



**Peace Region Air Zone
Canadian Ambient Air Quality Standards Response
Government of Alberta Action Plan**

September 2017

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Air Quality Management System

The Air Quality Management System (AQMS) provides a comprehensive, cross-Canada framework for collaborative action to further protect human health and the environment through continuous improvement of air quality. The Air Zone Management Framework, a component of the AQMS, provides a system for the management, monitoring and reporting actions to be implemented at an air zone level. The first Canadian Ambient Air Quality Standards (CAAQS) assessment results for Alberta were published in September 2015 for the 2011 to 2013 monitoring period - *Alberta: Air Zones Report 2011-2013*.

Alberta is committed to implementing the national Air Quality Management System, including taking action to reduce emissions, as required, in each air zone to meet the CAAQS requirements. Alberta Environment and Parks (AEP) developed and published the *Alberta Implementation of the Air Zone Management Framework for Fine Particulate Matter and Ozone* in September 2015. In addition to providing information on air zone boundaries and monitoring stations used for CAAQS reporting, the policy sets management planning requirements and timelines. Air zones in the orange and red management levels are required to develop a management plan to achieve CAAQS and/or further improve ambient air quality within two years of CAAQS reporting.

Current Assessment

The annual Air Zones Report summarizes the CAAQS achievement status and management levels for Alberta's Air Zones for fine particulate matter (PM_{2.5}) and ozone (O₃) monitoring results. Four stations in the Peace Region air zone were used in the 2011 to 2013 assessment. These stations are located within communities or in areas accessed by members of the public. The boundaries of the Peace Region air zone and the locations of the ambient air quality monitoring stations are shown in Figure 1.

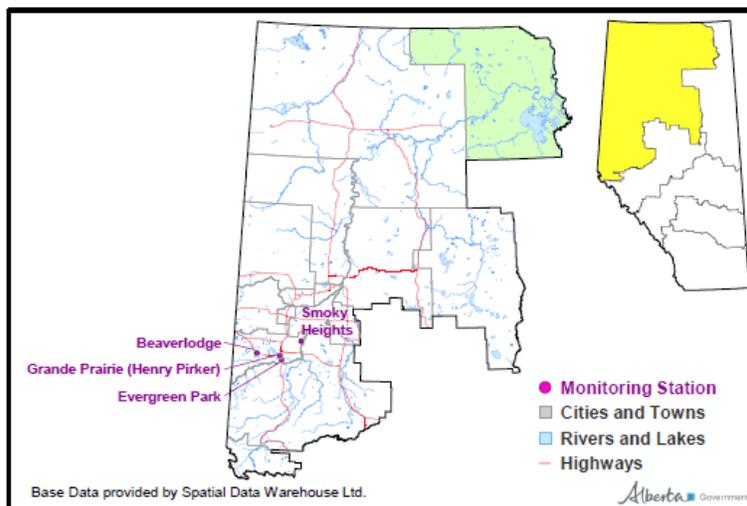


Figure 1 – Peace Region Air Zone boundaries and monitoring stations used for AQMS reporting.

A summary of the 2011 to 2013 reporting period assessment results for the Peace Region air zone is provided in Table 1. All the four stations were assigned yellow management level for PM_{2.5}, Actions for Preventing Air Quality Deterioration. This management level calls for improvement to air quality using early and ongoing actions for continuous improvement.

The Peace Region air zone is assigned to the green level for O₃, Actions for Keeping Clean Areas Clean.

