Strategic Plan for Asthma in Massachusetts
2015 – 2020
RELEASED MAY 2015
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Strategic Plan for Asthma in Massachusetts
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About the Asthma Prevention and Control Program at the Massachusetts Department of Public Health

The Massachusetts Department of Public Health (MDPH), Asthma Prevention and Control Program (APCP), in collaboration with other state agencies and community partners is working to improve the quality of life for all Massachusetts residents with asthma and to reduce disparities in asthma outcomes. Located within the Division of Prevention and Wellness, the program is funded by the Center for Disease Control and Prevention. The scope of the APCP activities includes conducting asthma surveillance, supporting and promoting state and regional partnerships, evaluating and sustaining effective interventions to reduce asthma disparities in Massachusetts, promoting policies that improve asthma outcomes, supporting the primary prevention of asthma, and promoting tobacco cessation and reducing exposure to second-hand tobacco smoke. Several strategies undertaken by the APCP to meet the program’s mission include:

- Develop and administer the Asthma Disparities Initiative. From 2009 – 2014, the APCP funded pilot projects in priority regions most affected by hospitalizations due to asthma in Massachusetts through several iterations of the Asthma Disparities Initiative. ADI 1 and ADI 2 were designed to improve clinical care and to develop and coordinate regional asthma coalitions. ADI 3 partnered local asthma coalitions with school districts to address asthma management and indoor air quality in schools.

- Conduct asthma surveillance.

- Support the Massachusetts Asthma Action Partnership (MAAP), a statewide coalition made up of over 80 member organizations.

- Collaborate with other health promotion and disease prevention programs and other state agencies to develop and sustain an infrastructure that supports programmatic integration to help Massachusetts residents manage their chronic diseases.

- Provide Asthma Action Plans for children and adults in seven languages.

- Administer and promote the Reducing Ethnic/Racial Asthma Disparities in Youth (READY) study. READY uses Community Health Workers (CHWs) to deliver a home-based multi-trigger
multi-component intervention for children with asthma and their families that is based in the medical home.

About the Massachusetts Asthma Action Partnership

The Massachusetts Asthma Action Partnership’s (MAAP) mission is to reduce asthma health disparities and improve the quality of life for all people with asthma in the Commonwealth by coordinating statewide efforts. MAAP is the only statewide asthma partnership that links to local efforts across the state and brings together community organizations and others to achieve sustainable statewide changes in the environment, education and quality of health care as they relate to asthma. MAAP is a program of Health Resources in Action’s Policy and Practice Department, a nonprofit, public health and medical research funding organization committed to helping people live healthier lives and creating healthy communities through prevention, health promotion and research.

Currently, MAAP has over 100 members, with representation from asthma coalitions, health centers, hospitals, parents of children with asthma, health insurers, voluntary organizations, unions, community-based organizations, school nurses, physicians, local boards of health, community activists, universities, and others. MAAP has five active committees: Steering, Healthy Housing, Healthy Schools/Child Care settings, Health (providers) and Primary Prevention. These six committees voluntarily invest their time and have provided their expertise and effort to develop this plan. The Committee Chairs - David Turcotte, Tolle Graham, Megan Sandel, MD, Alicia Morris, Polly Hoppin and Elise Pechter, along with Gretchen Latowsky and Anjali Nath in their work with the Older Adults with Asthma Taskforce, committed a significant amount of time in the development of this document. Many thanks to these individuals in their tireless efforts in developing this Strategic Plan.

Funders
This strategic plan was supported by Cooperative Agreement Number U59EH000502 from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.
The goals, objectives and strategies listed in this strategic plan represent the collective opinion of the lead partners and others who were involved in the drafting of the plan on what is needed and achievable to address asthma in the next five years. It attempts to draw on the unique opportunities present in Massachusetts and highlight the on-going work of its partners.

About Lead Partners

The lead partners agree to actively pursue the strategies for which they are listed in support of the goals and objectives of this document. It is a commitment from the partner to make that strategy occur. However, many of the commitments in the document are contingent upon available staffing and resources. Therefore, the commitments are not binding but a statement of intent. In addition, strategies may change as outcomes and processes are evaluated. We will update this plan regularly to ensure that it represents any changes to partner commitments or to the collective opinion on the best strategies.

The Massachusetts Asthma Action Partnership and the Asthma Prevention and Control Program at the Massachusetts Department of Public Health will coordinate the work under the goals related to disparities in asthma outcomes, asthma management, environmental exposures, primary prevention, and partnership. Massachusetts Department of Public Health’s Asthma Prevention and Control Program will coordinate the work under the goals related to Asthma Surveillance and State Asthma Plan evaluation. As coordinators of the State Asthma Plan, both the Massachusetts Asthma Action Partnership and the Asthma Prevention and Control Program at the Massachusetts Department of Public Health will assist the lead partners in accomplishing their work, as needed and as is feasible. They will communicate with the partners regularly and add new partners as appropriate. They will regularly update the plan.
The purpose of this document is to provide a strategic direction for reducing the burden of asthma for Massachusetts residents while reducing disparities in asthma outcomes between distinct population groups. Asthma is a complex disease that requires a multi-faceted approach; therefore no single intervention can accomplish these goals in the Commonwealth. Instead, multiple evidenced-based efforts aimed at addressing the clinical and environmental aspects of asthma are required to truly see improvements. Currently, there is no known cure for asthma. Research on the causes of asthma and on interventions to prevent asthma in high risk populations is evolving and, while greater support for science relevant to reducing the incidence of asthma is needed, strategies to address the primary prevention of asthma are emerging. Therefore, primary prevention efforts – those that focus on preventing the development of asthma – will be implemented in the areas where the weight of the evidence has been growing in recent years, including the modifiable risk factors of tobacco smoke, mold, dust-mites, workplace chemicals, psychosocial stress, obesity, and traffic proximity. In addition, numerous efforts are aimed at tertiary prevention – preventing disease complications for those with the diagnosis of asthma. These efforts require coordination to be effective and avoid duplication. This strategic plan represents a coordinated approach that targets both the clinical and environmental aspects of asthma. It relies on a strong surveillance system to inform its work. Active statewide and local partnerships are required to accomplish these goals.

The strategic plan is a living document that reflects the priorities of the partners and the opportunities available at the time of drafting. It spans the five years of 2015 - 2020. However, it will be updated at the midway point to ensure that it continues to reflect the partners’ priorities and state opportunities. Objectives of new partners will be added as necessary.

The plan builds on the extensive work of its partners over the last five years since The Strategic Plan for Asthma in Massachusetts 2009-2014 was published in 2009. It reflects the collective vision of the work that needs to be done to continue and further advance collaborative action into the future. To accomplish the plan’s goals and objectives, the participation of both new and existing partners is acknowledged as being essential.

The Burden of Asthma in Massachusetts report, published in 2014, is a companion document. It presents data that highlights the continued
need for aggressive action to improve asthma outcomes in the Commonwealth to address the pressing burden of the disease. The surveillance data contained in the Burden Document informed the goals, objectives, and targets of this plan.

There are seven goals in this plan: 1) enhance asthma surveillance to inform asthma prevention and control efforts in Massachusetts, 2) reduce disparities in asthma outcomes for Massachusetts residents, 3) improve asthma management for Massachusetts residents, 4) reduce exposure to environmental factors that cause and/or exacerbate asthma in Massachusetts, 5) advance the primary prevention of asthma in Massachusetts with innovative evidence-based initiatives to reduce risk factors that contribute to asthma onset, 6) increase capacity of the statewide and local partnerships to implement the plan and 7) evaluate Massachusetts’ progress on the plan.
What is Asthma?

Asthma is a chronic inflammatory disease of the airways. Airways become constricted with swelling and excessive mucous production, making it difficult to breathe. Common symptoms of asthma are wheezing, coughing, and chest tightness. Sometimes the symptoms become so severe they require immediate medical treatment. Asthma affects individuals differently in regards to severity, symptoms and responsiveness to treatment. When not treated, asthma can cause poor quality of life, interrupt sleep, school and work, and may result in disability and even death.

The development of asthma relies on a complex interaction between genetics and environmental exposures. The environment also plays a critical role in the worsening of asthma symptoms once a person develops asthma. For the most part, it has been very difficult to prevent asthma onset. Occupational asthma is one area where primary prevention has been found to be effective although strategies are emerging in areas where the weight of the evidence has been growing in recent years, including the modifiable risk factors of tobacco smoke, mold, dust-mites, workplace chemicals, and traffic proximity. Asthma can be controlled with environmental measures and asthma management. Public health asthma program efforts focus on reducing the burden of the disease by promoting asthma clinical management, healthy environments, education and focusing efforts on those most adversely affected by the disease.

All people with asthma should be able to lead full and active lives. This plan seeks to support Massachusetts residents in that goal, and to advance efforts around asthma prevention.

Asthma in Massachusetts

Asthma is a significant public health problem in the United States and in Massachusetts. In 2010 in the United States, over 25.7 million people currently had asthma (1 in 8 Americans), including an estimated 7 million children and 18.7 million adults. Nationally, the prevalence of asthma has been increasing since 1980 across all age, sex, and racial groups. In Massachusetts, the prevalence of asthma is among the highest reported for states across the nation.
The costs, both direct and indirect, associated with asthma are substantial. The American Lung Association estimates that asthma burdens our nation with an annual economic cost of $50.1 billion in direct health care costs and another $5.9 billion in indirect costs (lost productivity) for a total of $56.0 billion (in 2007 dollars). Furthermore, in 2008, the Centers for Disease Control and Prevention (CDC) estimated that asthma resulted in 14.4 million missed school days among children ages 5-17 years and nearly 14.2 million missed work days among currently employed adults.\(^4\)

*The Burden of Asthma in Massachusetts* report, scheduled for publication by the Massachusetts Department of Public Health in summer 2015, presents comprehensive asthma data for Massachusetts. This document, unpublished at the time of this printing, will be available at [www.mass.gov/dph/asthma](http://www.mass.gov/dph/asthma) in summer 2015.

### Background for the Massachusetts Strategic Plan on Asthma

#### The Changing Landscape

Major changes related to health care access, health disparities, and chronic disease management have occurred in the Commonwealth, and across the Nation, in the last five years. These changes offer unique opportunities to improve asthma outcomes and meet objectives in the State Asthma Plan.

#### Massachusetts Health Care Reform

On April 12, 2006, the legislature passed the Health Care Reform Act to provide increased access to health care for Massachusetts residents. This law resulted in Massachusetts having the lowest rates of uninsured residents in the nation. In the summer of 2008, the legislature passed related Health Care Reform legislation focused on containing cost and improving quality care. Again in 2012, the legislature passed legislation focused on cost containment and health care quality improvement. Massachusetts Health Care Reform informed the Federal Patient Protection and Affordable Care Act (the Affordable Care Act) of 2010.

Massachusetts Health Care Reform is based on the concept of shared responsibility between people, business and government. The law requires all persons to purchase health coverage if they can afford it; requires businesses that do not provide coverage to employees, to help pay for it; and requires the government to provide subsidies to ensure affordability. To ensure health care access for all, the law created the Commonwealth Health Insurance Connector Authority (Connector) to link individuals statewide to affordable healthcare options. The Affordable Care Act provisions taking effect in 2014 at the Federal level supersede many of the provisions of Massachusetts Health Care Reform.
Chapter 224 and the Prevention and Wellness Trust Fund

In August 2012, Chapter 224 of the Acts of 2012 “An Act Improving the Quality of Health Care and Reducing Costs through Increased Transparency, Efficiency and Innovation” was signed into Massachusetts law by Governor Deval Patrick. Chapter 224 refocused health care reform on healthcare costs through evidence-based prevention and wellness activities, and established the Prevention and Wellness Trust Fund.

The Prevention and Wellness Trust Fund (PWTF), administered by the Massachusetts Department of Public Health is a first-in-the-nation competitive grant program, providing more than $42 million to grantees over a four year period. The goal of the grant program is to reduce healthcare costs in the Commonwealth by supporting evidence-based community and clinical prevention strategies and providing activities that will simultaneously decrease preventable risk factors and illness and improve the management of existing chronic disease. Trust activities focus on four priority health conditions: pediatric asthma, hypertension, tobacco, and falls among older adults. The Trust supports community-based partnerships including municipalities, healthcare systems, businesses, regional planning organizations, and schools with interventions occurring simultaneously in clinical and community settings with required linkages across the two. In January 2014, nine communities were awarded grants through the Prevention and Wellness Trust Fund. The organizing partners in each of these communities are: Barnstable County Department of Human Services, Berkshire Medical Center, Boston Public Health Commission, Holyoke Health Center, Town of Hudson, City of Lynn, Manet Community Health Center, City of New Bedford Health Department and the City of Worcester. Six of these nine grantees will be implementing initiatives that address pediatric asthma. PWTF grantees addressing pediatric asthma may utilize a variety of mechanisms including improvements in asthma management in the primary care settings, asthma management and indoor air quality initiatives in schools and early childcare settings, and by providing home-based CHW lead asthma interventions in funded communities.

Patient Protection and Affordable Care Act (ACA)

On March 23, 2010 the landmark Affordable Care Act was signed into law by President Barak Obama. The ACA builds upon the success of Massachusetts health care reform, further improving access to coverage in Massachusetts by making health insurance more affordable and expanding eligibility for MassHealth benefits. Effective January 1, 2014, implementation of the ACA in Massachusetts means that pre-existing conditions will be covered by insurance without denials or added charges, insurers must provide an understandable Summary of Benefits and Coverage to enrollees, lifetime or annual limits on coverage are no longer permissible, cost-sharing for certain preventative services has been eliminated and insurance must cover doctor’s visits, maternity services, ER care, and prescriptions. Furthermore, the ACA increases the income
limits both for MassHealth eligibility and assistance in purchasing private coverage, resulting in greater opportunities for coverage for Massachusetts residents, including those with asthma.

The Board of Certification of Community Health Workers
The Massachusetts Board of Certification of Community Health Workers (CHWs) was established through an act of the legislature, Chapter 322 of the Acts of 2010, and signed into law by Gov. Deval Patrick on August 31, 2010, with an effective date of January 1, 2012. It was created as a result of state health care reform and is intended to help integrate community health workers into the health care and public health systems in order to promote health equity, cost containment, quality improvement, and management and prevention of chronic disease. The Board will establish standards for the education, training and work experience required of certified community health workers, standards for the education and training programs and curricula for community health workers, and requirements for renewal of certification for both community health workers and training programs. It is chaired by a designee of the commissioner of the Department of Public Health, is located at the Division of Health Professions Licensure, and includes ten additional members appointed by the governor and nominated by organizations named in the authorizing legislation.

Division of Prevention and Wellness
The Massachusetts Department of Public Health was one of four pilot states selected in 2008 by CDC to participate in an Integration Demonstration Project. This process, along with the Coordinated Chronic Disease and Health Promotion Program, eventually led to a reorganization of the Division of Prevention and Wellness at MDPH based on domains of intervention rather than diseases. This new alignment is designed to foster a more collaborative and integrative approach to the Division’s work. Although the Asthma Prevention and Control Program retained a cohesive structure after integration, it has benefited significantly from this realigned approach. Additionally, the Division of Prevention and Wellness also facilitates the Massachusetts Partnership for Health Promotion and Chronic Disease Prevention, comprised of a broad range of public and private organizations with a shared interest in the primary prevention of chronic disease, in reducing the burden of chronic disease, and in reducing health disparities while promoting health equity in the Commonwealth through policy, systems and environmental change strategies. The Partnership works to support the Massachusetts Coordinated Health Promotion and Chronic Disease Prevention Plan, an integrated strategy that simultaneously streamlines and strengthens current approaches to chronic disease prevention by crossing disease categories while strategically targeting the unequal burden of chronic disease borne by the state’s most vulnerable residents and communities.
Office of Health Equity
In 2007, the Office for Health Equity was created at the Massachusetts Department of Public Health (MDPH) to promote and coordinate disparity reduction across all bureaus. The Office promotes the health and well-being of racial, ethnic and linguistic minority populations throughout the Commonwealth by increasing the Department’s capacity to respond effectively to the critical public health needs of these communities. Because racial and ethnic minority groups currently experiencing poorer health status are expected to grow in population, while other groups will decline, the future health of Massachusetts as a whole will be influenced substantially by our success in improving the health of these racial and ethnic minorities.

One major area of focus for the Office of Health Equity is the administration of the Culturally and Linguistically Appropriate Services (CLAS) Standards for Massachusetts. The national CLAS Standards were developed by the U.S. Department of Health and Human Services in 2000. The standards offer a framework to address the structural, clinical, and organizational barriers that contribute to health disparities. The DPH CLAS Initiative develops and implements the CLAS Standards within DPH programs and agencies who receive direct service grants from DPH, although they provide a valuable framework for all agencies. The CLAS Standards address six areas: 1) foster cultural competence; 2) build community partnerships; 3) collect and share diversity data; 4) benchmark: plan and evaluate; 5) reflect and respect diversity; and 6) ensure language access. The DPH CLAS Initiative has developed a tool to assist agencies with implementing the CLAS Standards – “Making CLAS Happen: Six Areas for Action.” This manual offers innovative and practical approaches for agencies to incorporate the federal CLAS principles and practices into all aspects of organizational activities. The manual, along with additional information and resources, is available online at:

www.mass.gov/eohhs/gov/departments/dph/programs/admin/health-equity/clas
Work undertaken as a part of the Strategic Plan for Asthma in Massachusetts 2009 – 2014 resulted in many successes in efforts to enhance asthma surveillance in Massachusetts. These successes include, but are not limited to, the following:

Goal 1: Enhance Asthma Surveillance to Inform Asthma Prevention and Control Efforts in Massachusetts

- Questions were added to the BRFSS Core Survey about the industry and occupation of the adult respondents to aid in analysis of work-related asthma and environmental exposures.
- Race and ethnicity data became routinely collected as part of the Pediatric Asthma Surveillance.
- Asthma management and control measures were examined among older adults and the Asthma Among Older Adults report was issues in 2011.
- Occupational Lung Disease Bulletins were generated for the following:
  - Burden of Asthma Among Massachusetts Service Workers, 2010
- Methodology was developed and applied to generate Small area estimates of adult asthma prevalence for cities and towns in Massachusetts.
- The Toxics Use Reduction Institute produced the *Asthma-Related Chemicals in Massachusetts: an Analysis of Toxics Use Reduction Data (2009)* report.
- The Massachusetts Department of Public Health Bureau of Environmental Health Massachusetts Environmental Public Health Tracking (MA EPHT) Program Website began providing health and environmental information on asthma hospitalizations, pediatric asthma and air quality.

Goal 2: Improve Asthma Management for Massachusetts Residents

Objective A: Reduce disparities in asthma outcomes by focusing on priority populations who suffer disproportionately from higher than average hospitalizations

- The NIH-funded READY study and the HUD-funded READY2 study administered by the Massachusetts Department of Public Health APCP enrolled a total of 285 participant families and demonstrated promising results in initial analyses in addressing childhood asthma disparities.
Our Recent Successes 2009-2014

Health Resources in Action (HRiA) received a Center for Medicare and Medicaid Services Innovation Award to administer the New England Asthma Innovation Collaborative (NEAIC) project. NEAIC promotes sustainable financing and infrastructure for the delivery of cost-effective home-based care and education to children with poorly controlled asthma by community health workers (CHWs).

As a result of legislative mandate requiring EOHHS to develop a global or bundled payment system for high-risk pediatric asthma patients enrolled in the MassHealth program, the Massachusetts Children’s High-risk Asthma Bundled Payment Demonstration Program (CHABP) was developed. CHABP will provide CHW-led home visits for pediatric asthma patients enrolled in MassHealth. As of the printing of this document, the CHABP was still in development.

The Community Asthma Initiative (CAI) of Boston Children’s Hospital provides an enhanced model of care for pediatric asthma patients including asthma education and home visiting. Since 2005, the CAI has provided case management to 1,213 patients and has observed significant improvements in asthma outcomes among program participants.

In Lawrence, MA over 100 child care providers were trained and hundreds of parents received information in Spanish and English to help them protect children with asthma and improve factors in homes that affect children’s health. Trainings were provided by JSI with support from the U.S. EPA.

Objective B: Improve the standards of care in Massachusetts for the diagnosis and management of asthma

MDPH created an inventory of trainings on asthma for primary care providers and allied health professionals. Highlighting provision of asthma education to build patient’s asthma self-management skills and trainings that enhance primary care provider use of spirometry, this document is available at: http://maasthma.org

Objective C: By 2014, the partners will increase the number of health care providers that address the environmental factors related to asthma

Approximately 5,000 pediatric asthma home visits were made across Massachusetts from 2009 – 2014 from a variety of home visiting programs.

In 2013, Massachusetts’ Medicaid (MassHealth) expanded its tobacco cessation benefit such that members could make unlimited quit attempts annually with over-the-counter (OTC) medications whereas members were formerly limited to two attempts per year with OTC meds.

Objective D: By 2020, the lead partners will improve the asthma self-management of Massachusetts residents with asthma to meet or exceed targets for Healthy People 2010

An Asthma Action Plan (AAP) working group was created which developed and made available PDF versions of Action Plans for children and adults in a variety of languages available online at www.mass.gov/maclearinghouse.
Approximately 85,000 Asthma Action Plans for Children and Adults have been distributed to individuals across Massachusetts.

The Asthma Prevention and Management Initiative of Tufts Medical Center – Floating Hospital for Children provided outpatient and home-based interventions, created and facilitated self-management classes in schools and bilingual workshops to local community agencies in order to improve the quality of life for children with asthma and their families who live, work, or attend school in the Chinatown area and surrounding communities of Boston. In 2014, this program won an EPA National Environmental Leadership Award in Asthma Management.

The Kids with Asthma Can! public awareness campaign by PBS provided asthma educational materials to children with asthma in print and via the web.

Objective E: Increase sustainability of asthma care through coverage and reimbursement for a comprehensive management approach to asthma


- The Neighborhood Health Plan Asthma Program provided a variety of interventions, including home environmental assessments and durable medical equipment coverage for medication devices for its members with asthma.

- In 2013, Massachusetts’ Medicaid (MassHealth) expanded the tobacco cessation benefit such that members could make unlimited quit attempts annually with over-the-counter (OTC) medications whereas members were formerly limited to two attempts per year with OTC meds.

- In 2013, the state agency that provides employee health insurance expanded coverage to include 300 minutes of counseling in three modalities (individual, groups, and by phone) as well as all prescription medications approved by the FDA for tobacco treatment. This was an improvement over previous employee plans which covered tobacco cessation counseling in a non-standardized manner and did not cover telephone-based counseling.

- The Lowell Center for Sustainable Production, in partnership with the Asthma Regional Council of New England produced the Asthma: A Business Case for Employers and Health Care Purchasers report in 2010.

Objective F: Improve the integration of care outside the health care setting with schools and child care settings

- The Asthma and Allergy Foundation of America - New England Chapter trained 1,249 child care providers in Massachusetts with mini-grants.

- The Massachusetts Department of Public Health APCP funded the Asthma Disparities Initiative Phase #3, which focused on improving policies that support improved asthma management and environmental conditions in school settings. ADI Phase #3 funds the Boston
Healthy Homes and Schools Collaborative and the Pioneer Valley Asthma Coalition to work with local school districts on incorporating asthma management and indoor air quality policies into their District Wellness Policies.

- The Massachusetts Department of Public Health Asthma Prevention and Control Program produced the Caring for Kids with Asthma: A Guide for Massachusetts Child Care Programs guidance document for childcare educators.
- Mass DPH Division for Perinatal, Early Childhood & Special Health Needs revised the Regional Consultation Program Nurses Asthma Medication Module for Early Childhood Educators/Providers.

