

9. PATS Emission Reduction Plan, Next Steps

9.1 Introduction

The PATSAC provided DEQ with valuable input and a wide diversity of opinion on the developing PATS emission reduction plan. Committee members participated in many challenging discussions on emerging science, problem definition and potential solutions, and as a result have helped inform and contribute to the proposal for emission reductions and implementation stated in this section. DEQ fully considered input from PATSAC and incorporated much of the committee's input in the technical study and emission reduction plan. DEQ understands through comments received and group discussion that many PATSAC members support the next steps stated in this section. However, this section does not represent the views of all PATSAC members and DEQ in no way implies that is endorsed by all members. Written PATSAC comments including letters of support and opposition received during the committee process are in [Appendix 10.13](#). DEQ will seek further comment from the public and stakeholders before finalizing this proposal for presentation to the Environmental Quality Commission.

This emission reduction plan is organized in the following sections: a ranking of 2017 total risk from categories area wide and locally, a list of recommended actions, including ongoing and imminent actions, a prioritized set of categories needing follow up action expressed as a short term and longer term plan, and future process recommendations for high priority categories in the short term plan.

The prioritized source categories will guide DEQ and actions of partners to reduce toxics; however DEQ and others may take advantage of additional emission reduction opportunities as they arise. For example, revisions to the federal ozone standard could cause additional ozone planning in the Portland area. Reducing ozone precursors will reduce multiple air toxics in the Portland area. It can also reduce precursors to secondary formation air toxics such as formaldehyde and acetaldehyde. Oregon DEQ can also work with Washington air agencies to address significant levels of background pollutants that are transported regionally, such as benzene. In addition, many efforts to reduce greenhouse gases will also reduce air toxics, and there are opportunities to maximize co-benefits through coordinated planning.

Because many air toxics emission reductions are achievable only through partnerships, PATSAC and DEQ respectfully request the assistance from agencies and partners named in this report. For each one of the priority source categories needing follow up action, DEQ or partners will conduct additional stakeholder consultation and outreach to the affected sectors and public. This follow up consultation will be more detailed for each category and give stakeholders a chance to refine data, further investigate and analyze emission reduction options, and apply the full spectrum of PATSAC considerations ([Appendix 10.2.3](#)) in evaluating reduction plans.

9.2 Ranked Source Categories based on Modeled Total Risk

Oregon air toxics regulations outlining requirements for a local emission reduction plan specify that the plan will address both area wide and localized risk from air toxics emissions. The modeling results, source category rankings and emission reduction targets for both area wide and local impacts are detailed in chapters 4, 5 and 6 of this report. To perform an initial ranking or prioritization of source categories area wide, DEQ analyzed 2017 projected total risk for all source categories at the 80th percentile of emission concentrations. This is shown in the first column of Table 44 below. The second column shows the white paper categories that match the ranked source categories. After each category the number in parentheses shows a total times above benchmarks for all pollutants from that category. For each significant category of air toxics emissions, DEQ with the assistance of contractor Eastern Research Group developed white papers to provide a survey of initial information on existing and potential emission reduction strategies. The white papers are summarized in chapter 7 and are available as links in [Appendix 10.9](#).

In the PATS model estimated air toxics concentrations are distributed in different patterns throughout the region. Some pollutants are distributed uniformly; others track roadways or residential density to form zones of higher concentrations. In a few areas, the PATS model estimates higher concentrations of pollutants from industrial activities causing local impacts. In the Portland area, the unique local industrial impacts are limited to several metals related to casting and metal production. To perform an initial ranking of these localized impacts, DEQ analyzed total risk for metals that were present only in isolated groups of census blocks. This analysis was performed at the 98th percentile to generate point source emission reduction targets at the highest and closest impacted receptors for metal pollutants. The localized impact results are in Table 45 , showing the category of point sources followed by the white paper category of metals facilities. While on road mobile and residential wood emissions also showed localized impacts in the concentration maps, the model output did not provide enough information to formally delineate these impacts. On road mobile emissions, while distributed throughout the study area, can result in elevated localized impacts in areas with high volume and congestion. Residential wood combustion causes some of the highest risks throughout the study area and can cause high localized impacts in denser residential areas with less air circulation where many residents burn wood, especially in older uncertified stoves. Further investigation and data refinement will lead to greater understanding of all localized impacts.

Table 44: 2017 Total Risk for all Source Categories at the 80th Percentile Emission Concentrations

Area Wide All Pollutant Ranking (Times Above Benchmark 80 th Percentile)	White Paper Category Detail (Times Above Benchmark 80 th Percentile)
1. Residential Wood Combustion (38)	Residential Wood Combustion (38)
2. On Road Mobile (35)	1. On Road Mobile Gas (29) 2. On Road Mobile Diesel (6)
3. Area Other (24) Note: risk in this category is dominated by structural fires, most of which are accidental. As a result, this category is not a top priority.	1. Industrial Fuel Use (2) 2. Residential Heat Non Wood (1) 3. Asphalt Use (1)
4. Construction (12)	1. Construction Diesel (11.5) 2. Construction Gas (0.5)
5. Non Road Mobile Other (11)	1. Non Road Mobile Diesel (6) 2. Non Road Mobile Gas (5)
6. Lawn & Garden (10)	1. Non Road Mobile Diesel (9) 2. Non Road Mobile Gas (1)
7. Solvent Use (7)	1. Solvent-Coating (4) 2. Consumer Products (3)
8. Point (5)	Point (5)
9. Airport (3)	Airport (3)
10. Rail (2)	Rail (2)
11. Residential Open Burning (2)	Residential Open Burning (2)

