

# Alaska Department of Environmental Conservation



Amendments to:  
State Air Quality Control Plan

Volume II: III.K.8

**Long-Term Strategy**

Regional Haze

**Public Review Draft**

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### III.K.8 LONG-TERM STRATEGY

The Regional Haze Rule requires Alaska to submit a 10-15 year long-term strategy (LTS) to address regional haze visibility impairment in each Class I area in Alaska and for each Class I area outside Alaska that may be affected by emissions originating from within the Alaska. Due to the long distances from Alaska to the Lower 48 states, Alaska has not identified any Class I areas outside of Alaska that are impacted by Alaskan emissions and no states have notified Alaska through the regional planning process of Alaska source impacts on their Class I areas. As a result, Alaska's strategy focuses solely on addressing visibility impairment in Alaska's Class I areas. In addition, Alaska has found that international emissions transported into Alaska have an impact on visibility in the Class I areas. These international emissions cannot be controlled by local or state control measures and are factored into the reasonable progress goals discussed in Section III.K.9. The LTS must identify all manmade sources of visibility-impacting pollution that Alaska considered in developing the strategy as well as the measures needed to achieve Alaska's reasonable progress goals. The LTS presented in this section covers the first regional haze planning period, which spans from 2002 to 2018.

#### A. Overview of the Long-Term Strategy Development Process

Alaska is a participant in the Western Regional Air Partnership, which is a major source of technical and policy assistance for the western states in developing regional haze reduction strategies. While Alaska has differences from other states in some of the tools available for use in the regional haze planning process, the following list contains WRAP products that were used by ADEC in developing the LTS. For additional detail on WRAP products, please see the WRAP website at <http://www.wrapair.org>.

- Technical Support System (TSS) – This is a project that provides a single, one-stop shop for access, visualization, analysis, and retrieval of the technical data and regional analytical results prepared by WRAP Forums and Workgroups in support of regional haze planning in the West. The TSS specifically summarizes results and consolidates information about air quality monitoring, meteorological and receptor modeling analyses, and emission inventories and models. <http://vista.cira.colostate.edu/wraptss/>
- Regional Modeling Center (RMC) – The RMC conducted an MM5 Modeling Study and assisted with an Alaska Visibility Modeling Protocol. These reports are posted and available for download. <http://pah.cert.ucr.edu/aqm/308/docs.shtml>
- Visibility Information Exchange Web System (VIEWS) – This data system provides ongoing access to IMPROVE and other visibility monitoring data, research results, and special studies related to regional haze. Downloads of IMPROVE data, custom displays of spatial, chemical, and temporal patterns, as well as information about applying monitoring data for regional haze planning, are available. <http://vista.cira.colostate.edu/views/>
- Causes of Haze Assessment Project (CoHA) – This project provides detailed analyses of IMPROVE and meteorological monitoring data in the WRAP region. It includes multi-year

back trajectory wind plots for each monitored Class I area, trajectory regression analyses' results used in the Phase I attribution of haze project, and extensive descriptive information about the monitoring data and each Class I area. <http://coha.dri.edu/index.html>

- Emissions Data Management System (EDMS) – This data system provides emission inventory data and web-based GIS application with a consistent, complete, and regional approach to emissions data tracking for SIP development, periodic progress reviews, and data updates. The EDMS serves as a central emission inventory database for all types of emissions, and uses associated software to facilitate the data collection efforts for regional modeling, emissions tracking and associated data analyses. [http://wrapdms.org/default\\_login.asp](http://wrapdms.org/default_login.asp)

## **1. Summary of Manmade Sources of Visibility Impairment Considered in the Long-Term Strategy**

Regional Haze Rule Section 51.308(d)(3)(iv) requires the state to identify all anthropogenic, or manmade, sources of visibility impairment considered in developing the LTS. Section III.K.5 of this plan describes emissions within the state and projections of emission changes from manmade sources from 2002 to 2018; Sections III.K.4, III.K.7 and III.K.9 discuss the sources that may be impacting Class I areas in Alaska. Together, these sections show the major manmade source categories impacting Alaska's Class I areas, which are therefore the primary focus of the LTS. All manmade source categories considered are listed below.

- Stationary sources subject to BART requirements
- Non-BART stationary sources
- Smoke from planned burning for agricultural, land clearing, forestry, and habitat management
- On-road and non-road mobile sources
- Area sources
- Construction

## **2. Technical Documentation**

Section 51.308(d)(3)(iii) of the Regional Haze rule requires documentation of the technical basis, including modeling, monitoring, and emission information, on which the State relied upon to determine the apportionment of emission reductions needed to achieve progress goals in each Class I area it affects. Alaska relied on technical information and analysis provided by the WRAP, through various projects and studies conducted by contractors, WRAP staff, and incorporated into the WRAP's TSS website. In addition, ADEC undertook additional analyses in the development of this plan.