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**Goal 3: Reduce Exposure to Environmental Factors that Cause and/or Exacerbate Asthma in the Commonwealth**

*Objective A: Reduce exposure to specific outdoor air pollutants linked to asthma development and worsening asthma symptoms by 2014*

- Under MassCleanDiesel, MassDEP has completed six programs and is in the process of completing and/or implementing another three programs to reduce pollution in up to 2,817 diesel engines:
  - **MassCleanDiesel: Clean Air for Kids Diesel School Bus Retrofit Program** installed pollution controls technologies on 2,114 diesel-powered school buses that served nearly 310,000 students in 300 local communities.
  - **MBTA Locomotive Head End Power Repower Program** repowered 18 head-end power (HEP) generator sets in its commuter locomotive fleet. HEP generators supply electrical power used for heating, cooling, and lighting the passenger coaches. Although much smaller than main locomotive engines (670 horsepower versus 3,000 horsepower), HEP engines typically consume 40 percent or more of the diesel fuel used by a locomotive and emit a substantial amount of the total emissions.
  - **Waste Collection Vehicle Retrofit Program** retrofitted 203 waste collection vehicles owned by municipal and private waste haulers with diesel oxidation catalysts (DOCs).
  - **Heavy-Duty Diesel Vehicle Retrofit Program** retrofitted 341 heavy-duty vehicles, including dump trucks; plow trucks, rack trucks, truck/crane combination vehicles, and front end loaders with DOCs. The vehicles are owned by the Massachusetts Department of Transportation (MassDOT) and the Department of Conservation and Recreation (DCR).
  - **Northeast Hybrid Truck Consortium Hybrid Truck Purchasing Program** offset the incremental cost (up to 25% or $40,000) of purchasing 11 diesel medium- and/or heavy-duty hybrid trucks for commercial fleets and utility fleets as replacements for the conventional diesel-powered trucks.
  - **Massport Fish Pier Electrification Project** enabled six fishing
vessels berthed at the Boston Fish Pier to switch power from diesel engines to the electrical grid system.

- **MassCleanDiesel: Clean Market Program** is funding the installation of retrofit technologies and idle reduction technologies for freight trucks, and replacement of diesel transportation refrigeration units (TRU) with electric units operating at markets, distribution facilities, and warehousing centers. The target fleets include up to 85 privately owned on-road and stationary equipment.

- **MassCleanDiesel: Vehicle Repower Program** is funding the repower of diesel front-end loaders operating at facilities that handle bulk materials, including road salt storage and distribution facilities, blacktop plants, and concrete plants. The funding will allow vehicle owners to repower up to 14 engines from Tier 0 to Tier 1 standards.

- **MassCleanDiesel: State Fleet Retrofit Program** is funding the retrofit of up to 25 MassDOT-owned diesel vehicles (i.e., John Deere series 544 and 644 wheeled loaders) with EPA-verified diesel particulate filters (DPFs).

- A Massachusetts town asked the Bureau of Environmental Health for help to decide whether to allow construction of a new asphalt plant within the town limits. Asphalt production releases several dangerous pollutants into the air. For people living nearby, the pollutants might aggravate respiratory conditions like asthma. The Massachusetts Tracking Program looked at the available state tracking data for childhood asthma and rates of hospital stays. The tracking program also evaluated potential health outcome patterns related to emissions from the asphalt plant. Data from the state tracking network informed policymakers about the potential effects of asphalt production on public health. Ultimately, based in part on the data and recommendations provided by the Massachusetts Tracking Program, the zoning board in this town denied the permit required for the asphalt plant.

**Objective B: Reduce Exposures to Factors that Cause and/or Exacerbate Asthma in School, Child Care and Child Recreational Settings**

- The Indoor Air Quality Task Force, convened under the 2009 – 2014 Strategic Plan, was instrumental in developing the first Green Ribbon Schools Award Conference in Massachusetts and developing a resource guide for Massachusetts’ schools.

- The Pioneer Valley Asthma Coalition, as part of the Asthma Disparities Initiative Phase #3, developed and made available online training for teachers and school staff on asthma triggers, symptoms, and warning signs, and also to aid in developing school policies to address air quality issues.

- The Safe Cleaning Products and Practices Work Group, a collaboration between DPH, the Massachusetts Department of Early Education and Care (EEC) and early childhood educators revised and distributed the revision of Early Education and Care Policy Paper on Safe Cleaning Products and Practices.
Objective C: Reduce Exposures to Factors that Cause and/or Exacerbate Asthma in the Home Setting
■ The Massachusetts Partnership for Health Promotion and Chronic Disease Prevention Tobacco-Free Living Community of Practice initiated a number of strategies with the objective of increasing the percentage of smokers in Massachusetts who report that they have a “no smoking in the home” policy by 5% by 2017.
■ The Massachusetts Department of Public Health and the Massachusetts Department of Housing and Community Development partnered to develop and release guidelines for implementing a smoke-free rule to help Local Housing Authorities implement smoke-free housing on a voluntary basis.

Objective D: Reduce Exposures to Factors that Cause and/or Exacerbate Asthma in the Work Place
■ The following Occupational Lung Disease Bulletins were published:
  ■ Fall 2013 On-The-Job Exposure to Environmental Tobacco Smoke (ETS) in Massachusetts
  ■ Summer 2013 Disinfecting Surfaces and Asthma
  ■ October 2012 Burden of Asthma Among Massachusetts Service Workers, 2010
  ■ Winter 2011-2012 Hair Straightening with Health Risks
  ■ January 2011 Work-Related Asthma Among Laboratory Animal Workers
  ■ April 2010 Some Chemicals Linked to Asthma are Used by Massachusetts Companies
  ■ September 2009 Burden of Asthma in Massachusetts Adults
  ■ May 2009 Baker’s Asthma
■ Information about industry and occupation were included in the BRFSS and enabled MDPH to demonstrate the prevalence of asthma among service occupations as well as the decline in exposure to environmental tobacco smoke at work, with a few notable occupational exceptions.
■ MDPH continued to conduct surveillance of sentinel cases of work-related asthma which provided information about industries, occupations and exposures associated with WRA. These data were shared with NIOSH and will be updated on the electronic Work Related Lung Disease Surveillance System (www2a.cdc.gov/drds/worldreportdata).

Goal 5: Increase Capacity of the Statewide and Local Partnerships to Implement the Strategic Plan for Asthma in Massachusetts

Objective A: Increase the capacity of MAAP and MAAP members to tackle asthma
■ From 2009–2014, the MAAP steering and four sub-committees met bi-monthly and convened 12 bi-annual MAAP summits, with no less
than 75 members in attendance at each summit.

- MAAP’s diverse membership has grown from 72 to 132 active members between 2009 and 2014. MAAP’s membership consists of community members from local asthma coalitions and representatives from health centers, hospitals, public health organizations and foundations, community based organizations, health insurance companies, local boards of health, pharmaceutical companies, research institutions, schools as well as local boards of health and state and Federal government agencies.

- MAAP has supported the growth of partnerships statewide by coordinating statewide advocacy, policy, and education efforts, with a focus on promoting the use of evidenced based practices such as: supporting community health workers, promoting the US EPA Tools for Schools framework, advocating for environmental health related revisions to the MA state sanitary code and encouraging adaption of prevention strategies that reduce costs associated with asthma care. MAAP has focused efforts on reducing asthma-related health disparities in the Commonwealth of Massachusetts’ most impacted populations—Blacks and Latinos, low-income families and urban residents.

- A Taskforce on Older Adults with Asthma was convened by DPH, MAAP, and JSI, creating new networks, gathering recommendations, and forming a new MAAP workgroup.

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Goal 6: Evaluate Massachusetts’ Progress on the Strategic Plan for Asthma in Massachusetts

- MDPH evaluated its Pediatric Asthma Prevalence Measures in order to clarify, coordinate, and enhance its ability to provide the most useful surveillance data for addressing asthma among children.

- An evaluation of the MDPH Asthma Disparities Initiative was used to assess and bolster this model of clinical/community linkages. Results, including lessons-learned, were shared at the 2013 annual meeting of the American Public Health Association. In 2014, this evaluation received the CDC National Asthma Control Program Evaluation Award.

- The APCP, along with the MDPH Office of Community Health Workers and JSI consultants, conducted an assessment of the infrastructure needed to support CHW asthma services that is being used to advance CHW training, licensure, and supervision in preparation for service-reimbursement by insurers.

These efforts in Massachusetts serve as the backdrop for the State Asthma Plan.
The framework of the *Strategic Plan for Asthma in Massachusetts 2015 – 2020* is the social ecological model. This model recognizes that preventing asthma and improving asthma control is not the sole responsibility of the person with asthma. Instead, many factors affect a person’s asthma: the quality of health care they receive, the environmental exposures in the home, school, child care or work environment, the air they breathe and their own individual behaviors. To truly reduce disparities in asthma outcomes and improve the quality of life for all people with asthma, we need to take collective action on multiple levels (individual, family, community, and society) and in multiple settings (health care facilities, homes, schools, child care settings, work, and outdoors).

**A Note about Baseline Measures & Targets:**

This plan is very similar to the first *Strategic Plan for Asthma in Massachusetts (2009 – 2014)*. Therefore, this Strategic Plan retains the baseline measures utilized in the 2009 – 2014 Plan and develops new targets for 2020. The data used to track systematic improvements on asthma-related health outcomes and reductions in environmental exposures are often delayed several years making tracking Plan progress difficult. Baseline measures were retained to track progress from the two Plans since they have similar goals, objectives, and activities.

Targets for 2020 represent statistically significant changes in baseline measures unless otherwise noted.
Goals, Objectives, Strategies
Surveillance is the ongoing systematic collection, analysis, interpretation and timely dissemination of health data for use in public health practice. The ultimate goal is to inform actions that aim to reduce morbidity and mortality and to improve health. As the foundation of a public health approach to prevention, surveillance is essential to planning, implementing, and evaluating public health efforts. Accordingly, asthma surveillance data should help asthma prevention and control advocates and professionals working with affected populations define public health priorities, plan effective interventions, and develop policies to reduce the burden of asthma in Massachusetts.

The diagram below demonstrates the public health model for prevention.

Several programs at MDPH collect, analyze, disseminate and/or use asthma data. These include, but are not limited to the following programs:
- Asthma Prevention and Control Program
- Occupational Health Surveillance Program
- Environmental Public Health Tracking Program
- School Health Services Program
- Health Survey Program
- Office of Community Health and Tobacco Use Prevention
Several data sources are available to and utilized by multiple programs at MDPH to provide a picture of asthma in Massachusetts. The Behavioral Risk Factor Surveillance System (BRFSS) provides state- and regional-level prevalence estimates for adults and children and incidence estimates for adults. The Asthma Call-back Survey provides state-level prevalence estimates of various asthma management and control activities among people with asthma. The Massachusetts Youth Health Survey provides state prevalence estimates among school-aged children in middle and high school. The Pediatric Asthma Survey estimates the state and municipal-level prevalence among elementary and middle school-aged children (K through 8th grade). The Essential School Health Services (ESHS) program data documents the wide variety of duties performed by school nurses funded through the ESHS initiative. Data pertaining to hospitalizations, observation stays, and emergency department visits due to asthma are available from all acute care hospitals in Massachusetts except federal, psychiatric, or rehabilitation hospitals and private clinics. Mortality data from the Massachusetts Registry of Vital Records and Statistics are used to examine deaths with asthma listed as the cause of death. For case-based surveillance, the MDPH Occupational Health Surveillance Program investigates new and work-aggravated cases of asthma among workers identified through the Massachusetts Work-related Asthma Surveillance and Prevention (WRASP) project (www.mass.gov/dph/ojsp). Regarding the sanitation and condition of public institutions, the Indoor Air Quality Program conducts assessments of the indoor air quality of public buildings in Massachusetts. Copies of the Indoor Air Quality reports are available online (www.mass.gov/dph/environmental_health).

While these data sources are extremely useful for conducting asthma surveillance, the data are subject to limitations. These limitations include:

- Prevalence estimates are based on self-report or school nurse report, not documented physician diagnoses.
- Hospitalization and ED usage rates are based on visits not individuals.
- Work-related asthma data are limited due to underreporting of occupational diseases as a whole.
- Currently, there is no public access to data on the utilization (and quality) of primary care services for asthma, including routine check-ups. It is expected that this data will be available in the All Payer Claims Database during the period covered by this Strategic Plan.
- Hospitalization, ED and mortality data are subject to delays in data availability and cannot be tracked in real time.
- The sample size for the Asthma Call Back Survey is small, limiting the ability to examine risk factors for poor asthma outcomes.
- Due to the application of the new “raking” weighting technique on BRFSS datasets for 2011 and later, trends cannot be analyzed across this year of data.

Goal 1 focuses on enhancing the collection, analysis, dissemination and use of Massachusetts asthma data to better inform asthma prevention.
OBJECTIVE: Conduct routine surveillance activities.

Lead Partners: Massachusetts Department of Public Health Asthma Prevention and Control Program is the lead on all activities under this Objective, unless otherwise noted.

Target: Maintain 10 data sources for asthma surveillance

I. From 2015 – 2020, the lead partner will maintain the following current data sources for asthma surveillance activities.
   b. Adult Asthma Call-Back Survey, MDPH – Asthma history, management, environmental and work-related factors
   c. Child Asthma Call-Back Survey, MDPH – Asthma history, management, environmental factors
   d. Massachusetts Inpatient Hospital Discharge Database, Center for Health Information and Analysis (CHIA) – Inpatient hospitalizations (All ages)
   e. Massachusetts Emergency Department Discharge Database, CHIA – Emergency department visits (All ages)
   f. Massachusetts Outpatient Observation Stays Database, CHIA – Outpatient observation stays (All Ages)
   g. Massachusetts Registry of Vital Records and Statistics, MDPH – Mortality (All Ages)
   h. Massachusetts Work-related Asthma Surveillance and Prevention (WRASP) project, MDPH – Work-related asthma case-based information including industry, occupation, exposures
   i. Massachusetts School Based Pediatric Asthma Surveillance MDPH – Prevalence (Grades K-8)
   j. Massachusetts Youth Health Survey, MDPH – Prevalence (Middle and High school) School Based Pediatric Asthma Surveillance
   k. Massachusetts All Payer Claims Database

OBJECTIVE: Enhance data collection sources for asthma surveillance.

Lead Partners: Massachusetts Department of Public Health Asthma Prevention and Control Program is the lead on all activities under this Objective, unless otherwise noted.

Measures: Enhance at least 1 data collection system
Potential areas include:

I. By 2020, increase the Behavioral Risk Factor Surveillance System Survey (BRFSS) Asthma Call-Back Survey (ACBS) sample size for children and adults by seeking additional funding to perform ACBS on at least 2 survey splits.

II. By 2020, begin reviewing MA-RI Regional Poison Control Center case reports of work-related poisonings from health care providers for cases of symptomatic asthma. *Lead Partners: Massachusetts Department of Public Health – Occupational Health Surveillance Program (OHSP)*

III. By 2020, explore opportunities to collect data on diagnosed asthma prevalence in the 0 -5 years age population in early childhood settings. *Lead Partners: Massachusetts Department of Public Health – Division of Perinatal, Early Childhood, and Special Health Needs, Massachusetts Department of Early Education and Care*

**OBJECTIVE:** Expand analyses for asthma surveillance.

**Lead Partners:** Massachusetts Department of Public Health Asthma Prevention and Control Program is the lead on all activities under this Objective, unless otherwise noted.

**Target:** Expand asthma surveillance to include at least 2 additional analyses.

Potential expanded areas include:

I. Expand information related to asthma disparities by geography of residence, age group, education level, insurance status, industry and occupation, country of birth, primary care utilization and pharmacy utilization.

II. Identify characteristics of those with not well-controlled and very poorly controlled asthma, including direct and indirect costs, using the BRFSS Asthma Call Back and All Payer Claims Database.

III. Analyze the burden of asthma among populations with small sample sizes (e.g. rural areas, ethnic subgroups, spoken language).

IV. Expand local data analyses to include adult asthma prevalence at the community level using Small Area Estimation techniques and produce Community Fact Sheets for selected communities.
V. Analyze work-related asthma among teachers and other school-based workers and release results in an Occupational Lung Disease Bulletin. *Massachusetts Department of Public Health – Occupational Health Surveillance Program*

VI. Analyze aggregated available data on Massachusetts' pediatric asthma home visits, including a cost analysis, which includes data from the APCP, Asthma Regional Council of New England, and other partners, as available and release the results in a data bulletin.

VII. Explore potential use of the Massachusetts Pregnancy Risk Assessment Monitoring System (PRAMS), or other surveillance data sources, to describe prevention of asthma onset in Massachusetts.

VIII. Explore potential use of asthma surveillance data to describe factors related to asthma in school-aged children and the school setting.

IX. Explore potential usages of the All Payers Claims Database administered by the Massachusetts CHIA. By 2017, MDPH will develop an analysis plan and conduct analyses of asthma measures captured in the All-Claims database with a particular emphasis on use of primary care services and MassHealth (Medicaid) data and the cost of asthma among older adults to insurers and communities.

**OBJECTIVE:** Identify and utilize new data sources for asthma surveillance.

**Lead Partners:** Massachusetts Department of Public Health Asthma Prevention and Control Program

**Target:** Utilize 1 new data source.

Potential expanded areas include:

I. Explore the use of MDPHNet, as a new data source for ambulatory care data.

II. Explore the use of PRAMS for factors related to asthma onset in the first 1000 days of life.

**OBJECTIVE:** Update and disseminate asthma data in reports used by local, state, and national partners.

**Lead Partner:** Massachusetts Department of Public Health Asthma Prevention and Control Program
Target: Disseminate data products.

I. The Burden of Asthma in Massachusetts report, at least every 5 years (MDPH APCP)

II. BRFSS report, annually (MDPH Health Survey Program)

III. Youth Health Survey report, in alternate years (MDPH Health Survey Program)

IV. Pediatric Asthma Surveillance report, annually (MDPH Bureau of Environmental Health)

V. Essential School Health Services report, annually (MDPH School Health Program)

VI. Instant Topics report on MassCHIP, as data is available (MassCHIP)

VII. Environmental Public Health Tracking website, periodically (MDPH Bureau of Environmental Health)

VIII. APCP website, periodically (MDPH APCP)

IX. Occupational Lung Disease Bulletin, semi-annually (MDPH Occupational Health Surveillance Program)

X. Massachusetts State Asthma Plan, as revised (MDPH APCP)

XI. Participation at state and national conferences, routinely (all lead partners)

XII. Metropolitan Area Planning Council website (Metropolitan Area Planning Council)

XIII. Annual APCP Special Topic Data Bulletin (MDPH APCP)

XIV. Massachusetts city and town asthma fact sheets (MDPH APCP)

XV. Asthmagens fact sheet available at: www.turi.org/TURI_Publications/TURI_Chemical_Fact_Sheets/Asthma-related_Chemicals (Toxics Use Reduction Institute)

OBJECTIVE: Increase the understanding and use of asthma data in Massachusetts.

Lead Partner: Massachusetts Department of Public Health Asthma Prevention and Control Program
**Target:** Increase the number of partners utilizing MDPH asthma data products.

I. Complete and track customized requests for asthma data by individuals and groups outside of the APCP.

II. Ensure public access to up-to-date asthma surveillance data through MassCHIP, EPHT, MDPH website, bulletins, fact sheets, reports, and presentations.

III. Provide technical assistance to internal and external stakeholders on the use of asthma surveillance data, including dissemination of the Pediatric Asthma Prevalence Measures fact sheet.

IV. Promote the use of asthma data to inform policy and programming for asthma prevention and control.

**Objective:**

Continue coordination of asthma surveillance activities among key MDPH programs.

**Lead Partner:** Massachusetts Department of Public Health

**Target:** Meetings attended by key MDPH programs.

I. Continue to participate in intra- and inter-agency scientific workgroups that relate to asthma surveillance (e.g. BRFSS Workgroup, Internal Asthma Working Group, YHS Workgroup, Office of Statistics and Evaluation meetings).
In Massachusetts, Black non-Hispanics, Hispanics, very young children, older adults and women have the highest hospitalization rates for asthma even though, with the exception of women, they do not have higher prevalence rates in the state. Class and the social experience of race play important roles in explaining the excess rates of asthma prevalence, severity and mortality in low-income, urban communities. For example, Blacks are twice as likely to be hospitalized and almost twice as likely to die from asthma as Whites. Research has linked disparities in asthma outcomes to differences in the quality of care and environmental exposures, among other factors. Strategies to tackle asthma disparities should involve both clinical and community interventions to address both clinical and socio-economic factors. One of the overall goals of the Strategic Plan for Asthma in Massachusetts 2015 – 2020 is reducing disparities in asthma outcomes for those Massachusetts residents disproportionally affected by the disease for reasons of age, gender, race, socioeconomic status and geography and this commitment to reducing disparities is reflected in Activities throughout the Plan. Goal 2 focuses on those Activities that specifically target priority populations (Black non-Hispanics and Hispanic residents, children aged 0-4 years and adults aged 65+ years) for the reduction of disparities throughout the Commonwealth.

In Massachusetts, rates of asthma-associated hospitalization and ED visits for Black non-Hispanic and Hispanic children are three to four times the White non-Hispanic children. Currently, many Massachusetts organizations have addressed childhood asthma disparities by implementing well-designed interventions (home-based multi-trigger multi-component asthma education provided by CHWs) that have demonstrated reductions in asthma morbidity. Large-scale reimbursement for these interventions by payers has not yet been achieved, yet opportunities to improve asthma outcomes at the population health level by significantly decreasing the hospitalization and ED rates among these sub-groups through participation in asthma home visits exists. Using methodology described in Davis and Herman’s paper, Considerations and Challenges for Planning a Public Health Approach to Asthma 2011, the number of participants in such programs needed to achieve a population health impact was calculated and informs a major effort of this Goal.

The need for public health action to address asthma among older adults in Massachusetts is evident. Approximately 17% of the 5.1 million
adult residents of the Commonwealth are aged 65 and older, and this population is projected to grow in the coming years. Recent surveillance findings from the Asthma Prevention and Control Program in the Massachusetts Department of Public Health revealed that, consistent with national findings, older adults had the second highest asthma hospitalization rate and the highest asthma mortality rate of any age group in the Commonwealth. Based on these findings, the Strategic Plan for Asthma in Massachusetts, 2015 – 2020 has identified older adults as a priority population for interventions.

Finally, disparities by geography are apparent in Massachusetts. Rates of asthma prevalence, hospitalizations, and ED visits vary significantly across cities and towns in the Commonwealth. The APCP has begun to analyze disparities in adult asthma prevalence at the city and town levels using small area estimates and produce local fact sheets for priority communities, although these data products are not available at the time of the printing of this Plan. These tools will assist local municipalities in understanding the disparities in asthma outcomes in their communities in order to drive the development of strategies to reduce disparities.

A **OBJECTIVE:** Reduce disparities in asthma outcomes by focusing on priority populations who suffer disproportionately from higher than average hospitalizations and Emergency Department visits.

**Baseline:** In 2006 – 2007, the age-adjusted rates of hospital discharges due to asthma among priority populations with rates above the state average were:
- Children ages 0-4 years: 129.7 per 10,000 people
- Adults ages 65+ years: 20.1 per 10,000 people
- Young males (ages 0 – 14 years): 26.96 per 10,000 people
- Adult women (ages 19 years and older): 15.01 per 10,000 people
- Black non-Hispanic and Hispanic residents: 30.60 per 10,000 people

**Target 2020:** Significantly reduce the hospitalization rates in priority populations from Baseline rates.
- Children ages 0-4 years: reduce rate by 5%
- Adults ages 65+ years: reduce rate by 4%
- Young males (ages 0 – 14 years): reduce rate by 5%
- Adult women (ages 19 years and older): reduce rate by 3%
- Black non-Hispanic and Hispanic residents: reduce rate by 4%

I. From 2015 – 2020, APCP will analyze data for specific “priority” populations that have significant disparate outcomes for asthma hospitalizations and observation stays (based on geographic area, age, gender, race/ethnicity, primary care utilization and pharmacy utilization data) in all data reports. **Lead Partners:** Massachusetts Department of Public Health – APCP
II. From 2015 - 2020, in order to achieve a population level decrease in the state Emergency Department rates for pediatric asthma among Black non-Hispanic and Hispanic children, the lead partners will provide 5,000 multi-trigger multi-component home interventions for children with asthma. 

