

# Maine Department of Environmental Protection

## Maine Air Toxics Strategy

March 2009

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## Maine DEP

# Maine State Air Toxics Strategy

March 2009

### 1. PURPOSE

This document contains the Maine Department of Environmental Protection's (MEDEP) Air Toxics Strategy for the State of Maine. The strategy stems from work conducted by the Maine Air Toxics Advisory Committee (ATAC). The ATAC presented the Commissioner with consensus recommendations on September 21, 2007. Those recommendations should be referenced for background information.

### 2. INTRODUCTION

Air toxics are the many air pollutants for which the federal government has not established an ambient air standard but which could still cause health problems. The MEDEP launched the Maine Air Toxics Initiative (MATI) in 2003 to identify any air toxics posing an unreasonable risk to Maine citizens and the source of those air toxics. A second phase of the project determined the best way to reduce potential health risks for the least cost. EPA awarded MEDEP a Healthy Communities Grant to help fund the project. MATI was undertaken by a stakeholder group known as the Air Toxics Advisory Committee (ATAC), composed of some 33 interested community, government, industrial and environmental organizations.

Between August of 2003 and November of 2005 the ATAC evaluated emissions inventories, chemical toxicity databases, national air modeling, and ambient air monitoring programs<sup>1</sup> and ultimately agreed on several major points<sup>2</sup>:

- data limitations introduce uncertainty into the ATAC findings, and verification of the science underlying the following decisions should be undertaken;
- air quality is better in Maine than in southern New England;
- air toxics in Maine could pose unacceptable health risks in hot-spot locations;
- air toxics driving the potential risk are primarily combustion byproducts;
- it would be prudent to evaluate no-cost or low-cost strategies to reduce air toxic emissions rather than expend resources to definitively prove or disprove human health impacts; and
- the ATAC agreed on an Air Toxics Priority List (ATPL)<sup>3</sup>.

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<sup>1</sup> MEDEP, Maine Air Toxics Priority List & Basis Statement (Bureau of Air Quality, MEDEP, 17 SHS, Augusta, ME 04333-0017, available at: [www.maine.gov/dep/air/toxics/mati\\_docs/AT%20priority%20list%20Basis%20D-48\\_.pdf](http://www.maine.gov/dep/air/toxics/mati_docs/AT%20priority%20list%20Basis%20D-48_.pdf)), Draft Revision of October 7, 2005

<sup>2</sup> Consensus Report of the Maine Air Toxics Advisory Committee Regarding the Maine Air Toxics Priority List and Next Steps in the Maine Air Toxics Initiative As Agreed To At The ATAC's November 18, 2005 Meeting (Bureau of Air Quality, MEDEP, 17 SHS, Augusta, ME 04333-0017, available at: [www.maine.gov/dep/air/toxics/mati\\_docs/MATI-11-18-05%20Consensus%20Report-v7.pdf](http://www.maine.gov/dep/air/toxics/mati_docs/MATI-11-18-05%20Consensus%20Report-v7.pdf)), Revision of February 9, 2006

<sup>3</sup> The final ATPL is in Table 1 on page 2. The original ATPL ranking can be seen in the attached document.

Beginning in November of 2005, three ATAC subcommittees evaluated “low or no-cost” air toxic reduction alternatives, while continuing to verify the underlying science behind the ATPL. On June 26, 2007 the subcommittees presented their findings and recommendations for Maine’s Air Toxics Strategy to the ATAC, which then developed consensus recommendations. At the meeting, the Commissioner of MEDEP committed to heavily weighting these consensus recommendations as the MEDEP developed the State’s Air Toxics Strategy. More details on the Phase II of MATI work can be found in the ATAC’s September 2007 consensus recommendation report.

The MEDEP largely adopted the recommendations of the ATAC, as discussed below. A draft of Maine’s Air Toxics Strategy was released in February 2008. Since that time, several of the tasks in the draft have been completed and additional tasks have been undertaken or planned. This updated strategy reflects this progress and sets forth the steps, goal dates, and lead personnel who will undertake the strategy moving forward. The strategy includes progress reports, periodic assessment, and mechanisms to adjust the strategy as necessary. The MEDEP is grateful to the ATAC members for their assistance in developing this strategy, which will help ensure protection of public health in a reasonable and cost effective manner.

**Table 1: Maine Air Toxics Priority List – July 2007**

Revised Rank	MEDEP Pollutant CATEGORY NAME	Basis for addition to Air Toxics Priority List, version-2
1	Polycyclic Organic Matter	Toxicity-Weighted Emissions <sup>4</sup> and NATA risk
2	Naphthalene	Toxicity-Weighted Emissions and NATA risk
3	Acrolein	Toxicity-Weighted Emissions and NATA risk
4	Formaldehyde	Toxicity-Weighted Emissions and NATA risk
5	Benzene	Toxicity-Weighted Emissions and NATA risk
6	Chromium Compounds	Toxicity-Weighted Emissions and NATA risk
7	Cobalt Compounds	Toxicity-Weighted Emissions and NATA risk
8	1,3-Butadiene	Toxicity-Weighted Emissions and NATA risk
9	Sulfuric Acid	Toxicity-Weighted Emissions and NATA risk
10	Diesel Particulate Matter	Qualitative estimate of Toxicity-Weighted emissions and risk
11	Nickel Compounds	Toxicity-Weighted Emissions and NATA risk
12	Arsenic Compounds	Toxicity-Weighted Emissions and NATA risk
13	Particulate Matter from Nanotechnology	Qualitative estimate of emerging risk
14	Brominated Flame Retardants	Persistence & bioaccumulation