Table 45: 2017 Total Risk from Metals for all Source Categories at the 98th Percentile Emission Concentrations

Localized Impact Pollutant Ranking (Times Above Benchmark 98 th Percentile)	White Paper Category Detail (Times Above Benchmark 98 th Percentile)
Point (5)	Metals Facilities (5)

9.3 Ongoing or Imminent Strategies

DEQ recognizes that government partners implement multiple measures that currently or imminently will reduce air toxics in the Portland Area. The following section lists many of the actions that more directly affect air toxics. DEQ supports the continued implementation of these measures. [Appendix 11.12](#) provides additional detail on some of these measures.

9.3.1 Removal of Uncertified Woodstoves upon Home Sale

Heat Smart is a DEQ program that accelerates the change out rate for older more polluting woodstoves. As directed by Oregon's Legislature, homeowners are required to remove and destroy any uncertified woodstove when they sell their home. As housing stock turns over, uncertified stoves will be slowly removed. This regulation is part of a program to help protect Oregonians from uncontrolled wood smoke that results from the use of old, polluting and inefficient uncertified woodstoves. It was adopted to help meet the federal fine particulate air quality standard, but will also help reduce air toxics like 15 PAH and benzene.

9.3.2 Low Emission Vehicles

Oregon's Low Emission Vehicle (LEV) standards as adopted by DEQ took effect with the 2009 model year and will reduce greenhouse gas emissions from new light duty vehicles by 30% when fully effective in 2016. Reductions achieved a net savings to vehicle owners through improved fuel efficiency. The LEV rules also reduce traditional pollutants (VOC, NO_x) and toxic air pollutants such as benzene, and include requirements for increasing numbers of Zero Emission Vehicles such as Battery Electric Vehicles and Plug-in Hybrids.

9.3.3 Oregon Low Carbon Fuels

Oregon statutes allow DEQ to adopt low carbon fuel standards, which would reduce the carbon intensity (i.e. greenhouse gas emissions per unit of fuel energy) of Oregon's transportation fuels by 10% over a 10-year period. DEQ convened an advisory committee to provide input on the structure and design of a low carbon fuel standard program. DEQ and the advisory committee evaluated various scenarios that represent different ways (traditional and cellulosic biofuels, compressed natural gas, electricity as a transportation fuel, etc.) the state could comply with a low carbon fuel standard. Depending on the mixture of fuels, especially electricity, there is potential for low carbon fuels standards to decrease air toxics in the Portland area. Rulemaking to implement this program may be considered during 2012.

9.3.4 Land Use and Transportation Planning

Metro is responsible for long-range land use and transportation planning for the region and sets policy for the Portland region in cooperation with local governments and transit providers who need to implement the policy. Updates occur through the Regional Transportation Plan (RTP), which identifies specific transportation projects to be built over the next twenty years. Metro will update the RTP in 2013-2014 and incorporate measures to reduce greenhouse gas emissions from vehicles. Those measures will also reduce mobile source air toxics. Metro is also interested in quantifying air toxics reductions. Transportation and land use objectives are interdependent and therefore the two planning processes are coordinated at both the regional and local levels. Metro's Regional Transportation Functional Plan and Urban Growth Management Functional Plan provide direction to local governments and other partners and are the basis for determining consistency with regional plans and policies. As a member of the Metro committee, DEQ participates in the transportation planning process.

Metro conducts many other activities that help reduce air toxics emissions by decreasing vehicle miles traveled, supporting transit use or tracking changes in air toxics emissions. These are summarized in [Appendix 10.12](#), and include:

- The 2040 Growth Concept
- The Regional Travel Options Plan
- Metro's Transit Oriented Development Program
- The Regional Transportation Plan Update
- Drive Less Save More

TriMet, the region's transit authority, engages in transit planning through its Transit Investment Plan (TIP), a five year planning process updated annually on a rolling basis. TIP priorities help reduce air toxics emissions by increasing frequency, accessibility and connectivity of the regional transit system. The TIP describes the investments in service, capital projects and customer information necessary to meet regional transportation and livability goals. The TIP provides local governments with a guide for their planning processes so they can leverage TriMet's investment with transit-related infrastructure such as sidewalks and safe street crossings. The TIP includes the following four priorities:

1. Build the "Total Transit System" by enhancing customer information, access to transit, stop amenities, frequency, reliability, passenger comfort, safety and security;
2. Expand high-capacity transit by investing in light rail, commuter rail and streetcar service along key corridors to connect regional centers;
3. Expand Frequent Service by adding to TriMet's network of bus lines that run every 15 minutes or better;
4. Improve local service by working with local jurisdictions to improve transit service in specific local areas.