**Lead Partners: Massachusetts Department of Public Health, Asthma Regional Council of New England, Boston Medical Center, Baystate Medical Center, Boston Children’s Hospital, Boston Public Health Commission, MassHealth, Prevention and Wellness Trust Fund Grantees**

III. From 2015 - 2020, develop and promote best practices that are effective in addressing asthma disparities in priority populations. 

**Lead Partners: Massachusetts Asthma Action Partnership, Cambridge Public Health Department/Cambridge Health Alliance, University of Massachusetts – Lowell Healthy Homes Program, City of Lawrence Mayors Health Taskforce, American Lung Association of the Northeast, Boston Medical Center, Centro de Apoyo Familiar, JSI Research and Training Institute, Inc., World Education, Inc., Floating Hospital for Children at Tufts Medical Center, South Shore Hospital**

- a. During 2015 – 2020, the lead partners will identify and evaluate interventions that are effective in reducing asthma disparities for priority populations. **Lead Partners: Network Health Plan, Neighborhood Health Plan**

- b. During 2015 – 2020, the lead partners will disseminate interventions that are effective in reducing disparities for older adults addressing older adults with asthma. **Lead Partners: Massachusetts Department of Public Health – APCP, University of Massachusetts – Lowell Healthy Homes Program, Boston Public Health Commission**

- c. From 2015 - 2020, the lead partners will disseminate and implement best practices that are effective in reducing disparities for priority populations. **Lead Partners: Asthma and Allergy Foundation of America – New England Chapter**
  - From 2015 – 2020, the lead partners will disseminate an existing evidence-based intervention for improving quality of pediatric asthma care delivery by increasing demand for CHW-led multi-trigger multi-component asthma home visits among priority populations. **Lead Partners: Massachusetts Department of Public Health – APCP**
  - From 2015 – 2020, the Massachusetts Department of Public Health will promote and support the set of recommendations generated by the Older Adult Task Force for public health and health care institutions to improve asthma outcomes for adults aged 65 and older. **Lead Partners: Massachusetts Department of Public Health – APCP, Boston Public Health Commission**
  - During 2015 - 2020, the Massachusetts Department of Public Health will provide technical assistance to support asthma self-management activities in priority geographic areas in
order to decrease asthma hospitalizations and reduce disparities in priority populations. *Lead Partners: Massachusetts Department of Public Health – APCP*

**IV.** From 2015 - 2020, the lead partners will support asthma coalition activities in the priority geographic areas in order to increase local collaboration and local policies that will decrease asthma hospitalizations and reduce disparities in the priority populations. *Lead Partners: Massachusetts Asthma Action Partnership, Cambridge Public Health Department/Cambridge Health Alliance, University of Massachusetts – Lowell Healthy Homes Program, City of Lawrence Mayors Health Taskforce, American Lung Association of the Northeast, Boston Medical Center, Centro de Apoyo Familiar, JSI Research and Training Institute, Inc., World Education, Inc., Floating Hospital for Children at Tufts Medical Center, South Shore Hospital, Massachusetts Department of Public Health – APCP*
Asthma is a chronic disease that can have a significant impact on the quality of life of both the person with asthma as well as his or her family. Uncontrolled asthma can result in the inability to breathe, wheezing, tiredness, stress, inability to work or go to school, and in rare cases death. While we don't yet have a cure for asthma, asthma can be controlled. With proper asthma management that includes avoidance of asthma triggers, a person with asthma can lead a full and healthy life. This section focuses on the management of asthma in clinical and community settings.

Even though asthma is a complex disease to manage, better asthma control by people with asthma in Massachusetts is an achievable goal. Advances in medical research have led to improved understanding of asthma and how it works as well as improved treatment options. The most recent asthma guidelines promulgated by the National Asthma Education and Prevention Program in 2007, the Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma provide guidance to health professionals based on the most current research on the appropriate diagnosis and management of asthma. The EPR3 breaks down asthma management into four components: assessment and monitoring, patient education, control of factors contributing to asthma severity, and pharmacologic treatment.

The EPR3 divides effective clinical asthma management into four components: 1) measures of assessment and monitoring; 2) education for a partnership in asthma care, 3) control of environmental factors and comorbid conditions that affect asthma, and 4) pharmacological therapy. The overall goal of therapy is to control asthma by reducing impairment and reducing risk.

**Assessment and Monitoring.** The diagnosis of asthma includes patient history, physical examination, and pulmonary function testing. The EPR3 recommends that office-based physicians who care for asthma patients have access to spirometry for the diagnosis and monitoring of asthma. However, not all of Massachusetts office-based physicians have access to spirometry. Studies have shown that low income communities of color are often the last to see benefits from medical technology.\(^8\)

**Education.** Education for the self-management of asthma is essential for asthma control. Asthma education should be integrated into all
aspects of asthma care and at every opportunity. It requires repetition and reinforcement at every level of clinical care (e.g. ambulatory care, hospitals, specialty care) and in many community settings (e.g. schools, work sites, homes, pharmacies). EPR3 recommends that all patients receive a written asthma action plan that includes instructions for daily management of the disease and information on how to recognize and handle worsening symptoms. True asthma control requires an active partnership between the patient and family and health professional(s).

Environment. For successful management of asthma, the EPR3 states that it is important “to identify and reduce exposures to relevant allergens and irritants and to control other factors that have been shown to increase asthma symptoms and/or precipitate asthma exacerbations.” It divides these factors into five categories: inhalant allergens, occupational exposures, irritants, comorbid conditions, and other factors (such as influenza). This objective focuses on the clinician’s role in identifying and reducing some of these factors.

Comprehensive Pharmacologic Therapy. Asthma is a chronic disorder that has recurrent episodes and that may have differing levels of severity over time. “Pharmacologic therapy is used to prevent and control asthma symptoms, improve quality of life, reduce the frequency and severity of asthma exacerbations, and reverse air flow obstruction.” Asthma medications are categorized into two general classes: long-term control medications and quick-relief medications. Patients who have persistent asthma require both classes of medications.

This goal uses the EPR3 as the underpinning of all its objectives and activities. While most health care providers are aware of these national standards, many individuals in Massachusetts do not receive all of the recommended components of quality asthma care. Goal 3 seeks improved systems of care and clinical outcomes for all individuals with asthma in Massachusetts.

**OBJECTIVE:** Improve the standards of care in Massachusetts for the diagnosis and management of asthma.

**Baseline:** In 2006–2010, the rates of children and adults with current asthma who received appropriate asthma care according to the NAEPP guidelines were:
- 45.0%* of children and 33.4%* of adults received a written asthma management plan (i.e. asthma action plans) from their health care providers
- 98.1% of children and 67.3% of adults currently prescribed inhalers received instruction on their use

*2006-2007 data
85.2% of children and 66.7% of adults received education about appropriate response to an asthma episode

57.4% of children and 54.3% of adults did not use more than one canister of short-acting inhaled beta agonist per month

44.5% of children and 41.9% of adults were advised by a health professional to change things in their home, school, and work environments to reduce exposure to irritants or allergens to which they are sensitive

79.3% of children and 57.9% of adults had at least one routine follow-up visit in the past 12 months

9.8% of adults who had discussed with a doctor or other health professional whether their asthma was work related

**Target 2020:** Significantly increase the proportion of persons with current asthma who receive appropriate asthma care according to the NAEPP guidelines.

50% of children and 38% of adults receive a written asthma management plan (i.e. asthma action plans) from their health care providers

98.4% of children and 70.3% of adults currently prescribed inhalers receive instructions on their use

98.4% of children and 68.3% of adults receive education about appropriate response to an asthma episode

59.1% of children and 57.2% of adults do not use more than one canister of short-acting inhaled beta agonist per month

46.9% of children and 43.1% of adults are advised by a health professional to change things in their home, school, and work environments to reduce exposure to irritants or allergens to which they are sensitive

80.2% of children and 66.7% of adults have at least one routine follow-up visit in the past 12 months

12.1% of adults who discuss with a doctor or other health professional whether their asthma is work related

**Background:** Data from the BRFSS Asthma Call Back Survey suggests that asthma is largely uncontrolled in Massachusetts.

In Massachusetts, for the years 2006 – 2010, 26.2% of adults with current asthma were classified as having well-controlled asthma while 73.8% adults were classified as having not well or very poorly controlled asthma. Twenty-five percent of adults with current asthma reported that their asthma symptoms made it difficult to sleep in the past 30 days. In addition, 66.0% of adults with current asthma experienced symptoms of asthma at least once in the past 30 days. At the same time, only 35.3% of adults with current asthma reported using inhaled corticosteroids in the past 3 months.

For those same years, 33.8% of Massachusetts children with current asthma were classified as having well-controlled asthma while 66.2% were classified as having not well or very poorly controlled asthma.
Approximately 22% percent of children with current asthma had asthma symptoms that made it difficult to sleep in the past 30 days. In addition, 45.0% of children with current asthma experienced symptoms of asthma at least once in the past 30 days. At the same time, only 31.1% of children with current asthma used inhaled corticosteroids in the past 3 months.\textsuperscript{10}

The Healthcare Effectiveness Data and Information Set (HEDIS) is a tool used by more than 90 percent of America’s health plans to measure performance on dimensions of care and service, developed by the National Committee for Quality Assurance (NCQA). In 2013, the asthma measure was updated to include an asthma medication ratio measure which assesses the ratio of controller medications prescribed to all medications prescribed. This measure replaces the previous measure of limited utility. It is unclear at the time of this printing if and when all health plans will initiate reporting on the new measure. Therefore, HEDIS data currently has limited use in understanding the quality of care provided by physicians for asthma in Massachusetts. In Massachusetts, MassHeath began using medication ratio as a quality improvement measure prior to national adoption. However, the most recent Massachusetts data on the HEDIS measures for asthma that is available is from 2010, before the adoption of the new measure. According to the Massachusetts Health Quality Partners, Massachusetts physicians perform above the National Committee for Quality Assurance 90th percentile for asthma care of children. However, they score below the 90th percentile for adults.\textsuperscript{11} For MassHealth providers and health plans, only one MassHealth plan (BMCHP) had a significantly better rate than the 2010 national Medicaid 75th percentile (5-11 years) and some fall significantly below the benchmark.\textsuperscript{12}

This objective focuses on controlling asthma in Massachusetts through improved assessment, education, monitoring, and pharmacologic therapy.

I. From 2015 – 2020, create opportunities for health care providers and personnel working in asthma disease management programs and community settings to share knowledge, experiences, and best practices in asthma care. By 2020, the partners will improve the diagnosis and assessment of asthma in Massachusetts.

a. From 2015 - 2020, provide training and technical support on the diagnosis and assessment of asthma for health care providers. \textit{Lead Partners: Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital}

b. By 2020, develop and disseminate an Asthma Management Toolkit for health care providers. \textit{Lead Partners: Network Health, Massachusetts Department of Public Health – APCP, Massachusetts Department of Public Health – OHSP, Massachusetts Asthma Action Partnership}

c. From 2015 – 2020, raise awareness of asthma comorbidities, particularly among older adults with asthma, among the
general public and providers. Lead Partners: Massachusetts Department of Public Health – APCP, Tufts Medical Center

d. By 2020, increase the number of ambulatory care practices that have access to spirometry on site. Lead Partners: Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital, Network Health

e. By 2020, increase the number of ambulatory care practices trained on the use of spirometry. Lead Partners: Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital, Network Health

f. By 2020, conduct a literature review on healthcare interventions that are known to be effective for older adults with asthma. Lead Partners: Massachusetts Department of Public Health – APCP, Tufts Medical Center


II. By 2020, improve the care coordination of patients with asthma between hospital and ambulatory care practices. Lead Partners: Boston Children’s Hospital, Boston Public Health Commission

a. By 2016, assess barriers to care coordination between hospitals and ambulatory care settings. Lead Partners: Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital

b. By 2018, begin to implement strategies to overcome barriers to care coordination. Lead Partners: Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital

III. From 2015 – 2020, increase asthma knowledge and competency of health care professionals, especially professional groups underserved by asthma training programs. Lead Partners: Massachusetts Department of Public Health – APCP, Boston Children’s Hospital

a. From 2016 – 2020, the Massachusetts Department of Public Health – APCP will update and, with lead partners, will disseminate an inventory of asthma training programs available for health professionals in Massachusetts. Lead Partners: Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital

b. From 2015 – 2020, implement strategies to address training gaps and needs of health professionals, including but not limited to:

- By 2020, refine the training strategy to support CHW asthma home visiting infrastructure by developing an Asthma Home Visiting Training Program for CHWs. This training program will expand on the current classroom training to include field-based training through a mentorship model, CHW core asthma home visiting skills requirements, and CHW skill evaluation which includes an observational assessment. Lead
By 2020, increase the number of CHWs trained on asthma and environmental interventions, by using several trainings, including the Massachusetts Department of Public Health Asthma Home Visiting Training for Community Health Workers developed by the Boston Public Health Commission. **Lead Partners:** Massachusetts Department of Public Health – APCP, Boston Public Health Commission, Boston Medical Center, Baystate Medical Center, Pioneer Valley Asthma Coalition

By 2020, develop an asthma home visiting training for Visiting Nurses and/or other professional groups as determined as necessary by lead partners. **Lead Partners:** Massachusetts Department of Public Health – APCP

By 2020, will conduct provider trainings offering Continuing Medical Education credits on how to work with older adults with asthma on asthma self-management. **Lead Partners:** Massachusetts Department of Public Health – APCP, Boston Public Health Commission, MCPHS University

By 2020, review and enhance curriculum and training on asthma self-management available at pharmacy schools. **Lead Partners:** MCPHS University

IV. From 2015 – 2020, create opportunities for health care providers and personnel working in asthma disease management programs and community settings to share knowledge, experiences, and best practices in asthma care. **Lead Partners:** Massachusetts Asthma Action Partnership, Massachusetts Department of Public Health – APCP, University of Massachusetts – Lowell Healthy Homes Program, American Lung Association of the Northeast

**OBJECTIVE:** By 2020, increase the number of health care providers that manage the environmental factors related to asthma.

**Baseline:** In Massachusetts for the years 2006 through 2007:
- 46.5% of adults with current asthma and 49.6% of children with current asthma were advised by a health professional to change aspects of home, school or work
- 45.4% of adults under age 65, 80.9% of adults ages 65 and older, and 48.9% of children with current asthma received a flu vaccination
- Of adults with current asthma who reported that their asthma was caused or made worse by either their current or previous job, only 26.8% reported ever telling or being told by a health professional that their asthma is work-related.
**Goal 3**

**Target 2020:** To meet or exceed the Massachusetts targets, which represent statistically significant improvements, where applicable:

- 50% of adults and 55% of children advised to change aspects of home, school or work
- 49% of adults under age 65, 90% for adults ages 65 and older, 54% for children receive a flu vaccination
- 35% of adults with current asthma who report that their asthma was caused or made worse by work report telling or being told by a health professional that their asthma is work-related.

**Background:** Integrating environmental management of asthma into clinical care can be difficult. Health professionals don't always know how to address problems outside the medical management of the disease. Addressing exposures in the home, school or work environment requires knowledge of community resources and state legal requirements that health professionals often lack. However, EPR3 recommends that the clinician evaluate exposure to environmental factors for, at least, those patients with persistent asthma.13

The *Environmental Management of Pediatric Asthma, Guidelines for Health Care Providers*, recommends that health professionals have the following core competencies: knowledge of environmental asthma triggers, identification of environmental triggers of asthma, environmental intervention and treatment, ability to counsel caregivers and pediatric asthma patients on the reduction of environmental asthma triggers, effective communication and patient follow-up skills, and advocacy.14

For work related asthma, the *American College of Chest Physicians Consensus Statement* recommends that work related asthma be considered for all adults with new-onset or worsening asthma and that a careful history be obtained in those cases. Those adults with occupational asthma (asthma caused by work) should be evaluated as a possible sentinel event requiring primary prevention to protect other workers.

For providers to manage the environmental aspects of asthma, they need to be aware of resources available in the community and have support to follow through with cases in which the environment plays a role in making asthma worse. Community health workers can play an essential role in addressing the housing environment. The Seattle King County Asthma Program community health worker intervention, which focuses on reducing exposure to indoor asthma triggers, has been shown to have an impact on pediatric asthma disparities by reducing urgent care use and asthma symptom days and improving parent/caregiver quality of life.15,16

In addition, local and state government play a role in improving the environment by enforcing existing codes or laws that protect occupants of homes or buildings from harm.
I. By 2020, increase provider’s knowledge of the role of the home environment in controlling asthma and encourage providers to ask patients about the conditions of their home environment. **Lead Partners:** Boston Children's Hospital, Network Health Plan, Neighborhood Health Plan, Boston Public Health Commission, Cambridge Public Health Department/Cambridge Health Alliance, University of Massachusetts – Lowell Healthy Homes Training Center, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital

a. From 2015 – 2020, increase the number of community health worker clinical supervisors trained on asthma and environmental interventions using the Massachusetts Department of Public Health Asthma Home Visiting Training for Community Health Worker Supervisors. **Lead Partners:** Massachusetts Department of Public Health – APCP, Boston Public Health Commission

II. By 2020, increase the number of pediatric asthma home visits linked to the medical home. **Lead Partners:** Asthma Regional Council of New England, Massachusetts Department of Public Health, Boston Medical Center, Baystate Medical Center, Pioneer Valley Asthma Coalition, MassHealth, Prevention and Wellness Trust Fund Grantees

III. By 2020, increase the number of referrals for home visits and actual visits conducted at the request of a health provider. **Lead Partners:** Boston Children's Hospital, Network Health Plan, Neighborhood Health Plan, Boston Public Health Commission, Cambridge Public Health Department/Cambridge Health Alliance, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital

IV. By 2020, increase the number of people with asthma who receive the influenza vaccination. **Lead Partners:** Boston Children's Hospital, Network Health Plan, Neighborhood Health Plan, Boston Public Health Commission, Cambridge Public Health Department/Cambridge Health Alliance, Massachusetts School Nurse Organization, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital

V. From 2015 - 2020, promote smoking cessation. **Lead Partners:** Boston Children's Hospital, Network Health Plan, Neighborhood Health Plan, Boston Public Health Commission, Cambridge Public Health Department/Cambridge Health Alliance, University of Massachusetts – Lowell Healthy Homes Program, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital, Massachusetts Department of Public Health, JSI Research and Training Institute, Inc.

VI. From 2015 – 2020, will encourage health care providers to report work-related asthma as required by law, and to work with patients
and their employers to prevent exposures to asthmagens. For exposures to asthmagens, lead partners will promote attention to finding safer replacements before isolation, ventilation and personal protective equipment are relied upon to reduce exposure. Where early symptoms exist, lead partners will support interventions that reduce or eliminate the use of the chemical. Lead Partners: Massachusetts Department of Public Health – Occupational Health Surveillance Program, Massachusetts Medical Society

**OBJECTIVE:** By 2020, improve the asthma self-management of Massachusetts residents.

**Baseline:** In Massachusetts for the years 2006 through 2007:
- 45.0% of children and 33.4% of adults with current asthma reported having ever received an asthma action plan,
- 84.2% of children and 65.5% of adults with current asthma had been taught how to recognize early signs of an asthma attack,
- 55.3% of children and 50.7% of adults with current asthma had been taught to use a peak flow meter, and
- 7.8% of children and 5.1% of adults with current asthma had taken a class on asthma management.

**Target 2020:** To meet or exceed the Massachusetts targets where applicable:
- 50% of children and 38% of adults reporting receiving an Asthma Action Plan
- 85% of children and 70% of adults taught how to recognize the early symptoms of an asthma attack
- 60% of children and 56% of adults taught how to use a peak flow meter
- 9% of children and 10% of adults take class on asthma management

**Background:** Asthma self-management is essential to improving asthma outcomes. Both health professionals and community organizations play a role in supporting people with asthma and parents of children with asthma in helping them understand how to manage their chronic condition on a daily basis. Asthma self-management education should be integrated into all aspects of clinical care and reinforced in the community setting. The EPR3 recommends that asthma self-management education occur at the time of diagnosis and at each follow up visit, involve all members of the health care team, and introduce essential educational messages and negotiate agreements about the goals of treatment, specific medications, and actions patients will take. All patients with asthma should receive a written asthma action plan that provides instructions on the daily management of asthma and how to recognize and handle worsening symptoms.

I. By 2020, increase the number of people with asthma who receive asthma education in the clinic. Lead Partners: Boston Children's
Hospital, Network Health Plan, Neighborhood Health Plan, Boston Public Health Commission, Cambridge Public Health Department/ Cambridge Health Alliance, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital

a. By 2020, increase the number clinics and hospitals that provide asthma education through technical support. **Lead Partners: Massachusetts Department of Public Health – APCP**

- By 2020, develop and disseminate patient educational materials for adults with asthma and for parents of children with asthma. **Lead Partners: Network Health, Massachusetts Department of Public Health – APCP, Massachusetts Asthma Action Partnership**

b. From 2015 – 2020, the Massachusetts Department of Public Health will distribute free Asthma Action Plans to health care providers, school nurses, and community based-organizations both in print and as a downloadable, modifiable PDF available on APCP website. **Lead Partners: Massachusetts Department of Public Health – APCP**

II. By 2020, increase the number of adults with asthma or parents of children with asthma who attend asthma education classes or chronic disease self-management programs, including community-based asthma home visiting programs. **Lead Partners: Boston Children’s Hospital, Network Health Plan, Neighborhood Health Plan, Boston Public Health Commission, Cambridge Public Health Department/Cambridge Health Alliance, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital, JSI Research and Training Institute, Inc., University of Massachusetts – Lowell Healthy Homes Program**

a. From 2015 – 2020, publicize chronic disease self-management classes in the priority regions through the www.healthyliving-4me.org website. **Lead partners: Massachusetts Executive Office of Elder Affairs**

b. From 2015 – 2020, increase the number of people with persistent asthma referred to self-management classes by ambulatory care practices. **Lead Partners: University of Massachusetts – Lowell New England Healthy Homes Program**

III. From 2015 - 2020, educate and provide outreach directly to families and children with asthma, including through community-based asthma home visiting programs. **Lead Partners: Boston Children’s Hospital, Boston Public Health Commission, Cambridge Public Health Department/Cambridge Health Alliance, University of Massachusetts – Lowell Healthy Homes Program, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital, JSI Research and Training Institute, Inc**

IV. From 2015 – 2020, improve the asthma self-management of older adults with asthma in the Commonwealth through specific
strategies designed for older adults.

a. From 2015 – 2020, engage peer leaders and Community Health Workers (CHWs) from cultural and linguistic-specific communities to take part in outreach efforts to reach older adults. Compile a resource guide of existing resources (including asthma self-management programs and environmental supports) for older adults for use by peer leaders and CHWs. **Lead Partners: Massachusetts Department of Public Health – APCP, Massachusetts Executive Office of Elder Affairs, Boston Public Health Commission, Pioneer Valley Asthma Coalition, Baystate Medical Center**

b. From 2015 – 2020, collaborate with pharmacy and nursing students to include outreach and education among older adults as part of their professional education. **Lead Partners: Boston Public Health Commission, MCPHS University**

c. From 2015 – 2020, ensure availability of linguistically and culturally appropriate educational and outreach materials for older adults to meet the needs of diverse state residents. **Lead Partners: JSI Research and Training Institute, Inc.**

V. From 2015 - 2020, develop a funding strategy to support, and implement if possible, a public education and awareness campaign to increase asthma self-management of children ages 3 to 8 by educating, empowering and motivating the families to better manage their children’s asthma and to advocate for improved environments and services in their communities. **Lead Partners: Massachusetts Asthma Action Partnership, Boston Public Health Commission, Cambridge Public Health Department/Cambridge Health Alliance, University of Massachusetts – Lowell Healthy Homes Program, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital, LifeGuard Games**

**OBJECTIVE:** Increase sustainability of asthma care through coverage and reimbursement for a comprehensive management approach to asthma.

