National Center for
HEALTHY HOUSING

# STRATEGIES TOWARD SUSTAINABILITY

## More Financing Mechanisms for Healthy Homes Services

May 2019

# LESSONS LEARNED AT A GLANCE

The interviews conducted from 2016-2018 suggest that sustainable funding for asthma- and lead poisoning-related services can come from a variety of sources in addition to funds directly provided by the healthcare community. Building these programs takes time and the willingness of partners to share data and resources. Government and advocates must to work together to identify viable sustainable sources of funding. Fees, excise taxes, tax credits, and innovative leverages of other funding sources, such as weatherization and tobacco settlements, can support new programs as well as strengthen existing ones. While stable funding of services through state general funds may be a long-term goal, there are many other ways to make services self sustaining.

### What triggers the decision to put complementary financing in place? (Page 3)

- Advocacy.
- Available mechanisms and pools of additional funding, such as tobacco settlements, excise fees and taxes, and federal categorical and block grants.
- Leverages for funding.
- Compelling data on needs and effective interventions.
- An outgrowth of existing programs.

### What has not triggered the move to other funding mechanisms? (Page 4)

- Healthcare financing reform.
- The need for Medicaid financing to supplement programs' funding.

### What leads to sustainability? (Page 4)

- Building on a pilot program.
- Programs with limited costs.
- Use of licensing fees, specialized taxes, and special assessments on hospitals and insurers that impact a smaller segment of the taxpaying population.
- A "carrot and stick" approach.
- Self-sustaining sources of funding.
- Flexibility in program operations and eligibility requirements.
- Effective partnerships.
- Systematic data collection.

## OVERVIEW

How can we make homes healthier through home-based education and repairs when the funding for this work is in doubt? What are the options for funding apart from those associated with healthcare? While some states have explored the use of Medicaid funds for home-based interventions, these strategies are not available in every community or may not cover all of the appropriate services or populations in need. As a result, others have turned to complementary strategies to build sustainability.

In addition to the well-documented work to fund healthy housing interventions through the healthcare system, these financing strategies hold promise, but what do we know about what works, what challenges exist, and how we can overcome them?

From 2016 to 2018, the National Center for Healthy Housing (NCHH) interviewed representatives from seven states (Massachusetts, Maine, Montana, New Jersey, New York, Oregon, and Washington) that used a variety of strategies to fund home-based interventions outside of the healthcare system. The focus of the services funded included lead poisoning primary and secondary prevention, asthma management, and coordinated services to improve energy efficiency and make repairs. The funding mechanisms also varied (see Table 1). The 12 resulting case studies provide insight into states' motivation to adopt the funding mechanism, the health and other outcomes that resulted, and the lessons states learned during implementation.

## LESSONS LEARNED

While every state addressed a unique set of issues through these funding mechanisms, a number of common themes emerged.

## What triggers the decision to put sustainable financing in place?

### *Advocacy.*

Pressure from nonprofit and private sector organizations, often in response to a public or political crisis, may trigger governmental efforts to fund programs but not commit ongoing state general funds. For example, after a Boston Housing Authority court case, in which local housing authorities administering the Section 8 Housing Assistance Payments Program were ruled to be potentially liable if a child were to be poisoned by lead in housing they controlled, property owners and local housing associations led advocacy efforts for state appropriations to fund lead intervention. Their efforts resulted in the establishment of the **Get the Lead Out** deferred loan program, which was codified through statute a few years later. As another example, the **Conservation Law Foundation**, a nonprofit environmental advocacy group, led the efforts that resulted in the creation of the Massachusetts **Lead Education Trust Fund**. Similarly, Maine's **Lead Poisoning Prevention Fund** was established in 2005 through the efforts of a coalition of environmental activists.

### *Available mechanisms and pools of additional funding, such as tobacco settlements, excise fees and taxes, and federal categorical and block grants.*

In 1998, the Montana State attorney general, together with attorneys general from 45 other states, five U.S. territories, and the District of Columbia, reached an accord with the five largest tobacco companies in the U.S. for the **Master Settlement Agreement (MSA)**. The settlement terms included requirements that the tobacco industry pay the parties to the agreement approximately $10 million annually for the indefinite future. In anticipation of competing for a grant through the federally funded **National Asthma Control Program**, the **Montana Department of Public Health and Human Services** bureau chief advocated for Montana to start the foundation of an asthma control program in 2007. This received $350,000 from the MSA funds.