<sup>4</sup> The air toxics inventory is “Toxicity-Weighted” to allow quick “apples-to-apples” comparisons between pollutants with widely varying potencies and health effects. The risk posed by an air toxic depends upon exposure concentration (the amount of air toxic in the air), the amount breathed, and the toxicity of the pollutant. Toxicity-factors for air toxics are based on the toxicity of each pollutant and constants that help determine air toxic intake. Pollutant emissions are a significant factor in determining exposure concentration. Therefore, the toxicity-factor is multiplied by air toxic emissions, to derive a relative ranking of air toxics. Emission personnel can then focus QA reviews on those air toxics that have a high toxicity ranking, and those air toxics whose relative rankings would change significantly when emissions change. Thus, a high quality inventory is available for fate and transport modeling, which ultimately calculates actual risk. Toxicity-factors and their technical basis are available on MEDEP’s website at: [www.maine.gov/dep/air/toxics/mati-docs.htm](http://www.maine.gov/dep/air/toxics/mati-docs.htm). See: David W. Wright, *Toxicity-Weighting: A Prioritization Tool for Quality Assurance of Air Toxics Inventories* (Bureau of Air Quality, Maine Department of Environmental Protection, 17 SHS, Augusta, ME 04333-0017) April 19, 2007

Revised Rank	MEDEP Pollutant CATEGORY NAME	Basis for addition to Air Toxics Priority List, version-2
15	Acetaldehyde	Toxicity-Weighted Emissions and NATA risk
16	Lead Compounds	Toxicity-Weighted Emissions and NATA risk
17	Cadmium Compounds	Toxicity-Weighted Emissions and NATA risk
18	Chloroform	Toxicity-Weighted Emissions and NATA risk
19	Manganese Compounds	Emerging risk update & persistence
20	Tetrachloroethylene (Perchloroethylene)	Monitoring exceeds ME Ambient Air Standard
21	Methyl Bromide (Bromomethane)	Persistence
22	Carbon Tetrachloride	Persistence
23	Dioxins and Furans	Persistence & bioaccumulation
24	Hydrogen Sulfide	Acute Risk incidents
25	Ethylene Dichloride (1,2-Dichloroethane)	Persistence
26	Ethylene Dibromide (Dibromomethane)	Persistence
27	Mercury Compounds	Persistence & bioaccumulation

### 3. EARLY AIR TOXIC REDUCTION ACTIONS

While reviewing the long-term air toxic reduction options, two early actions were undertaken during MATI. The first early action was development of an environmental notebook for schools, which is discussed below. The second was a recommendation to control emissions from Outdoor Wood Boilers (OWBs), which is discussed with the residential wood combustion controls in section 4.2, beginning on page 6.

#### 3.1 Environmental Notebooks for Schools

The first early action was initiated by MEDEP prior to forming the ATAC, as part of the EPA Grant award. MEDEP developed and distributed a Maine School Environmental Guide<sup>5</sup> to all Maine K-12 schools, which specifically addresses school environmental, health, and safety concerns. The notebook explains in simple language all environmental statutes, regulations, and initiatives by state government and the U.S. EPA that reduce exposure to toxics in school settings.

The MEDEP has received positive responses from schools regarding this notebook. Additionally, during the four quarters preceding distribution of the “Maine School Environmental Guide,” MEDEP conducted 45 Asbestos Hazard Emergency Response Act (AHERA) inspections, 18 of which resulted in a Notice of Violation (NOV) being issued for a non-compliance rate of 40%. During the four quarters after distribution of the guide, MEDEP conducted 46 AHERA inspections and issued only eight NOVs, for a non-compliance rate of 17%. During June through September 2007 MEDEP conducted 14 AHERA inspections and issued one NOV, for a non-compliance rate of 7.1%. Therefore MEDEP believes that the notebooks have had a strong, positive influence on compliance rates, and that this influence will continue into the future.

Other factors influencing recent compliance rates are a newsletter focused on common AHERA non-compliance issues that MEDEP worked cooperatively with EPA Region I and other New England States to develop, which was provided to each of the schools in Maine,

<sup>5</sup> Pistell, Ann, *Maine School Environmental Guide* (MEDEP, 17 SHS, Augusta, Maine, 04333-0017, <http://www.maine.gov/dep/mercury/school.htm>), May 2006.

along with MEDEP's strong asbestos licensing, training, compliance inspection, and enforcement program.

The Solid Waste Division in the Bureau of Remediation intends to continue to update this guidebook as necessary and reference it in its routine outreach and educational programs.

