20% of monthly income on energy costs

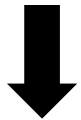
VS.

3.5% in other households

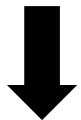


The GHHI Model: No Wrong Door

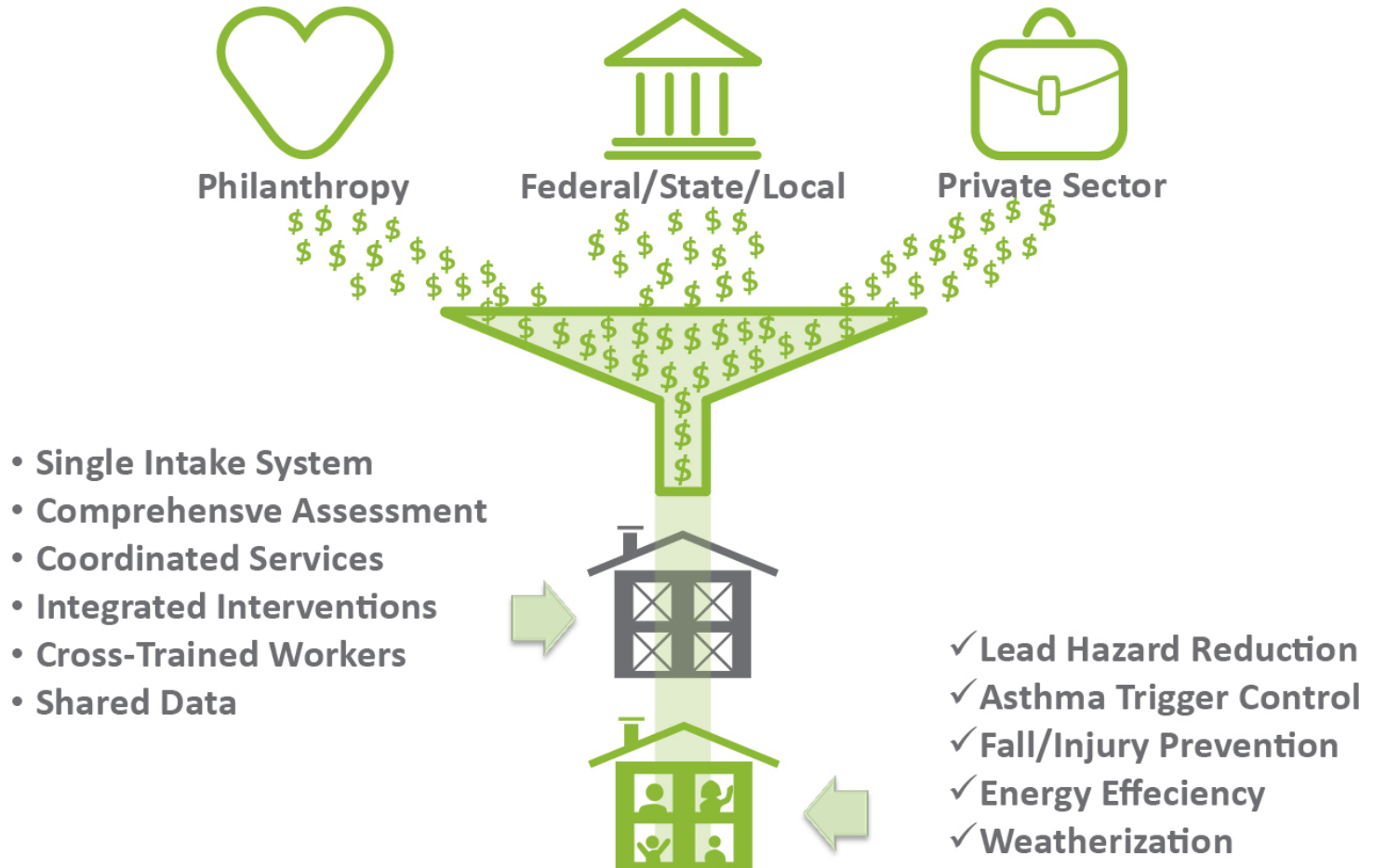
Align
services & funding



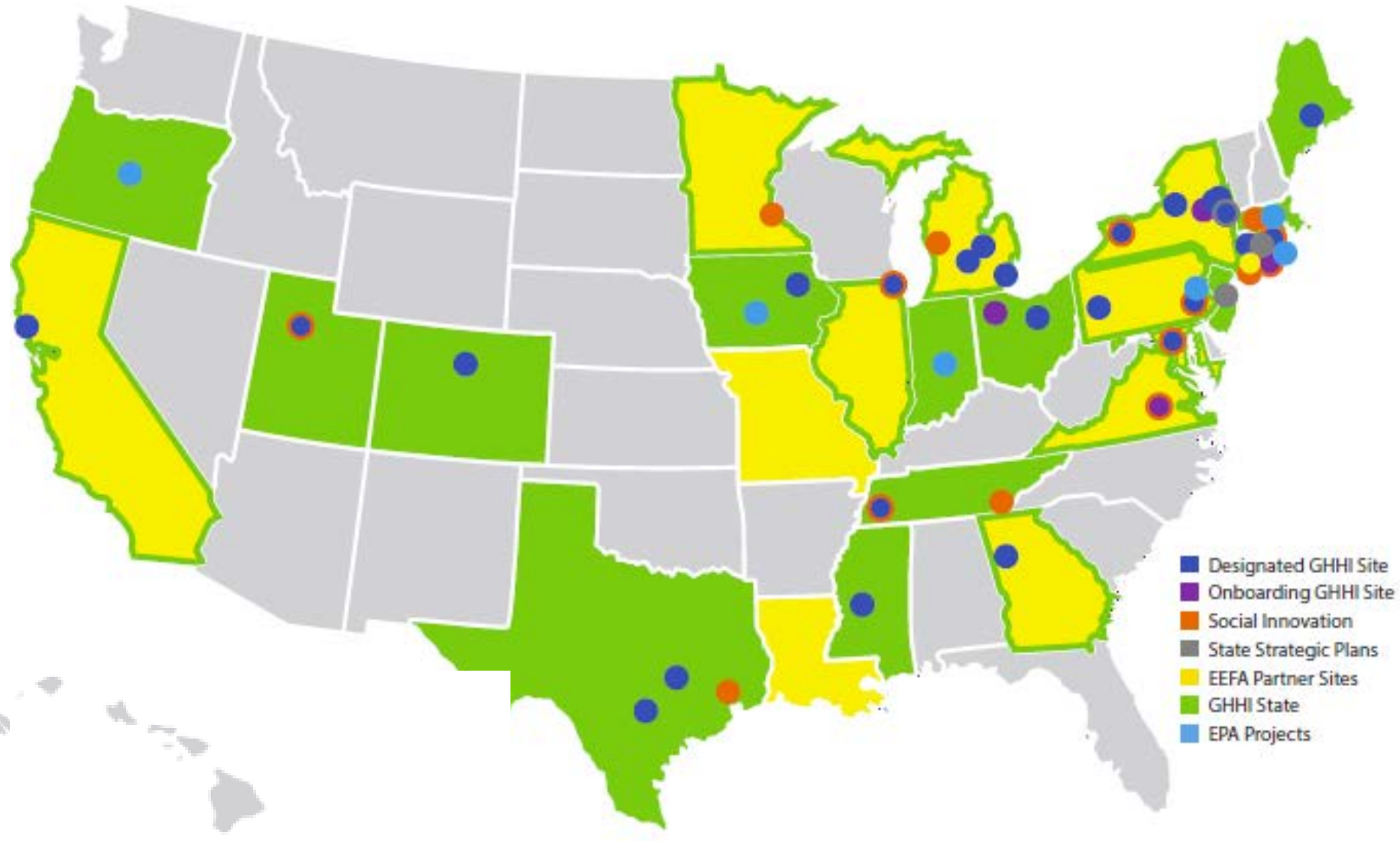
Braid
relevant resources



Coordinate
service delivery



Scaling Best Practices and Innovation: GHHI's National Work





GHHI Model - The Assessment Team and Building Capacity Locally

- **Environmental Health Educator**
 - **Conduct resident education**
 - Coordinate pre and post client health surveys
 - Develop recommended action plans for the residents
 - Coordinate follow-up client services
- **Environmental Assessment Technician-Energy Auditor**
 - **Conduct pre-intervention environmental assessments**
 - **Conduct energy audits**
 - Develop scopes of work for the properties
 - Conduct post intervention assessments and audits



Scope of Work Development

Develop a Comprehensive Scope of Work to address all intervention components:

1. Lead Hazard Reduction
2. Healthy Homes (asthma triggers, safety and other home-based environmental health hazards)
3. Weatherization
4. Energy Efficiency
5. Housing Rehabilitation



Environmental Health Educator

- **Conduct in-home resident education**
- Coordinate pre and post client health surveys
- Develop recommended action plans
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Environmental Assessment Technician-Energy Auditor

- **Conduct pre-intervention environmental assessment**
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The Strategy: Intervention Crews Address Issues Holistically

- Asthma Trigger Reduction
- Lead Hazard Reduction
- Integrated Pest Management
- Kitchen, bathroom, dryer venting
- Mold remediation
- Removal or steam cleaning of carpets
- Injury prevention measures, including:
 - Carbon monoxide and smoke detectors
 - Trip and fall reduction measures-Seniors
 - Other safety hazard mitigation
- Weatherization, Energy Efficiency and Rehabilitation
- Radon, asbestos, and home-based env. hazard remediation



Healthy Homes Asthma Intervention Strategy

- Reduce Asthma Triggers in the Home
 - Mold and Moisture
 - Extreme Heat and Cold
 - Cockroaches
 - Mice and Rats
 - Dust Mites
 - VOCs/Chemical Odors
 - Tobacco Smoke
 - Poor IAQ





Cross Trained Inspectors and Contractors

- Cross Training of Contractors and Inspectors From Multiple Fields to Increase Ability to Deliver Comprehensive Scope
- Increased Contractor and Inspector Capacity
- Development of Green Trades Accreditation
- Job Training and Economic Development for Residents of Low Income Communities



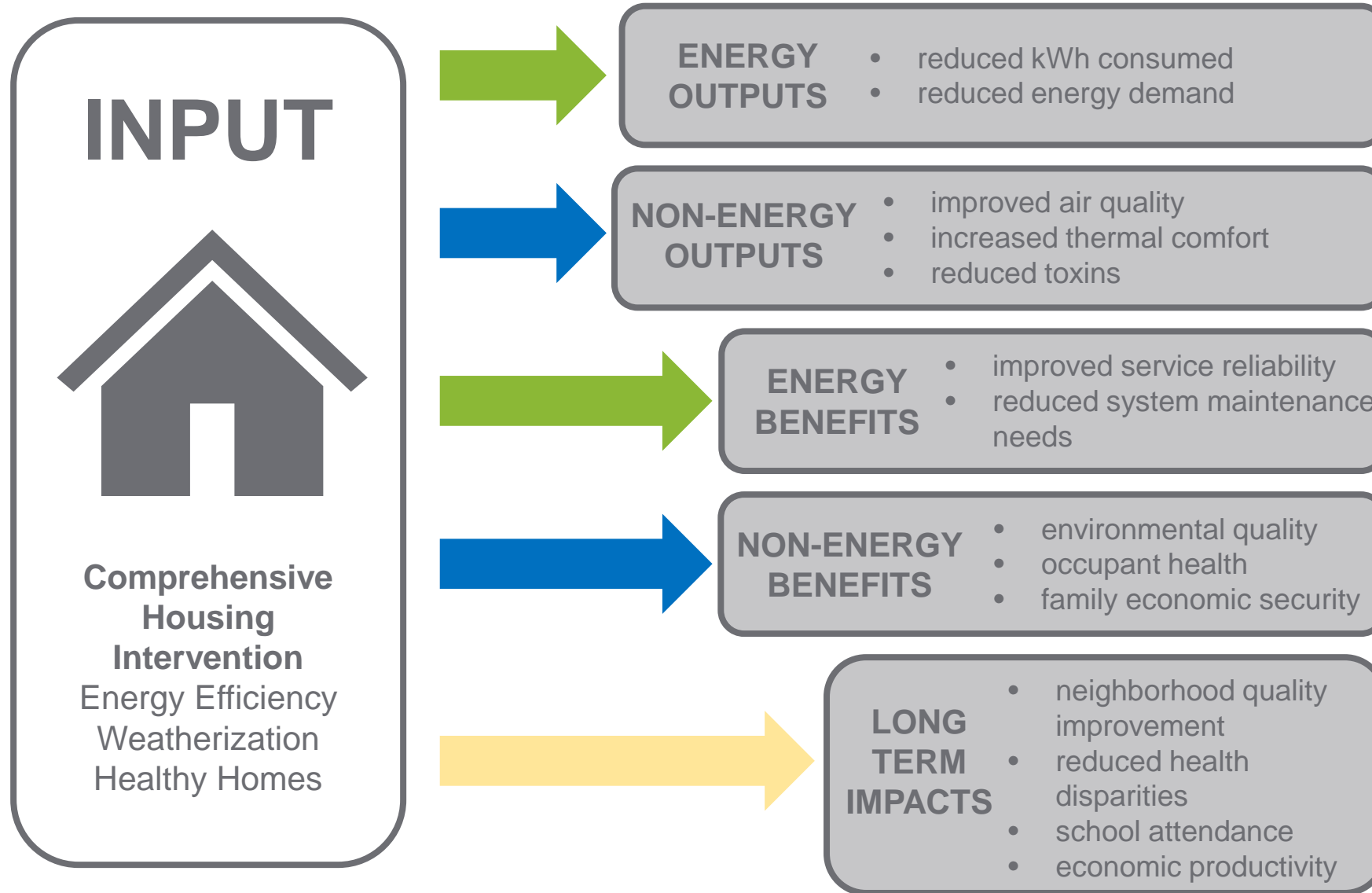
Supporting Environmental Assessment, Cross Training and Capacity of Energy Auditors - New BPI Healthy Homes Evaluator Micro-credential