While **New York's Healthy Neighborhoods Program (HNP)** currently receives most of its funding through the state general fund, it has used many other funding mechanisms in the past. First created in 1985, the HNP's original source of funding was the federal **Preventive Health and Health Services Block Grant ("Prevent Block")**. Through this decade, it received funding through federal categorical grants and the and the state's **Preventive Health Cornerstones** project; in the 1990s, it received federal block grant funding; and subsequently, the New York State Health Care Reform Act's Tobacco Control and Insurance Initiatives Pool funded from the state's tobacco-related litigation, as well as an increase in the state tobacco tax, supported the program.

Excise taxes and fees, such as Maine's $0.25/gallon tax on the sale of paint, and the fees charged for professional licenses in Massachusetts, represent additional strategies for dedicated funding.

### *Leverages for funding.*

In 2012, Massachusetts established its **Prevention and Wellness Trust Fund** as a means to reduce healthcare costs by preventing chronic conditions. Washington's **Weatherization Plus Health** Enhanced pilot sought a new approach to leveraging state and local resources and support. One of its long-term objectives was to develop integrated service models eligible for reimbursement from Medicaid or other sources that engaged medical and public health services. The department encouraged pilot sites to experiment with different combinations of partners, weatherization and healthy homes interventions, and other activities that could have a measurable impact on client medical costs.

### *Compelling data on needs and effective interventions.*

Although the motivation to address rising healthcare costs in Massachusetts led to the creation of the Prevention and Wellness Trust Fund, the decision about which high-priority health concerns to address depended on the available data. The magnitude of childhood asthma rates, coupled with a strong evidence base for the efficacy of asthma home visiting programs, was essential to pediatric asthma's selection as a priority service area. Similarly, **New York's Regional Lead Resource Centers** began in the 1980s in response to the need to develop a standardized chelation procedure to treat lead poisoning in children. Later, the state's ability to identify counties whose ZIP codes had the highest percentage of children identified with elevated blood lead levels provided the foundation for its **Childhood Lead Poisoning Primary Prevention Program** (CLPPPP) pilot. Prior to the CLPPPP's creation, county health departments were authorized to enter a home only when a child with an elevated blood lead level was known to live there. Effective matches of records on elevated blood lead levels to ZIP codes provided a compelling reason to authorize the new program's entry into homes at high risk of lead hazards even when no child with an EBLL was in residence.

### *An outgrowth of existing programs.*

New Jersey's **Neighborhood Revitalization Tax Credit (NRTC)** began in 2002. New Jersey business entities that invest in the revitalization of eligible low- and moderate-income neighborhoods can receive a 100% credit against various state taxes. Each year, the state's **Department of Community Affairs** invites applications from nonprofit entities located in municipalities that qualify for its **Special Municipal Aid Act** or **Abbott district designation** (i.e., designated as a "poorer urban district"). The nonprofit must demonstrate a commitment to the neighborhood and must submit a plan or project. The **Isles, Inc.**'s Project ReHEET in Trenton, New Jersey, was the first NRTC-funded pilot to provide a combination of energy audits, healthy homes-related testing and remediation, structural repairs, insulation and air sealing, and community education on energy and health. It was not, however, the first NRTC-funded project. By the time Project ReHEET received funding, extensive evaluation had helped to identify strategies to build effective partnerships and support sustainability.

Washington's weatherization program had been in existence for many years and employed a combination of federal and utility company funding to support 62 weatherization programs across the state. These programs already had strong partnerships in the community for enrollment and repairs. This infrastructure provided justification for the 2015 expansion of its existing **Matchmaker Low-Income Residential Weatherization Program** to include healthy housing improvements. Of the total funding available for the Matchmaker program, the **Washington Department of Commerce** set aside $4.3 million for the Weatherization Plus Health pilot.