9.3.5 Oregon Greenhouse Gas Scenario Planning

The 2009 Oregon Legislature adopted HB 2001 which requires Metro to do greenhouse gas scenario planning. In 2010, the Legislature adopted SB 1059, a statewide, comprehensive bill aimed at reducing greenhouse gas emissions from transportation. This bill expanded voluntary scenario planning to the other five metropolitan planning organizations and required the Oregon Transportation Commission to adopt a statewide greenhouse gas strategy for transportation. The goal of Senate Bill 1059 is to set interim year 2035 goals to ensure that transportation and urban planning-related greenhouse gas reduction activities are on the trajectory to meet the statewide goal of reducing greenhouse gas emissions in the year 2050 by 75% of 1990 levels. The Oregon Land Conservation and Development Department set light duty vehicle miles traveled reduction targets for the Metropolitan Planning Organizations in June 2011 in order to meet the 2035 goals. The strategies developed through greenhouse gas scenarios planning or the statewide greenhouse gas transportation strategy will likely have co-benefits for air toxics.

9.3.6 City of Portland and Multnomah County Clean Diesel Contracting Specifications

The City of Portland and Multnomah County are exploring opportunities to reduce diesel emissions associated with publicly funded construction projects. Potential strategies include financial incentives, as well as bid language and contract specifications encouraging private contractors working on City and County projects to utilize clean diesel equipment (e.g. new

engines, exhaust retrofits). The City and County are currently pilot testing a variety of approaches to clean diesel contracting. The County has piloted a clean diesel contracting requirement at its East County Courthouse project, a \$19.5 million construction project in the Rockwood neighborhood in Gresham. The knowledge and experience gained through these pilot projects, as well as ongoing engagement with stakeholders in the construction community, is helping the City and County identify viable clean diesel contracting options for the future that: are cost effective; ensure a fair bidding process; and mitigate impacts on small subcontractors and minority, women and emerging small businesses.

9.3.7 TriMet Fleet Improvements

TriMet has and continues to improve the operation of their bus fleet by reducing diesel fuel consumption and emissions, including air toxics. See [Appendix 10.12](#) for more information on TriMet fleet improvements.

9.3.8 Washington County

Washington County designs roads and bridges to optimize traffic flow to save gas, reduce air pollution, and shorten commute time by using low impact designs wherever possible. These measures also reduce air toxics. New highway projects always include significant bicycle and pedestrian facilities. Other measures include road recycling, roundabouts, signal and streetlight efficiency, and development for cyclists and pedestrians.

Washington County's Long Range Planning Division provides community land use planning for rural and unincorporated Washington County. With transit corridor and station area planning, and bike and pedestrian planning, it integrates a mix of land uses and densities that result in more complete communities with multiple transportation options that could reduce VMT and air toxics.

Washington County's Department of Land Use and Transportation (LUT), supported by a U.S. Department of Energy (DOE) Energy Efficiency Community Block Grant (EECBG), is conducting a process to evaluate its land use and building codes to identify how energy efficient and sustainable development may be better supported. Improvements in both of these areas could reduce air toxics. (Source: Washington County website: http://www.co.washington.or.us/Support_Services/Sustainability/)

9.3.9 Clackamas County

Clackamas County has upgraded many of its heavy duty diesel vehicles for road construction and maintenance. Clackamas County is deploying grant funds to retrofit solid waste and recycling collection vehicles operating in the region. The Clackamas County weatherization program decreases air toxics emissions from home heating.

9.3.10 Other Ongoing DEQ Actions

DEQ implements several other regulatory, outreach and incentive programs that reduce air toxics in the Portland area on an ongoing basis. They include implementation of:

- National Emissions Standards for Hazardous Air Pollutants (NESHAPS) for many categories of industrial and commercial activities including autobody shops, gas stations and dry cleaners (<http://www.deq.state.or.us/aq/bap/neshap.htm>)
- A Small Business Assistance Program (<http://www.deq.state.or.us/aq/bap/index.htm>)

- The Vehicle Inspection Program (<http://www.deq.state.or.us/aq/vip/>)
- The Employee Commute Option Program (<http://www.deq.state.or.us/nwr/ECO/eco.htm>)
- As part of the Portland Ozone plan, permit limits on volatile organic compounds which are ozone precursors, and many of which are air toxics
- Agency-wide toxics coordination, prioritization and reduction planning

9.4 Priority Categories for Emission Reductions

In collaboration with PATSAC, DEQ has prioritized five categories of emission sources shown below for near term follow up action, including stakeholder consultation, planning and emission reduction actions. This prioritization is based on the categories shown in Table 44 and Table 45 according to total modeled risk, practicability of emission reductions, and the directive in Oregon air toxics regulations to address both area wide and localized risk. Even though it ranked third in level of modeled risk, the category called “Area Other” was not included in the top five categories because most of the emissions are from structural fires, which are unpredictable and not practicable to control. In general, DEQ anticipates that emission reduction planning will occur in the near term categories in one to five years as resources allow.

The emission reduction plan also prioritizes remaining emission categories for longer term follow up action, including stakeholder consultation and emission reduction actions. These categories may contribute significant risk in various locations, but overall contribute much less risk than the five categories recommended for near term action. DEQ anticipates that emission reduction planning in the longer term categories will occur in five to ten years, as resources allow. This recommended prioritization is intended to guide the work of DEQ and partners. In no way is it intended to preclude development and implementation of important toxics and emission reduction opportunities as they arise or are initiated by partner agencies.