**Table 2: MEDEP Strategy to Reduce Toxic Exposures in Schools**

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>Environmental Notebook Maintenance</b>	Review and update notebook	As needed	Ann Pistell, Bureau of Remediation and Waste Management (BRWM)
	Incorporate into education and outreach programs aimed at schools	Ongoing	Ann Pistell, BRWM

#### **4. STATIONARY SOURCE REDUCTIONS**

The MEDEP's "low or no-cost" air toxics reduction strategies from stationary sources are included in this section. Stationary sources as used in this section include both large point sources as well as the smaller stationary sources, which are often called "area sources."

##### **4.1 Energy Efficiency Programs**

Most air toxic emissions in Maine are combustion by-products. Given the effectiveness of existing and pending emission control programs applicable to stationary sources in Maine, the MEDEP agrees with the ATAC that the best low or no-cost air toxics reduction alternative addressing combustion by-products is to reduce the amount of fuel burned. Therefore, as the ATAC recommended, the MEDEP will foster energy conservation programs for all stationary sources through the following two-step approach:

1. MEDEP will promote energy conservation efforts for all stationary sources, where it is practical and has a low-cost or results in a net savings; and
2. MEDEP will collaborate with EPA and others to help sources conserve energy, including coordination with stakeholder groups established by other agencies and organizations in Maine to determine the information and support most needed by energy users to overcome barriers to energy conservation projects.

In addition, the MEDEP will continue to implement existing rules and regulations that control air toxic emissions.

**Table 3: Reduction of Air Toxics Emissions from Stationary Sources through Energy Efficiency**

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>Facility Outreach</b>	Work with licensed facilities to overcome barriers to energy conservation and	Ongoing	Marc Cone, BAQ

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
	provide regulatory relief where feasible and appropriate		
	Distribute information regarding available funding of energy conservation projects through the Energy and Carbon Savings Trust	Ongoing	Mike Karagiannes, BAQ
	Review and comment on administrative rules for selecting energy conservation projects to receive funding from the Energy and Carbon Savings Trust	Completed November 2008	James Brooks, BAQ
	Final report of Bucksport Mill energy conservation and innovation project	Completed October 2008	Marc Cone, BAQ
<b>Energy Conservation Clearing house</b>	Establish and maintain website containing outreach materials and links to related energy conservation websites (e.g. Governor's Office)	Ongoing	Tammy Gould, BAQ
<b>Energy Conservation Workshop for Area Sources</b>	Governor's Energy Efficiency Summit: Strengthening Business through Energy Savings	Held April 2008	Governor's Office
	Distribute conference proceedings / findings	Ongoing	Governor's Office and Beth Nagusky, OC
<b>Implementation of Toxics Use Reduction Act</b>	Promote pollution reduction and energy conservation from large quantity hazardous waste generators	Ongoing	Julie Churchill, OC
<b>Development and Implementation of Laws Controlling Air Toxic Emissions from Stationary Sources</b>	Survey facilities with multi-fuel boilers to determine HAP emissions by fuel type and relative amounts of fuels combusted	Completed October 2008	Marc Cone, BAQ
	Provide multi-fuel	March 2009	Marc Cone, BAQ

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
	boiler survey data to EPA to assist development of Boiler MACT standard		
	Continue to implement MEDEP regulations	Ongoing	Marc Cone and Lisa Higgins, BAQ

## 4.2 Reduce Pollutant Releases from Residential Wood Combustion

### 4.2.1 Early Action Controls for Outdoor Wood Boilers

An early action was initiated by the ATAC while long-term strategies were developed, focused on control of air toxic risks posed by the rapidly expanding use of outdoor wood boilers (OWBs) in Maine. The ATAC researched the available information on OWBs before forwarding a recommended early action to the MEDEP on December 12, 2006. ATAC called for MEDEP to:

- Conduct education and outreach on best operating practices for wood burning devices, health effects of wood smoke, and the prohibition on burning solid waste;
- Immediately enact a moratorium on OWB sales until emission standards comparable to indoor stoves are established;
- By the 2007-08 heating season, establish state standards to control OWB emissions to at least the same level as indoor wood stoves, and establish rules to reduce the risk from existing OWBs;
- Enforce the State's visible emission standards on existing OWBs; and
- Work with local authorities, OWB manufacturers and suppliers to ensure that existing stoves meet recommended installation specifications.

In June 2007, the Maine Legislature adopted the EPA Phase I particulate emission limit of 0.60 lbs/MMBtu/hr heat input as the standard for new outdoor wood-fired hydronic heaters (OWHH), also known as outdoor wood boilers, sold in Maine beginning April 1, 2008. Beginning April 1, 2010 new OWHH sold in Maine are required to meet a more stringent particulate emission standard of 0.32 lbs/MMBTU heat output (Phase II).

The Board of Environmental Protection adopted Chapter 150, Control of Emissions from Outdoor Wood Boilers, which incorporated the OWHH particulate emission standards adopted by the Legislature. Chapter 150 became effective November 1, 2007. Chapter 150 also established setback, stack height, particulate emission limits, and fuel requirements for new outdoor wood boilers, and nuisance criteria for existing outdoor wood boilers.