## What <u>has not</u> triggered the move to other funding mechanisms?

### *Healthcare financing reform.*[1]

Asthma-related home visiting programs and some features of lead poisoning prevention (primary and secondary) programs may have begun because of the concern for the high costs of medical services, but many of the financing mechanisms discussed in this report were in use before the current healthcare financing reform efforts were underway. As documented elsewhere, there is increasing interest from the healthcare sector in supporting these services, but it is likely that complementary financing sources will still play a vital role in ensuring access to needed services.

### *The need for Medicaid financing to supplement programs' funding.*

We speculate that the lack of Medicaid funding for the programs highlighted in these case studies may have involved several factors. Medicaid is primarily targeted to individuals with low incomes or disabilities. States interested in expanding their healthy homes-related services beyond this portion of the population would need to identify other funding sources. Programs whose main purpose was to rehabilitate housing may not meet states' definition of direct services when they apply for Medicaid state plan amendments or waivers. Services provided by agencies not perceived as health-related, such as the Washington State Department of Commerce's funding for weatherization, may also not qualify for inclusion. Finally, programs that have self-sustaining sources of funding, such as licensing fees or excise taxes, may not have a need to compete for scarce Medicaid resources.

## What leads to sustainability?

### *Building on a pilot program.*

This allows programs to experiment with lower-cost interventions as well as better understand the problems in implementation that may occur. This also enables the program to gather data on impact and client testimonials.

### *Programs with limited costs.*

For example, most of the New York programs that now receive general funds have costs under $10 million but have extensive reach in the most vulnerable communities throughout the state. We speculate that lower program costs may make it possible to sustain the programs by transitioning to state general funds.

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[1] Recent federal efforts to encourage state plan amendments to create health services initiatives (HSI) may further change the policy landscape in the future. HSIs build strategies to provide direct services or public health actions to improve the health of low-income children under the age of 19 who are eligible for Medicaid or the Children's Health Insurance Program (CHIP). These strategies can be extended to include other initiatives. For example, states have targeted their HSI efforts to increasing the number of children enrolled in Medicaid or CHIP, screening and treatment for a variety of chronic and behavioral health conditions, increasing the number of well-child visits, and other activities. Of particular interest, Maryland, Michigan, Illinois, Indiana, and Ohio have received approval to fund endeavors such as blood lead screening, referrals for developmental services, and lead abatement services to address lead exposure from water, paint, dust, and soil in homes of Medicaid- or CHIP-eligible children. Maryland's HSI also includes asthma home visiting services. The federal portion of the HSI activities comes from the state's CHIP available allotment for a fiscal year, but the remaining activities must be funded by the state.

# WHAT MAKES FOR SUCCESSFUL PROGRAM PARTNERSHIPS?

### Recognizing that partnerships need to be grown and maintained.

There are considerable start-up costs to building and maintaining collaborations between local agencies and community-based organizations. Many of the programs required more than a year for start-up as these relationships were formalized. With time, there may also be a need to engage new partners. For example, the Massachusetts Prevention and Wellness Trust found a need to work with "intermediary groups" – seasoned groups that have used CHWs for many years and implemented evidence-based practices – that could guide and encourage new and emerging programs on the path of home-based asthma visiting programs.

### The development of clear mechanisms and procedures for referrals.

Partners' need to support their own activities and workforce may lead to less emphasis on providing referrals to other programs. Showing partners that they receive direct benefits from referrals to other programs can help sustain their involvement. For example, asthma programs and weatherization services providers have traditionally approached respiratory illness through different paths. Integrating both services can create a connection that results in greater efficiency and positive results. The Washington Weatherization Plus Health Enhanced pilot demonstrated a demand for services for residents with respiratory conditions among the existing weatherization clientele. However, building and maintaining the partnerships with healthcare providers, funding, and standardized procedures for referrals and interventions required a longer time frame than the pilot anticipated and resulted in fewer referrals from hospitals and healthcare systems.

### Understanding the needs and concerns of the healthcare community.

Public health and healthcare providers often have different perspectives on client needs and procedures. For example, use of community health workers (CHWs) for education and home visits is growing in many healthcare settings, but services by nurses and other licensed professionals are still more common.[2] Conversely, public health agencies may find that CHWs who come from the target community provide credibility for their community outreach services, as well as lower their program costs. Understanding the state's regulations for scope of practice and oversight by other licensed professionals in a medical setting, as well as the reimbursement mechanisms that apply, may facilitate relationships with healthcare institutions. Institutional rules and practices related to disclosure of protected health information (PHI) can be another challenge to overcome.