In the near term categories below, DEQ has designated “lead” and “support” agencies. A lead designation means an agency is recommended to convene the stakeholder process and follow up on emission reduction planning for the related category. Supporting agencies are recommended to work in partnership with the lead agency to assist with the stakeholder process and follow up.

9.4.1 Near Term Plan

- Residential Wood Combustion (DEQ lead with city and county support)
- On Road Mobile Light Duty (Metro lead on VMT reductions, DEQ lead on cleaner vehicles)
- On Road Mobile Heavy Duty (DEQ lead)
- Construction (DEQ lead with local government support)
- Industrial Metals (DEQ lead)

9.4.2 Longer Term Plan

- Non Road Mobile Other
- Lawn and Garden
- Solvent Use
- Area Other
- Point
- Airport
- Rail

- Residential Open Burning

9.5 Future Process for Near Term Categories

9.5.1 Residential Wood Combustion (DEQ lead with city and county support)

9.5.1.1 *Risk contributed by the category*

Residential wood combustion emits 75% of 15 PAH within the PATS area and contributes to both area-wide risk and localized impacts. The target reduction for 15 PAH from this category is 97%. Approximately half of this target can be achieved by implementation of the strategies where emission reductions have been quantified. Strategies where the emission reductions are unknown could reduce this gap.

9.5.1.2 *Emission reduction plan*

9.5.1.2.1 General

- With city and county support DEQ will convene a stakeholder process to identify and evaluate strategies to achieve the maximum feasible emission reductions, and recommend specific actions consistent with the PATSAC considerations, including cost effectiveness, feasibility and benefits analysis and options for ongoing improvement. This process will consider all of the recommendations to follow in this category, with the purpose of further exploring, evaluating and selecting actions for implementation.
- Conduct a residential wood heating activity survey targeted to the Portland Metro area.
- Following validation of the wood heating activity survey, develop a targeted regional campaign to raise awareness that RWC is a significant contributor to air toxics risk in the Portland region.
- Improve implementation of the uncertified woodstove change out program including improved outreach and incentives or requirements for replacement appliances.

9.5.1.2.2 Cleaner Fuel, Cleaner Burning

The following actions are recommended to achieve cleaner fuel and cleaner burning:

- DEQ and partners to develop community-based education efforts (e.g. Clean Burn Ambassadors) to train residents to reach neighbors on clean-burn techniques (certify them to assess opacity, educate on wood moisture, etc.) and communicate voluntary curtailment days during stagnant air episodes as a routine component of local weather reporting.
- DEQ to evaluate effectiveness of other jurisdictions' opacity regulations.

9.5.1.2.3 Cleaner Appliances

The following actions are recommended to achieve cleaner appliances:

- Government and private partners to create a stable long term fund for replacement of uncertified wood stoves, with emphasis on funding replacement in affected environmental justice communities.
- DEQ to coordinate with partners to advocate for funding assistance for wood stove replacements and weatherization programs, with emphasis on assistance to affected environmental justice communities.

- DEQ to advocate for strong national standards for new wood heating devices based on the best current technology and performance. If EPA standards are not adequate, DEQ to adopt more stringent state standards for new wood heating devices.

9.5.1.2.3 Less Wood Burning

The following actions are recommended to achieve less wood burning:

- DEQ and partners to assess the need for and access to weatherization programs and incentives for those who frequently (or primarily) heat with wood. If needed, develop new funding or target existing funding to weatherize homes that primarily or frequently heat with wood, with emphasis on weatherization in affected environmental justice communities.

9.5.1.3 Issues

Future consideration of emission reduction in this category will include the following issues:

- More information is needed to evaluate whether fuel quality and opacity requirements would effectively reduce wood burning emissions.
- Because there is a large gap between the emission reduction target and achievable reductions for this category, once the initial feasible strategies are implemented, DEQ and partners will need to establish a follow up process to revisit strategies and recommend implementation of technological advances.

9.5.1.4 Stakeholders and Partners

Stakeholders and partners in this category will include citizens, realtors, developers, wood burning and other heating appliance vendors, oil, electric and natural gas companies, city and county government, including health departments, building code agencies and planning departments.

9.5.1.5 Data and white paper refinement needs

The following actions are recommended for data refinement:

- DEQ to develop more complete emission inventory information about PAH emissions from fireplace use.
- DEQ to develop more information on the composition of and emissions from artificial logs.

9.5.2 On Road Mobile Light Duty (Metro lead on VMT reductions, DEQ lead on cleaner vehicles)

9.5.2.1 Risk contributed by the category

The pollutants contributing the majority of the risk from this category and their associated on road mobile contributions are 15 PAH (10%), benzene (14%), 1, 3 butadiene (64%), arsenic (28%) and chromium (59%).

The target reductions for this category are 15 PAH 95%, benzene 86%, 1,3, butadiene 88%, arsenic 64% and chromium 24%. PATS modeling shows that emissions in this category contribute to concentrations above benchmarks area-wide, are higher in distinct zones near busy

roadways, and present localized impacts in areas of the highest traffic volume and congestion. The reductions available for this category are complex and difficult to quantify at this time.