**Baseline:** In 2010, New England insurers surveyed reported that, in accordance with NAEPP guidelines:
- 32% reimbursed for discrete asthma education sessions in the clinic
- 33% reimbursed for Environmental/Trigger Assessment in the Home

**Target 2020:** Increase the number of health plans that provide coverage for comprehensive asthma management by 10%

**Background:** Many Massachusetts residents with asthma cannot access the health services, medications and devices needed to manage their disease. Among Massachusetts’ adults with current asthma, 11.6% reported
that cost was a barrier to care in the years from 2006 through 2010. Of those that reported cost was a barrier to care, 18.5% had well-controlled asthma, 40.8% had not well-controlled asthma, and 40.7% had very poorly controlled asthma. Massachusetts is the first state to offer universal health care access.

On April 12, 2006, the Massachusetts legislature passed the groundbreaking Health Care Reform Act to provide increased access to health care for Massachusetts residents. Based on the concept of shared responsibility between people, business and government, it requires all persons to purchase health coverage if they can afford it, it requires businesses that do not provide coverage for employees to help pay for it, and it requires the government to provide subsidies to ensure affordability. On March 23, 2010 the landmark Affordable Care Act was signed into law by President Barack Obama. The ACA builds upon the success of Massachusetts health care reform, further improving access to coverage in Massachusetts by making health insurance more affordable and expanding eligibility for MassHealth benefits.

However, increased access does not always result in coverage of the recommended asthma services. Currently, health plans – both public and private – have varied reimbursement policies for asthma services, medications and devices. Not all the recommended services and devices from EPR3 are covered. Tiered medication coverage often put controller medications in a higher tier resulting in costly co-pays for persons with asthma.

At the same time, few health payers routinely reimburse for asthma education sessions and home-based services shown to be cost-effective in the research literature. Those that do have found that health care providers are unaware of coverage provided by insurers and so do not refer patients or bill for the full range of services available, such as environmental interventions. While progress has been made in this area since 2009 - notably around health payers willingness to reimburse for home-based asthma education services provided by Community Health Workers - much remains to be done.

This objective focuses on improving access to the services, medications and devices recommended in EPR3 through public awareness and policy change.

I. From 2015 – 2020, continue coverage, or promote increases in the voluntary coverage of asthma services, medications and equipment consistent with the national asthma guidelines (EPR3) by public and private insurers. Lead Partners: Network Health, Neighborhood Health Plan, Boston Public Health Commission, Health Resources in Action, Cambridge Public Health Department/Cambridge Health Alliance, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital
a. From 2015 – 2020, promote voluntary coverage for CHW-lead multi-trigger multi-component home visits for children with asthma, which include environmental assessments, asthma management education and low-cost environmental interventions. 

Lead Partners: Massachusetts Department of Public Health – APCP, Asthma Regional Council of New England

b. From 2015 – 2020, build the capacity of the CHW workforce to support sustainable funding for asthma home visits by developing and disseminating an Asthma Home Visiting Training Program for Community Health Workers that expands on the current classroom training to include field-based training through a mentorship model, CHW core asthma home visiting skills requirements and CHW skill evaluation, including an observational assessment. Lead Partners: Massachusetts Department of Public Health – APCP, Boston Public Health Commission, Boston Medical Center, Baystate Medical Center, Pioneer Valley Asthma Coalition

c. From 2015 – 2020, continue to disseminate a model benefits package that is consistent with the EPR3. Lead Partners: Asthma Regional Council of New England

II. From 2015 - 2020, promote policies that increase coverage, or continue efforts to increase coverage, for asthma services, medications, and equipment consistent with the new national guidelines (EPR3). Lead Partners: Network Health, Neighborhood Health Plan, Boston Public Health Commission, Health Resources in Action, Cambridge Public Health Department/Cambridge Health Alliance, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital

a. From 2015 - 2020, work with Massachusetts’ payers, including MassHealth and Medicaid Managed Care Organizations, to promote policies that increase coverage. Lead Partners: Asthma Regional Council of New England

b. From 2015 – 2020, enlist payers in the reimbursement of prescribed asthma education services for older adults. Lead Partners: Massachusetts Department of Public Health – APCP, Tufts Medical Center

III. From 2015 – 2020, advocate for comprehensive tobacco cessation coverage in all plans. Lead Partners: Tobacco Free Mass

IV. From 2015 – 2020, advocate for increased resources that address tobacco prevention and smoking cessation. Lead Partners: Boston Public Health Commission, Health Resources in Action, Cambridge Public Health Department/Cambridge Health Alliance, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital
V. From 2015, increase the demand for asthma services, medications and devices in insurance policies. **Lead Partners:** Boston Public Health Commission, Health Resources in Action, Cambridge Public Health Department/Cambridge Health Alliance, Boston Medical Center, Floating Hospital for Children at Tufts Medical Center, South Shore Hospital

a. From 2015 – 2020, continue to disseminate the Asthma Business Case for Employers in collaboration with New England Asthma Programs. **Lead Partners:** Asthma Regional Council of New England

b. By 2016, convene stakeholders to develop and disseminate standardized home visiting protocols, educational materials and data collection instruments for use in pediatric asthma home visits. **Lead Partners:** Massachusetts Department of Public Health – APCP

c. From 2015 – 2020, develop and disseminate an Asthma Home Visiting Training Program for Community Health Workers that expands on the current classroom training to include field-based training through a mentorship model, CHW core asthma home visiting skills requirements and CHW skill evaluation, including an observational assessment. **Lead Partners:** Massachusetts Department of Public Health – APCP, Boston Public Health Commission, Boston Medical Center, Baystate Medical Center, Pioneer Valley Asthma Coalition

**OBJECTIVE:** Improve the integration of care outside the health care setting with schools, child care settings, senior housing, and senior service settings.

**Baseline:**

- **Schools:** During the FY12 school year, 72 districts reported receiving Asthma Action Plans for 7,940 students. At the same time, school nurses reported 138,400 students with asthma. Thus, only approximately 6% of students with asthma have an asthma action plan on file with their school nurse.

- **Early Education and Care Settings and Head Starts:** The Massachusetts Department of Early Education and Care regulations require an individualized health care plan (IHCP) for all children with a diagnosed chronic illness, including asthma. There is currently no data on the number of children with asthma in child care or Head Start settings.

- **Senior Housing and Senior Service Settings:** In Massachusetts for the years 2006 through 2008: 24.6% of adults with current asthma received an Asthma Action Plan.

**Target 2020:**

- Increase to 20% the number of children with an Asthma Action Plan on file with their school nurse.
Develop a system for tracking the number of children with asthma who have Individualized Health Care Plans in the early education and care or Head Start settings.

Increase to 50% the number of adults aged 65+ who receive an Asthma Action Plan.

**Background:** Uncontrolled asthma can result in school absenteeism and missed work for a parent of a child with asthma. Asthma is the leading cause of school absenteeism nationwide. In Massachusetts, more than one in three children (41.1%) missed one or more days of schools or daycare in a twelve month period. Poorly controlled asthma can interfere with a child’s development and learning. A critical component of asthma management in schools and child care settings is ensuring each child with asthma has a written asthma action plan. An estimated 132,887 of Massachusetts children have current asthma (9.5%) in 2010. Yet only 7,940 have asthma action plans on file with their school or day care. As mentioned in an earlier objective, the asthma action plan is an important part of asthma self-management. The plan contains written instructions for the patient or caretaker/parent from the clinician that includes instructions for daily management and recognizing and handling worsening asthma. It is an important tool of communication between the health care clinician and the school nurse or child care setting. Finally, although all people with asthma should have an Asthma Action Plan, only 24.6% of older adults with asthma reported ever having been given an Asthma Action Plan by their healthcare provider in 2006 – 2008.

I. From 2015 – 2020, train new school nurses and continue training for experienced nurses on asthma management and control, including providing online training opportunities. **Lead Partners:** Massachusetts Department of Public Health – School Health Services Program, Boston Children’s Hospital, Asthma and Allergy Foundation of America – New England Chapter, Northeastern University School Health Institute

II. From 2015 – 2020, promote training opportunities for school nurses. **Lead Partners:** Massachusetts Asthma Action Partnership, Boston Public Health Commission, Massachusetts Coalition for Occupational Safety and Health, American Lung Association of the Northeast, Massachusetts School Nurse Organization, Pioneer Valley Asthma Coalition, Baystate Medical Center, Boston Healthy Homes and Schools Collaborative, Northeastern University School Health Institute

III. From 2015 – 2020, provide online training opportunities for teachers on asthma triggers, symptoms, and warning signs with an emphasis on the classroom environment. **Lead Partners:** Pioneer Valley Asthma Coalition, Baystate Medical Center, Massachusetts Department of Public Health – APCP, American Lung Association of the Northeast of the Northeast, Northeastern University School Health Institute
IV. From 2015 – 2020, promote the inclusion of asthma management and indoor air quality policies in School District Wellness Policies by providing technical assistance and making model asthma-related policies available on the Massachusetts Department of Public Health website. **Lead Partners: Massachusetts Department of Public Health – APCP, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center**

V. During the years of 2015–2020, advocate for a nurse in every school, based on the acuity of the student population. **Lead Partners: Massachusetts Asthma Action Partnership, Massachusetts School Nurse Organization**

VI. During the years of 2015-2020, improve the linkages between school nurses and health care providers. **Lead Partners: Massachusetts Asthma Action Partnership, Boston Public Health Commission, Massachusetts Coalition for Occupational Safety and Health, American Lung Association of the Northeast, Massachusetts School Nurse Organization, Pioneer Valley Asthma Coalition, Baystate Medical Center.**

   a. By 2020, promote evidence-based interventions that improve the communication between school nurses, pediatricians and students with asthma (as well as their parent/caregivers) at the local community level and share success at the statewide MAAP meetings and summits. **Lead Partners: Massachusetts Asthma Action Partnership, Pioneer Valley Asthma Coalition, Baystate Medical Center, Boston Healthy Homes and Schools Collaborative, Boston Public Health Commission, Massachusetts Coalition for Occupational Safety and Health, Boston Children’s Hospital**

   b. During the years 2015 – 2020, promote improved linkages between health care providers and school nurses.
      - Explore the use of e-referral technology developed by the Massachusetts Department of Public Health to share asthma action plans between pediatricians’ offices and school nurses. **Lead Partners: Massachusetts Department of Public Health – APCP, Massachusetts Department of Public Health – School Health Services Program.**
      - Work with local physicians and school nurses to promote and facilitate grand rounds at hospitals located in priority communities to educate providers about opportunities to improve communication with school nurses. **Lead Partners: Massachusetts Department of Public Health – APCP, Massachusetts Department of Public Health – School Health Services Program.**

VII. From 2015 – 2020, promote the inclusion of asthma management, asthma and physical activity, and indoor air quality policies in School District Wellness Policies, or other school district health policies, by providing technical assistance and making model asthma-related policies available on the Massachusetts Department of Public Health website. **Lead Partners: Massachusetts Department of Public Health – APCP, Massachusetts School Nurse Organization, Pioneer Valley Asthma Coalition, Baystate Medical Center.**
Public Health website. *Lead Partners: Massachusetts Department of Public Health – APCP, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center*

VIII. From 2015 – 2020, increase the capacity of early education and child care settings to manage asthma. *Lead Partners: Massachusetts Asthma Action Partnership, Boston Public Health Commission, Massachusetts Coalition for Occupational Safety and Health, American Lung Association of the Northeast, Pioneer Valley Asthma Coalition, Baystate Medical Center*

a. From 2015-2020, disseminate the Caring for Kids with Asthma: A Guide for Massachusetts Child Care Program and the Creating and Sharing a Plan for Your Child with Asthma guidance documents that support early education and child care settings management of asthma. *Lead Partners: Massachusetts Department of Public Health – APCP, Massachusetts Department of Public Health – Division of Perinatal, Early Childhood, and Special Health Needs*

b. From 2015 – 2020, increase the number of child care sites that have received training in reducing environmental triggers of asthma and improving care for children with asthma. *Lead Partners: Massachusetts Department of Public Health Division of Perinatal, Early Childhood, and Special Health*

c. From 2015 – 2020, revise the Individual Health Care Plan form to emphasize team building and uptake of use among parents, providers, and early educators. *Lead Partners: Massachusetts Department of Public Health Division of Perinatal, Early Childhood, and Special Health Needs, Massachusetts Department of Early Education and Care*

IX. From 2015 – 2020, disseminate information on asthma programs through the Executive Office of Elder Affairs’s 1-800 Age Info phone line using a list of resources and services for older adults with asthma. *Lead Partners: Massachusetts Executive Office of Elder Affairs*

X. From 2015 – 2020, conduct training and in-service for case managers to increase the capacity of staff at senior service organizations, community centers, and the Visiting Nurse Association to assist older adults with asthma. *Lead Partners: Massachusetts Department of Public Health – APCP (Pending resources – Pioneer Valley Asthma Coalition, Baystate Medical Center, Asthma and Allergy Foundation of America – New England Chapter)*

XI. From 2015 – 2020, target outreach on asthma to older adults via their housing and service programs such as senior housing, senior centers, and home care associations. *Lead Partners: University of Massachusetts – Lowell New England Health Homes Project, Massachusetts Department of Public Health – APCP, Boston Public Health*
XII. From 2015 – 2020, establish linkages with cultural and religious organizations to provide services for older adults with asthma. 

*Lead Partners: JSI Research and Training Institute, Inc (Boston Public Health Commission and MDPH pending resources)*
Exposure to certain indoor and outdoor environmental factors can make asthma worse and in some cases, cause asthma. Pollutants, chemicals, and allergens can all affect a person with asthma depending on the person's sensitivities and the type of exposure. Less is known about the role of environmental exposure in the development of asthma although research in this field is growing rapidly. Research has found that tobacco smoke, dust mites, living in close proximity to busy roadways, and certain occupational exposures can cause asthma for young children and adult workers, respectively. These exposures alone, however, do not explain the steep increase in asthma prevalence that occurred in the 1980s, though they have likely played a role. More research is needed to better understand the role environmental exposures in causing the development of asthma. For more information on the growing evidence base on factors associated with asthma onset, and strategies to reduce exposure to risk factors, see Goal 5: Advancing the Primary Prevention of Asthma in Massachusetts.

**Outdoor Environmental Pollutants**

Epidemiological studies have reported significant positive associations between ambient air pollutants, notably ozone and particulate matter, and increased respiratory-related hospital admissions, emergency department and other medical visits, increased incidence of asthma and other respiratory symptoms, and decrements in pulmonary function. The primary pollutants associated with triggering asthma attacks are: ground level ozone, sulfur dioxide, particulate matter, and nitrogen oxides. Recent studies also suggest that some pollutants – ozone and particulate matter – are associated with the development of asthma. For example, an innovative study in California linked the onset of asthma to exposure to elevated ozone levels in exercising children.

Long-term studies of children's health conducted in California have demonstrated that particle pollution may significantly reduce lung function growth in children. In addition to studies linking air pollution in general to asthma and respiratory symptoms, health studies have also identified individual pollutants that may exacerbate respiratory symptoms, particularly in susceptible populations.

- Oxides of nitrogen (NOx) is the general term for a mixture of highly reactive gases that contain nitrogen and oxygen in varying amounts...
(e.g., nitric oxide [NO] and nitrogen dioxide [NO₂]) that affect the respiratory system. Symptoms include wheezing, cough, reduced lung function, and increased airway responsiveness in normal and asthmatic individuals. NOₓ may also be a co-factor in the tissue damage associated with exposure to ambient levels of ozone.

- Sulfur dioxide (SO₂) is a direct respiratory irritant and contributes to the formation of sulfate and sulfuric acid absorbed onto particulate matter.
- Volatile organic compounds (VOCs) are also linked to respiratory morbidity, particularly respiratory irritants including acrolein and several aldehyde compounds. These compounds may interact within the complex mixture of ambient pollutants to exacerbate asthma and asthma-related symptoms. For example, VOCs contribute to the formation of ozone and airborne secondary particles. Ozone is formed in the atmosphere from the reaction of combustion by-products - NOₓ, VOCs and ultraviolet light.

Research efforts are focused on the fact that asthma is a multifactorial lung disease that is often associated with familial, allergenic, socio-economic, psychological, and environmental factors. Three important findings guiding research and policy efforts to address the asthma morbidity and mortality are: (1) pollutants from fuel combustion including gasoline, diesel and coal, may play a greater role in inducing and aggravating asthma; (2) susceptible subpopulations tend to have higher risk of symptoms from air pollution exposure and (3) intervention programs that reduce air pollution are associated with a decline in respiratory symptoms. Of particular importance is the finding of several recent studies that have shown a correlation between proximity to traffic and childhood asthma.²¹,²²,²³

Indoor Environmental Exposures

The Institute of Medicine and the American College of Chest Physicians have released documents that review the literature on asthma and indoor environmental exposures. The Institute of Medicine’s (IOM) 2000 report Clearing the Air: Asthma and Indoor Air Exposures found sufficient evidence to conclude there is a causal relationship between exposures to the allergens produced by cats, cockroaches and house dust mites and asthma exacerbations in sensitized individuals as well as environmental tobacco smoke and asthma exacerbations in preschool aged children. Other exposures that were associated with asthma were: allergens produced by dogs, domestic birds, fungi and molds, high levels of nitrogen oxides, environmental tobacco smoke for all ages, formaldehyde, and fragrances.

For the development of asthma, the IOM found sufficient evidence of a causal relationship between exposure to house dust mites and the development of asthma in susceptible children. In addition, it found that there
was sufficient evidence to conclude an association between environmental tobacco smoke and the development of asthma in younger children. It also found suggestive evidence between the exposure to cockroach allergen and the development of asthma in pre-school aged children.

In 2004, IOM released a second housing-related report entitled *Damp Indoor Spaces and Health.* This report found sufficient evidence of an association between asthma symptoms in sensitized individuals and exposure to damp indoor environments. There was also evidence of the same link between those exposures and wheeze, cough and upper respiratory tract symptoms.

The American College of Chest Physicians released a consensus statement entitled *Diagnosis and Management of Work-Related Asthma in 2008* (ACCP Consensus Statement). The American College of Chest Physicians estimates that approximately 25% of adult asthma is likely related to work. The role of occupational sensitizers and irritants as causing asthma is recognized with reference to over 300 distinct causes. The work environment can also exacerbate asthma with the most common causes being mineral and inorganic dusts, chemicals, cleaning agents, second-hand cigarette smoke, and poor indoor air quality.

The ACCP Consensus Statement recommends better control of exposures for all people with work-related asthma also. However, for individuals with sensitizer-induced occupational asthma, it is recommended that the person be removed from further exposure. In addition, the ACCP Consensus Statement recommends implementing primary prevention strategies for workers who are potentially exposed to sensitizers or uncontrolled levels of irritants.

A number of the chemicals known to be capable of causing asthma in the workplace are also found in non-occupational settings. Educational information about household products that contain asthmagens (for example formaldehyde, isocyanates, quaternary ammonium compounds) can help consumers avoid exposures.

The National Heart Lung and Blood Institute’s Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma (EPR3) recommends reducing the exposure of anyone with asthma to asthma allergens, irritants and environmental tobacco smoke. Recent studies on the best approach to eliminating or reducing these asthma triggers has found that multi-faceted interventions result in better outcomes than those targeting only one environmental agent (such as dust mites). The EPR3 recommends a multifaceted, comprehensive approach to reducing asthma exposures as “individual steps alone are generally ineffective.”

There exists no easy environmental solution to improving asthma. Instead, a coordinated approach that targets multiple environmental
factors is needed. This goal reflects a multi-faceted approach to reducing exposure to environmental factors associated with asthma.

**OBJECTIVE:** Reduce exposure to specific outdoor air pollutants linked to asthma development and worsening asthma symptoms by 2020.

**Baseline:** While research suggests that there is no threshold for cardiovascular and respiratory mortality associated with particulate matter exposure, this Strategic Plan for Asthma in Massachusetts 2015 – 2020 uses established federal standards from the Clean Air Act.

In Massachusetts for the year 2014:
- Nitrogen Dioxide: in attainment with the National Ambient Air Quality Standards (NAAQS)
- Sulfur Dioxide: designation to be addressed in future EPA action
- Particulate Matter: in attainment with NAAQS (150 ug/m³ [24-hour] for PM₁₀, 12 ug/m³ [annual] and 35 ug/m³ [24-hour] for PM₂.₅)
- Ozone: all but one Massachusetts region (Dukes County) attainment with NAAQS (0.075 ppm)

**Target 2020:**
- Attain compliance for Dukes County and maintain compliance with 2008 ozone standard (0.075 ppm) through 2020 for Commonwealth.
- Maintain attainment for nitrogen dioxide and particulate matter through 2020.

**Background:** State and federal law provide some support for this objective. Idling reduction is a low- or no-cost option for addressing vehicle emissions. Massachusetts law and Massachusetts Department of Environmental Protection (MassDEP) regulation prohibit unnecessary idling in excess of five minutes. The MassDEP has invested resources to not only enforce its regulation, but also to educate vehicle owners, municipalities, and businesses about the benefits of reducing vehicle idling. In addition, Massachusetts has adopted a 2009 law that specifies addresses idling on school grounds. The Registrar of Motor Vehicles, in consultation with other departments, has developed regulations to implement this legal requirement.

The retrofit of selected diesel vehicles and engines in Massachusetts is a cornerstone of MassCleanDiesel, a MassDEP strategy to reduce diesel emissions in the Commonwealth. Since the inception of the diesel retrofit requirements adopted by the Central Artery/Tunnel project in 1998, numerous diesel retrofit projects have been undertaken to reduce diesel emissions from certain sectors of the legacy fleet. Using available funding through the American Recovery and Reinvestment Act (ARRA), Diesel Emission Reduction Act (DERA), Congestion...
Mitigation and Air Quality (CMAQ), and enforcement settlement funding, MassDEP is providing resources and technical support to cities, towns, state agencies, and private fleets to retrofit school buses, waste collection vehicles, non-road municipal vehicles, construction equipment, fishing vessels, regional transit authority buses, and diesel commuter locomotives.

The Bureau of Environmental Health at MDPH also has the Environmental Public Health Tracking Program (EPHT). The EPHT Program provides researchers and the public with both health and environmental data. This includes asthma hospitalization data and school based pediatric asthma surveillance data along with individual source data and GIS mapping capabilities.

**Lead Partner:** The Massachusetts Department of Environmental Protection is the Lead Partner on all activities in this Objective, unless otherwise noted.

I. By 2020, decrease the pollutants caused by vehicle idling.
   a. From 2015 - 2020, promote policies that reduce or eliminate all vehicles idling, building off the existing anti-idling legislation. **Lead Partners:** Massachusetts Department of Environmental Protection; Massachusetts Department of Public Health – Bureau of Environmental Health (BEH)
   b. From 2015 - 2020, enforce idling reduction requirements in schools and other places with a targeted emphasis in communities where vulnerable populations are found, consistent with lead partners’ on-going enforcement compliance and initiatives.
   c. From 2015 - 2020, coordinate, develop, and deliver outreach messages to raise awareness and provide education on the impacts to the environment and public health associated with idling vehicles, consistent with lead partners’ ongoing initiatives. Public outreach will include driver awareness, driver training, and messaging.

II. By 2020, reduce pollution caused by diesel transportation sources through programs and policies that reduce diesel pollution for the entire Commonwealth.
   a. From 2015 - 2020, promote policies and programs that will encourage the retrofit of eligible diesel vehicle to reduce diesel pollution.
   b. From 2015 - 2020, explore the feasibility of retrofitting other fleets, subject to availability of funding and technology.