[2] The **National Academy for State Health Policy (NASHP)** maintains a webpage devoted to CHW models. Their **State Community Health Worker Models Map** provides information by state on financing strategies, education and certification requirements, legislation that defines CHWs' scope of practice, associations active in the state, and other topics. In 2017, NASHP surveyed programs to identify their practices for engaging CHWs in asthma management and lead poisoning prevention, as well as whether they have applied for or obtained Medicaid funding for these services.This information can be found on the "CHW Roles in State" tab.

### *Use of licensing fees, specialized taxes, and special assessments on hospitals and insurers that impact a smaller segment of the taxpaying population.*

General funds usually come from state income taxes, and increases in income taxes are rarely popular. We speculate that the cost burden from funding strategies like these may be less visible and therefore more politically acceptable.

### *A "carrot and stick" approach.*

Massachusetts combined incentives (such as removing liability from certain organizations) with enforcement that requires property owners to delead subsidized housing. The Get the Lead Out revolving loan fund assured that there were resources for small-property owners to comply with state requirements.

### *Self-sustaining sources of funding.*

License renewal fees are routine, and a small excise tax, such as those on paint sales, generates modest revenues. As long as the funds generated are dedicated to a specific purpose and distributed through competitive grants or loans with clear repayment requirements, the programs can support themselves; however, this requires clear oversight and accountability.

### *Flexibility in program operations and eligibility requirements.*

Washington's Weatherization Plus Health pilot found that federal and state caps on weatherization expenditures acted as a barrier to provide comprehensive services to high-need households. In contrast, New York State's Healthy Neighborhoods program gave grantees flexibility to define the scope of services to meet local needs.

### *Effective partnerships.*

Partnerships are often vital to sustainability but only if they are strategic and effective. Characteristics of effective partnerships are described in more detail in the text box on page 5.

### *Systematic data collection.*

Good local data helps legislators, the media, and the public understand the magnitude of the problem in their state and community. For example, providing data visualizations and maps can help communities to understand the place-based nature of lead poisoning and the populations most at risk. This, in turn, can build support for both primary and secondary prevention and effective targeting of resources. For example, New York's Childhood Lead Poisoning Primary Prevention Pilot program collected evaluation data across the grantees that documented the cumulative impact of their activities. Technical assistance from the National Center for Healthy Housing supported grantee efforts to document activities systematically and to display data in graphical form. Annual conferences enabled grantees to share experiences and methods to improve press releases, public presentations, and communicate success.

Lack of high-quality data may also be a limiting factor in scaling up or sustaining the initiatives. Outcome evaluations and return on investment (ROI) are generally not publically available. However, for those programs that have collected this data, there is a growing body of impact data (see Table 2).

## CONCLUSIONS

States have long served as laboratories for program innovations. In recent years, they have demonstrated a willingness and ability to to replace or supplement funding that might come from the healthcare sector to improve community health outcomes. The innovations described here offer promising models for other states to consider. Although every state faces unique funding challenges, the practices highlighted in this report identify strategies for leveraging funding, working with new partners, and building an evidence base that can support individual states as they commit to fund or expand healthy homes or lead poisoning prevention programs. These long-standing initiatives demonstrate that positive health outcomes and returns on investment can result from states' willingness to think broadly about funding. Use of excise taxes, fees, tax credits, tobacco settlements, and other strategies can reduce the strain on states' general funds or provide evidence that the benefits are great enough to support a more sustained commitment.