9.5.2.2 Emission reduction plan

9.5.2.2.1 General

Because Metro currently leads regional transportation planning in coordination with government partners and affected parties, the stakeholder process for this category can be conducted through existing committees and procedures.

- Metro and DEQ to identify authorities, roles and responsibilities for implementing cleaner vehicles, cleaner fuels and decreasing VMT. In evaluating various strategies, Metro and DEQ to determine the most effective ways to coordinate and utilize authorities to implement air toxics reduction strategies.

9.5.2.2.2 Reduced VMT from light duty vehicles

The following actions are recommended to achieve reduced VMT from light duty vehicles:

- State agencies, Metro, and other public and private partners to identify sustainable funding to reduce VMT from light duty vehicles.
- Metro and the Joint Policy Advisory Committee on Transportation (JPACT) to incorporate air toxics reductions into existing VMT reduction planning, including greenhouse gas scenario planning required by HB 2001 and the Regional Transportation Plan.
- Under state greenhouse gas planning scenarios, Metro and JPACT to strive to achieve a per capita reduction of 20% of air toxics emissions from light duty vehicles by 2035, considering all of the recommendations in this section, with the purpose of further exploring, evaluating and selecting them for implementation. Metro and JPACT to select strategies consistent with the PATSAC considerations including cost effectiveness, feasibility, benefits analysis and options for ongoing improvement (Note: this target is consistent with the per capita target for greenhouse gas reduction adopted by the Land Conservation and Development Commission. For a link to statewide greenhouse gas reduction targets see [Appendix 10.12.2](#))
- In developing corridor plans, ODOT, Metro and JPACT to seek additional VMT reduction (or offsetting air toxics reductions) in localized air toxics corridors identified in [Section 6](#) of this report.
- Metro, ODOT, cities and counties and other partners to implement transportation demand management and system operation improvements (traffic incident management, electronic traveler information, traffic signal coordination, etc.)
- Metro to integrate public health, environmental, and environmental justice considerations early in the metropolitan planning process (e.g. evaluating and developing transportation and land-use plans and projects),
- ODOT to integrate public health, environmental, and environmental justice considerations early in the statewide transportation planning process with FHWA
- Metro and JPACT in consultation with TriMet to assess the following specific VMT reduction measures, and incorporate into the RTP as appropriate:
 - A transit service standard based on a needs assessment of transit dependent communities

- Programs and fare incentives to increase use of public transportation, including finding sustainable funding for the youth pass transit program in Multnomah County, which influences the next generation's transit choices;
- Stronger Employee Commute Options incentives, regulations or other programs to reduce home to work trips;
- Funding operating costs to increase service by allowing more flexible use of state and federal capital resources.

9.5.2.2.3 Cleaner vehicles

The following actions are recommended to achieve cleaner vehicles:

- DEQ to advocate for EPA adoption of strong national air toxics reductions in the next phase of light duty vehicle standards (Tier 3) covering 2017 to 2025.
- DEQ to adopt California's LEV III standards for the same period as a backup to federal standards in coordination with Washington.
- DEQ in cooperation with ODOE and ODOT to promote and facilitate development of infrastructure for low emitting vehicles.

9.5.2.2.4 Cleaner fuel

The following actions are recommended to achieve cleaner fuel:

- DEQ to evaluate life cycle air toxics from low carbon fuels (eg, biofuels, electric) and encourage fuels with co-benefits.
- DEQ to evaluate air toxics reduction potential, co-benefits with ozone precursors, cost-effectiveness, and legal authorities for reformulated gasoline in Western Oregon, Western Oregon-Washington, or statewide Oregon-Washington.
- State agencies, Metro and other public and private partners to promote and facilitate development of infrastructure for low emitting vehicles.

9.5.2.3 Issues

Future consideration of emission reduction in this category will include the following issues:

- Consider full life-cycle impact of electric vehicles (source of electricity, mining impacts, etc.)
- Account for air toxics reductions needed from metals associated with wear and tear during vehicle operation.
- Update the emission inventory to include current Metro transportation modeling, including the final configuration for the Columbia River Crossing bridge
- Review and consider recent developments with low carbon fuel standards and biofuel requirements.
- Review and consider co-benefits and potential conflicts of measures to reduce greenhouse gases and toxics, and to increase use of biofuels.

9.5.2.4 Stakeholders and Partners

Stakeholders and planning partners include the 25 cities, three counties and affected special districts of the Portland region, Oregon Department of Transportation (ODOT), DEQ, The Port of Portland, South Metro Area Regional Transit (SMART), TriMet, automotive, trucking, business, freight, transit rider organizations and other interested community representatives. Metro also coordinates on bi-state issues with the City of Vancouver, Clark County Washington, the Port of Vancouver, the Southwest Washington Regional Transportation Council (RTC), C-Tran, the Washington Department of Transportation, the Southwest Washington Clean Air Agency (SWCAA) and other Clark County governments.

9.5.3 On Road Mobile Heavy Duty (DEQ lead)

9.5.3.1 Risk contributed by the category

Most pollutants emitted by on-road heavy duty engines are risk drivers for the PATS study area as a whole, and diesel particulate is the main risk driver for this category. The target reduction for diesel particulate from heavy duty on road engines is 91%. With the maximum amount of engine turnover and alternate fuel engines, along with other strategies identified in the white paper in [Appendix 10.9.1](#), it would be technologically possible to achieve almost all of this target reduction. However, engine turnover and retrofit solutions are costly and funding is not currently available.