In April 2008, the Maine Legislature enacted Resolve Chapter 190, Regarding Legislative Review of Portions of Chapter 150: Control of Emissions from Outdoor Wood Boilers, a Major Substantive Rule of the Department of Environmental Protection, Bureau of Air Quality Control. The resolve required Chapter 150 be amended in several areas. In particular, the resolve directs the BEP to adopt a rule by April 1, 2009 to control the sale, installation, use, and siting at residences and businesses of outdoor wood boilers that combust biomass pellets as fuel.

In April 2008, the Legislature also enacted Public Law, Chapter 680, An Act Establishing an Outdoor Wood Boiler Fund. This Public Law:

- Established a nonlapsing fund administered by commissioner to be used by the department to upgrade, purchase and replace outdoor wood boilers that create a nuisance condition as defined in the department's rules or threat to public health or safety.
- Established an allotment of \$200,000 in FY 2008/2009. The fund may receive up to \$200,000 of civil penalties for violations of air quality laws or rules administered by the department if the penalties are imposed pursuant to an administrative consent agreement or court-ordered decree and the person against whom the penalty is imposed expressly assents in the agreement or decree that the penalty may be paid to the fund.
- Directed the Department to develop a rule that includes criteria for determining whether an outdoor wood boiler constitutes a nuisance condition or threat to public health or safety and is eligible for use of the fund, compensation criteria and amounts and procedures for certification and verification of removal and possible replacement of eligible outdoor wood boilers.

On October 16, 2008, the Board held a public hearing on proposed amendments to Chapter 150 to include provisions to address pellet outdoor wood boilers and the creation of a new Chapter 160 to establish an Outdoor Wood Boiler Replacement and Buy Back Program. The Chapter 150 proposed amendments require the installation of outdoor pellet boilers 20 feet from the nearest property line or at least 40 feet from the nearest dwelling. Outdoor pellet boilers are also subject to stack height, visible emission standard, EPA certification, fuel, notice to buyer, nuisance condition and third party sales requirements.

#### 4.2.2 Long-Term Strategy to Reduce Air Toxics from Residential Wood Combustion

The MEDEP and Science Advisory Subcommittee developed a revised air toxics inventory at the same time that the Stationary and Mobile Subcommittees were evaluating air toxic reduction options. MEDEP did not complete this revised inventory until June 21, 2007. The revised inventory included a significant increase in the estimated air toxic releases from residential wood combustion for the most recent inventory year, 2005. Since this information was not available until late in the process, the Stationary

Sources Subcommittee was not able to conduct a detailed evaluation of reduction alternatives for this source category.

There is some uncertainty associated with the MEDEP's emissions inventory for residential wood combustion. However, due to the high potential risk from this source category, concurrent with refining the inventory, the ATAC recommended that the MEDEP explore low-cost or no-cost reduction alternatives for air toxics from residential wood combustion. Since this source category is also a relatively large source of some criteria air pollutants, but can be low in terms of net green house gas emissions, the ATAC recommended that this evaluation should be done on a multi-pollutant basis. Further, the ATAC said that MEDEP should consult stakeholders as it evaluates low-cost/no-cost alternatives, preferably through existing stakeholder groups working on green house gas reductions. Finally, the ATAC said that MEDEP should consider the following alternatives:

1. Education and outreach on proper stove use, maintenance, and the fuel savings achievable with the lower emitting stoves;
2. Woodstove change-out programs that promote use of cleaner existing home heating technologies, including how tax incentives could be used to foster change-outs;
3. Promotion of new home-heating technologies based on cleaner burning fuels that are derived from wood or other renewable resources; and
4. Development of Outdoor Wood Boiler regulations, as discussed in section 4.2.1 beginning on page 6.

The MEDEP believes that significant reductions in estimated toxic emissions from woodstoves can be achieved and demonstrated through a strong outreach program and improved inventory, and that an emissions reduction goal should be established as a target for MEDEP's efforts. The MEDEP may reevaluate this goal as additional information becomes available. The MEDEP accepts all of the recommendations from the ATAC regarding residential wood combustion, and will implement them with the following strategies:

**Table 4: Reduction of Air Toxics Emissions from Residential Wood Combustion**

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>Outdoor Wood Boilers Education and Outreach</b>	Develop education and outreach materials	Ongoing	Deb Avalone-King and Louis Fontaine, Bureau of Air Quality (BAQ)
	Identify outreach opportunities	Ongoing	Deb Avalone-King, BAQ
	Distribute information	Ongoing	Deb Avalone-King, BAQ
<b>Outdoor Wood Boiler Regulation</b>	Work with ASTM and EPA to develop appropriate emission test methods and	Ongoing	Louis Fontaine, BAQ