## PROGRAM ACRONYMS

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|---|---|
| *ME LPPF* | *Maine Lead Poisoning Prevention Fund* |
| *MA LETF* | *Massachusetts Lead Education Trust Fund* |
| *MA GTLO* | *Massachusetts Get the Lead Out* |
| *MA PWTF* | *Massachusetts Prevention and Wellness Trust Fund* |
| *MAP* | *Montana Asthma Home Visiting Program* |
| *NJ Project ReHEET* | *Project Residential Health, Energy, and Environmental Transformation* |
| *NY LPPP* | *New York Lead Poisoning Prevention Program* |
| *NY RLRC* | *New York Regional Lead Resource Centers* |
| *NY CLPPPP* | *New York Childhood Lead Poisoning Primary Prevention Program* |
| *NY HNP* | *New York Healthy Neighborhoods Program* |
| *WA Wx+H* | *Washington Weatherization Plus Health* |

*We gratefully acknowledge the following individuals at the National Center for Healthy Housing in the preparation of this report:*

*Amanda Reddy, MS, Executive Director*
*Carol Kawecki, MA, Program Manager*
*Christopher Bloom, BA, Communications and Marketing Officer*
*Laura Fudala, BES, Project Manager*

*This report was made possible through a contract between the W.K. Kellogg Foundation and the National Center for Healthy Housing. It is part of a larger NCHH Housing as Healthcare project funded by the W.K. Kellogg Foundation with several objectives:*

- *Develop ready-made solutions and remove barriers associated with defining and funding the scope of services associated with healthy homes services.*
- *Create sustainable and readily accessible data systems to demonstrate the need for and impact of healthy homes services.*
- *Build a credible and reliable healthy homes workforce to provide healthy homes services.*
- *Manage a coordinated portfolio of policy, research, and capacity-building activities to complement and amplify the work of other stakeholders to increase our collective impact on increasing the healthcare sector's investment in healthy homes services.*

*The contents of this document are solely the responsibility of the authors and do not necessarily represent the official views of the W.K. Kellogg Foundation.*

*May 2019*

# GLOSSARY

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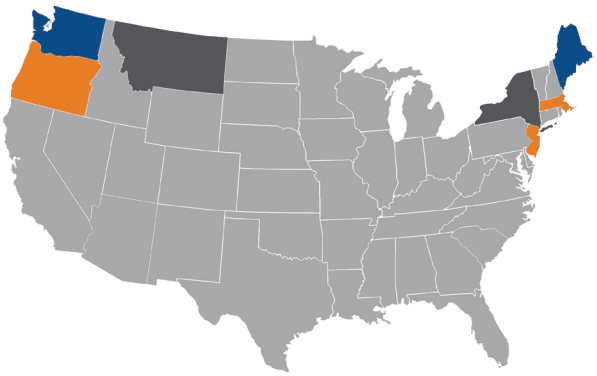
|---|---|
| ***Block Grant*** | A lump sum of federal funds awarded to a state, county, or city government for use in a general purpose. |
| ***Categorical Grant*** | Grants issued for a specific purpose, where the funds can only be used for that explicitly defined objective. The government may issue categorical grants on a per-project basis or based on a formula of purpose and financial need. The grantee agrees to adhere to the rules and regulations of that grant, or it will be withdrawn. |
| ***Competitive Grant*** | Funds awarded on the basis of a competitive process. The funder reviews applications, usually through a formal review process, in light of the legislative and regulatory requirements and published selection criteria established for a program. The review process gives the funder discretion to determine which applications best address the program requirements and are, therefore, most worthy of funding. |
| ***Deferred Loan*** | Loans for which the principal and/or interest installments are postponed for a specified period. |
| ***Excise Tax*** | Taxes paid when purchases are made on a specific good, such as gasoline. Excise taxes are often included in the price of the product. Excise taxes can also apply to activities, such as on wagering or highway usage by trucks. |
| ***Elevated Blood Lead Levels (EBLLs)*** | Blood lead concentrations, as determined by a Clinical Laboratory Improvement Amendments (CLIA)-certified facility, less than or equal to 5 µg/dL in a child or adult. |
| ***Formula Grants*** | Noncompetitive awards based on a predetermined formula. |
| ***General Fund*** | Assets and liabilities used to finance the daily and long-term operations of the government as a whole. It also includes accounts used in management of the budget. It is funded through cash collected from the public for various purposes. |
| ***Healthy Homes*** | Residences designed, constructed, maintained, and rehabilitated in a manner that is conducive to good occupant health. |
| ***Licensing Fee*** | An amount paid by an individual or business to a government agency for the privilege of performing a certain service or engaging in a certain line of business. |
| ***Revolving Loan*** | Form of loan that allows the amount to be withdrawn, repaid, and redrawn again in any manner and any number of times until the arrangement expires. |
| ***Primary Prevention*** | Practices to prevent disease or injury before it can occur by preventing exposures to hazards that cause disease or injury, altering unhealthy or unsafe behaviors that can lead to disease or injury, and increasing resistance to disease or injury should exposure occur. |
| ***Secondary Prevention*** | Practices to reduce the impact of a disease or injury that has already occurred by detecting and treating disease or injury as soon as possible to halt or slow its progress, encouraging personal strategies to prevent re-injury or recurrence, and implementing programs to return people to their original health and function to prevent long-term problems. |
| ***Weatherization*** | Services to reduce the amount of energy required to heat and cool homes and provide hot water. Weatherization reduces energy consumption and thus minimizes the impact of higher fuel costs. |