III. From 2015 - 2020, continue to implement and develop potential strategies to reduce air pollution from mobile and stationary sources in Massachusetts.
   a. From 2015 - 2020, explore strategies to achieve and maintain the 2008 ozone standard (0.075 8-hour national standard) and
achieve and maintain the 2012 PM standards (150 ug/m³ [24-hr] for PM$_{10}$, 12 ug/m³ [annual] and 35 ug/m³ [24-hour] for PM$_{2.5}$) and subsequent revisions to these standards by EPA.

b. From 2015 - 2020, ensure that new vehicles delivered for sale to Massachusetts are as clean as possible. Through MassDEP’s adoption of California standards under the Massachusetts Low Emission Vehicle (LEV) Program, all vehicles will meet California emission standards, which are more stringent than federal standards. In addition, the lead partner will promote hybrid vehicles, electric vehicles, and other advanced clean vehicle technologies.

c. From 2015 - 2020, continue to implement MassDEP’s Inspection and Maintenance (IM) Program that requires light- and medium-duty vehicles with on-board diagnostic equipment be tested every year (passenger vehicles and trucks). In addition, the opacity cutpoints for testing heavy duty diesel vehicles have been lowered to the lowest levels in the US. The IM program will identify vehicles emitting excess pollution and require those vehicles to be repaired.

IV. From 2015 - 2020, make environmental and public health data accessible to the public

a. From 2015 - 2020, make real time air quality data available to the public with alerts and predictions using the Commonwealth’s air monitoring network.

b. From 2015 - 2020, make public health, air quality, and industrial sources data available to the public through maps and websites. Lead Partners: Massachusetts Department of Environmental Protection; Massachusetts Department of Public Health – Bureau of Environmental Health

V. During 2015 – 2020, make available environmental and public health data as a resource to communities to inform community planning. Lead Partners: Massachusetts Department of Public Health – BEH

VI. From 2015 – 2020, promote and support adoption of Complete Streets policies by local municipalities, which increase opportunities for non-motorized transportation. Lead Partners: Massachusetts Department of Public Health – Division of Prevention and Wellness and Built Environment Community of Practice

VII. From 2015 – 2020, promote and support a “health in all policies” approach to built environment projects through work with the Massachusetts Healthy Transportation Compact and Massachusetts Bicycle and Pedestrian Advisory Board. Lead Partners: Massachusetts Department of Public Health – BCHAP Division of
OBJECTIVE: Reduce Exposures to Factors that Cause and/or Exacerbate Asthma in School, Child Care and Child Recreational Settings.

Baseline: Currently, there is no baseline count of the number of District Wellness Policies or other district-wide health policies for students in Massachusetts schools that include indoor air quality.

Target 2020:

- Develop a baseline count of the number of District Wellness Policies or other district-wide health for Massachusetts schools that include indoor air quality.
- Increase the number of school districts that include indoor air quality in their District Wellness Policies or other district-wide health policies for students.
- Increase the number of early education and care providers trained in improving indoor air quality and addressing environmental exposures that make asthma worse.

Background: This objective focuses on improving the environments in school and child care settings so that they are not barriers to the learning and development of children. As the state pursues academic excellence, the role of the school environment in enhancing or preventing student performance should not be ignored. The school and child care environment may cause and can make asthma worse by exposing children to asthma triggers and irritants such as mold, pests or toxic cleaning products. Nationally, inequities in health conditions, such as asthma, may account for as much as a quarter of the racial gap in school readiness. Asthma is a significant cause of school absenteeism. In Massachusetts, more than two in five students with current asthma (41.1%) missed school or daycare because of their asthma at least once in a twelve month period (from 2006 to 2010). The environment also affects the health of school and child care staff. Elementary and secondary education staff results in 9.4% of all work-related asthma cases reported to MDPH from 1993 to 2009. Work-related asthma is defined as asthma that is caused or made worse by the work environment. Thus the schools environment can not only affect the ability of students with asthma to learn but also the ability of teachers to teach.

Massachusetts has some of the oldest schools in the country. More than 950,000 children and about 70,000 teachers spend a significant portion of their days in more than 1,800 public and private school buildings in Massachusetts. The Environmental Protection Agency estimates one third of U.S. schools have buildings in need of extensive repair or
replacement. The leading air quality problems found in schools that relate to asthma are: pest problems, poor ventilation, mold and moisture, and chemical exposures. Although Massachusetts has invested significant resources in school buildings over the 60 years, more work is needed. Of the 1,707 surveyed by the School Building Authority in 2010, 5% were built before 1960, 20% were built between 1960 and 1969, and 35% were built since 1969. Additionally, while the majority of school buildings included in this survey were deemed in generally good condition, 244 schools were assessed being in need of moderate to extensive while 23 were assessed as being in poor condition.

MDPH has been able to link the school environment to asthma prevalence. As part of the Environmental Public Health Tracking Program, MDPH has been conducting systematic indoor air quality testing and pediatric asthma surveillance in schools across Massachusetts. In 2006, MDPH published a report summarizing the results of indoor environmental assessments at 106 Massachusetts schools. A variety of environmental tests were conducted, including carbon dioxide and visual inspections for mold. A statistically significant association between the presence of mold and moisture problems and the prevalence of childhood asthma in the schools was observed.

Since 1997, the Bureau of Environmental Health at MDPH has regulated the air quality inside indoor skating rinks to protect the health of children and other occupants. Massachusetts is one of three states with indoor air quality regulations for ice rink surfaces. The state has 158 ice rink surfaces that are permitted and inspected annually by local boards of health to ensure the levels of carbon monoxide or nitrogen dioxide remain at safe levels. Recently, all rinks operated by the Massachusetts Department of Conservation and Recreation renewed contract requirements that included the purchase of electric equipment with limited carbon monoxide and nitrogen dioxide emission, thus significantly reducing the indoor air quality pollution at those rinks.

Child care and Head Start settings currently have few supports for improving indoor air quality. Little is known about what air quality issues confront these settings that support the youngest of Massachusetts residents. Cleaning products and procedures used for cleaning, sanitizing and disinfecting child care environments directly impact the air quality of these settings. This objective focuses on raising awareness of how to improve indoor air quality through the proper use of cleaning products and providing guidance on procedures and practices that encourage safer indoor air quality in early child care settings. This objective focuses on providing guidance to early education and child care settings and better understanding the environmental issues in these sites.

Poor school environments not only impact the health of school and child care staff and students, but it also significantly interferes with
learning. This objective outlines policy and education activities to reduce exposures for both children and adults who learn, grow, teach and care take in school buildings and child care settings.

I. By 2020, increase the capacity of school staff to improve the school environment.

a. From 2015 - 2020, train new school nurses and continue training for experienced school nurses on asthma and environmental issues in the schools, including providing online training opportunities. Lead Partners: Massachusetts Department of Public Health – School Health Services Program

b. From 2015 to 2020, increase awareness among MA school nurses on asthma and environmental issues in the schools. Lead Partners: Massachusetts Coalition for Occupational Safety and Health, Massachusetts School Nurse Association, Boston Public Health Commission, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center

c. From 2015 - 2020, train school staff on how to assess the school environment for environmental triggers, e.g., Tools for Schools or MA Healthy Schools Checklist. Lead Partners: Massachusetts Coalition for Occupational Safety and Health, Massachusetts School Nurse Association, Boston Public Health Commission, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center, Asthma and Allergy Foundation of America – New England Chapter

d. From 2015 – 2020, provide online training opportunities for teachers on asthma triggers, symptoms, and warning signs with an emphasis on the classroom environment. Lead Partners: Pioneer Valley Asthma Coalition, Baystate Medical Center, Massachusetts Department of Public Health – APCP

e. From 2015 to 2020, provide technical assistance to school districts that includes environmental health education for school staff members on how to identify the environmental triggers that cause or exacerbate asthma among students, faculty and staff in schools. Examples may include pest problems, poor ventilation, mold and moisture, and chemical exposure. Lead Partners: Massachusetts Coalition for Occupational Safety and Health, Massachusetts School Nurse Association, Boston Public Health Commission, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center

f. From 2015 to 2020, provide technical assistance to school staff, local municipalities and boards of health on how to act on findings from assessment and identify the environmental triggers that may cause or exacerbate asthma among students, faculty, and staff in schools, based on request and complaint. Examples may include pest problems, poor ventilation, mold and moisture, and chemical exposures. If an assessment of a school or
school district has already been completed, lead partners will provide technical assistance on the survey and results. **Lead Partners: Massachusetts Department of Public Health – BEH**

g. From 2015 – 2020, determine the impact of environmental triggers on the health of students, faculty, and staff in schools and will disseminate through regular IAQ reports. **Lead Partners: Massachusetts Department of Public Health – BEH**

h. From 2015 – 2020, continue to work with local health and school officials to address indoor air quality challenges likely to emerge in a changing climate. **Lead Partners: Massachusetts Department of Public Health - BEH**

II. By 2020, increase the number of school wellness policies that include measures to improve the school environment.

a. By 2016, develop a guidance document for school wellness committees to share with school districts. This document will include sample language to include in wellness policies, and will addresses environmental assessments and environmental strategies. **Lead Partners: Massachusetts Department of Public Health – APCP, Massachusetts Coalition for Occupational Safety and Health, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center**

b. From 2015 – 2020, promote the inclusion of indoor air quality policies in School District Wellness Policies by providing technical assistance and making model asthma-related policies available on the Massachusetts Department of Public Health website. **Lead Partners: Massachusetts Department of Public Health – APCP, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center**

c. From 2015 - 2020, conduct outreach to school districts to raise awareness of environmental factors associated with asthma and promote the model wellness policies. **Lead Partners: Massachusetts Department of Public Health – APCP**

III. From 2015 – 2020, conduct outreach to school districts and childcare sites to raise awareness of environmental factors associated with asthma and to increase the use of green cleaners by school districts and childcare sites.

a. By 2016, conduct a pilot survey on the impact of green cleaners on the health of school staff and students and will disseminate the results across the state. **Lead Partners: Massachusetts Coalition for Occupational Safety and Health, Boston Healthy Homes and Schools Collaborative**

b. From 2015 - 2020, advocate for policies that promote state-wide or local use of green cleaners in schools and childcare settings. **Lead Partners: Massachusetts Coalition for Occupational Safety and Health, Massachusetts School Nurse Association, Boston**
IV. During the years of 2015 – 2020, increase the number of child-care sites and Head Starts that have indoor air quality policies for children with asthma.

a. By 2017, assess key environmental exposures in child care settings, provide evidence for how exposure impacts child health and identify strategies for reducing or eliminating the exposures. **Lead Partners: Massachusetts Coalition for Occupational Safety and Health, Boston Public Health Commission, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center, MDPH Division for Perinatal, Early Childhood, and Special Health Needs, Massachusetts Department of Early Education and Care**

b. By 2018, draft model environmental policies for child care settings. **Lead Partners: Massachusetts Coalition for Occupational Safety and Health, Boston Public Health Commission, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center, MDPH Division for Perinatal, Early Childhood, and Special Health Needs, Massachusetts Department of Early Education and Care**

c. By 2020, disseminate the model environmental policies to child care agencies. **Lead Partners: Massachusetts Coalition for Occupational Safety and Health, Boston Public Health Commission, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center, MDPH Division for Perinatal, Early Childhood, and Special Health Needs, Massachusetts Department of Early Education and Care**

d. By 2020, assess the training needs of early education and child care settings. **Lead Partners: Massachusetts Coalition for Occupational Safety and Health, Boston Public Health Commission, Asthma and Allergy Foundation of America – New England Chapter, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center, MDPH Division for Perinatal, Early Childhood, and Special Health Needs, Massachusetts Department of Early Education and Care**

V. From 2015 – 2020, train childcare sites and Head Starts on asthma and the environment. **Lead Partners: Massachusetts Department of Public Health – Division of Perinatal, Early Childhood, and Special Health Needs, Asthma and Allergy Foundation of America – New England Chapter, Health Resources in Action, Massachusetts Department of Early Education and Care**

a. From 2015 – 2020, develop and promote safe cleaning products and practices for child care settings by convening a cross-agency collaborative work group to identify best practices, revising the EEC policy papers on safe products and practices,
and training early childhood educators across Massachusetts, as needed. *Lead Partners: MDPH Division for Perinatal, Early Childhood, and Special Health Needs, Massachusetts Department of Public Health – Occupational Health Surveillance Program, Massachusetts Department of Early Education and Care, Massachusetts Department of Public Health – APCP*

VI. From 2015 – 2020, increase the capacity of coalitions and community organizations to work toward improved environmental conditions in their schools, early childcare settings and out of school time programs (afterschool enrichment, athletics and school vacation youth programs/camps) by sharing successful strategies and providing technical support. *Lead Partners: Massachusetts Asthma Action Partnership*

VII. From 2015 – 2020, the Massachusetts Department of Public Health Bureau of Environmental Health will continue to conduct up to twenty compliance investigations each year at the approximately 180 ice rink facilities statewide. These inspections are designed to ensure compliance with state regulations on indoor air quality and to reduce the incidence of asthma as a result of exposure to carbon monoxide and nitrogen dioxide in ice rinks. *Lead Partners: Massachusetts Department of Public Health – BEH*

VIII. By 2020, the Massachusetts Department of Public Health Bureau of Environmental Health will review other venues where children and adults are exposed to combustible power equipment that pose a threat to health to propose regulations to reduce exposure, if needed. *Lead Partners: Massachusetts Department of Public Health – BEH*

**OBJECTIVE:** Reduce Exposures to Factors that Cause and/or Exacerbate Asthma in the Home Setting.

**Baseline:** In Massachusetts for the years 2006 to 2007, according to the MA BRFSS Asthma Call Back Survey, Massachusetts residents with current asthma reported the following conditions or behaviors in their homes:
- Mold inside the home in the past 30 days: 16.4% adults, 8.7% children
- Mice or rats inside the home in the past 30 days: 7.9% adults, 11% children
- Cockroaches inside the home in the past 30 days: 3.7% adults, 1.4% children
- Carpeting or rugs inside the bedroom: 58.5% adults, 56.3% children
- Smoking inside the home in the past week: 18.2% adults; 3.5% children
- Used a mattress cover and/or pillow cover: 32.6% adults; 41.8% children
- Used a pillow cover: 29.4% adults; 37.6% children
Target 2020:
- Reduce exposures to environmental factors in the home that exacerbate asthma by 30%.
- Mold: 11.5% adults, 6.1% children
- Mice/rats: 5.5% adults, 7.7% children
- Cockroaches: 2.6% adults, 1% children
- Carpeting or rugs in the bedroom: 41% adults, 39.4% children
- Smoking inside the home: 12.7% adults, 2.5% children
- Mattress cover: 42.4% adults, 54.3% children
- Pillow cover: 38.2% adults, 49.9% children

Every effort will be made to exceed these targets. They do not reflect an acceptable level of exposure but an estimate of the realistic impact of the activities under this objective.

Background: The U.S. Environmental Protection Agency (EPA) studies show that levels of air pollution inside the home are often two to five times higher than outdoor levels. In addition, the Environmental Protection Agency estimates that children spend on average 90% of their time indoors. Children are particularly vulnerable to such air pollution as their bodies take in proportionately greater amounts of environmental toxins than adults.

New England has some of the oldest and most decrepit housing in the country. New England has more than twice the national rate of homes built before 1940. The Department of Housing and Urban Development (HUD) reported that in 2011, approximately 6.2 million homes in the U.S. had severe to moderate physical problems. However, the New England percentage of homes with severe physical problems is twice that of the U.S. In 2011, 5.1% of rental housing and 1.6% of owner-occupied housing had severe physical problems (compared with 3.1% and 1.2% for the U.S. In 2011, New England had higher rates of: signs of mice, leaks from outside, lacking complete plumbing, siding and foundation problems.

Most secondhand smoke exposure now occurs in the home, according to the US Surgeon General. State law in Massachusetts requires all enclosed workplaces to be smoke-free. Similarly, eliminating smoking in indoor spaces is the only way to fully protect non-smokers from secondhand smoke exposure in the home. Separating smokers from nonsmokers, cleaning the air, opening windows, and ventilating buildings does not eliminate exposure or reduce secondhand smoke to safe levels.

The Massachusetts Tobacco Cessation and Prevention Program (MTCP) provides support to private and public housing landlords and property managers interested in adopting a smoke-free rule by providing educational resources and technical assistance. The MA Partnership for Health Promotion and Chronic Disease Prevention’s Tobacco-free living Community of Practice (co-chaired by MTCP) made up of
professionals working on smoke-free housing expanded its membership to include groups representing tenant issues and concerns.

Healthy People 2020 has several targets related to asthma and the home environment. This objective attempts to set achievable targets for Massachusetts modeled on the Healthy People 2020 targets. To truly improve housing environments in Massachusetts for people with asthma, many state agencies and community groups will need to work together. This objective requires a coordinated effort between public health, housing, energy efficiency, and community development representatives to succeed.

I. Increase the percentage of residents of multi-unit housing that report living in a smoke-free building from 34% in 2012 to 50% in 2020. **Lead Partners: Boston Public Health Commission, Massachusetts Department of Public Health – Office of Community Health and Tobacco Prevention, Tobacco Free Mass**
   a. From 2015 – 2020, provide technical assistance regarding the legality of the smoke free rule for all landlords and, if possible, target private housing landlords through training and technical assistance to dispel beliefs that smoke-free rules are not legal, within target geographic areas. **Lead Partners: Tobacco Free Mass, Massachusetts Department of Public Health – Office of Community Health and Tobacco Prevention**
   b. From 2015 – 2020, increase awareness of secondary smoke hazards among family-based childcare providers and low-income families. **Lead Partners: Boston Public Health Commission, Boston Healthy Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center, American Lung Association of the Northeast**

II. From 2015 – 2020, advocate for local and state policies that reduce exposures to environmental triggers and irritants in the home. **Lead Partners: University of Massachusetts – Lowell Healthy Homes Program, Massachusetts Asthma Action Partnership**

III. By 2020, enhance regulations and guidance documents that focus on reducing exposures to asthma triggers and irritants in the home. **Lead Partners: Massachusetts Department of Public Health – BEH**
   a. From 2015 – 2020, develop guidance documents and provide technical assistance for local boards of health, landlords and home owners on minimum standards for housing under the State Sanitary Code intended to reduce exposure to asthma triggers and irritants in the home. **Lead Partners: Massachusetts Department of Public Health – BEH**
   b. From 2015 – 2020, continue to reduce exposures to factors that cause and/or exacerbate asthma in home settings by amending the housing code regulations to further mitigate known asthmagens, such as moisture and mold. **Lead Partners: Massachusetts Department of Public Health – BEH**
   c. From 2015 to 2016, promote Federal guidelines for home
owners on strategies to reduce exposure to asthma triggers and irritants in the home. 

**Lead Partners:** University of Massachusetts – Lowell Healthy Homes Program, Boston Public Health Commission

**IV.** From 2015 - 2020, increase the use of integrated pest management (IPM) for eliminating/reducing pest problems in homes.

a. From 2015 - 2020, promote the use of IPM in multi-trigger multi-component asthma home visits for children with asthma and will train asthma home visiting CHWs and their supervisors IPM practices. 

**Lead Partners:** Massachusetts Department of Public Health – APCP, Asthma Regional Council of New England

b. By 2017, increase the number of affordable and public housing agencies that practice IPM through education and technical assistance. 

**Lead Partners:** Boston Public Health Commission

c. From 2015 – 2020, increase the number of healthy homes visits that utilize IPM for older adults. 

**Lead Partners:** Massachusetts Department of Public Health – APCP, University of Massachusetts – Lowell Healthy Homes Program

**V.** By 2016, increase the knowledge of local boards of health, landlords and families on the importance of addressing moisture problems in homes to reduce major indoor asthma triggers.

a. From 2015 – 2020, provide healthy homes training to local boards of health.

**Lead Partners:** Massachusetts Coalition for Occupational Safety and Health, , New England Healthy Homes Training Center

b. From 2015 – 2020, develop guidance documents on asthma triggers, with mold and dampness being a top priority. 

**Lead Partners:** University of Massachusetts – Lowell Healthy Homes Program

**VI.** From 2015 – 2020, explore evidence-based strategies that are effective for older adults with asthma, such as home assessments that target older adults or homes where older adults live.

**Lead Partners:** University of Massachusetts Lowell – New England Healthy Homes Project, Asthma and Allergy Foundation of America – New England Chapter, Massachusetts Department of Public Health – APCP.

**VII.** From 2015 – 2020, include environmental assessments for asthma triggers in home visits for older adults with asthma. 

**Lead Partners:** University of Massachusetts Lowell – New England Healthy Homes Project, Massachusetts Department of Public Health – APCP

**OBJECTIVE:** Reduce Exposures to Factors that Cause and/or Exacerbate Asthma in the Work Place.

**Baseline:** In Massachusetts, from 1993 through 2006, 710 cases of work-related asthma (WRA) were confirmed, with healthcare and
manufacturing the leading industries and cleaning products and indoor air quality the leading exposures. Attempts to control hazardous exposures focused on removing latex from healthcare, food service and early education and care environments; we initiated work on cleaning products and isocyanates, as well as conditions within schools and healthcare.

**Target 2020:**
- Send two Occupational Lung Disease Bulletins per year to healthcare providers to continue to educate them about the links between work and asthma so healthcare providers can help reduce exposures for their patients.
- Continue to encourage healthcare providers to ask their patients with asthma about work, and report cases to OHSP.
- Use referrals, investigations and policy changes to decrease the number of employees exposed to hazardous cleaning products on the job. For example, increase the number of state agencies in compliance with Executive Order 515, which requires use of green cleaners.
- Improve awareness of correct and incorrect uses of bleach and other disinfectants in early education and childcare.
- Collaborate with partners in coordinating activity on this objective along with the primary prevention of asthma roadmap.

**Background:** The ultimate purpose of this objective is to decrease asthma among Massachusetts residents by reducing exposures at the work site that can cause or exacerbate asthma. A multi-pronged approach to reducing these exposures is needed. First, we need to better understand occupations and industries in which workers are at risk of developing WRA and the relevant exposures. We also need to conduct outreach to raise general awareness of the problem among employers, employees, environmental and advocacy groups and communities as well as health care providers. However, we must also proceed with steps to address known asthma hazards in workplaces such as auto body shops, schools, manufacturing and health care facilities.

WRA is a reportable condition in Massachusetts, and since 1993 MDPH has conducted case-based surveillance of WRA using provider case reports and more recently hospitalization, emergency department, and workers' compensation data. Follow-up interviews are conducted with individuals to confirm cases and find out more about exposures contributing to their breathing problems. The greatest numbers of cases identified by the surveillance system are employed in health care, educational services and manufacturing. Cleaning products stand out as commonly reported exposures. While the case-based data provide important information about the types of workplaces where workers are at risk, only about 75 cases are identified every year and they are not necessary representative of the underlying incidence of WRA in the Commonwealth. To generate population-based estimates, MDPH has used the BRFSS Asthma Call-back Survey data since 2006, which has
shed light on the scope of WRA in Massachusetts. Findings indicate that in 2006-07 the number of adults with asthma affected by work was much higher than previously thought. An estimated 13.9% of adults with current asthma reported that their asthma was caused or made worse by exposures at their current job; 40.2% of adults with current asthma reported that their asthma was caused or made worse by exposure at a current or previous job. Notably, among adults with current asthma who reported that their asthma was caused or made worse by their work, only 26.8% reported ever telling or being told by a health professional that their asthma is work-related.

Massachusetts has some, albeit limited, capacity to intervene in individual workplaces to reduce exposures contributing to asthma. The MDPH Occupational Health Surveillance Program conducts investigations of select cases reported to the surveillance system and provides prevention recommendations to employers and workers. OSHA may also investigate workplaces upon referral from MDPH, but OSHA’s ability to act is restricted given the inadequacy of current OSHA standards. For many known sensitizing agents, there are no OSHA standards and for others, the standards are not stringent enough to prevent sensitization. The Department of Labor Standards conducts investigations of hazards primarily in public sector workplaces. Additionally, as discussed in the previous section, the MDPH Bureau of Environmental Health conducts air quality investigations in schools and work places that are open to the public. Their efforts to improve schools, child care centers and agencies that deal with the public also protect workers in these settings.