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
	emission standards		
	Resolve nuisance OWB situations	Ongoing	Louis Fontaine, BAQ
	Report to legislature reviewing OWB technology	Completed January 2009	Louis Fontaine, BAQ
	Revise Chapter 150 and 160 to include emission standards for outdoor pellet boilers and nuisance boiler Buy Back program	March 2009	Ron Severance and Carolyn Wheeler, BAQ
	Promulgate regulatory changes	As needed	Carolyn Wheeler, BAQ
<b>Develop Woodstove Emission Reduction Strategies</b>	Develop white paper evaluating strategies employed in other states	April 2009	Andrea Lani, BAQ
	Identify feasible strategies for implementation in Maine and distribute for public comment	August 2009	Melanie Loyzim, BAQ
	Select strategies and develop implementation plan	November 2009	Melanie Loyzim, BAQ
	Implement strategy to achieve 25% toxicity-weighted air toxic reduction from residential wood combustion from 2005 baseline	September 2013	Melanie Loyzim, BAQ
<b>Residential Wood Combustion Inventory Improvement</b>	Work with the National Emissions Inventory task force and regional organizations to develop better emission factors and methodologies	Ongoing	Melanie Loyzim and Doug Saball, BAQ
	Gather information on amount of wood combusted for residential heating during the 2007 and 2008 heating seasons	September 2009	Rich Greves and Doug Saball, BAQ

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
	Implement revised calculation protocols developed by the 2008 National Emissions Inventory – Residential Wood Combustion Task Force	June 2010	Rich Greves, BAQ
	Gather information on amount of wood combusted for residential heating during the 2009 and 2010 heating seasons	September 2011	Rich Greves and Doug Saball, BAQ
	Develop report of trends in residential heating and associated emissions	January 2012	Melanie Loyzim, BAQ
<b>Education and Outreach on Best Management Practices for complete combustion of wood for residential and commercial heating and energy conservation</b>	Update education and outreach materials as necessary with MATI findings and other appropriate information	Ongoing	Louis Fontaine and Deb Avalone-King, BAQ
	Distribute education and outreach materials through DEP website, Governor's Office website, and others	Ongoing	Deb Avalone-King, BAQ
<b>Support the Development of Clean Burning Renewable Fuels and Equipment for Residential and Commercial Heating</b>	Evaluate emissions from available renewable fuel burning equipment for home and commercial heating	January 2010	Melanie Loyzim, BAQ
	Develop education and outreach materials	July 2010	Melanie Loyzim and Deb Avalone-King, BAQ

## 5. MOBILE SOURCE REDUCTIONS

The Mobile Source Subcommittee of the ATAC identified numerous mobile source regulations for both the on-road and non-road sectors that have or soon will be implemented. These programs are contained in the attached ATAC recommendations. Most of these are federally administered programs. MEDEP, however, will continue to implement the programs that it has been delegated, with the following strategy.

**Table 5: Administer Existing Regulations that reduce Mobile Source Air Toxics**

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
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<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>Ongoing Implementation of Laws Controlling Air Toxic Emissions from Mobile Sources</b>	Continue to implement MEDEP regulations, voluntary programs, and education and outreach that help reduce mobile source air toxics.	Ongoing	Lynne Cayting, BAQ
<b>Regulation and Policy Evaluation</b>	Periodically explore the need for additional mobile source programs in collaboration with regional organizations	Ongoing	Lynne Cayting, BAQ

In addition to existing programs, ATAC's Mobile Sources Subcommittee conducted an exhaustive evaluation of additional control strategies. The subcommittee's selected strategies were accepted by the ATAC. The following ATAC recommendations for mobile sources air toxics reduction strategies in most cases will save money, in addition to reducing air toxic emissions.

#### 5.1 Expand On-board Diagnostics Statewide

The ATAC's evaluation determined that the state can achieve the greatest mobile source air toxics reductions for a low-cost by expanding the Cumberland County On-board Diagnostics (OBD) program statewide. On-board Diagnostics refers to a computer-based system available in 1996 and newer light-duty vehicles that alerts owners to emission control problems. Prompt response to warning lights can prevent more costly repairs, save fuel, reduce wear and tear on the engine, and reduce pollution. The ATAC believes that the estimated cost of expanding OBD, at 86 dollars per toxicity-weighted<sup>4</sup> ton of air toxic (\$86/TW-ton), is reasonable given the estimated reductions from this strategy (35,600 TW-tons / year). Therefore, the ATAC recommended that the Commissioner adopt this "low-cost" option. The MEDEP accepts this recommendation, subject to verification of the costs, benefits, and feasibility of this program.

**Table 6: Mobile Sources Air Toxic Reductions through Expansion of the On Board Diagnostics Program**

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>Expand OBD statewide</b>	Consult with State Police on implementation feasibility	Ongoing	Lynne Cayting, BAQ
	Obtain statutory authority for pilot program	June 2009	James Brooks, BAQ
	Implement pilot program including electronic data transfer	September 2009	Scott Wilson, BAQ

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
	(contingent on authorization)		
	Verify costs to implement OBD by assessing failure rates, costs to repair, warrantee coverage and software/hardware needed to centralize reporting	September 2010	Lynne Cayting, BAQ
	Evaluate reductions of air pollutants by running most current Mobile model for statewide OBD scenario	September 2010	Tammy Gould, BAQ
	Obtain statutory authority for statewide program	March 2011	James Brooks, BAQ
	Implement statewide program (contingent on statutory authority)	September 2011	Scott Wilson, BAQ

## 5.2 Reduce VMT and Increase Vehicle Occupancy

The benefits predicted from the existing and pending mobile regulations diminish if Vehicle Miles Traveled (VMT) increase beyond predictions. Therefore, the ATAC explored several strategies aimed at reducing VMT, including changes to land use policy. A ten percent (10%) reduction in commuter vehicle traffic would reduce air toxic emissions by some 17,800 toxicity-weighted tons per year (TW-tons/yr), with a net fuel savings worth \$681 million per year. The ATAC recommended the following strategies to reduce VMT and increase vehicle occupancy from the light-duty gas vehicle category, in the order of the greatest potential for air toxics emissions reductions. The MEDEP is incorporating all of these recommendations into its Air Toxics Strategy. Each of these strategies is discussed in much greater detail in the attached document.