# Table 2.
# Outcomes and Return on Investment

**Note: No outcomes or ROI data were available for Multnomah County, Oregon.*

## MAINE
## Lead Poisoning Prevention Fund

### HEALTH AND HOUSING OUTCOMES

- Data from 2003 through 2013 indicate a significant drop in rates of lead poisoning in three out of the five high-risk areas receiving lead prevention services.[1]
- From January 2009 to June 2010, over a threefold increase in the number of homes inspected compared to 2007.
- In the same period, 370 landlords completed lead training courses required by the U.S. EPA. These landlords owned at least 2,900 units, two thirds of which were built before 1950.

### RETURN ON INVESTMENT (ROI)

- A 2014 study reported a ROI of $2.34 for every $1 invested from 2006 through 2012.[2]

## MASSACHUSETTS
## Lead Education Trust Fund

### HEALTH AND HOUSING OUTCOMES

- Indirectly, 20 years of lead data and 20 years of Massachusetts SAT scores showed that preventing lead poisoning helped to improve education outcomes.[3]

*RETURN ON INVESTMENT (ROI) data not available.*

## MASSACHUSETTS
## Get the Lead Out

### HEALTH AND HOUSING OUTCOMES

- As of 2018, the program has addressed 4,399 units for a total expenditure of $85,794,402.
- In 2018, 108 units were inspected.

*RETURN ON INVESTMENT (ROI) data not available.*

## MASSACHUSETTS
## Prevention and Wellness Trust Fund

### HEALTH AND HOUSING OUTCOMES

- As the statewide prevalence of asthma in zero- to nine-year-olds decreased from 13% to 10% between 2012 and mid-2016, there were larger drops in rates in four PWTF communities, while their comparison communities had milder or no decreases.
- Almost 6,000 youngsters completed school-based asthma education and care management interventions.[4]

### RETURN ON INVESTMENT (ROI)

- All PWTF communities addressing asthma showed declines in total costs per year compared to comparison communities. “Although available data are incomplete, data suggests that asthma interventions may give very good value and perhaps result in net costs savings.”[5]
- A 2017 supplement to Harvard Catalyst’s final report did not contain ROI information.[6]

## Table 2. Outcomes and Return on Investment (continued)

### MONTANA Asthma Home Visiting Program

**HEALTH AND HOUSING OUTCOMES**

- A 2016 report showed statistical improvements in several areas, including reduction in ED visits, missed school days for children, use of a rescue inhaler daily, and activity limitation.
- It also reported statistically significant increases in participants with an asthma action plan, good inhaler technique, asthma knowledge, and asthma control.[7]

**RETURN ON INVESTMENT (ROI)**

- Through the first four years of the program, program staff reported that decreases in emergency department visits, missed school days, and missed workdays among MAP participants enrolled in Medicaid contributed to an estimated $2,124 savings per participant during the year of the program.
- The total cost per participant, including staff time, travel, and materials, was $2,133.