While activities to address asthma hazards in individual workplaces are an important component of a comprehensive prevention effort, broad based activities to reach workplaces are also necessary, and Massachusetts has had some important accomplishments in addressing asthma hazards at work on the policy front. MDPH has continued to promote cleaning products without asthmagens and safer practices regarding cleaning, sanitizing and disinfecting to prevent onset or exacerbation of asthma. On a national front, MDPH participates in an international committee of the National Institute for Occupational Safety and Health that is developing a problem statement about healthcare associated infections and recommendations for cleaning and disinfecting practices that do not promote asthma. On the state level MDPH participates in the Toxic Reduction Task Force of the Environmental Preferable Products (EPP) Procurement Program in the state procurement agency to implement the Executive Order that requires state agencies to use green cleaners; allowed cleaners approved by Green Seal and Ecologo do not contain asthmagens. And further, steps to improve guidance for use of sanitizers and disinfectants in early education and care will decrease exposures to bleach, which is an asthmagen and irritant. MDPH analyzed the impact of the Massachusetts Smoke-Free Workplace Law (M.G.L. Ch. 270, § 22) which significantly improved the work environment for many workers, but left a
substantial number of workers in three occupations, installation repair and maintenance, construction and extraction, and transportation and material moving still exposed to environmental tobacco smoke.

Increased public awareness of the potential relationship between workplace exposures and asthma is needed to promote change and the MDPH Occupational Health Surveillance Program has collaborated with numerous partners to conduct outreach about WRA to workers and the general community. Community partners have included among others, MASS-COSH, the Massachusetts Teachers Association and the Massachusetts Federation of Teachers, and the Massachusetts Nurses Association. Efforts to reach employers to raise awareness and address exposures that can cause or aggravate asthma at work have been more challenging.

The Worksite Wellness Program at MDPH offers opportunities to increase employer awareness of WRA and to promote policies and practices to address asthma at work. The Worksite Wellness Program has developed a web based Working on Wellness Tool Kit for employers which includes basic information about approaches to addressing asthma in the workplace.

In the next five years, Massachusetts will continue and enhance efforts to increase worker, employer and community understanding of the role of the work environment in asthma and strategies to reduce risks. At the same time, some activities will target reducing hazardous exposures in the work environment and promoting safer alternatives. Plans to improve surveillance of WRA and asthma hazards in Massachusetts workplaces are included elsewhere in this report, as are plans to improve diagnosis and treatment of WRA by Massachusetts health care providers.

This objective aims to develop a more comprehensive plan to reduce exposures in the workplace and in turn the contribution of WRA to the burden of asthma in the Commonwealth.

I. From 2015 - 2020, continue to investigate workplaces and facilitate work-site changes to reduce or eliminate exposures in response to cases of WRA that are reported to MDPH and to complaints about workplaces accessible to the public. Lead Partner: Massachusetts Department of Public Health - OHSP

II. From 2015 - 2020, raise worker and employer awareness of WRA and promote safe work practices to reduce asthma risks in targeted work settings through publications, trainings and presentations.

a. As needed from 2015 - 2020, work with the MAAP Healthy Schools Committee to promote educational services staff protection along with good practices that protect children. Lead Partners: Massachusetts Department of Public Health - OHSP
III. By 2020, advance (or implement) policy initiatives to decrease exposures to hazardous products in worksites.

a. From 2015 - 2020, the Environmental Preferred Purchasing program of the state Operational Services Department (OSD), the state procurement agency, will continue to reference Green Seal GS-37 and Ecologo as a basis for the RFR for environmentally preferable product purchasing. **Lead Partners: Massachusetts Department of Public Health – OHSP**

b. From 2015 - 2020, promote the use of cleaning products approved by Green Seal and Ecologo, and policies that require the use of safer cleaning products, with state agencies, schools, unions, and other stakeholders. **Lead Partners: Massachusetts Department of Public Health – OHSP, Massachusetts Coalition on Occupational Safety and Health**

c. The Toxics Use Reduction Institute will continue to work with partners to coordinate the Healthy Cosmetology Committee and promote policies that limit or eliminate the use of formaldehyde and other asthma hazards in hair and nail salons, barber shops, and other cosmetology settings. **Lead Partners: The Toxics Use Reduction Institute**

IV. From 2015 - 2020, collaborate with worksite wellness programs to increase employer awareness of WRA.

a. From 2015 – 2020, include information and resources on WRA in the Worksite Wellness Toolkit available on the Massachusetts Department of Public Health website. **Lead Partners: Massachusetts Department of Public Health – Office of Integrated Policy, Planning and Management**

b. From 2015 – 2020, provide technical assistance on WRA and worksite wellness, as requested. **Lead Partners: Massachusetts Department of Public Health – OHSP, Office of Integrated Policy, Planning and Management**

**OBJECTIVE:** Promote strategies for safer alternatives for small and large businesses and other sectors.

**Baseline:** Massachusetts businesses have achieved significant reductions in their use of a number of asthma-related chemicals. However, large amounts of asthma-related chemicals continue to be used in Massachusetts manufacturing and services, and certain chemicals are being used in increasingly large amounts. In 2012, 184 manufacturing firms in Massachusetts reported the use of 309,011,375 pounds of asthma-related chemicals. 416,842 pounds of this was released to the environment, primarily thought air releases.
Target 2020: Reduce by 20% the total use of asthma-related chemicals among facilities reporting to the Toxics Use Reduction Act Program.

Background: Data reported by Massachusetts industries under the Toxics Use Reduction Act (TURA) show that hundreds of thousands of pounds of chemicals capable of causing or exacerbating asthma continue to be used and released into the environment. According to data from the Massachusetts Department of Public Health’s Sentinel Event Notification System for Occupational Risk, new cases of work related asthma have occurred from exposure to these chemicals. While the TURA data demonstrate annual reductions in use and environmental releases, more work with Massachusetts businesses is needed to increase awareness about asthma-related chemicals and to evaluate and adopt safer alternatives. State agency partners working together to promote greater awareness of asthma-related chemicals and their safer substitutes have prioritized action on a select number of chemicals, including diisocyanates, formaldehyde and others. Diisocyanates, which include toluene diisocyanate (TDI) and methylene diisocyanates (MDI), and others, are among the leading causes of occupational asthma. Use of diisocyanates has increased dramatically over the past decade due to increasing use of spray foam insulation. Formaldehyde is used in a variety of applications, including manufacturing of resins and adhesives.

I. Work with Massachusetts businesses to reduce the use of diisocyanates by 2020 by providing education and technical assistance to companies using these chemicals to help reduce their use and whenever possible to promote the adoption of safer alternatives. Lead Partners: Massachusetts Toxics Use Reduction Institute, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance

II. From 2015-2020, increase employer awareness of (a) asthma and (b) safer alternatives for asthma-related chemicals by providing education and materials to businesses and their consultants. Lead Partners: Massachusetts Toxics Use Reduction Institute, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance

III. From 2015-2020, provide the technical assistance to help individual companies change production processes to reduce or eliminate the use of asthma-related chemicals. Lead Partners: Massachusetts Toxics Use Reduction Institute, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance

IV. From 2015-2020, sponsor university research to help identify and test safer alternatives in cases in which alternatives are not yet well understood or present concerns related to technical feasibility. Asthma-related chemicals considered a significant concern will
be prioritized. *Lead Partners: Massachusetts Toxics Use Reduction Institute, Massachusetts Office of Technical Assistance*

V. From 2015-2020, provide training, technical assistance, and small grants to small business sectors that use of asthma-related chemicals – including floor finishing, auto shops, and hair and nail salons, among others– to promotes use reductions.
The Increasing Evidence on Risk Factors for Asthma Onset

A growing body of research documents associations between asthma onset and a range of risk factors, many of which are modifiable. This evidence base has grown substantially since the seminal Institute of Medicine’s *Clearing the Air Report* (2000), which reviewed studies of exposures in indoor air and concluded that house dust-mite can cause the development of asthma, and that environmental tobacco smoke is associated with the initial onset of asthma in preschool aged children. Since then, the evidence on ETS exposure and asthma onset has strengthened, including exposures *in utero* as well as in early life and later in childhood. ETS exposure in the workplace and at home has also been implicated in the development of asthma in adults. While there is much more to learn, the evidence linking exposure to some molds and indoor allergens with the development of asthma has also strengthened, and understanding of vulnerability or susceptibility to adverse effects of these exposures has increased. A growing literature links the development of asthma and/or repeated wheeze in children with maternal health factors, in particular psychosocial stress (stemming from a range of factors including, for example, poverty, racism and bereavement) and obesity. Other studies have shown associations between the initial onset of asthma and obesity in children and adults. Recently, strong evidence has emerged that individuals living in close proximity to busy roadways, particularly children, are at higher risk for the development of asthma than those living at greater distance. Children exposed to traffic who also experience significant stress have even higher rates of asthma onset. The literature on associations between specific pollutants such as NO2 – found not only in vehicle emissions but also in emissions from point sources such as power plants – is strengthening. Hundreds of specific chemicals and other agents have been associated with the onset of asthma in workers; some of these same substances are found in household settings (for example, cleaning chemicals and isocyanates used in spray foam insulation), though few studies have examined the impact on asthma onset of exposures to occupational asthmagens outside a workplace setting.

The strength of the evidence establishing these exposures as risk factors for asthma onset varies. For most of the risk factors discussed above, the literature is robust, clearly establishing that associations with asthma onset are unlikely to be explained by chance, bias, or confounding. Many
of these associations also meet additional criteria for a causal relationship with asthma onset (e.g., temporality; dose-response effect etc.)\(^1\) For a few of the risk factors in some sub-populations, although several studies suggest a role in asthma onset, the associations may be less strong, and study results less consistent.

There has been relatively little intervention research exploring the impact on asthma onset of various approaches for reducing exposure to these risk factors. Some of the studies that have been done suggest that systemic, multi-factorial approaches may be the most effective in preventing asthma in high risk children.\(^{58,59}\) Additional intervention studies are needed to better understand which prevention strategies will reduce asthma incidence in which populations, and to what extent.

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**Developing a “Roadmap” for the Primary Prevention of Asthma: The Massachusetts Primary Prevention Symposium**

The growing evidence base on risk factors for asthma onset, along with concern about increasing asthma prevalence and rising health care costs, led asthma leaders in Massachusetts to include in the state strategic plan for asthma 2009–2014 a goal “to develop...[with input from] a diverse group of professionals and individuals... a roadmap for better understanding the causes of asthma and the role of primary prevention in Massachusetts,” the first state-level commitment of its kind. The Lowell Center for Sustainable Production took responsibility for planning and convening a symposium to develop the primary prevention roadmap, guided by a committee of asthma researchers, clinicians and representatives of labor and community organizations, asthma coalitions and government agencies. In April 2013, eighty people gathered over two days for a working symposium to explore what is known and not known about the development of asthma and to generate recommendations for research, policy and practice changes.

The meeting was groundbreaking in several ways. First, it convened people and organizations as planners, speakers and participants who typically do not work together. Second, to help participants work with an evidence base that has inherent uncertainty, the Lowell Center developed tools to enable speakers to use consistent approaches to characterizing the weight of the evidence\(^2\); to guide participants to identify

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\(^1\) Criteria distinguishing a causal relationship delineated in The Institute of Medicine’s report Clearing the Air: Asthma and Indoor Air Exposures include strength of association, biologic gradient (dose-repose effect), consistency of association, biologic plausibility and coherence, and temporality.

\(^2\) Speakers summarizing the science on individual or groups of risk factors were asked to conclude their presentations by characterizing the weight of the evidence regarding the association between the risk factor(s) and the development of asthma. Categories for associations were “known,” “probable,” “possible,” and “unknown or not classifiable.” Speakers’ presentations and additional information about the symposium are at www.sustainableproduction.org.
risk factors that were “ready for action;” and to encourage a systems approach to planning interventions. Finally, the symposium was timed so that its recommendations could feed into the next Massachusetts statewide strategic plan for asthma.

Key conclusions from the symposium included that asthma is a complex, multi-factorial disease, in which a range of risk factors play a role, within a broader context of health and economic inequities. Consequently, reducing the incidence of asthma will likely require multiple interventions at multiple levels: individual, institutional, and sectoral. The symposium also concluded that while there remain gaps in understanding about effective interventions, and robust research is needed to fill those gaps, some changes to policy and practice aimed at reducing modifiable risk factors should proceed, because of the risk factors’ potential to prevent new asthma cases as well as other health problems. Specifically, participants recommended actions in the realms of housing, schools and early childcare/out of school programs; health care; outdoor air; urban planning and workplaces. Cross-cutting recommendations included a focus on the first 1000 days of child development, the development of a model for neighborhood-level intervention; maximizing opportunities for prevention in the Affordable Care Act; primary prevention-related tracking and surveillance and a series of actions to “prepare the field” for effective interventions. Participants recommended leveraging current programs and policies that are reducing exposure to some of the same risk factors associated with asthma onset, in order to pilot and evaluate interventions to prevent new asthma cases.

The Primary Prevention Roadmap and the 2015-2020 State Strategic Plan

Following the symposium, a new primary prevention committee of the Massachusetts Asthma Advocacy Partnership, chaired by the Lowell Center for Sustainable Production, refined long-term strategic priorities to advance the primary prevention of asthma in Massachusetts, and finalized the roadmap. The committee then selected objectives and actions from the roadmap that would advance the strategic priorities over the next five years, for inclusion in the Strategic Plan for Asthma in Massachusetts 2015-2020. Many of the strategies targeted at preventing asthma onset and managing the disease are similar, and there is overlap in the Objectives and Actions in this Goal and others throughout

3 Examples of modifiable risk factors for asthma onset addressed in this Roadmap include tobacco, obesity, pre-natal/early infancy nutrition, psychosocial stress, traffic-related air pollution, environmental allergens (mold, pests, dust-mite), and many agents, including chemicals, to which workers are exposed; these occupational asthmagens have the potential to cause asthma in other settings as well though there has been little research in this area. As noted above, the research literature suggests that multi-factorial interventions are most likely to be effective.
the Plan. In order to present a clear vision of those specific Activities which will address the primary prevention of asthma from 2015-2020, the strategic decision was made to create a stand-alone Primary Prevention goal. While full integration of the Activities associated with Goal 5 with those that appear throughout the Plan was not possible under the concurrent timelines of development of the Roadmap and the Plan, every effort will be made to engage Lead Partners across Goals and focus areas to maximize impacts both in preventing asthma onset and in improving outcomes for those living with asthma.

The primary prevention symposium and follow-up activities generated great enthusiasm for a strategic effort to make headway on preventing new onset asthma in Massachusetts, as reflected in the broad range of partner organizations committing to work on specific actions in the next five years. They have also sparked interest from organizations across the country interested in the Massachusetts work as a model for initiatives in other states.

People participating in the development of the roadmap acknowledge that given the complexity of the disease and the relative paucity of intervention research, it is not clear which proposed actions will result in reduced asthma incidence and to what extent. Nonetheless, these asthma stakeholders concur that the current evidence is sufficient to justify taking action. They believe that doing so will likely reduce the burden of asthma in the Commonwealth, and that evaluation of the wide range of actions will accelerate learning about which practices and policies are the most effective, making possible rational allocation of resources going forward. Moreover, they expect the actions to contribute positively to other health problems associated with these risk factors. Checking these assumptions against data is important; therefore, tracking the effectiveness of the actions is a high priority.

**Long-Term Strategic Priorities for Advancing the Primary Prevention of Asthma**

A subset of participants in the primary prevention symposium gathered early in 2014 to answer this question: what initiatives do you believe have the potential to achieve a substantial shift in the prevalence of asthma over the next 10-12 years? The discussions generated six long-term strategic priorities:

- Prioritize primary prevention research and interventions that focus on early child development: conception through age 2 years.
- Replace known asthmagens\(^4\) with safer alternatives to improve work environments and other indoor spaces where people may be exposed. Where alternatives are not available, reduce use of and exposure to asthmagens.
■ Increase utilization of public transportation and active transit, and reduce exposures to vehicular traffic and emissions.
■ Increase understanding among public health and medical professionals about modifiable risk factors associated with the onset of asthma, and the potential benefits of reducing them and studying the outcomes, so that “primary prevention” becomes part of common parlance about and action on asthma.
■ For individuals and populations at high risk of developing asthma, prioritize the delivery of home visits to reduce risk factors for asthma onset. For exposures that cannot be addressed via education and behavior change alone, develop community-based resources to enable mitigation of risk factors for asthma onset and to improve indoor air quality.
■ In programs whose primary purpose is to target risk factors of broad concern which are also associated with asthma onset (for example, tobacco, obesity or psychosocial stress), incorporate education about the role of those risk factors in asthma prevention and referrals to asthma-related community resources.

OBJECTIVE: Promote asthma-safe housing to prevent asthma onset.

Baseline: Currently, no baseline exists for this Objective.

Target 2020:
■ Provide education about reducing risk factors for asthma onset during asthma home visits with 1000 high-risk Massachusetts families. Design and initiate a follow-up strategy to track and evaluate subsequent onset of asthma in siblings.
■ Increase to 50% the percentage of residents in multi-unit housing that report living in a smoke-free building.
■ Provide asthma risk reduction education messages related to IPM, green cleaning and smoke-free to all owners engaged by utilities on multi-family housing energy upgrades.

Background: The ultimate purpose of this objective is to identify, pursue and measure the impact of actions to reduce exposure to risk factors for asthma onset in housing policy and programs, for the benefit of residents and other occupants, with attention to the positive and negative impacts of any changes on residents.

Asthmagens are substances causally associated with the development or initial onset of asthma, typically studied and verified in an occupational setting. This long-term priority reflects concern that exposure to such substances outside of workplaces — for example in homes — may be contributing to the development of asthma in some people, as well as contributing to other health problems, so that reducing exposure makes sense not only in the workplace but in other settings as well.

For example, children in home-based childcare settings (see also Objective 4).
I. From 2015 – 2020, develop and advocate for regulatory and/or institutional policies and systems to reduce priority housing-related risk factors for asthma onset while also protecting against detrimental impacts on tenants, including displacement and rent increases.

a. From 2015 – 2020, develop and advocate for policies that prohibit smoking within and near residential buildings. **Lead Partners:** American Lung Association of the Northeast, Health Resources in Action, Boston Public Health Commission, Cambridge Health Alliance/Cambridge Health Department, JSI Research and Training Institute, Inc., University of Massachusetts Lowell – Healthy Homes Program, HUD – Office of Healthy Homes and Lead Hazard Control

b. From 2015 – 2020, develop and advocate for policies that promote the use of asthma-safe “green/healthy” cleaners. **Lead Partners:** American Lung Association of the Northeast, Health Resources in Action, Boston Public Health Commission, Toxics Use Reduction Institute, JSI Research and Training Institute, Inc.

c. From 2015 – 2020, develop and advocate for policies that promote the use of Integrated Pest Management (IPM).** Lead Partners:** Boston Public Health Commission, Toxics Use Reduction Institute, HUD – Office of Healthy Homes and Lead Hazard Control

II. From 2015 – 2020, explore opportunities to tie provision of capital funding for housing to the implementation of programs and policies to reduce risk factors for asthma onset. **Lead Partners:** Boston Public Health Commission, Toxics Use Reduction Institute, US HUD – Office of Healthy Homes and Lead Hazard Control, Massachusetts Public Health Association

III. From 2015 – 2020, promote changes to the state housing regulations to require Integrated Pest Management (IPM) as the approach to mitigate pests. **Lead Partners:** Cambridge Health Alliance/Cambridge Health Department, Massachusetts Asthma Action Partnership, Massachusetts Department of Public Health Bureau of Environmental Health – Community Sanitation Program

IV. From 2015 – 2020, utilize existing home inspection activities, Section 8 inspections, and energy assessments to provide technical assistance and/or educational messages on risk factors associated with asthma onset, with a focus on multi-family housing. **Lead Partners:** Boston Public Health Commission, HUD – Office of Healthy Homes and Lead Hazard Control

V. From 2015 – 2020, promote the asthma-friendly package of smoke-free housing, green cleaning, and IPM as part of the state

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6 Integrated Pest Management is a multi-faceted approach to reducing pest populations tailored to the specific setting. IPM uses pesticides as a last resort.
and utility funded multi-family energy assessment and upgrade programs and single-family programs, when appropriate. 

Lead Partners: Tohn Environmental Services

VI. From 2015 – 2020, explore opportunities for existing home visit programs and associated materials, in particular asthma home visit programs and maternal/child health programs, to provide asthma onset prevention education and home environmental assessments to reduce exposure to risk factors for asthma onset and evaluate impacts. Lead Partners: Pioneer Valley Asthma Coalition, Baystate Medical Center, University of Massachusetts Lowell – Center for Work, Family and Community, Neighborhood Health Plan, Cambridge Health Alliance/Cambridge Health Department, University of Massachusetts Lowell – Healthy Homes Program, Boston Children’s Hospital, HUD – Office of Healthy Homes and Lead Hazard Control, Boston Public Health Commission, US Environmental Protection Agency Region 1 – New England

VII. From 2015 – 2020, expand resources to renovate and build healthy housing, and educate developers about risk factors for asthma onset and exacerbation, including chemical constituents in building materials, furnishings and insulation. Lead Partners: Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance, HUD – Office of Healthy Homes and Lead Hazard Control

VIII. From 2015 – 2020, encourage health impact assessments, with appropriate metrics, for building or road construction, transit-oriented development or other projects likely to affect air quality near residences. Lead Partners: Massachusetts Department of Public Health – Division of Prevention and Wellness and Bureau of Environmental Health Environmental Toxicology Program, Massachusetts Public Health Association, US HUD – Office of Healthy Homes and Lead Hazard Control

IX. From 2015 – 2020, explore built environment policy approaches for reducing residents’ exposures to traffic-related pollution, including measures to decrease exposures of occupants when publicly-funded housing is located within 500 feet of major roadways. Lead Partners: Massachusetts Public Health Association, HUD – Office of Healthy Homes and Lead Hazard Control, Tufts University – Community Assessment of Freeway Exposure and Health

X. From 2015 – 2020, evaluate the impact of specific policies and programs under this objective, including health outcomes and potential detrimental impacts, on the affected populations. Lead Partners: Cambridge Health Alliance/Cambridge Public Health Department
OBJECTIVE: Reduce Risk Factors for Asthma Onset in the First 1000 Days of Child Development.

Baseline: Currently, no baseline exists for this Objective.

Target 2020:

- Reach 30% of the prenatal/early childhood medical practitioners serving priority high, at-risk populations in Massachusetts with information about the state of the science regarding risk factors for asthma onset.
- Develop program recommendations and supporting guidance materials for asthma interventions in the first 1,000 days of life.

Background: This objective seeks to develop educational messages and outreach, and design and evaluate pilot intervention programs to reduce exposure to multiple risk factors associated with the development of asthma in young children.

I. From 2015 – 2020, develop and/or disseminate information, including a journal article and educational materials, that summarize risk factors which may be associated with the development of asthma in young children, including: maternal smoking, obesity, psychosocial stress, environmental allergens and some chemicals. Seek input from key institutions supporting relevant research including appropriate institutes at the National Institutes of Health. Lead Partners: University of Massachusetts Lowell - Lowell Center for Sustainable Production Environmental Health Program, Boston Medical Center, American Lung Association of the Northeast in Massachusetts, Cambridge Health Alliance/Cambridge Health Department, Asthma Regional Council of New England, Harvard School of Public Health, Boston Children's Hospital, Science and Environmental Health Network, Massachusetts Department of Public Health – Division of Pregnancy, Infancy and Early Childhood, Pioneer Valley Asthma Coalition

II. From 2015 – 2020, pilot and evaluate programs to educate women and early childcare providers about risk factors for asthma development, and the importance of the first 1000 days of life in influencing asthma onset. Lead Partners: Boston Public Health Commission, Boston Medical Center, Toxics Use Reduction Institute, Boston Children's Hospital, MDPH Division for Perinatal, Early Childhood, and Special Health Needs, MDPH Division of Pregnancy, Infancy and Early Childhood, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program

III. From 2015 – 2020, develop and implement a multi-year strategy for engaging physicians, nurse-midwives and other clinicians who work with women from conception to age 2 years about risk factors for asthma development including developing links with
other initiatives focusing on the first 1000 Days and identifying opportunities for incorporating asthma prevention messages into these programs. **Lead Partners: Neighborhood Health Plan, Asthma Regional Council of New England, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program, University of Massachusetts Medical School**

IV. From 2015 – 2020, track ongoing research on the role of nutritional and other influences on asthma development. **Lead Partners: Science and Environmental Health Network, Boston Medical Center, Professor Carlos Camargo, MD DrPH of Massachusetts General Hospital/Harvard Medical School, Boston Children’s Hospital**

V. From 2015 – 2020, track ongoing research on the impact of asthma on the development of asthma in young children. **Lead Partners: Boston Medical Center, Boston Children’s Hospital, Harvard School of Public Health, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program**

VI. From 2015 – 2020, educate and advocate among high-level hospital leadership for attention via clinical and community programs to exposures during the first 1,000 days of child development likely to contribute to the development of asthma. **Lead Partners: Health Care Without Harm**

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**OBJECTIVE:** Develop Model for Comprehensive Community-Based Asthma Prevention.