- Developed by the Building Performance Institute, Green & Healthy Homes Initiative (GHHI) and other key partners in the field
- Fully released in October 2016
- Cross training energy auditors on home-based environmental health hazard assessment, scope writing and intervention best practice protocols
- Supports the further integration nationally of Healthy Homes interventions with weatherization/energy efficiency intervention funding streams
- Go to http://www.bpi.org/professionals_hhe.aspx to find a BPI testing center in your area





Pathway in Practice – Improving Economic and Health Analysis



Measuring and Celebrating Family Outcomes:

The Obianuka Family

Pre-Intervention Situation:

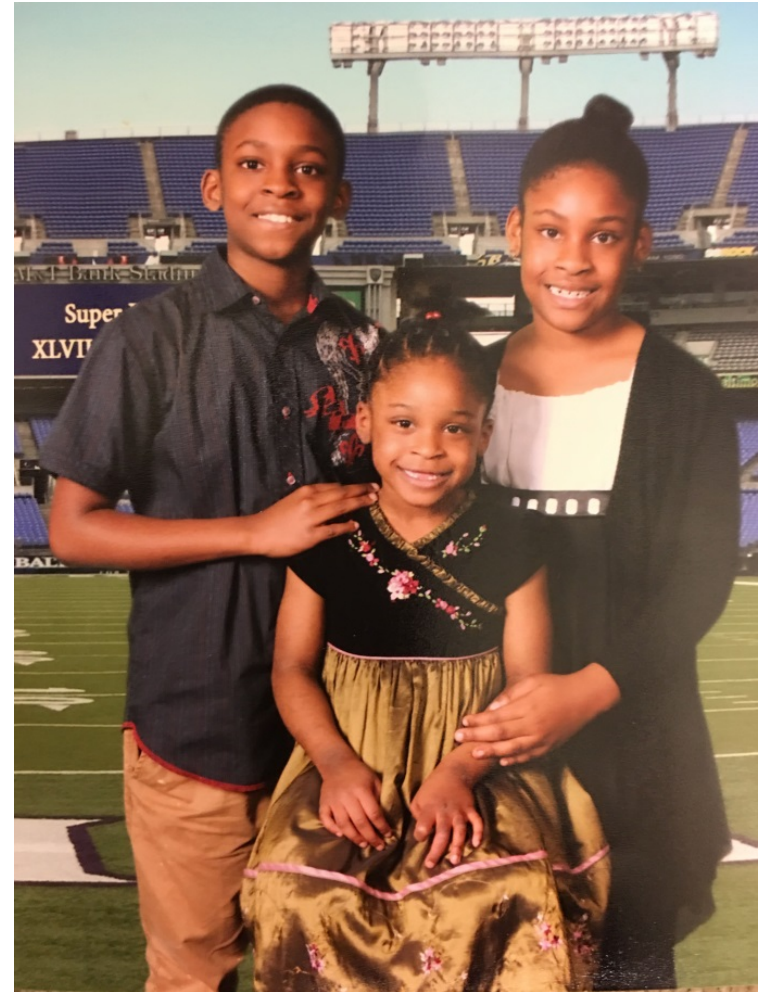
- Homeowner family of five with a daughter who had severe asthma; average of 1 asthma related hospitalizations and 5 ED visits per year
- Conditions - Lack of kitchen and bathroom venting causing high moisture levels, mouse infestation and dust mites, chipping lead paint hazards; Lack of adequate heat due to needed furnace boiler replacement

Partners: Baltimore City Community Development Block Grant, the Maryland Energy Administration, and the Weinberg Foundation.