9.5.3.2 Emission reduction plan

9.5.3.2.1 General

- DEQ will convene a stakeholder process to identify and evaluate strategies to achieve the maximum feasible emission reductions, and recommend strategies consistent with the PATSAC considerations including cost effectiveness, feasibility, benefits analysis and options for ongoing improvement. This process will consider all of the recommendations to follow in this category, with the purpose of further exploring, evaluating and selecting them for implementation.
- DEQ and partners to identify authorities, roles and responsibilities for implementing cleaner vehicles, cleaner fuels and using less fuel. In evaluating various strategies, DEQ and partners to determine the most effective ways to coordinate and utilize authorities to implement air toxics reduction strategies.
- DEQ and partners to identify opportunities for financial support of clean diesel activities.
- DEQ and partners to identify what role education and outreach can play in building acceptance of and action toward clean diesel projects, including building citizen and consumer demand for clean diesel.

9.5.3.2.2 Burn Fuel Cleaner

The following actions are recommended to burn fuel cleaner:

- DEQ and partners to develop a strategy to accelerate engine turnover, repowering and retrofit. DEQ and partners to assess the feasibility and effectiveness at all levels of government to incent or require clean diesel fleets for publically funded projects, including

franchised or contracted fleets. Important considerations include procurement and contracting rules, policy adoption processes, financial resources, and effects on small businesses.

9.5.3.2.3 Burn Cleaner Fuel

The following actions are recommended to burn cleaner fuel:

- DEQ and partners to evaluate alternatives and where effective, evaluate strategies to increase the fleet mix of alternative fuels and fuel engines.
- DEQ and partners to evaluate need for a technical clearinghouse on environmental benefits and effects of alternative fuels. See links in [Appendix 10.11](#).

9.5.3.2.4 Burn Less Fuel

The following actions are recommended to burn less fuel:

- DEQ and partners to evaluate ways to increase efficiency on a gallons per ton mile or gallons per hour basis. This could include improving logistical and physical efficiency, for example Smartway, aerodynamics, scheduling and delivery, network efficiencies, truck only lanes, choice of other transportation modes.
- DEQ and partners to evaluate implementation of House Bill 2081 idling restrictions. If potential improvements are identified, DEQ and partners to present them to the Oregon Legislature for consideration.
- DEQ and partners to evaluate private and other jurisdictions' idle reduction programs that reduce air toxics concentrations in affected environmental justice communities.

9.5.3.3 Issues

Future consideration of emission reduction in this category will include the following issues:

- Upgrading older engines represents a very cost effective public health and environmental protection measure, but cost to individuals and businesses can be prohibitively high.
- With more advanced engines, maintenance is of increasing importance.

9.5.3.4 Stakeholders and Partners

Further work on this sector will require active participation and involvement by business and industry associations including the Oregon Trucking Association and Associated General Contractors, public health advocates, citizens and government, including ODOT, DEQ, the State Health Authority and local health agencies.

9.5.3.6 Data and white paper refinement needs

The following actions are recommended for data refinement:

- DEQ and partners to better understand the determinants of truck and vehicle turnover per duty cycle and application, e.g. medium versus heavy duty vehicles, drayage and short haul trucks, transit buses, school buses, specialty vehicles like refuse hauler trucks and cement trucks.
- DEQ and partners to evaluate the need for refinement of on road diesel data, including transit information.

9.5.4 Construction (DEQ lead with local government support)

9.5.4.1 Risk contributed by the category

Most of the risk from this category comes from diesel particulate and PAH. The reduction target for diesel particulate for this category is 92%. If every potential strategy were implemented, there would be no gap between the target and achievable reductions. However, engine turnover and retrofit solutions are costly and funding is extremely limited.

9.5.4.2 Emission reduction plan

9.5.4.2.1 General

- DEQ proposes that it will convene a stakeholder process to identify and evaluate strategies to achieve the maximum feasible emission reductions, and recommend strategies consistent with the PATSAC considerations including cost effectiveness, feasibility, benefits analysis and options for ongoing improvement. DEQ proposes that this process consider all of the recommendations to follow in this category, with the purpose of further exploring, evaluating and selecting them for implementation.
- DEQ and partners to identify and communicate authorities, roles and responsibilities for implementing cleaner engines, cleaner fuels and using less fuel. In evaluating various strategies, DEQ and partners to determine the most effective ways to coordinate and utilize authorities to implement air toxics reduction strategies.
- DEQ and partners to conduct a survey of construction equipment in the Metro area to better define the quantity, age activity levels and locations of each type of equipment. DEQ to use this information to improve the emission inventory and modeling, as appropriate, as well as target future emission reduction strategies.
- DEQ and partners to evaluate the design and effectiveness of a registration system to identify the use of equipment or construction projects within the Metro area.
- DEQ and partners to research the impact of high emitting used equipment that may be imported from California as a result of California's construction fleet emission standards. If this concern is significant, DEQ to identify options to address it.
- DEQ and partners to identify opportunities for financial support of clean diesel activities.
- DEQ and partners to identify what role education and outreach can play in building acceptance of and action toward clean diesel projects, including building citizen and consumer demand for clean diesel.