**Baseline:** Currently, no baseline exists for this Objective.

**Target 2020:**
- Develop and secure funding for a participatory community engagement process.
- Target: Implement one pilot neighborhood-level intervention to prevent asthma onset.

**Background:** The ultimate goal of this objective is to develop, pilot and evaluate a model for neighborhood-level community engagement and intervention that targets and reduces multiple risk factors, taking a systems approach to asthma prevention. The community process should reflect an understanding that addressing institutional racism and classism is essential to reducing disparities and inequities in exposure to risk factors for asthma onset and in rates of disease.

I. From 2015 – 2020, work with community leaders, residents, and workers in the development of a process for community engagement on asthma prevention. **Lead Partners: University of**
II. From 2015 – 2020, seek funding to pilot priority initiatives in select communities and evaluate their success. **Lead Partners:** University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program, Boston Medical Center, Boston Public Health Commission, Alternatives for Community and Environment, Massachusetts Asthma Action Partnership, University of Massachusetts Amherst – Center for Public Policy and Administration, Cambridge Health Alliance/Cambridge Health Department, Boston Children’s Hospital, JSI Research and Training Institute, Inc., Boston Alliance for Community Health, Boston Healthy Homes and Schools Collaborative, Massachusetts Department of Public Health – APCP, US Environmental Protection Agency Region 1 – New England

**OBJECTIVE:** Promote Asthma Prevention in Schools, “Out-of-School” Time and Early Education/Child Care Settings.

**Baseline:** Currently, no baseline exists for this Objective.

**Target 2020:**
- Engage four new collaborators and implement three new asthma prevention strategies in early childhood, out of time, and school-based settings.
- Establish mechanisms to leverage existing monitoring data to document progress in reducing risk factors associated with asthma onset in early childhood, out of school time and school-based settings; risk factors targeted include chemicals and pests.

**Background:** This objective will target risk factors for asthma onset and measure impacts in students and school staff, with a focus on establishing healthy indoor and outdoor environments and enhancing programs that reduce obesity and psychosocial stress.

7 Out-of-school time programs are regulated by MA Dept. of Early Education and Care, serve children ages 5-14, and are located in community settings (e.g. YMCAs, Boys and Girls Clubs) or in schools.

8 In the context of asthma prevention, healthy indoor environments are free of tobacco smoke, environmental allergens from pests, mold and dust-mite, and chemical exposures. Healthy outdoor environments would not expose students to traffic-related air pollution.
I. From 2015 – 2020, strengthen existing partnerships and build new partnerships among parents, teachers, students, staff, and other stakeholders around asthma prevention strategies. Lead partners: Asthma and Allergy Foundation of America, New England Chapter, Children's Investment Fund, Massachusetts Coalition on Occupational Safety and Health, Toxics Use Reduction Institute, Boston Healthy Homes and Schools Collaborative, MDPH Division for Perinatal, Early Childhood, and Special Health Needs, US Environmental Protection Agency Region 1 – New England
   a. From 2015 – 2020, link messages among organizations conducting education and advocacy initiatives that overlap with asthma prevention strategies, such as stress reduction, obesity prevention, healthy school environments, and wellness programs. Lead partners: Asthma and Allergy Foundation of America New England Chapter, Children's Investment Fund, Massachusetts Coalition on Occupational Safety and Health, Toxics Use Reduction Institute, Boston Healthy Homes and Schools Collaborative, US Environmental Protection Agency Region 1 – New England
   b. From 2015 – 2020, explore opportunities to issue guidance and design and implement effective programs targeting workers, families, and children. Lead partners: Asthma and Allergy Foundation of America, New England Chapter, Children's Investment Fund, Massachusetts Coalition on Occupational Safety and Health, Toxics Use Reduction Institute, Boston Healthy Homes and Schools Collaborative, US Environmental Protection Agency Region 1 – New England

II. From 2015 – 2020, implement a “cleaning for health program,” promoting procurement of “green/healthy” cleaners and will develop cleaning policies and procedures for programs that are tenants of public schools and other spaces. Lead Partners: Children's Environmental Health Network, Massachusetts Coalition on Occupational Safety and Health, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance, Toxics Use Reduction Institute, Health Resources in Action

III. From 2015 – 2020, reduce exposures to pesticides and pests in schools, “out of school time,” and early education/child care settings by promoting the use of Integrated Pest Management (IPM) in these settings. Lead Partners: Children's Environmental Health Network, Massachusetts Department of Early Education and Care, Massachusetts Coalition on Occupational Safety and Health,

9 Green/healthy cleaners are those that are safer for human health and the environment. It is important to ensure that cleaners labeled as “green” contain no asthmagens or other hazardous materials. Green Seal and Ecologo-certified products meet these criteria. Additional research is needed to foster research to identify and evaluate cleaning and disinfecting products and processes used for environmental surfaces and non-critical devices that are effective for infection prevention and protective of respiratory health.
Boston Healthy Homes and Schools Collaborative, Toxics Use Reduction Institute, MDPH Division for Perinatal, Early Childhood, and Special Health Needs, US Environmental Protection Agency Region 1 – New England

a. From 2015 – 2020, explore strengthening the training and technical assistance components of the state IPM law which mandates training and technical assistance for teachers, facility owners, managers, and staff. Lead Partners: Children’s Environmental Health Network, Massachusetts Department of Early Education and Care, Massachusetts Coalition on Occupational Safety and Health, Boston Healthy Homes and Schools Collaborative, Toxics Use Reduction Institute

b. From 2015 – 2020, explore advancing IPM techniques using resources such as EPA’s Tools for Schools action kits or the EPA’s Healthy Child Care IPM Training. Lead Partners: Children’s Environmental Health Network, Massachusetts Department of Early Education and Care, Massachusetts Coalition on Occupational Safety and Health, Boston Healthy Homes and Schools Collaborative, Toxics Use Reduction Institute

c. From 2015 – 2020, develop policies and procedures for early care and education and out-of-school time programs that are tenants of public schools or other owners, to coordinate their work with the owner’s maintenance staff. Lead Partners: Children’s Environmental Health Network, Massachusetts Department of Early Education and Care, Massachusetts Coalition on Occupational Safety and Health, Boston Healthy Homes and Schools Collaborative, Toxics Use Reduction Institute

IV. From 2015 – 2020, assess existing Massachusetts Department of Early Education and Care licensing regulations, national accreditation standards, and other facility standards for measures promoting environmental safety and health in construction and renovation and determine needs and opportunities for eliminating asthma triggers and reducing risk factors for asthma onset. Lead Partners: Children’s Environmental Health Network, Children’s Investment Fund, Massachusetts Department of Early Education and Care, Boston Healthy Homes and Schools Collaborative

V. From 2015 – 2020, promote increased capital investment in schools, out-of-school time and early education/child care settings to improve indoor environments and reduce risk factors for asthma onset, including remediating water damage, upgrading HVAC systems, using materials and equipment that do not contain harmful chemicals (e.g., formaldehyde); and creating healthy outdoor play spaces to encourage physical activity. Lead Partners: Children’s Investment Fund, Massachusetts Department of Early Education and Care, Toxics Use Reduction Institute, Massachusetts Department of Labor Standards
VI. From 2015 – 2020, promote inclusion of asthma prevention strategies such as environmental checklists, action plans and owner/staff trainings in the required health policies for licensed early care, education, and out of school time programs. **Lead Partners:** Children’s Investment Fund, Massachusetts Department of Early Education and Care, Children’s Environmental Health Network

VII. From 2015 – 2020, encourage outreach to educators, administrators and all staff about asthmagens to which they may be exposed in their workplaces and identify needs for improvements to HVAC systems in locations where both carbon monoxide and asthma rates are high. **Lead Partners:** American Lung Association of the Northeast in Massachusetts, Massachusetts Coalition for Occupational Safety and Health, Massachusetts Department of Public Health – Bureau of Environmental Health, Indoor Air Quality Program, Massachusetts Department of Labor Standards

**OBJECTIVE:** Pursue Asthma Prevention Opportunities in the Affordable Care Act, with a particular focus on low-income families at high risk of developing asthma.

**Baseline:** Currently, no baseline exists for this Objective.

**Target 2020:**
- Develop model guidance for the provision and integration of clinical and non-clinical approaches for the primary prevention of asthma as supported by the ACA.

**Background:** The purpose of this objective is to assess opportunities for reducing asthma onset in Medicaid populations via the Affordable Care Act, as discussions continue about how to measure and reward keeping populations healthy through insurance reform.

I. From 2015 – 2020, analyze which risk factors identified by the April 2013 primary prevention symposium are also priorities within the Affordable Care Act (ACA). **Lead Partners:** US Department of Health and Human Services – Region I New England, Boston Public Health Commission, Massachusetts Public Health Association, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program

II. From 2015 – 2020, identify opportunities in the Affordable Care Act for advancing the primary prevention of asthma in clinical practice, with a particular focus on maternal/early childhood and environmental/workplace exposure screening, perhaps through support for Community Health Workers as a part of the care team for asthma prevention and management. **Lead Partners:**
III. From 2015 – 2020, examine opportunities for non-profit hospitals obligated by new IRS requirements under the ACA to include in their required community health needs assessments a priority of reducing asthma incidence as well as promoting asthma management, including whether environmental indicators of health are prioritized, and the availability of resources in communities to address environmental concerns. **Lead Partners: Baystate Medical Center, Pioneer Valley Asthma Coalition / Partners for a Healthier Community, Boston Public Health Commission, Health Care Without Harm**

IV. From 2015 – 2020, explore opportunities for establishing a state requirement for hospitals to work towards alleviating community health disparities, such as asthma, in order to achieve their Accountable Care Organization certification. **Lead Partners: Baystate Medical Center, Pioneer Valley Asthma Coalition / Partners for a Healthier Community, Boston Public Health Commission, Massachusetts Public Health Association**


VI. From 2015 – 2020, support full integration of community health workers into health care delivery and reimbursement, as their skill sets may be needed for prevention programs as well as for asthma management programs. **Lead Partners: US Department of Health and Human Services, Region I New England, Boston Public Health Commission, Asthma Regional Council of New England, Boston Medical Center, Boston Public Health Commission, Boston Children’s Hospital, Massachusetts Public Health Association, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program**

**OBJECTIVE:** Promote Primary Prevention of Asthma in Health Care Settings.

**Baseline:** Currently, no baseline exists for this Objective.

**Target 2020:**
- Include primary prevention educational messages in 20% of new hospital-sponsored asthma home visit programs – programs designed
to intervene after an ER visit or hospitalization for asthma. Design and initiate a follow-up strategy to track and evaluate subsequent onset of asthma in siblings.

- Provide 15% of primary care providers with information about risk factors for asthma onset, encourage risk factor screenings and reporting of work-related asthma as required by law.
- Develop guidance to enhance multi-faceted workplace and environmental asthma prevention interventions for health care employees and patient occupants in health care settings.

**Background:** This objective will launch primary prevention initiatives in health care settings, including home health care, among patients and people working in health care settings. Form “learning communities” around multi-factorial interventions and engage in policy development where appropriate. Consider opportunities for integrating primary with secondary and tertiary prevention activities and track results.

I. From 2015 – 2020, develop and implement a multi-year strategy for engaging physicians, nurse-midwives and other clinicians who work with women from conception to age 2 years about risk factors for asthma development including developing links with other initiatives focusing on the first 1000 Days and identifying opportunities for incorporating asthma prevention messages into these programs. *Lead Partners: Neighborhood Health Plan, Asthma Regional Council of New England, University of Massachusetts Lowell–Lowell Center for Sustainable Production Environmental Health Program, University of Massachusetts Medical School*

II. From 2015 – 2020, collaborate with health care leaders, clinicians and with existing hospital-affiliated home visit programs to promote healthy housing practices in patients’ homes, especially those homes with young children and will evaluate the impacts of these programs. *Lead Partners: Asthma and Allergy Foundation of America - New England Chapter, Pioneer Valley Asthma Coalition, Baystate Medical Center, Boston Medical Center, Boston Asthma Home Visiting Collaborative; Boston Public Health Commission; Asthma Regional Council of New England, Boston Children’s Hospital, Health Care Without Harm, JSI Research and Training Institute, Inc.*

   a. From 2015 – 2020, encourage development of, and referral to, local resources that support structural interventions to address risk factors that cannot be controlled by residents. *Lead Partners: Asthma and Allergy Foundation of America - New England Chapter, Pioneer Valley Asthma Coalition, Baystate Medical Center, Boston Medical Center, Boston Asthma Home Visiting Collaborative; Boston Public Health Commission; Asthma Regional Council of New England, Boston Children’s Hospital, Health Care Without Harm, JSI Research and Training Institute, Inc.*
III. From 2015 – 2020, encourage primary care providers to screen patients for potential exposure to risk factors associated with asthma onset, including workplace exposures, particularly tobacco exposure, obesity, and psychosocial stress, and provide counseling and referrals as needed related to identified exposures. Lead Partners: Neighborhood Health Plan, Massachusetts Department of Public Health – OHSP, Boston Children’s Hospital

IV. From 2015 – 2020, encourage health care providers to report work-related asthma as required by law, and to work with patients and their employers to prevent exposures to asthmagens. For exposures to asthmagens, lead partners will promote attention to finding safer replacements before isolation, ventilation and personal protective equipment are relied upon to reduce exposure. Where early symptoms exist, lead partners will support interventions that reduce or eliminate the use of the chemical. Lead Partners: Massachusetts Department of Public Health – Occupational Health Surveillance Program, Massachusetts Medical Society

V. From 2015 – 2020, promote programs for health care employees that address risk factors associated with asthma onset and assistance for workers who need referrals for tobacco exposure, obesity, and psychosocial stress. Lead Partners: Massachusetts Department of Public Health – Occupational Health Surveillance Program, University of Massachusetts Lowell – Sustainable Hospitals Program, JSI Research and Training Institute, Inc., Massachusetts Coalition for Occupational Safety and Health, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program

VI. From 2015 – 2020, encourage efforts to reduce exposure to those risk factors, prioritizing changes that benefit multiple workers, patients, bystanders and visitors where the health care work environment is exposing employees to risk factors for asthma onset. Lead Partners: Massachusetts Department of Public Health – Occupational Health Surveillance Program, University of Massachusetts Lowell – Sustainable Hospitals Program, JSI Research and Training Institute, Inc., Massachusetts Coalition for Occupational Safety and Health, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program
a. From 2015 – 2020, for exposures to asthmagens, promote attention to finding safer replacements before isolation, ventilation and personal protective equipment are relied upon to reduce exposure. Lead Partners: Massachusetts Department of Public Health – Occupational Health Surveillance Program, University of Massachusetts Lowell – Sustainable Hospitals Program, JSI Research and Training Institute, Inc., Massachusetts Coalition for Occupational Safety and Health, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program
b. From 2015 – 2020, encourage worksite wellness/employee health initiatives to include education about risk factors for asthma onset and screening for exposures. **Lead Partners:** Massachusetts Department of Public Health – Occupational Health Surveillance Program, JSI Research and Training Institute, Inc., Massachusetts Coalition for Occupational Safety and Health, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program

VII. From 2015 – 2020, develop pilot programs to evaluate the effectiveness of cleaning and disinfecting agents to reduce potentially infectious micro-organisms and minimize respiratory hazards in actual healthcare settings, develop trainings on hazards and alternatives and develop model policies that promote substitution with green cleaning products and disinfectant products where needed. **Lead Partners:** University of Massachusetts Lowell – Sustainable Hospitals Program, Toxics Use Reduction Institute, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance

VIII. From 2015 – 2020, promote the use of Integrated Pest Management for pest control in health care settings, with ongoing evaluations of effectiveness, building on the Joint Commission’s IPM and pesticides-related standards for accreditation. **Lead Partners:** Boston Medical Center, Toxics Use Reduction Institute

**OBJECTIVE:** Improve Traffic-Related Air Quality.

**Baseline:** Currently, no baseline exists for this Objective.

**Target 2020:**
- Develop methods to identify populations at risk for the development of asthma, and at risk for disproportionate exposure to heavy localized traffic pollution across the state.
- Develop and begin initiating strategies to mitigate traffic-related air pollution exposure levels in at least 3 priority geographic areas/communities.

**Background:** This objective seeks to reduce exposure to traffic-related air pollution, which is associated with the onset of asthma, with particular attention to children and high-risk populations and track results.

I. From 2015 – 2020, utilize state regulatory and non-regulatory policy tools to reduce near-roadway traffic pollution.
   a. From 2015 – 2020, establish specifications within construction contracts to use best available control technologies to reduce ultrafine as well as larger particulate pollution. **Lead Partners:** Massachusetts Department of Environmental Protection
b. From 2015 – 2020, partner with municipal officials in Boston to enact a diesel emissions reduction ordinance that requires use of best available control technologies on diesel engines owned, leased, or contracted by the city. Lead Partners: Alternatives for Community and Environment, US Environmental Protection Agency Region 1 – New England

c. From 2015 – 2020, enforce anti-idling regulations. Lead Partners: Massachusetts Department of Environmental Protection

d. From 2015 – 2020, ensure that new vehicles delivered for sale meet stringent emission standards. In addition, promote hybrid vehicles, electric vehicles, and other advanced clean vehicle technologies. Lead Partners: Massachusetts Department of Environmental Protection, Conservation Law Foundation

e. From 2015 – 2020, engage the state’s metropolitan planning organizations in considering allocation of a small portion of budgets for transportation improvement projects to asthma primary prevention programs in Massachusetts’ communities. Lead Partners: Metropolitan Area Planning Council, Conservation Law Foundation

II. From 2015 – 2020, increase access to public transportation, improving its ease, reliability and cost to encourage broad usage. Lead Partners: Alternatives for Community & Environment, Massachusetts Public Health Association, Conservation Law Foundation

III. From 2015 – 2020, improve capacity to identify populations with localized exposure to higher levels of air pollution, including
a. From 2015 – 2020, assess the adequacy of current air quality monitoring efforts to capture near-roadway pollution levels, linking official air monitoring networks with other air monitoring networks supported by academic groups and non-profit organizations. Lead Partners: Tufts University – Community Assessment of Freeway Exposure and Health, US Environmental Protection Agency Region 1 – New England

b. From 2015 – 2020, assess population density characteristics associated with proximity to high-volume traffic patterns. Lead Partners: Tufts University – Community Assessment of Freeway Exposure and Health

c. From 2015 – 2020, utilize the MDPH Environmental Public Health Tracking system to identify populations at high risk of developing asthma because of multiple risk factors including air pollution. Lead Partners: Harvard School of Public Health, Massachusetts Department of Public Health – Bureau of Environmental Health Environmental Toxicology Program, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program

IV. From 2015 – 2020, promote and explore the use of health impact assessments to identify and mitigate impacts on public health and
vulnerable populations of major projects that will increase the vehicular capacity on transportation corridors or that will result in significant new residents or employees being located near highways. 

*Lead Partners: Massachusetts Department of Public Health – Division of Prevention and Wellness and Bureau of Environmental Health Environmental Toxicology Program, Boston Public Health Commission, Massachusetts Public Health Association, Jon Levy, ScD of Boston University School of Public Health, Metropolitan Area Planning Council*

V. From 2015 – 2020, develop and disseminate to the public key messages about links between traffic-related air pollution and the onset of asthma, including the benefits of using public transportation, among others. *Lead Partners: Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health, Asthma and Allergy Foundation of America – New England Chapter, American Lung Association of the Northeast in Massachusetts, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program, Tufts University – Community Assessment of Freeway Exposure and Health, Massachusetts Department of Public Health – Bureau of Environmental Health Environmental Toxicology Program, US Environmental Protection Agency Region 1 – New England*

VI. From 2015 – 2020, develop strategy, data and methods to determine the health impacts of vehicle emissions and the emission reduction and health benefits of zero-emission transportation sources and will use statewide carbon pollution reduction goals set out in the Global Warming Solutions Act to motivate non-polluting transportation resources and drive this transition. *Lead Partners: Jon Levy, ScD of Boston University School of Public Health, Cambridge Public Health Department/Cambridge Health Alliance, Conservation Law Foundation*

**OBJECTIVE: Prioritize Health in Urban Development.**

**Baseline:** Currently, no baseline exists for this Objective.

**Target 2020:**
- Increase personal miles traveled by public transportation, biking and walking towards the state’s goal of tripling by 2030.
- Advance implementation of the 2013 Massachusetts new Healthy Transportation Policy Directive.

**Background:** This objective aims to guide development, including buildings and transportation, to reduce pollutants from vehicular sources and people’s exposure to them, and to encourage physical activity.
I. From 2015 – 2020, work to incorporate public health, and specifically risk factors associated with asthma onset such as exposure to traffic-related pollution, into the decision-making process for transit-oriented development across the State. **Lead Partners:** Health Resources in Action, Metropolitan Area Planning Council, Massachusetts Department of Public Health – Division of Prevention and Wellness, Massachusetts Department of Public Health – Bureau of Environmental Health Environmental Toxicology Program

   a. From 2015 – 2020, utilize evidence-based studies and strategies during the transit-related development planning process. **Lead Partners:** Health Resources in Action, Metropolitan Area Planning Council, Massachusetts Department of Public Health – Division of Prevention and Wellness, Massachusetts Department of Public Health – Bureau of Environmental Health Environmental Toxicology Program

II. From 2015 – 2020, use or encourage use of health impact assessments as tools for incorporating public health into urban/regional/local planning and building siting and construction projects, explicitly accounting for traffic-related air quality, vehicular trip reductions, active transportation, other physical activity infrastructure, and additional dimensions relevant to asthma as appropriate. Ensure that health impact assessments use the best indicators of localized traffic pollution levels whenever data are available. **Lead Partners:** Metropolitan Area Planning Council, Massachusetts Department of Public Health – Division of Prevention and Wellness, Health Resources in Action, Massachusetts Department of Public Health – Bureau of Environmental Health Environmental Toxicology Program, Jon Levy, ScD of Boston University School of Public Health, Tufts University – Community Assessment of Freeway Exposure and Health

III. From 2015 – 2020, support the Massachusetts Department of Transportation goal by working to shift financial resources to emphasize affordable and reliable public transportation and provision of bicycling and walking facilities, especially in combination, versus single occupant vehicle trips. **Lead Partners:** Metropolitan Area Planning Council, Massachusetts Department of Public Health – Division of Prevention and Wellness, Massachusetts Public Health Association, Conservation Law Foundation

   a. From 2015 – 2020, promote bicycling/walking in locations that are protected from traffic-related pollution and that have the potential to offset vehicular traffic, reduce exposure to air pollution, and increase public safety and physical activity. **Lead Partners:** Metropolitan Area Planning Council, Massachusetts Department of Public Health – Division of Prevention and Wellness, Massachusetts Public Health Association
OBJECTIVE: Promote Asthma Prevention in Massachusetts Workplaces.

Baseline: Currently, no baseline exists for this Objective.