Intervention Results: Allergens and lead and safety hazards remediated; Home weatherized and boiler replaced

Outcomes:

- Daughter was not hospitalized nor been to the emergency room due to asthma episodes in the 12 months post-intervention
- Asthma symptom free days changed from 0 per month to 29 days per month
- Annual energy cost savings of \$407



Costs: \$16,035

Asthma Specific Costs: \$4,059



Integrated Models Create Measurable Outcomes

GHHI Baltimore

- **66%** reduction in asthma-related hospitalizations
- **62%** increase in asthma-related perfect school attendance
- **88%** increase in never missing work due to their child's asthma

GHHI Philadelphia

- **70%** fewer asthma-related client hospitalizations
- **76%** fewer asthma-related client ED visits

GHHI Cleveland

- **58%** reduction in asthma-related client hospitalizations
- **63%** reduction in asthma-related client ED visits

* Backed by data from studies in: Baltimore, MD; Philadelphia, PA; Cleveland, OH



National Outcomes



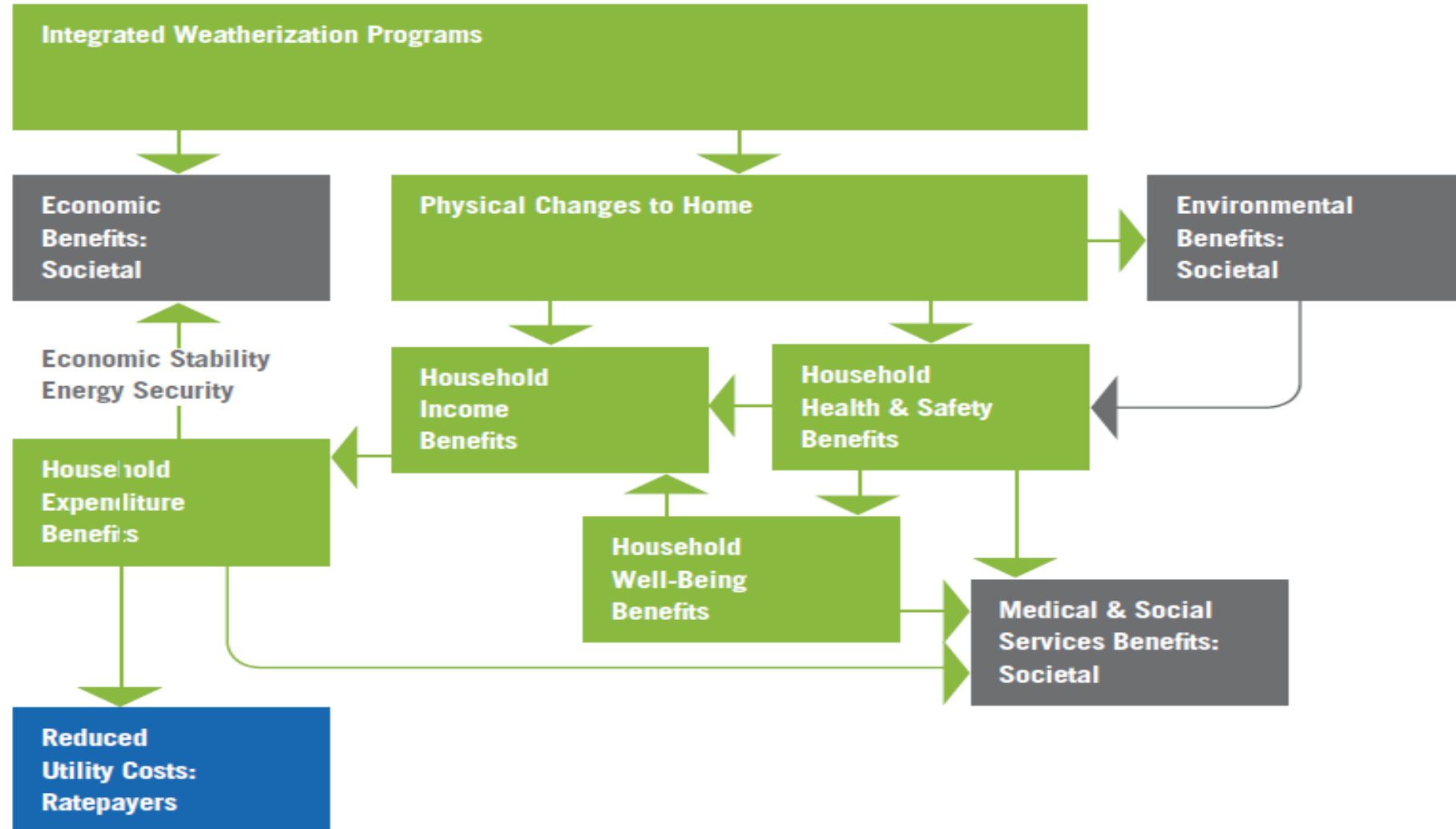
597,000 units made green & healthy nationally in partnership with HUD