Emissions Data – Section III.K.5 describes the emission inventory information for Alaska that was used in developing this plan.

Modeling Techniques – Section III.K.7 describes the source apportionment analysis and approach developed by Alaska, including the use of back trajectory modeling and a Weighted Emission Potential (WEP) tool, for the attribution of sources of sulfate, nitrate, organic carbon, elemental carbon, fine PM, and coarse PM.

Monitoring Data – Section III.K.3 describes the IMPROVE monitoring network and other monitoring data in Alaska. Section III.K.4 provides a summary of monitoring data, trends, and breakdown by pollutant for each of the site locations in Alaska.

## **B. Long-Term Strategy Measures**

Regional Haze Rule Section 51.308(d)(3)(v) lists the following minimum factors that must be considered in development of the Long-Term Strategy:

- Emission reductions due to ongoing air pollution control programs;
- Measures to mitigate the impacts of construction activities;
- Emission limitations and schedules for compliance;
- Source retirement and replacement schedules;
- Smoke management techniques for agricultural and forestry burning;
- Enforceability of emission limitations and control measures; and
- Anticipated net effect on visibility over the period of the long-term strategy.

Consideration of each of these factors is discussed below. In addition, another requirement not specifically referenced in the above list is regional haze BART control. This program is relevant to ADEC's on-going air pollution control programs, and as such will be discussed with the first factor listed above.

### **1. Emission Reductions Due to Ongoing Air Pollution Programs**

Alaska has a number of ongoing programs and regulations that directly protect visibility or provide for improved visibility by generally reducing emissions. This summary does not attempt to estimate the actual improvements in visibility at each Class I area that will occur between 2002 and 2018, because existing technical tools are inadequate to accurately do so. The visibility benefits from these programs are secondary to the primary health-based air pollution objectives of these programs and rules.

#### **a. Prevention of Significant Deterioration/New Source Review Regulations**

The two primary regulatory programs for addressing visibility impairment from industrial sources are BART and the Prevention of Significant Deterioration/New Source Review (PSD/NSR) rules. The PSD/NSR rules protect visibility in Class I areas from new industrial sources and major changes to existing sources. Alaska's regulations (18 AAC 50 Article 3) and SIP require visibility impact assessment and mitigation associated with emissions from new and modified major stationary sources through protection of air quality related values (AQRVs). AQRVs are scenic and environmentally related resources that may be adversely affected by a

change in air quality, including visibility, odor, noise, vegetation, and soils. These visibility requirements were approved by EPA in 1983.

Alaska's continued implementation of New Source Review and Prevention of Significant Deterioration requirements with Federal Land Manager involvement for Class I area impact review will assist in maintaining the least impaired days from further degradation and assure that no Class I area experiences degradation in visibility resulting from expansion or growth of stationary sources in the state.

#### **b. Reasonably Attributable Visibility Impairment BART Requirements**

Federal regulations at 40 CFR 51.305-51.306 contain requirements for the purposes of addressing —reasonably attributable‖ visibility impairment at each Class I area. These requirements included a three-step process to address visibility degradation from identifiable stationary sources:

1. Federal Land Manager (FLM) —certifies‖ impairment.
2. State makes a determination as to whether impairment can be —reasonably attributable‖ to one or a small group of stationary sources.
3. If the state determines that impairment is attributable to a source or small group of sources, the state undertakes a Best Available Retrofit Technology (BART) analysis to arrive at the appropriate control level.

It should be noted that the —reasonably attributable‖ BART requirements are separate and distinct from the Regional Haze BART requirements discussed in Section III.K.6. While both apply to existing industrial sources, the reasonably attributable BART requirements are triggered by a —certification‖ by the Federal Land Manager that visibility impairment exists in a federal Class I area. Upon such a certification, ADEC is required to make a determination of impairment attributable to a source and then analyze BART for the contributing source.

To date, ADEC has not made any determinations of —reasonably attributable‖ impairment for Alaska Class I areas. However, concerns related to a PSD permit issued to the Golden Valley Electric Association, Inc for the Healy Power Plant in 1994 resulted in evaluation and mitigation of potential impacts for that facility on the Denali Class I area.