9.5.4.2.2 Burn Fuel Cleaner

The following actions are recommended to burn fuel cleaner:

- DEQ and partners to develop a strategy to accelerate engine turnover, repowering and retrofit.
- DEQ and partners to identify funding options in addition to DERA and Oregon tax credits, to retrofit and repower equipment and accelerate turnover to new equipment.
- DEQ and partners to assess the feasibility and effectiveness at all levels of government to incent or require clean diesel fleets and equipment for publically funded projects, including franchised or contracted fleets and equipment. Important considerations include procurement and contracting rules, policy adoption processes, and financial resources.

9.5.4.2.3 Burn Cleaner Fuel

The following actions are recommended to burn cleaner fuel:

- DEQ and partners to evaluate alternatives and where effective, evaluate strategies to increase the fleet mix of alternative fuels and fuel engines.
- DEQ and partners to evaluate the need for a technical clearinghouse on environmental benefits and effects of alternative fuels. See links in Appendix 10.11.

9.5.4.2.4 Burn Less Fuel

- DEQ proposes the following actions to burn less fuel: DEQ and partners to evaluate and assess the feasibility of idle reduction for construction equipment.
- DEQ and partners to evaluate private and other jurisdictions' idle reduction programs that reduce air toxics concentrations in affected environmental justice communities.
- DEQ and partners to explore options to reduce emissions per unit of work accomplished with efficiency measures.
- DEQ and partners to explore and communicate best practices with regard to operating and maintaining heavy equipment.

9.5.4.3 Issues

Future consideration of emission reduction in this category will include the following issues:

- There is uncertainty about emissions because of lack of information about equipment; an improved emission inventory is needed for this category.
- Most emissions in this category come from construction equipment with a slow turnover rate.
- With more advanced engines, maintenance is of increasing importance.
- Strategies involving use of biodiesel need to account for manufacturer warrantee restrictions.
- Contractors' equipment is tied to the valuation of their businesses so any measures need to consider effects on business valuation.
- Emission reduction strategies must consider special needs of small businesses.

9.5.4.4 Stakeholders and Partners

Further work on this sector will include active participation and involvement by business and industry associations and experts including the Associated General Contractors, construction, state and local government agencies, public health, neighborhood, and public interest representatives.

9.5.5 Industrial Metals Facilities (DEQ Lead)

9.5.5.1 Risk contributed by the category

Metals facilities account for essentially all of the manganese, nickel and lead, and most of the cadmium projected in 2017 concentrations that contribute to benchmark exceedances in localized impact areas. Other pollutants, such as arsenic, benzene, hexavalent chromium, and naphthalene emitted by metals facilities may be potential risk drivers in their immediate vicinity. Cadmium and arsenic are two pollutants with incomplete emission inventory data and in need of further refinement as described in 9.7. Depending on the local modeled impacts and varying between

facilities, the target metals reductions from metals facilities are 39% to 91% for manganese, 72% for nickel, 49% for lead, 89% to 95% for chromium, and 94% to 96% for cadmium. (See [Section 6](#) on emission reduction targets.) Based on the current analysis, technically feasible options for reducing these metals can achieve reductions of emissions that are between ten and thirty percent of the targets. (See [Section 7](#) on the overview of white papers.)

9.5.5.2 Emission Reduction Plan

The following actions are recommended for the Industrial Metals Category:

- DEQ to refine emission estimates for metals facilities that modeled over or near benchmarks for 2017, using facility-specific models, improved emissions characteristics and more detailed receptor locations.
- DEQ to encourage facilities with modeled impacts above benchmarks to make voluntary early reductions.
- DEQ to convene a stakeholder process to identify, evaluate and recommend strategies to achieve the maximum feasible emission reductions, including facility or category specific strategies consistent with PATSAC considerations. These strategies should encourage ongoing improvements in emission reductions, and, where appropriate, performance-based approaches.

9.5.5.3 Issues

Future consideration of emission reduction in this category will include the following issues:

- Because there are significant gaps between targets and feasible reductions, there is a need for more information on potential emission reduction technologies.
- The follow up process for this category should include additional modeling designed for industrial facilities.

9.5.5.4 Stakeholders and Partners

The future process for this category will include technical experts, representatives from the affected facilities, neighbors and affected public, health authorities, local government and DEQ.

9.6 Milestones and Contingency Plans

Milestones for PATS will help to identify the stages of completion for the various phases of work necessary to achieve the ambient benchmark concentrations. A contingency plan for PATS will be any plan designed to respond to changes in conditions that will affect meeting milestones. Because this phase of PATSAC recommendations contains priority categories and considerations rather than imminent emission reduction actions, milestones and contingency plans will be developed in the next phase of planning to address the priority categories.