### 5.2.1 Promote Transit Oriented Development

Transit Oriented Development (TOD) is a strategy that promotes mixed use development around transportation stops which in turn reduces VMT and associated air pollution, promotes physical activity, and preserves open spaces. To ensure the highest benefit of TOD, Maine must make commensurate investments in new and improved transit infrastructure to serve and connect higher density, mixed use developments. Maine DOT has undertaken a refined study of the possibility of implementing TOD in the state of Maine in cooperation with University of Southern Maine, MEDEP, State Planning Office, public transit operators, regional planning agencies and

local governments. This study will give decision-makers concrete data about the benefits of implementing TOD in their cities, towns and regions.

#### 5.2.2 Promote Targeted Infrastructure Funding

Targeted infrastructure funding is a strategy that encourages existing infrastructure funding programs to consider VMT reduction when awarding bids. The added VMT criterion often shifts resources towards repairing existing infrastructure rather than greenfield development.

#### 5.2.3 Expand Public Transit

The ATAC recommended expanding public transit enough to reduce commuter vehicle miles traveled by five percent (5%). While reducing air toxic emissions by 9,000 TW-tons/yr, this will result in a net savings of an estimated \$220 million. Due to Maine's low population density, the state must carefully evaluate the locations where expanding public transit will be the most effective. MEDEP accepts this recommendation, but envisions DOT being the lead agency; MEDEP will support DOT as necessary.

#### 5.2.4 Promote Telecommuting

Under this option as recommended by the ATAC, MEDEP will evaluate and promote workplace policies allowing employees to work at home. It has been successful at some large corporations, and EPA has a model "Best Work Places for Commuters" for MEDEP to use as a starting point.

On August 15, 2008 Governor Baldacci signed an Executive Order, "*An Order to Promote Alternative Work Schedules to Reduce Commuting Costs*". The Order specifies that:

- Supervisors and managers are encouraged to seek ways to grant voluntary employee requests for telecommuting or alternative work schedules, provided current services to the public are maintained and an agency's operations are not otherwise adversely impacted.
- State agencies will be required to report alternative work schedule efforts to the Department of Administrative and Financial Services (DAFS), Bureau of Human Resources.
- Beginning immediately a specific pilot program will be implemented within DAFS that seeks to have 95% of eligible requests for an alternative work schedule by employees granted. This pilot will run through December 31, 2008 at which time the program will be evaluated to determine its impact on energy use, employee productivity, customer service, and employee satisfaction/participation.

The results of the pilot and the evaluation prepared by DAFS will determine if the program will be expanded to all state agencies and will

provide valuable feedback and guidance to successfully implement statewide.

### 5.2.5 Increase Carpool Parking Lots

The ATAC found that doubling the number of spaces available in current carpool lots from 2,000 to 4,000 would achieve a reduction of at least 183 TW-tons/yr of air toxics, at a net savings of \$21 per TW-Ton. However, success is dependent on siting new carpool lots in the most congested areas of the state. MEDEP will lend support, but envisions DOT as the lead agency on this initiative. As recommended by the ATAC, Maine DOT recognizes that it should focus on leasing developed lots that have unused capacity during peak commuting hours, such as shopping malls.

**Table 7: Mobile Sources Air Toxic Reductions through Reduced Vehicle Miles Travelled and Increased Vehicle Occupancy**

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>Promote Transit Oriented Development and Targeted Infrastructure Funding</b>	Identify funding sources, evaluation criteria, and areas where MEDEP can assist DOT	Ongoing	Lynne Cayting, BAQ
<b>Expand Public Transit</b>	MEDEP to provide assistance to DOT	Ongoing	Lynne Cayting, BAQ
<b>Promote Telecommuting</b>	Develop a method to calculate an agency's "commuter footprint"	April 2009	Ron Severance, BAQ
	Implement MEDEP pilot project and calculate "commuter footprint" for BAQ	May 2009	Ron Severance, BAQ
	Assess DAFS's evaluation of its pilot project on alternative work schedules	September 2009	Ron Severance, BAQ
	Promote telecommuting to MEDEP and other state Agencies as recommended by DAFS	October 2009	Ron Severance, BAQ
<b>Increase Carpool Parking Lots</b>	Identify areas where MEDEP can assist DOT and provide the assistance	Ongoing	Lynne Cayting, BAQ

### 5.3 Reduce Unnecessary Idling and Fuel Consumption

The ATAC estimates that reducing unnecessary idling by fifty percent (50%) would reduce air toxic emissions by about 3,000 TW-tons/yr, while saving about \$36 million worth of fuel. Coupling this with education on driving habits that save fuel could reduce emissions by about 11,700 TW-tons/yr, and increase fuel savings to \$108 million per year. The ATAC recommended that Maine's first phase of a no-idling campaign should focus on education and outreach, followed by adoption of a no-idling regulation. MEDEP is incorporating the ATAC recommendation into this Air Toxics Strategy, as detailed below.