ADEC issued Golden Valley Electric Association, Inc. (GVEA), a permit to operate the Healy Clean Coal Project (HCCP) in May 1994. The HCCP is located in Healy, Alaska, approximately 3.8 miles from the border of Denali National Park and Preserve. Through ADEC's PSD permit process, the Department of the Interior (DOI) and EPA offered recommendations and conducted independent modeling assessments. In the opinion of ADEC, modeling results demonstrated little potential for visibility impact from plumes and haze derived from proposed HCCP operations. The DOI appealed the issuance of a final permit in March 1993. Eventually, a Memorandum of Agreement was signed between the DOI, DOE, and GVEA to address visibility concerns and allow issuance of the permit.

ADEC issued a final permit to operate on May 6, 1994. GVEA agreed to retrofit its old generator, Unit #1, with low-NO<sub>x</sub> burners, and use overfire air, if feasible. It was to inject sorbent (FCM or lime) into Unit #1 to control SO<sub>2</sub> emissions. GVEA accepted facility-wide emission levels of 1,439 tpy for NO<sub>x</sub> and 721 tpy for SO<sub>2</sub>. If a visible plume were detected, GVEA would reduce combined emissions from permitted levels to 200 lbs/hr for NO<sub>x</sub> and 150 lbs/hr for SO<sub>2</sub>, for 12 hours. It was to continue in 12-hour increments until the plume was no longer observed.

### **c. Regional Haze BART Control**

Section 51.308(e) of the rule includes the requirements for states to implement Best Available Retrofit Technology for eligible sources within the State that may reasonably cause or contribute to any impairment of visibility in any mandatory Class I area. The installation of BART emission limits is an integral part of the state's LTS. ADEC established regulations in 18 AAC 50.260 establishing the guidelines for BART under the regional haze rule. ADEC has completed analysis of the identified BART-eligible sources in Alaska and has conducted four-factor analyses and established BART emission limits per the regulations. Each source subject to BART is required to install and operate BART as expeditiously as practical, but in no event later than January 1, 2015, or five years after the EPA approval of this implementation plan, whichever occurs first. Once controls are implemented, facilities subject to BART must ensure that control equipment is properly operated and maintained. Regional haze BART outcomes and emission limits are discussed in detail in Section 6 III.K.6 of this plan. The BART limitations will result in long-term visibility improvements to two of Alaska's Class I areas: Denali National Park and Tuxedni National Wildlife Refuge.

ADEC originally identified seven industrial facilities with units determined to be eligible for BART:

- Anchorage Municipal Light and Power, George Sullivan Plant 2;
- Golden Valley Electric Association, Healy Power Plant (GVEA);
- Agrium, Chemical-Urea Plant;
- Alyeska Pipeline Service Company, Valdez Marine Terminal;
- ConocoPhillips Alaska Inc., Kenai LNG Plant (CPAI);
- Tesoro, Kenai Refinery; and
- Chugach Electric, Beluga River Power Plant.

These facilities were notified of the eligible units in 2007. It was subsequently determined that the Chugach Electric Beluga River Power Plant was actually not BART-eligible due to replacement of the originally identified units. The six remaining facilities were determined to have BART eligible units and followed the requirements of 18 AAC 50.260.

Details on the full BART process and the BART determinations for each facility are included in Section III.K.6. The table below summarizes in general terms the outcome of the BART process for each facility.

<b>Facility</b>	<b>Subject to BART Analysis</b>	<b>BART Determination</b>
Alyeska, Valdez Marine Terminal	No: Modeled visibility impacts less than 0.5 deciview	N/A
Tesoro, Kenai Refinery	No: Modeled visibility impacts less than 0.5 deciview	N/A
Anchorage Municipal Light and Power, Sullivan Plant	No: Modeled visibility impacts less than 0.5 deciview	N/A
CPAI, Kenai LNG Plant	No: COBC limits emissions from units to levels that would have modeled visibility impacts less than 0.5 deciview	N/A – Handled by COBC
Agrium, Chem-Urea Plant	Yes	Facility is currently shutdown – zero emission limit for BART eligible units
GVEA, Healy Power Plant	Yes	NOx: 0.20 lbs/MMBtu SO <sub>2</sub> : 0.30 lb/MMBtu PM: 0.015 lb/MMBtu

#### **d. Operating Permit Program and Minor Source Permit Program**

DEC implements a Title V operating permit program as well as a minor source permit program for stationary sources of air pollution. The Title V permits are consistent with the requirements of 40 CFR Part 71 and requirements are found in 18 AAC 50 Article 3, Major Stationary Source Permits. The requirements for minor source permits are found in 18 AAC 50 Article 5, Minor Permits. Sources that may be required to obtain minor permits include asphalt plants, thermal soil remediation units, rock crushers, incinerators, coal preparation plants, or a Port of Anchorage stationary source. Minor permits are required for new or existing sources with a potential to emit above specific thresholds before construction, before relocating a portable oil and gas operation, or before beginning a physical change or change in the method of operation. Details are included in the state regulation.