### NEW JERSEY Project ReHEET

**HEALTH AND HOUSING OUTCOMES**

- Since 2011, ReHEET has rehabbed more than 200 homes at an average direct cost of $7,000.[8]

**RETURN ON INVESTMENT (ROI)**

- Isles, Inc. observed that each $7,000-$8,000 investment in lead-safe, energy-efficient, and healthy homes "saves the homeowner money, improves their safety and health, and keeps the home occupied, while saving the community and taxpayers much more"; also that "for every $1 invested in healthy homes or energy efficiency repairs, taxpayers—not just homeowners—receive many times more in health and energy savings."
- A 2012 analysis of the state's Neighborhood Reinvestment Tax Credit program found that every dollar in NRTC investment resulted in a leverage of $7.30 in additional resources, with 60% coming from the private sector.[9]

### NEW YORK Lead Poisoning Prevention Program

**HEALTH AND HOUSING OUTCOMES**

- NYS Department of Health data show a gradual decline in EBLLS greater than 10 µg/dL over time.[10]

**RETURN ON INVESTMENT (ROI)**

- NYS has determined that the LPPP is an essential health program. Evaluations focus on process improvements and quality management. For accountability purposes, every three to five years, counties receive state evaluation that examines both their medical and environmental services.

### NEW YORK Regional Lead Resource Centers

**HEALTH AND HOUSING OUTCOMES**

- In 2016, the annual volume of services for the three RLRCs combined was 74 educational sessions, consultations for 160 children and five pregnant women, case management for 12 children and five pregnant women, hospitalization for chelation for 24 children and one pregnant woman, and 70 capacity-building efforts.[11]

*RETURN ON INVESTMENT (ROI) data not available.*

## Table 2. Outcomes and Return on Investment (continued)

### NEW YORK Childhood Lead Poisoning Primary Prevention Program

#### HEALTH AND HOUSING OUTCOMES

From inception to 2017:

- Almost 49,250 homes had interiors inspected; 35% of these contained lead hazards. Of these homes containing lead hazards, 80% were cleared of hazards and declared "lead-safe."
- 29,383 children were impacted by the program.
- 15,693 children lived in the 10,823 housing units made lead-safe. [12]

*RETURN ON INVESTMENT (ROI) data not available.*

### NEW YORK Healthy Neighborhoods Program

#### HEALTH AND HOUSING OUTCOMES

- A 2017 program evaluation indicates reduction the overall number of hazards per home and demonstrated statistically significant improvements in fire safety, indoor air quality, tobacco control, lead poisoning prevention, pest control, moisture and mold, and other housing hazards.
- While there were improvements in nearly all of the 42 conditions assessed, the following hazards showed the largest magnitude of improvement (ordered from the maximum improvement, 95%, to 53%): missing smoke detectors, missing carbon monoxide detectors, malfunctioning appliances, blocked exits, rodents, cockroaches, leaks, electrical hazards, and molds.[13]

#### RETURN ON INVESTMENT (ROI)

- A cost-benefit analysis for residents with asthma reported a benefit of $2.03 to $3.58 for every $1 invested. Although other programs have reported higher returns on investment, this study was based on healthcare utilization; it is possible that other studies considered and monetized social benefits.[14]

### WASHINGTON Weatherization Plus Health Pilot (Enhanced and Basic)

#### HEALTH AND HOUSING OUTCOMES

- By the pilot's completion, Enhanced Wx+H funded interventions in 254 homes where at least one household member had a respiratory condition, with an additional 211 homes receiving services funded through community partners or other Department of Commerce grants. The former were more likely to receive a package of comprehensive weatherization and healthy homes interventions as well as post-intervention follow-up home visits. The latter tended to receive a lower-cost package of healthy homes services (under $,1000) because they did not qualify for the more comprehensive services or dropped out of the pilot before these could be completed. Thus, the profile of households receiving services from the pilot was not significantly different from those who would have qualified for other low-income weatherization services.
- "Although Wx+H is generating useful case study data on health benefits, the goal of providing a broad demonstration across multiple agencies was not consistent with the goal of conducting rigorous research to establish the effectiveness of these interventions on healthcare utilization."[15]

#### RETURN ON INVESTMENT (ROI)

- While no formal evaluation of return on investment has been published for Weatherization Plus Health, the weatherization work through the Washington Weatherization Assistance Program experiences a 20% reduction in energy consumption and an average reduction of $324 per year in energy bills.[16]
- In 2017, Washington State University assessed the feasibility of matching Medicaid utilization records with client records from the pilot. They concluded that the match would be marginal and not likely to detect changes in utilization rates due to client conditions, variations in the housing-level treatments, and the large share of low-income weatherization clients whose health costs are covered through Medicare, disability, or military systems.[17]

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