#### 5.3.1 Phase I: Voluntary No-idling Campaign Coupled with Driver Education

As recommended, MEDEP will continue to support local community efforts with training and materials for a no-idling campaign. Additionally MEDEP will promote supplemental driver education extolling the benefits of not idling and fuel savings techniques. Further, MEDEP will work with other government agencies to implement a no idling policy for state fleets through the clean government initiative. MEDEP will employ the education and outreach materials that have already been developed and tested.

#### 5.3.2 Phase II: Adopt Statewide No-idling Regulations

While being more costly to implement and enforce than a voluntary program, the ultimate air toxics reductions and fuel savings from a mandatory program could be more than three times greater. The ATAC recommended that Maine adopt a no-idling law consistent with the laws that are in place in all the other New England States, which target all transportation sectors and vehicle categories, and that the MEDEP take advantage of the opportunity for presenting a no-idling regulation to the legislature in the 2007-2008 session. MEDEP accepts this recommendation, as detailed below.

**Table 8: Mobile Sources Air Toxic Reductions through Reducing Unnecessary Idling**

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>Voluntary No-idling Campaign Coupled with Driver Education and Clean Government Initiative</b>	Update anti-idling outreach material as necessary	Ongoing	Lynne Cayting and Deb Avalone-King , BAQ
	Contact organizations controlling driver education materials and gate keepers for government agencies	Completed	Lynne Cayting and Deb Avalone-King, BAQ
	Identify target audiences and identify barriers to implementation	Completed	Lynne Cayting and Deb Avalone-King, BAQ

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
	Overcome barriers where possible and implement programs extolling the benefits of not idling and fuel savings techniques	Ongoing	Lynne Cayting and Deb Avalone-King, BAQ
	Conduct driver observation surveys and community intercept surveys to assess the number of people reached by the Clean Air Zone projects	January 2010	Deb Avalone-King, BAQ
	Estimate decrease in toxicity-weighted air toxic emissions from Clean Air Zone projects	January 2010	Rich Greves, BAQ
	Re-evaluate program and implement improvements	March 2010	Lynne Cayting, BAQ
<b>Adopt Statewide No-idling Regulations</b>	Review existing anti-idling regulations in other states	Completed	Lynne Cayting
	LD 2056 commercial vehicle no-idling law	In effect	Maine State Police

#### 5.4 Assess Adoption of Reformulated Gas (RFG)

Based on the current estimated cost of RFG (approx \$1,800 per TW-ton), and the fact that EPA's Mobile Source Air Toxics Phase 2 rule will achieve substantial air toxic reduction benefits in 2011, the ATAC did not recommend adoption of RFG.

However, the ATAC noted that benzene levels in Maine's fuel increased from 2006 to 2007 and recommended that MEDEP reevaluate adoption of RFG if this trend continues. Additionally, given this option's high potential for air toxic reductions (some 14,000 TW-tons/yr), the ATAC recommended that this strategy be reconsidered if additional air toxics emission reductions are necessary to reach Ambient Air Guidelines. Further, the economics of this alternative are likely to change as technology improves and if Maine begins producing ethanol. As recommended, MEDEP will continue its analysis of the RFG option as part of its routine data collection and analysis programs.

**Table 9: Continued Assessment of Statewide Reformulated Gas**

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>Reevaluate the need and feasibility of</b>	While developing the annual fuels report,	Annual	Lynne Cayting, BAQ

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>adopting Reformulated Gas</b>	note the levels of benzene in gasoline		
	Assess the need and feasibility of RFG	Annual	Ron Severance, BAQ

## **6. CONTINUE SCIENTIFIC INVESTIGATIONS INTO THE IMPACTS OF AIR TOXICS IN MAINE**

The ATAC found that additional collection and review of air toxics data was needed to effectively protect public health. As recommended by the ATAC, MEDEP's air toxic strategy will therefore include the following components.

### **6.1 Improve Residential Wood Combustion Emissions Inventory**

Since residential wood combustion has emerged as such a large risk driver in the state, the ATAC recommended that the MEDEP continue to refine the emissions inventory of residential wood combustion. To reduce uncertainty associated with activity data, MEDEP will undertake additional surveys to determine the amount of wood burned for residential heating in Maine. The survey will be similar to the survey MEDEP conducted for the 2005 heating season. Additionally, MEDEP will continue to encourage EPA to develop a complete set of accurate emission factors for this important source category. (Note: These improvements are included in Table 4: Reduction of Air Toxics Emissions from Residential Wood Combustion.)

### **6.2 Conduct Further Hot-spot Analysis**

As the ATAC recommended, MEDEP will continue to evaluate hot-spot emissions. Since the ATAC already developed maps of potential mobile hot-spots, MEDEP will begin its evaluation by identifying hot-spots stemming from emissions from point and area sources, with the primary focus on combustion by-products. MEDEP will assess available emissions, modeling, and ambient air data, including information that might be available from green house gas and criteria air pollutant programs. The MEDEP will then need to identify information gaps, and fill those gaps by gathering new information from modeling and monitoring. Once MEDEP has identified the mobile and stationary hot-spot areas, it will evaluate the potential risk attributed to air toxics. In this evaluation, the MEDEP will consider cumulative exposure to multiple air toxics with an emphasis on combustion by-products, bioaccumulation, transport/background concentrations, and environmental persistence of air toxics.