DEQ will strive to develop milestones and contingency plans for each priority source category strategy. Milestones will be based on a ten year timeframe. They may be linked to DEQ's three year emission inventory updates or other relevant planning and assessment cycles. Milestones may be procedural at first, e.g. surveying emissions or activity levels, but will ultimately relate to targeted emission reductions for risk driver pollutants in each priority category. Upon completion of each three year emission inventory cycle, DEQ may assess the projected modeled emissions

reductions against the 10-yr goals for each priority category in the PATS project. Milestones will also be evaluated by analyzing any relevant monitoring data. Lack of progress in achieving emission reductions could result in re-convening PATSAC or other stakeholder group for re-evaluation of technical and planning assumptions.

A contingency plan may be designed to take effect at any time during PATS implementation, but at a minimum should be triggered during the sixth year of a ten year reduction plan based on lack of progress in reducing emissions or meeting milestones. Contingency plans will be developed in conjunction with milestones during development of emission reduction plans for each priority category. When developing contingency plans, government partners and stakeholders should consider the range of realistically possible scenarios including:

- What events may occur that require a response?
- What is the worst case scenario of events for the situation?
- What event would cause the greatest disruption of current activities and plans?
- What happens if changes occur that affect feasibility, for example changes in cost or technology?
- What happens in the event of change to an organization implementing parts of the emission reduction plan?

An example of an Ozone maintenance contingency plan triggered by an increase in vehicle miles traveled in the Portland region may be found at:

<http://www.deq.state.or.us/aq/planning/docs/portlandSalemOzone.pdf>.

9.7 Pollutants/Problems Needing Refinement

The PATS technical study highlighted several areas in need data refinement for better understanding of emissions, potential risks and possible emission reduction strategies. With assistance from EPA and other state and local partners, DEQ will follow up on developing more accurate information in the following areas:

9.7.1 Methylene Chloride

DEQ will work with EPA and stakeholders to develop a more accurate emission inventory for methylene chloride. This activity is linked to the DEQ 2011 air toxics emission inventory.

9.7.2 Secondary Formation Pollutants

DEQ will research literature on acrolein, formaldehyde and acetaldehyde to gain a full understanding of precursor chemicals and secondary formation of these pollutants in the PATS study area. In coordination with the Portland Ozone plan, DEQ will assess the effectiveness of reducing precursors to both ozone and secondary formation air toxics. DEQ will use the MOVES mobile source model for additional refinements for mobile source pollutants.

9.7.3 Cadmium

DEQ will use additional monitoring data, meteorological data and source data to better identify the sources of cadmium emissions in the PATS Study Area, especially in North Portland where monitoring data shows higher levels that do not correspond to modeled concentrations. See Model to Monitor Comparisons in Section 3.6.2 above. Once sources have been identified, additional cadmium reduction efforts may be included in the relevant source category follow up actions.

9.7.4 Arsenic

DEQ will use additional monitoring data, meteorological data and source data to better identify the sources of arsenic emissions in the PATS Study Area, especially in North Portland where levels are somewhat under predicted compared to monitoring data. See Model to Monitor Comparisons in [Section 3.6.2](#). Once sources have been identified, additional arsenic reduction efforts may be included in the relevant source category follow up actions.

9.7.5 Additional Monitoring Studies

DEQ will continue to seek grant and other funding for additional air toxics monitoring to better characterize parts of the PATS study area and establish a more complete baseline for tracking future emission reductions.

9.8 Addressing Growth and Reduction Target Gaps

In discussion with PATSAC, DEQ has recognized several important future considerations for implementing emission reduction strategies. For many categories of emissions there are common potential future needs: 1) for continuous improvement in achieving emission reductions, 2) to respond to growth in emissions, 3) to provide the best quality information about air toxics, and 4) to mitigate exposures in ways that complement reduction strategies.

9.8.1 Reassess/Review Feasibility of Reductions to Address Gaps

In the categories of residential wood combustion and industrial metals emissions, technically feasible emission reduction measures were not sufficient to achieve reduction targets. While sufficient reductions are technically feasible in other categories, not all of these reductions may be consistent with the PATSAC considerations. However, through improved technologies additional reductions may be possible in the future. Methods to implement continuous improvement are therefore important to reach PATS emission reduction goals. Therefore, each strategy developed to reduce emissions from priority categories identified in section 9.3 will include a specific process for periodic review of improved technologies to address any gap between the target and the combined reduction actually achieved by all strategies for that category.

9.8.2 Address Growth that Exceeds 2017 Projections

The projected 2017 emissions inventory was created utilizing Metro growth factors. DEQ will need to periodically re-assess the actual growth and how that level of growth impacts emissions.

9.8.3 Improve Data and Access to Data on Source Contributions and Cumulative Impacts

DEQ used the best available technical information to estimate emissions from all sources in the Portland area. However the data contained many assumptions and in some cases was less certain. Along with partners, DEQ will work to improve the PATS emission inventory especially for priority categories with low quality and incomplete information. In addition, as more information and methods become available to assess cumulative impacts and risk from multiple air toxics, DEQ will use them to update the PATS technical study.

9.8.4 Find Opportunities to Mitigate Air Toxics Emissions

For some categories of emissions, stakeholders may want to consider mitigation measures to supplement emission reduction strategies. In general mitigation measures can include any actions that do not achieve quantifiable emission reductions but may decrease exposure or the impact of

emissions. Examples of these actions are adjusting activity or production schedules to times when fewer people would experience exposures, planting trees that would potentially decrease exposures, and land use or other planning that would increase the distance between emissions and people.