Target 2020:
- Reduce by 20% the total use of chemicals capable of causing new onset asthma among facilities reporting to the Toxics Use Reduction Act program.
- Target: Develop and initiate at least 1 workplace and industry-wide prevention effort targeting industries at high-risk for work-related asthma.

Background: This objective seeks to reduce work-related asthma in Massachusetts workplaces by utilizing the full range of resources that can be mobilized and evaluating impacts, with a focus on reducing exposure to factors that cause asthma in the workplace.

I. From 2015 – 2020, use the Toxics Use Reduction Act (TURA) to promote reduced use of chemical asthmagens in Massachusetts’ workplaces. Lead Partners: Massachusetts Department of Public Health – HSP, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance, Massachusetts Coalition on Occupational Safety and Health, Toxics Use Reduction Institute, University of Massachusetts Lowell – Sustainable Hospitals Program

II. From 2015 – 2020, explore both assistance and enforcement to promote reduced use of asthmagens in Massachusetts’ workplaces. Lead Partners: Massachusetts Department of Public Health – OHSP, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance, Massachusetts Coalition on Occupational Safety and Health, Asthma and Allergy Foundation of America – New England Chapter, Massachusetts Department of Labor Standards, Occupational Safety and Health Administration Region I

III. From 2015 – 2020, work to improve recognition and reporting of work-related asthma by health care providers, including working with professional associations to increase clinicians’ attention to medical diagnosis, identification of links between work and asthma, and reporting of work-related asthma cases to the Massachusetts Department of Public Health. Lead Partners: Asthma and Allergy Foundation of America – New England Chapter, Pioneer Valley Asthma Coalition, Baystate Medical Center, Massachusetts Department of Public Health – Occupational Health Surveillance Program

IV. From 2015 – 2020, promote medical monitoring and/or health surveys of high-risk workers exposed to known occupational risk factors that contribute to asthma onset. Lead Partners: Massachusetts Department of Public Health – OHSP
V. From 2015 – 2020, promote prioritization of removal of known chemical asthmagens in work settings where workers share exposure to these chemicals along with members of the public, such as the healthcare and education sectors. **Lead Partners:** Massachusetts Department of Public Health – OHSP, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance, Massachusetts Coalition on Occupational Safety and Health, Asthma and Allergy Foundation of America, New England Chapter, University of Massachusetts Lowell – Sustainable Hospitals Program, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program

VI. From 2015 – 2020, develop strategies to include asthma and work-related asthma in worksite wellness programs. **Lead Partners:** Massachusetts Department of Public Health – OHSP, Massachusetts Coalition on Occupational Safety and Health, Asthma and Allergy Foundation of America – New England Chapter, American Lung Association of the Northeast in Massachusetts, University of Massachusetts Lowell – Sustainable Hospitals Program

VII. From 2015 – 2020, scale up worksite asthmagen reduction programs and exposure reduction programs known to be effective, including in small business settings like nail salons, auto body shops, floor refinishing companies, printing shops and dry cleaners. **Lead Partners:** Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance, Massachusetts Coalition on Occupational Safety and Health, Boston Public Health Commission, Toxics Use Reduction Institute, JSI Research and Training Institute, Inc., Massachusetts Department of Labor Standards, US Environmental Protection Agency Region 1 – New England

VIII. From 2015 – 2020, disseminate information to workers and employers about whistleblower rights as protected by the US Department of Labor so that employees are not penalized or retaliated against for identifying chemical hazards that can cause asthma in the workplace. **Lead Partners:** Massachusetts Department of Public Health – OHSP, Massachusetts Coalition on Occupational Safety and Health

**OBJECTIVE:** Track progress towards the primary prevention of asthma.

**Baseline:** Currently, no baseline exists for this Objective.

**Target 2020:**
- Implement routine measurement of state-wide asthma incidence.
- Explore opportunities for using the All Payers Claims database and
Background: This objective will develop a strategy and supporting tools for measuring near and longer-term progress in reducing asthma onset, using both evaluation and surveillance tools, including methods for tracking disparities in the distribution of exposure to risk factors and outcomes and will share this strategy with partners implementing Goal 5 of the Strategic Plan for Asthma in Massachusetts 2015 – 2020 and the Primary Prevention Roadmap.

I. From 2015 – 2020, develop a paradigm for program or project evaluation that reflects the inherent methodological challenges in measuring asthma prevention and which includes risk factor reduction and health outcome measures. Lead Partners: University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program, Boston Public Health Commission, Massachusetts Department of Public Health – APCP

II. From 2015 – 2020, assess existing surveillance systems and data sources for their pertinence to the primary prevention of asthma, including both risk factors and health outcomes, identify needed data, and plan for new data collection. Lead Partners: Massachusetts Department of Public Health – APCP, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program, University of Massachusetts Amherst – Center for Public Policy and Administration

III. From 2015 – 2020, establish standardized case definitions for asthma onset for surveillance purposes, in conjunction with federal and state partners and other asthma and surveillance experts. Lead Partners: University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program, Massachusetts Department of Public Health – APCP, Boston Public Health Commission

IV. From 2015 – 2020, consider expanding existing state and local health surveillance systems and environmental health tracking programs, air quality monitoring and clinical systems to track progress towards reducing risk factors associated with asthma onset, reducing new onset asthma in high risk populations and implementation of primary prevention programs. Lead Partners: Massachusetts Department of Public Health – APCP, Boston Medical Center, American Lung Association of the Northeast in Massachusetts

V. From 2015 – 2020, convene stakeholders to develop recommendations for improving quality and access to data on indoor air
quality in the Commonwealth, while addressing privacy concerns. Explore the feasibility of implementing recommendations. Lead Partners: Massachusetts Department of Public Health - APCP, Boston Medical Center, Harvard School of Public Health

OBJECTIVE: Prepare the field over time to achieve primary prevention goals.

Baseline: Currently, no baseline exists for this Objective.

Target 2020:
■ Convene biannual conferences and/or webinar series on the primary prevention of asthma.
■ Develop baseline estimate the average economic costs and benefits of preventing each new case of asthma in the Commonwealth.

Background: The purpose of this objective is to conduct key analyses, build relationships, provide information and launch initiatives that support the long-term strategic priorities identified at the beginning of this Goal and help advance the near-term objectives and actions included in this Strategic Plan.

I. From 2015 – 2020, estimate the economic benefits of preventing asthma in children and adults, including avoiding the direct costs of medical good and services, the indirect costs of lost productivity and schooling, and the value of decreased quality of life. Lead Partners: University of Massachusetts Amherst - Center for Public Policy and Administration, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program, Massachusetts Department of Public Health - APCP

II. From 2015 – 2020, prepare a “systems map” which reflects the complex of factors that influence asthma development to help identify leverage points and strategic opportunities for changes in the system that can lead to reduced asthma incidence. Lead Partners: University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program, Harvard School of Public Health

III. From 2015 – 2020, develop consistent evidence-based messaging and a communications strategy about primary prevention that ties asthma onset to important risk factors. Lead Partners: Massachusetts Asthma Action Partnership, Asthma and Allergy Foundation of America – New England Chapter, Boston Public Health Commission, Massachusetts Department of Public Health - APCP, University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program
IV. From 2015 – 2020, consider and implement steps to promote connection and partnerships among government (local/municipal, regional, state) and non-government organizations working to address risk factors associated with asthma onset and other aspects of primary prevention such as annual conferences on primary prevention. **Lead Partners:** University of Massachusetts Lowell – Lowell Center for Sustainable Production Environmental Health Program, Asthma and Allergy Foundation of America – New England Chapter, Massachusetts Coalition for Occupational Safety and Health, Asthma Regional Council of New England, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance

V. From 2015 – 2020, engage new allies in asthma prevention, seeking partnerships with organizations that address risk factors for asthma onset, such as obesity and mental health/stress reduction/resilience, traffic-related air pollution, and workplace and environmental exposures. **Lead Partners:** Pioneer Valley Asthma Coalition, Baystate Medical Center, American Lung Association of the Northeast in Massachusetts, Massachusetts Coalition for Occupational Safety and Health, Massachusetts Executive Office of Energy and Environmental Affairs/Office of Technical Assistance, Massachusetts Asthma Action Partnership, Alternatives for Community and Environment, Massachusetts Public Health Association

VI. From 2015 – 2020, identify opportunities and advocate for corporate stakeholders to promote the objectives and actions in the Massachusetts Primary Prevention Roadmap. **Lead Partners:** American Lung Association of the Northeast in Massachusetts, Massachusetts Asthma Action Partnership, Health Care Without Harm
The complexities of asthma, both in the clinical management and in addressing the environmental factors, require broad partnerships to improve asthma outcomes in Massachusetts. Building strong partnerships assists in improving collaboration, improving public health programming, and eliminating duplication of services.

According to the Allies against Asthma Project, “coalitions and partnerships hold great promise because they:

- bring together diverse groups in a community to address issues of mutual interest
- widen spheres of influence
- facilitate creativity and innovation in programs and services
- pool resources to address issues system-wide.”

It is essential that the statewide and local partnerships and coalitions across the state have broad membership that is inclusive and diverse. Diversity ensures that the partnership have a representative process that includes the voices of those most affected by asthma. Inclusivity ensures that the partnerships have processes that enhance participation and ensure community participation in all levels of decision making.

This goal focuses on ensuring that Massachusetts has strong, diverse, broad and representative coalitions and partnerships on asthma. Partners helped develop this plan; and it’s the partner who will implement the plan. The success of the strategic plan on asthma relies heavily on a strong statewide partnership to implement and coordinate the plan.

OBJECTIVE: Increase the capacity of MAAP and MAAP members to tackle asthma.

MAAP is the lead partner on all activities under this objective. The MDPH Asthma Prevention and Control Program will provide support to MAAP to accomplish this goal.

Baseline:

Where we were:
According to an evaluation of MAAP conducted in 2008 and 2009:
Membership: 60.6% of survey respondents strongly agreed or agreed that MAAP actively engages its members, however, only 39.4% indicated that MAAP has a process for recruiting new members.

Leadership Development: Survey responses point to a shortage of opportunities for leadership development in MAAP, as 12.5% of respondents disagreed that MAAP makes a conscious effort to develop new leaders and 28.1% of respondents were unsure.

Sustainability: Interviewees and survey respondents noted that MAAP currently does not have the necessary resources related to funds and staffing to achieve its goals most effectively.

Where we are:
According to an evaluation of MAAP conducted in 2013:

Membership: Questions on membership engagement and recruitment were not repeated in the same format as in the 2008-2009 survey, but engagement was addressed under the heading of Role as convener and catalyst.

Role as convener and catalyst: 81.5% of survey respondents strongly agreed or agreed that MAAP “provides a venue for me to network with colleagues in my field,” 88.8% strongly agreed or agreed that MAAP “provides a venue for me to network with other stakeholders important to asthma,” and 84.7% strongly agreed or agreed that MAAP “gives me the opportunity to share what is happening to address asthma in my region.”

Leadership Development: Only 4% of respondents disagreed and 12% were unsure about being provided leadership opportunities through MAAP – an improvement over the 2008-2009 results.

Sustainability: 38.4% of survey respondents strongly disagreed or disagreed that MAAP has adequate financial resources to reach its goals and 50% strongly disagreed or disagreed that MAAP has adequate staffing to reach its goals.

Target 2020:
By 2020, MAAP will have increased its ability to sustain member engagement and provide leadership development opportunities for its members.

Background: The Massachusetts Asthma Action Partnership began in 2007 with a capacity building grant from the Boston Foundation and is now a program of Health Resources in Action’s Policy and Practice Department. Part-time staff members support its work. Since 2009, the Massachusetts Department of Public Health has also provided support for MAAP’s work. MAAP has developed a membership that is currently comprised of over 100 diverse representatives from across the state. It has met quarterly to develop its goals and objectives and draft by-laws. It collaborated with MDPH in the development of this Strategic Plan for Asthma in Massachusetts 2015 - 2020. The focus of this goal is to increase MAAP’s capacity to provide leadership in the state through
building its membership, developing leadership among its members, and increasing its resources so that it is a sustainable partnership that can effectively implement the plan.

MAAP is the lead partner on this Objective. The Asthma Prevention and Control Program will support MAAP to accomplish this goal.

I. By 2020, MAAP will continue to engage new members and also retain existing members to ensure diversity and inclusivity.
   a. From 2015 – 2020, MAAP will recruit new members that have been identified in the 2013 MAAP evaluation, especially in areas under represented both geographically and organizationally.
   b. By 2020, MAAP will develop processes and organizational structure that support involvement and leadership from communities that disproportionately suffer from asthma and environmental exposures and support engagement and leadership first at the local level and then in MAAP.
   c. From 2015 – 2020, local asthma coalitions and community organizations focused on asthma will share successful models for community member engagement and leadership in activities and advocacy that address asthma-related health disparities at the local level through MAAP meetings, summits, and webinars and MAAP will promote membership replication of successful models in other areas of the state. Lead Partners: Massachusetts Asthma Action Partnership, Boston Health Homes and Schools Collaborative, Pioneer Valley Asthma Coalition, Baystate Medical Center, University of Massachusetts Lowell New England Healthy Homes Project
   d. From 2015 – 2020, MAAP will explore opportunities for partnerships to share information, coordinate resources, conduct education, and strengthen advocacy among existing programs that address asthma among older adults. Lead Partners: Massachusetts Asthma Action Partnership, Boston Public Health Commission

II. By 2020, MAAP will develop processes and organizational structure that develops the leadership skills of its members.
   a. By 2017, MAAP will conduct a skills assessment survey of its membership base to better match members’ skills to the work of the partnership.
   b. MAAP will provide additional skill building opportunities for members.
   c. MAAP will develop processes for recognizing the leadership of its members and ensure MAAP leaders receive recognition for their work.
   d. MAAP will inform MDPH on how to best support organizations and their efforts to contribute to activities included in the Strategic Plan for Asthma
III. From 2015 – 2020, MAAP will provide technical assistance to local asthma coalitions to increase their capacity to address asthma at the local level.
   a. From 2015-2020, MAAP will work to address the needs identified in the 2013 MDPH assessment.
   b. From 2015 - 2020, MDPH – Asthma Prevention and Control Program will provide support to MAAP to provide technical assistance to local coalitions.

IV. By 2020, MAAP will have a more sustainable program that has diverse funding and adequate staffing to accomplish its work.
   a. From 2015 – 2020, MDPH – Asthma Prevention and Control Program will support MAAP, as feasible, to develop and maintain the statewide partnership.
   b. By 2016, MAAP will have developed strategies to secure additional funding so that it can increase its funding by 10%.

**OBJECTIVE:** Increase the capacity of MDPH to tackle asthma through enhanced coordinated efforts, both internally and with other state agencies.

**Baseline:** APCP coordinates internal MDPH efforts on asthma through the Internal Asthma Working Group. In 2013, eight MDPH programs attended these monthly meetings. Additionally, APCP has coordinated over 20 activities with internal partners in since 2008.

**Target:**
- Maintain membership in the Internal Asthma Working Group to include, at a minimum, representatives from the following: APCP, Bureau of Environmental Health, Occupational Health Surveillance Program, the Health Survey Program, Division for Perinatal, Early Childhood, and Special Health Needs and the School Health Services program.
- Maintain coordination with at least three state agencies.

**Background:** Many programs at MDPH impact asthma in the state. In addition to the Asthma Prevention and Control Program, the Bureau of Environmental Health, the Office of Community Health and Tobacco Use Prevention, the Occupational Health Surveillance Program, the School Health Services Program, among many others, work on asthma or asthma-related issues. To ensure a strong MDPH effort on asthma, this work needs coordination. Since 2008, MDPH has coordinated its efforts through the Internal Asthma Working Group. APCP will continue to lead this group as a focus of coordination. However, not every program can commit to bi-monthly meetings; therefore APCP will also coordinate with programs as opportunities arise.
In addition, the Division of Prevention and Wellness at MDPH was reorganized in 2013 in order to foster a more collaborative and coordinated approach to chronic disease prevention and management work. The APCP benefited significantly from this realigned approach. Furthering such intra-agency collaboration, the Division of Prevention and Wellness developed and continues to implement the Massachusetts Coordinated Health Promotion and Chronic Disease Prevention Plan utilizing a Community of Practice approach.

All activities in this section will be lead by the Asthma Prevention and Control Program with support from other programs at MDPH.

I. From 2015 - 2020, APCP will maintain coordination of asthma activities within the Massachusetts Department of Public Health by coordinating meetings of the Internal Asthma Working Group six times per year (bi-monthly).

II. From 2015 - 2020, MDPH will support optimal resources for ongoing implementation of the strategic plan as feasible, including exploring additional resource opportunities.

III. From 2015 - 2020, APCP will participate in the Massachusetts Coordinated Health Promotion and Chronic Disease Prevention Plan Communities of Practice and coordinate asthma efforts with the work of the project as feasible.

IV. From 2015 – 2020, the APCP will explore opportunities for inclusion of asthma prevention and control messages and strategies into the ongoing chronic disease integration efforts within the Division of Prevention and Wellness at the Massachusetts Department of Public Health

**OBJECTIVE:** Update and revise the Strategic Plan for Asthma in Massachusetts at midpoint, fully revise it in 2020.

**Baseline:** *The Strategic Plan for Asthma in Massachusetts 2015 – 2020* was developed over a 10-month period with over 80 partners from April 2013 – February 2014.

**Target 2020:**
- By 2018, the Massachusetts Department of Public Health - APCP and MAAP will have a state asthma plan that has been revised at midpoint to reflect the priorities of its members, respond to evaluation of its progress, and incorporate new opportunities.
- By 2020, the Massachusetts Department of Public Health and MAAP will have completely revised the *Strategic Plan for Asthma in Massachusetts.*
**Background:** This document was developed with significant input from partners across the state. MAAP and MDPH plan to spend a year in developing the next state asthma plan in 2019. The work on the current plan will help inform the goals and objectives of the next plan.

I. At midpoint, MAAP and APCP will update the *Strategic Plan for Asthma in Massachusetts* and identify specific strategies, measurable outcomes and time frames for objectives.

II. From 2015 - 2020, MAAP and APCP will identify other organizations, state and local government agencies and other entities to agree to address the goals and objectives of the strategic plan.

III. From 2015 - 2020, MAAP and APCP will encourage lead partners to use the plan to shape their internal work plans and strategic plans.
Evaluation is a systematic way of assessing whether the work of public health is resulting in the intended outcomes. Without a strong evaluation component, it will be difficult to assess the impact of the activities under the strategic plan. Evaluation under this goal will be practical and on-going. To aid in evaluating the effectiveness of the state plan, outcomes measures have been developed for each objective. They will serve as the basis of evaluating the outcomes measure of this plan. However, other evaluation components will strengthen our assessment.

OBJECTIVE: By 2020, the lead partners will strengthen approaches to implementing The Strategic Plan for Asthma in Massachusetts 2015 – 2020.

Baseline: A Strategic Evaluation Planning Team was established in 2009. The team worked with an evaluator to develop a 2009-2014 Strategic Evaluation Plan that was implemented through Individual Evaluation Plans. The resulting evaluations are nearing completion while results have been communicated regularly to partners and other stakeholders in order to improve partnerships, surveillance, and initiatives that help advance progress on the Strategic Asthma Plan.

Target 2020:
- Progress towards estimated outcomes reviewed and updated mid-course in 2017.
- 2015-2020 Strategic Evaluation Plan developed and implemented to review key elements of partnerships, surveillance, and initiatives.

Background: Evaluation is a continuous process at the state level and within each of the organizations, programs, and partnerships that support the Strategic Plan for Asthma in Massachusetts. The intent of this goal is to enable partners to participate meaningfully in evaluation activities that strengthen efforts across the state and that can also be helpful in furthering stakeholder’s capacity to evaluate their individual asthma-related efforts. Evaluation planning will draw upon the framework in the CDC Learning and Growing through Evaluation – state asthma program guide. The CDC Framework emphasizes engagement of stakeholders in evaluation planning starting with providing them with a clear and thorough understanding of the asthma program. Through a highly participatory
process, evaluation elements are considered and ultimately selected to create an evaluation design that is useful to the state asthma program and its many stakeholders taking into consideration feasibility, appropriateness, and accuracy. The resulting Strategic Evaluation Plan is intended, above all, to be of practical benefit so that lessons learned are shared among stakeholders and used to improve key elements of surveillance, partnerships, and initiatives to better address asthma and advance the Strategic Asthma Plan. It’s important to note that evaluation planning is a work in progress and will be modified and adapted as needed over the course of time to ensure that it is as useful as possible.

**Steps in the CDC Evaluation Framework**

I. By 2016, APCP will work with the Strategic Evaluation Planning Team and other key stakeholders to develop and finalize a new 2015-2020 Strategic Evaluation Plan that reviews key elements of partnerships, surveillance, and initiatives.

II. Lead partners will conduct ongoing monitoring and meet mid-term to assess progress on the Strategic Plan for Asthma in Massachusetts 2015-2020.

III. From 2015-2020 APCP and MAAP will support the ability of partners to utilize evaluation in implementing the Strategic Plan for Asthma.
a. By 2015, a system to communicate and share progress and findings from individual evaluations with partners and stakeholders will be developed, followed, and updated regularly.

b. From 2015-2020, technical assistance will be provided to partners to improve their ability to use evaluation to ensure that partnerships are effective, vital information is gathered and used effectively, and key initiatives are advanced.

IV. From 2015-2020 at least one annual capacity building activity will be conducted for diverse constituents improving their ability to plan and conduct evaluation activities.
### ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>AAFANE</td>
<td>Asthma and Allergy Foundation – New England Chapter</td>
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<tr>
<td>ACCP</td>
<td>American College of Chest Physicians</td>
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<tr>
<td>APCP</td>
<td>Asthma Prevention and Control Program, MDPH</td>
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<td>BPHC</td>
<td>Boston Public Health Commission</td>
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<td>Bureau of Environmental Health, MDPH</td>
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<td>BUSPH</td>
<td>Boston University School of Public Health</td>
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<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
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<td>CHABP</td>
<td>Massachusetts Children’s High-risk Asthma Bundled Payment Demonstration Program</td>
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<td>Community Health Network Area</td>
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<td>CI</td>
<td>Confidence interval</td>
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<td>CMAQ</td>
<td>Congestion Mitigation and Air Quality</td>
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<td>Diesel Emission Reduction Act</td>
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<td>Division of Health Care Finance and Policy</td>
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<td>Expert Panel Report 3</td>
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<td>Healthcare Effectiveness Data and Information Set</td>
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<td>IPM</td>
<td>Integrated pest management</td>
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<td>LEV</td>
<td>Low Emission Vehicle Program</td>
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<tr>
<td>MA</td>
<td>Massachusetts</td>
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<td>MAAP</td>
<td>Massachusetts Asthma Advocacy Partnership</td>
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<tr>
<td>Acronyms</td>
<td>Description</td>
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<tr>
<td>MassCOSH</td>
<td>Massachusetts Coalition for Occupational Safety and Health</td>
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<td>MassDEP</td>
<td>Massachusetts Department of Environmental Protection</td>
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<td>MECCS</td>
<td>Massachusetts Early Childhood Comprehensive Systems Project</td>
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<td>NO</td>
<td>Nitric oxide</td>
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<tr>
<td>NO₂</td>
<td>Nitrogen dioxide</td>
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<tr>
<td>NOₓ</td>
<td>Oxides of nitrogen</td>
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<td>Occupational Safety and Health Administration</td>
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<td>PM</td>
<td>Particulate matter</td>
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<td>PWTF</td>
<td>PWTF – Prevention Wellness Trust Fund</td>
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<td>RFR</td>
<td>Request for proposal</td>
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<tr>
<td>SENSOR</td>
<td>Sentinel Event Notification System for Occupational Risk</td>
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<td>Sulfur dioxide</td>
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<td>Toxics Use Reduction Act</td>
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<td>United States</td>
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<td>VOCs</td>
<td>Volatile organic compounds</td>
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<td>WRA</td>
<td>Work-related asthma</td>
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</table>
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Goal 2

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