Table 1: Air Quality Results for the Peace Region Air Zone

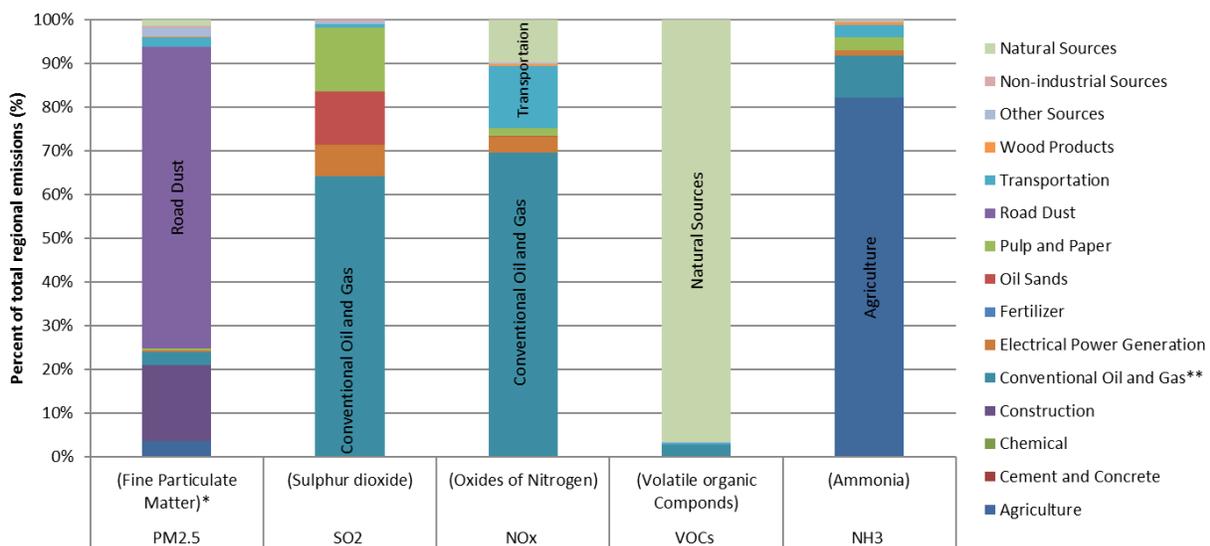
Air Zone	Station	PM _{2.5} 24-hour	PM _{2.5} Annual	Ozone 8-Hour
Peace	Beaverlodge	Yellow	Yellow	Green
	Evergreen Park	Yellow	Yellow	_-a
	Grande Prairie (Henry Pirker)	Yellow	Yellow	Green
	Smoky Heights	Yellow	Green	_-a

Green, yellow, orange and red correspond to the CAAQS management levels.
 -a: No assessment is possible as this substance is not monitored at this station.

Emissions

Figure 2 provides emissions of selected parameters, percent of total emissions by sector for the Peace Region air zone. This is based on the Alberta Air Emissions Inventory. While these data are a few years old, they represent the most consistent and detailed emissions inventory dataset available for all air zones, including non-industrial non-point¹ sources, and small sources.

Road dust, the construction and agriculture sectors followed by the conventional oil and gas sector contribute the greatest amounts to the primary PM_{2.5} emissions. The conventional oil and gas sector followed by the pulp and paper and oil sands sectors emit the largest amounts of sulphur dioxide (SO₂). Conventional oil and gas contribute the largest amount of nitrogen oxides (NO_x), whereas volatile organic compounds (VOCs) emissions are dominated by natural sources followed by conventional oil and gas. Ammonia (NH₃) emissions contributions in the Peace Region air zone are dominated by the agricultural sector. Figure 2 indicates that small and non-point sources dominate the primary PM_{2.5} emissions and are also significant contributors to NO_x, and VOCs (these substances contribute to the formation of secondary PM_{2.5}).



*Primary particulate matter emissions
 **Conventional oil and gas includes both upstream and downstream oil and gas

Figure 2: Percent of Total Emissions by Sector for the Peace Region Air Zone

¹ Non-point source pollution is subtle and gradual, caused by the release of pollutants from many different and diffuse sources (aggregated sources of emissions). This aggregation is done because the emission sources are either too small and numerous, too geographically dispersed, or too geographically large to be estimated or represented by a single point.

Government of Alberta Commitment to Improve Air Quality in Peace Region Air Zone

As the Peace Region air zone has been assigned to the yellow management level for PM_{2.5} and green management level for O₃, a response plan is not required. Note, however, that several of the policies and management actions listed can apply provincially to improve protection of air quality, thus benefiting regional air quality in the Peace Region air zone.