Up to 25% government cost savings

\$4K-8K increase in green job wages



WEATHERIZATION WORKS: FRAMEWORK FOR UNDERSTANDING NON-ENERGY BENEFITS





What The Data Means – Cashable Healthy Homes Savings Example

- Reduction in asthma-related client hospitalizations – **1 hospital stay on average costs \$10,278 in Rhode Island. By reducing hospitalizations we are helping to reduce medical costs.**

Potential Cost Savings RI Example: $500 \times \$10,278 = \$5,139,000$

- Reduction in asthma-related emergency room visits - **1 emergency room visit on average costs \$1,608 in Rhode Island. By reducing ER visits we are helping to reduce medical costs.**

Potential Cost Savings RI Example: $1500 \times \$1,608 = \$2,412,000$

Securing Diverse and Scalable Funding: Building the Business Case for Lead and Healthy Homes

Sources: HUD, Gould, RWJ Commission on Building a Healthier America, HHS economic review of published studies

Lead poisoning costs society **\$50.9 billion** annually and yet is **entirely preventable**

Impacts during Childhood



- **535,000** children under 6 with elevated blood lead level
- 700% increase in school drop out rate
- 600% increase risk of juvenile delinquency
- Lower IQ, ADHD, special education



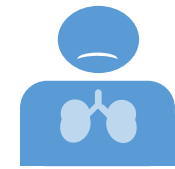
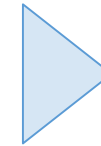
Impacts in Adulthood

- Diminished earnings from lower IQ
- Higher likelihood of incarceration
- Higher social service usage

ROI between \$17-221 per dollar invested in preventive lead remediation

Increased lifetime earnings of \$1,024,000 per child if lead poisoning prevented

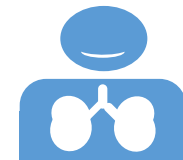
Asthma results in **\$50 billion in annual medical costs**, and 40% of costs are tied to environmental triggers in the home