### **6.3 Shift Risk Assessment Resources into Energy Efficiency Evaluations**

While the protocols now exist for risk assessment, as spelled out in EPA's Air Toxics Risk Assessment Reference Library<sup>6</sup>, the ATAC found that conducting detailed risk assessment on the vast majority of stationary sources in the state is not a prudent use of resources. Rather, the ATAC recommended that risk assessments be focused on hot-spots (see section 6.2 above), and that the MEDEP's limited resources be applied

<sup>6</sup> See EPA's Website at: [www.epa.gov/ttn/fera/risk\\_atra\\_main.html](http://www.epa.gov/ttn/fera/risk_atra_main.html)

to energy efficiency evaluations and improvements (see section 4.1 on page 4). The MEDEP incorporates this recommendation into its Air Toxics Strategy.

#### 6.4 Adjustments to the Air Toxics Priority List

The Air Toxics Priority List (Table 1 on page 2) will need to be periodically evaluated as air toxic reductions are implemented and new information comes to light.

#### 6.5 Other Ongoing Activities

MEDEP accepts the ATAC's recommendation that MEDEP continue several other ongoing activities. Specifically, MEDEP will:

- continue to improve the transparency, accuracy and reproducibility of the air toxics emissions inventory; and
- continue to improve its air monitoring program for air toxics.

**Table 10: Continue Scientific Investigations into the Impacts of Air Toxics in Maine**

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
<b>Improve Residential Wood Combustion Emissions Inventory</b>	(see Table 4 on page 8)		
<b>Continue to improve the transparency, accuracy and reproducibility of the air toxics emissions inventory</b>	Revise Chapter 137 to facilitate increased accuracy and efficiency of inventory process	Completed	Tammy Gould, BAQ
	Improve marine vessel inventory, using revised EPA and Clean Diesel Collaborative guidance and research	November 2009	Lisa Higgins, BAQ
	Improve aircraft inventory, using revised EPA guidance and research	November 2009	Lisa Higgins, BAQ
	Improve rail road emission estimates using revised EPA guidance and rules	November 2009	Lisa Higgins, BAQ
	MAIRIS – continue to develop consolidated (Criteria Air Pollutant, air toxic and green house gas) web-based reporting software for point Sources (note-	December 2009	Tammy Gould, BAQ

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
	see grant for subtasks and schedule)		
<b>Conduct Further Hot-spot Analysis – Stationary Sources</b>	Assess available emissions, modeling, and ambient air data, including information that might be available from green house gas and criteria air pollutant programs, and identify information gaps	January 2010	Rich Greves, BAQ
	Model potential hot-spot locations using Regional Air Impact Modeling Initiative (RAIMI) model	March 2010	Rich Greves, BAQ
	Confirm potential hot-spots with portable monitoring equipment where available	July 2010	Jeff Emery, BAQ
	Develop report of hot-spot modeling and monitoring, assessing the need for additional action on hot-spots	September 2010	Melanie Loyzim, BAQ
<b>Conduct Further Hot-spot Analysis – Mobile Sources</b>	Work with DOT to update interactive maps of potential mobile source Hot-spots	Ongoing	Lynne Cayting, BAQ
	Confirm potential hot-spots with portable monitoring equipment where available	July 2010	Jeff Emery, BAQ
	Develop report of hot-spot monitoring, assessing the need for additional action on hot-spots	September 2010	Melanie Loyzim, BAQ
<b>Continue to improve MEDEP air monitoring program for air toxics</b>	Continue to monitor for air toxics at long-term monitoring sites	Ongoing	Jeff Emery, BAQ
	Establish protocols and hardware for portable monitoring sites	July 2009	Jeff Emery and Andy Johnson, BAQ
	Establish capacity to	July 2009	Andy Johnson, BAQ

<b>Project</b>	<b>Task</b>	<b>Goal Date</b>	<b>Staff Lead</b>
	routinely analyze for acrolein		
	Solicit EPA grant to monitor distribution of air toxics in Portland or other urban areas in Maine	When available	Jeff Emery, BAQ
	Continue to improve quality assurance and data validation procedures for air toxic analysis	Ongoing	Andy Johnson, BAQ
<b>Communications and Adjustments to the Air Toxics Strategy</b>	Develop and implement Communication Plan detailing update of website and other outreach procedures to keep interested parties informed of the progress of Maine's Air Toxics Strategy	April 2009	Melanie Loyzim, BAQ
	Report on progress of Air Toxics Strategy, adjustments to the schedule, changes in the Air Toxics Priority List, and adjustments in strategies	As needed	Melanie Loyzim, BAQ

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Attachment 1: [www.maine.gov/dep/air/toxics/mati.htm#Final](http://www.maine.gov/dep/air/toxics/mati.htm#Final)

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