Alberta Environment and Parks is committed to work with stakeholders to continue to effectively meet the CAAQS in the Peace Region air zone. Alberta Environment and Parks will continue to undertake action in the following areas to reduce air emissions:

Regional Planning Actions:

The Government is committed to an Integrated Resource Management System (IRMS). Regional planning and related initiatives under the Land-use Framework are components of this system. IRMS is based on the principles of cumulative effects management - the management of the combined effects of past, present, and foreseeable future activities on the environment, economy, and society over time and in a particular place. The IRMS will support responsible resource management in the province, in part through the implementation of environmental management frameworks. CAAQS and their associated air zone management thresholds are being incorporated into air quality management frameworks and provide context for development and related planning and decision-making processes in each land use region.

Each regional plan is at a different stage of development. Alberta Environment and Parks will continue to advance air quality management frameworks developed within each region. Currently a Land Use Framework plan has not been initiated for the Peace Region, and plans for both Upper and Lower Peace Regions are likely multiple years away from finalization.

Regional Actions	Description
Develop and implement a regional land-use plan and associated air quality management framework.	A Peace Region Air Quality Management Framework will be developed as part of the Upper Peace Regional Plan.

Policy Actions:

In addition to the Alberta Implementation of the Air Zone Management Framework for Fine Particulate Matter and Ozone policy, which define the requirements to ensure the CAAQS are achieved, Alberta is assessing additional policies that can be applied in air zones at orange and red CAAQS management levels. While some of these actions may not be directly applicable to Peace Region air zone, pollution can be transported long distances, so actions taken in one air zone may lead to air quality improvements in others as well. Technology and equipment standards and policy for point sources such as large industry and non-point sources such as transportation will be assessed with continuous improvement principles encouraged.

Provincial Actions	Description
Establish provincial air emission policy, including defining standards / tools to apply to reduce emissions in air zones at orange and red CAAQS management levels.	<p>Jurisdictional review has been completed and published online.</p> <p>Based on the jurisdictional review of international policy approaches and regulatory tools applied in areas requiring air quality management, the Government of Alberta will subsequently identify policy gaps and develop tools for air zones at orange and red CAAQS management levels.</p>

<p>Establish and update source standards for both industrial sectors and equipment to reduce emissions.</p>	<p>Coal fired power plants are some of the major polluters in Alberta, and their emissions can impact air quality across the province. Requiring the electricity generating sector (existing coal-fired units) to meet the Alberta emission management framework standards for sulphur dioxide and nitrogen dioxide to significantly lower fine particulate matter precursor gases. Alberta's Climate Leadership Plan will phase out coal-fired electricity sources by 2030.</p> <p>Provincial roll out of more stringent equipment standards for new boilers and heaters.</p>
<p>Reduce methane emissions in Alberta under the Climate Leadership Plan.</p>	<p>Reduction in methane emissions will have co-benefits in improving air quality. In Alberta, the government's current initiative to reduce methane by 45% from the oil and gas industry by 2025 will have a co-benefit of also reducing VOCs, precursors to particulate matter and ozone, from these sources.</p>
<p>Action on non-point sources such as transportation.</p>	<p>The Government is collaborating with industry, non-government organizations, and airsheds cross-provincially through the Clean Air Strategic Alliance (CASA) to provide recommendations for potential management actions on non-point source emissions such as transportation and wood burning.</p> <p>The Government continues to support the development of green transit alternatives and continues to collaborate with federal/provincial/territorial jurisdictions through the Canadian Council of Ministers of the Environment (CCME) Mobile Sources Working Group to help inform further transportation management actions in Alberta.</p>
<p>Provide support and guidance to assist municipalities when making decisions on land-use planning for improved environmental outcomes.</p>	<p>Emissions from municipalities include sources such as vehicles, home-heating furnaces, backyard fire pits, and small engines such as lawn mowers. Provide technical support to municipalities for their planning, by-law development and public education efforts to reduce air emissions.</p>
<p>Better understand contributions from small businesses and manufacturing that do not require an Environmental Protection and Enhancement Act approval to the fine particulate matter issue.</p>	<p>Assess contributions from small businesses and manufacturing to better inform what impacts these have on air quality and help identify partners and promote collaboration.</p>
<p>Update Alberta Ambient Air Quality Objectives</p>	<p>Updates to Objectives for fine particulate matter, ozone, nitrogen dioxide, sulphur dioxide, and hydrogen sulphide and potential new Objective for total reduced sulphur compounds are planned over the next few years.</p>