6.8 million children
18.7 million adults
1.58 million hospital days

\$500-\$1,000
cost of ER visit

\$7,500-20,000
cost of hospitalization



\$1
invested in asthma interventions

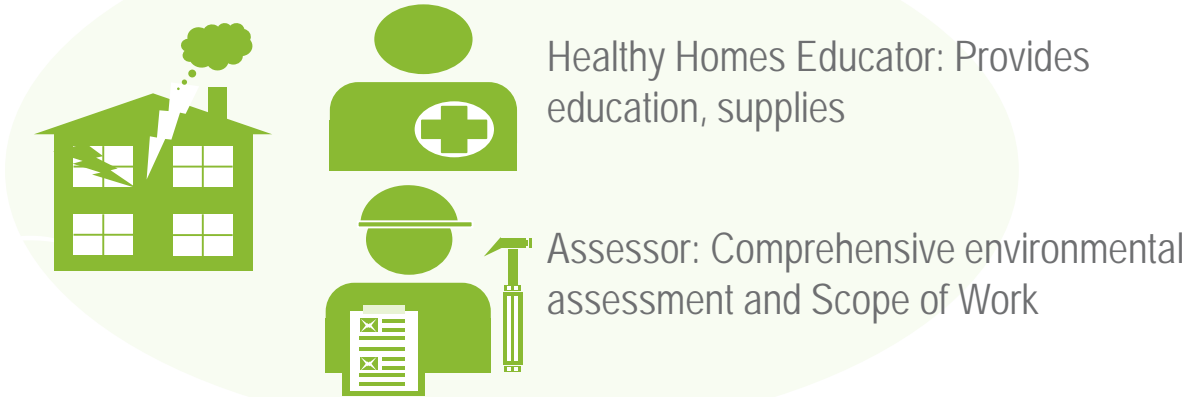
\$5.30 - \$14
return on investment

Evidence-based Interventions Produce Measurable Results

1 Intake and enrollment



2 Initial Home Visit



3 Healthy Homes education and home repairs



4 Evaluation of outcomes



Researching and Designing a Statewide Approach to Delivering Integrated Health, Energy and Housing Services in New York



- Partners: NYSERDA, NYHCR, NYSDOH
- Reducing energy usage, asthma episodes, household injury and lead poisoning and related energy and medical costs
- Researching and evaluating the possibility of supporting energy, health and housing services through sustainable public and private funding
- Increasing current capacity for these services throughout the state and designing an integrated delivery model



Developing Strong Partnerships and Integrating Energy, Health and Housing Sectors (7 state agencies)

Statewide Approach - Connecticut Green & Healthy Homes Initiative



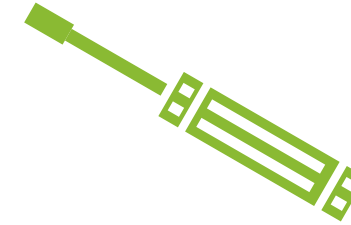
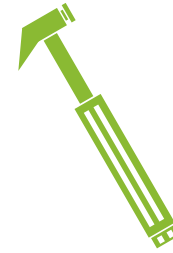
Connecticut Green & Healthy Homes

Purpose

- Research and evaluate the efficacy of statewide, comprehensive energy, health and housing interventions that can:
 - Increase the current capacity for these services in CT,
 - Reduce energy use, asthma, injury and lead exposure risks, and
 - Result in long term public sector cost savings.
- Research and evaluate the possibility of supporting energy, health and housing services through sustainable public and private sources of funding.

Innovations in Funding – Health Sector Financing

Developing an Innovative Healthy Homes Funding Toolbox for Your Energy and Health Partnerships



**Innovative use of
Medicaid, Medicare
and CHIP waivers**

**Hospital
Community
Benefits**

**Remanaging &
repurposing existing
housing programs**

Pay for Success

**Value-based
Payments**

**Redirecting existing
educational
outcomes**



Policy Innovations in the National Context – Potential Energy Partnerships

Current Medicaid Support for Housing and Health:

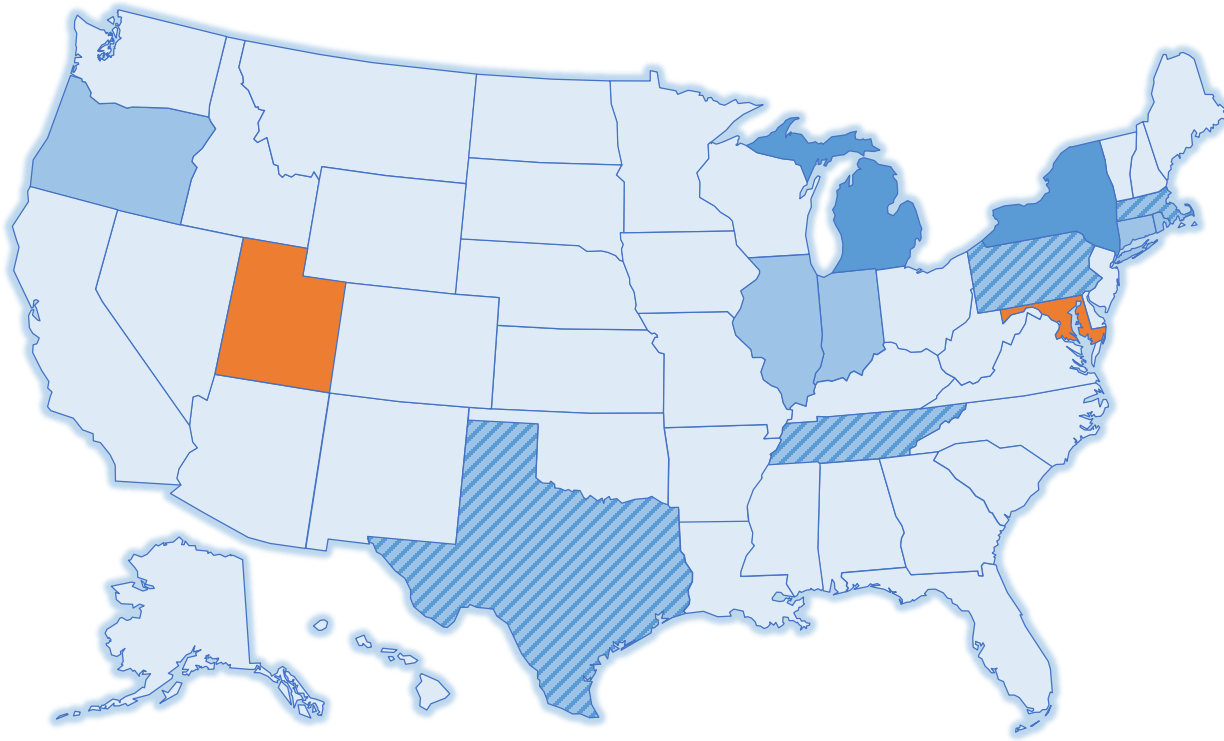
- **MARYLAND:** \$14.4 million in CHIP funds for asthma trigger and lead hazard remediation
- **MICHIGAN:** \$119 million in CHIP funds for lead hazard remediation and related services; workforce development
- **OHIO** (\$5 million)/**INDIANA** (\$3 million): CHIP funds for lead testing and remediation
- **MISSOURI:** Medicaid funding allowable for Asthma resident education; Environmental assessment services
- **OREGON:** Rule 1115 Waiver allowing for flexible services including asthma home visiting resident education
- **RHODE ISLAND:** Rule 1115 Waiver allowing for lead remediation

- **Hospital Community Benefits:** Boston Medical Center, Presence Health, CT Children's Medical Center

Developing Health Care Financing to Support Healthy Homes

20 projects with healthcare, energy and housing partners across the country

Feasibility Ongoing



- Chattanooga-green|spaces
- Philadelphia-Energy Coordinating Agency
- Worcester-UMass Memorial
- Oregon-Community Services Consortium
- Indiana-Indiana Joint Asthma Coalition
- Chicago-Presence Health
- Houston-Community Health Choice
- Rhode Island-State Medicaid
- Minneapolis-MMAHEN
- New York State Energy Research and Development Authority (NYSERDA)
- CT- Connecticut Green Bank
- Salt Lake County-Health Plans

Post-feasibility Transition

- Buffalo-YourCare Health Plan
- Grand Rapids-Spectrum Health
- Houston-UnitedHealthcare
- Memphis-Le Bonheur Children’s Hospital
- New York City-Affinity Health Plan
- Philadelphia-Health Partners Plans
- Springfield-Baystate Health

Funders



Transaction structuring

- Baltimore*-Johns Hopkins Medicine

Funding Support Success Stories

New York Attorney General Funds (health & energy)

\$2.3M-Buffalo

\$1M-Syracuse

\$1M-Rochester

Rhode Island Attorney General Funds - \$697,000 (health & energy) (City of Providence/RIH/CAPs)

Maryland PSC Consumer Investment Funds (health, housing & energy)

\$19.6M-MDDHCD - \$15,000 per unit

\$19M-BCDHCD

Building Sustainable Sources of Funds:

Michigan Annual General Funds - \$1.75M annual lead fund

State of Maine Legislation - \$4M annual lead fund

Other Funding Support Sources – Be Creative

CDBG Healthy Homes - \$185,000 (Baltimore)

Non Traditional Partners: Environment/Education/Utilities

MCF Green & Healthy Homes Services Fund - \$300,000 (Marin County, CA)

Casey Foundation - Healthy Homes Program - \$50,000 annually (Baltimore)

United Way - School Asthma Program - \$20,000 (Jackson)

Kellogg Foundation - School Asthma Program - Staffing and Supplies (Jackson)

Constellation Energy Funds - \$1M - roof repair and furnace replacement (Baltimore)



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