Regulatory Process Actions:

Industrial facilities in Alberta regulated by the *Environmental Protection and Enhancement Act* operate under the terms and conditions stipulated in their respective approval documents, which include emission control standards. These standards are updated when the facility approval is renewed on a 10-year cycle. Efforts are ongoing to ensure principles of continuous improvement are incorporated into the approval process to support environmental outcomes. The Government of Alberta is committed to taking actions to reduce emissions from existing sources and requiring control technologies on par with leading jurisdictions for major new sources.

Provincial Actions	Description
Action on industrial emissions.	<p>Industrial approvals in Alberta are normally issued for a ten-year period. The Alberta Energy Regulator and Environment and Parks are requesting continuous improvement practices be applied to all the industrial sources in renewal applications that are in air zones at orange and red CAAQS management levels. Data and information on current operations, management practices and technologies will be collected.</p> <p>The AEP pulp and paper mill technical group, which includes approvals, resource management, compliance and policy, was formed to standardize approvals terms and conditions for all pulp and paper mills in Peace and Upper Athabasca Regions. This group will also discuss and consider emerging air issues while issuing the industrial approvals for pulp and paper mills.</p>

Knowledge Improvement:

Currently, Alberta has the largest network of air monitoring stations in Canada. All population centres of over 50,000 people, as well as some smaller centres have at least one continuous air monitoring station, and this network is being expanded. . Alberta Environment and Parks will work with local airshed organizations and other partners to advance the knowledge in the priority areas and inform management approaches.

Regional Actions	Description
Ambient data analysis	Analyze available monitoring data to investigate possible cause or influences on elevated concentrations. Look at links to meteorology (wind/wind direction) and covariance between pollutants. Identify any long term trends etc.
Initiate Photochemical Modelling	Initiate regional photochemical modelling to inform regional planning and cumulative effects management.
Ambient air monitoring improvements	Assess the adequacy of existing regional air quality monitoring through ongoing monitoring network evaluation study. This information will inform future network needs. Currently within the Peace Region, monitoring stations are limited to the area around Grande Prairie, and may not be representative of the entire Peace Region.

Engagement Actions:

Air quality management is multi-faceted requiring the participation of numerous affected people, industries, and agencies. There are two aspects to engagement actions. The first is in recognizing the work with stakeholders to achieve a better understanding of regional priorities to pursue appropriate management initiatives aligned with regional needs. The second is focused on outreach and education to inform the public and stakeholders on the state of air quality, how it impacts them, and what they can do the help.

Provincial Actions	Description
Develop a provincial air literacy program	Update and develop, as required, suitable air quality literature for the public.
Leverage existing stakeholder relationship	Collaborate with Peace Air Shed Zone Association (PAZA) to identify any ambient air monitoring gaps and address regional air quality concerns. Collaborate with future airsheds and/or air monitoring groups and ensure alignment of AEP monitoring requirements and airshed requirements.

Additional Information

Information on the national Air Quality Management System, of which the CAAQS are a part, can be found on the Canadian Council of Ministers of the Environment website at:

- <http://www.ccme.ca/en/resources/air/aqms.html>

Information on Alberta's Implementation of the Air Zone Management Framework for Fine Particulate Matter and Ozone can be found at:

- <http://aep.alberta.ca/air/management-frameworks/canadian-ambient-air-quality-standards/default.aspx>

The 2011-2013 ambient air quality report for air zones, fact sheets on the results for the Red Deer and other zones can be found at:

- <http://aep.alberta.ca/air/management-frameworks/canadian-ambient-air-quality-standards/default.aspx>

Historical information on the management of PM_{2.5} and ozone in Alberta before the CAAQS, which was based on the Canada-wide Standards, including the results of the assessments for the 2010-2012 and earlier periods, can be found at:

- <http://aep.alberta.ca/air/management-frameworks/canadian-ambient-air-quality-standards/default.aspx>