These permit programs, coupled with PSD/NSR requirements, serve to ensure that stationary industrial sources in Alaska are controlled, monitored, and tracked to prevent deleterious effects of air pollution. Given the level of visibility impairment at Alaska's Class I areas, the sources that have been found to be significant contributors to that impairment, and the uncertainty of the technical information and analyses, ADEC believes that at this time the existing stationary source controls, coupled with regional haze BART controls (described above), will be adequate for the purposes of reducing visibility impairment on the worst visibility days and maintaining visibility on the best visibility days in Alaska Class I areas. ADEC will continue to assess and evaluate the impacts of stationary sources on Class I area visibility in future SIP revisions and will consider whether additional controls are warranted for stationary sources to insure reasonable progress in the long term.

### **e. Alaska Open Burning Regulations**

Smoke from wildland fires are a major contributor to visibility impairing air pollution in Alaska communities and mandatory federal Class I areas. Alaska has previously established open burning regulations in 18 AAC 50.065 and included open burning requirements in the State Implementation Plan (Volume II, Section III.F) to reduce and prevent particulate matter emissions from impacting public health. These requirements will now protect visibility impairment in Class I areas as well.

18 AAC 50.065 provides ADEC with the authority to require approvals for controlled burning to manage forest land, vegetative cover, fisheries, or wildlife habitat if the area to be burned exceeds 40 acres yearly. The regulations also provide for department approvals for open burns for firefighter training exercises. This existing program, coupled with the state's Enhanced Smoke Management Plan (described later in this subsection), provides for control of visibility impairing pollutants resulting from planned open burning. It should be noted that wildfire emissions typically dwarf planned burn emissions in any given year. Wildfires can occur in proximity to Class I areas or their smoke may be transported long distances resulting in visibility impacts. Section III.K.4 describes the impact from smoke emissions in Class I areas.

### **f. Local, State and Federal Mobile Source Control Programs**

Mobile source emissions show decreases in NO<sub>x</sub>, SO<sub>2</sub>, and VOCs in Alaska during the period 2002-2018. This decline in emissions is due to numerous rules already in place, most of which are federal regulations.

The State of Alaska has established regulations related to mobile sources that primarily impact the Fairbanks and Anchorage CO maintenance areas, Alaska's two largest cities. These regulations include local inspection and maintenance (I/M) programs (18 AAC 52), which have been in effect since the 1980s and that are described in Volume II, Sections III.A-C, of the Alaska Air Quality Control Plan. The local I/M programs may be suspended in the CO maintenance areas following approval by EPA of a revised SIP. The Fairbanks program was suspended in January 2010. The Anchorage program remains in effect, but may be suspended in the future pending local air quality planning decisions and federal approval. Alaska regulations (18 AAC 53) also provided for an oxygenated fuel program in Anchorage, which was suspended in 2004. These programs have resulted in NO<sub>x</sub> and hydrocarbon emission reductions from motor vehicles in Alaska's largest communities.

The Federal Motor Vehicle Control Program (FMVCP) is the federal certification program that requires all new cars sold in 49 states to meet specific emission standards. (California is excluded because it has its own state-mandated certification program.) As part of the FMVCP, all new cars must meet their applicable emission standards on a standard test cycle called the Federal Test Procedure (FTP). These standards vary according to vehicle age, with the newer vehicles required to be considerably cleaner than older models. The result of this decline over time in allowable emissions from newly manufactured vehicles has been a drop in overall emissions from the vehicle fleet, as older, dirtier vehicles are replaced with newer, cleaner vehicles.



EPA's Tier 2 emission standards for passenger cars, light trucks and larger passenger vehicles are focused on reducing emissions most responsible for ozone and particulate matter (i.e., nitrogen oxide or NO<sub>x</sub> and hydrocarbon or HC emissions). The control equipment introduced to meet these standards will result in reductions in visibility impairing pollutants. Mandated reductions in the sulfur content of gasoline will further enhance the performance of this equipment. This will also reduce emissions from the existing fleet of gasoline-powered vehicles by reducing the deterioration of catalytic converters.

Various federal rules establishing emission standards and fuel requirements for diesel onroad and nonroad equipment will significantly reduce emissions of particulate matter, nitrogen oxides, and sulfur oxides from emission sources over the first planning period. Prior to 2006, Alaska had fuel sulfur exemptions from the EPA for mobile sources. In June 2006, EPA finalized a rule in 40 CFR Part 69 for controlling air pollution from motor vehicles and nonroad diesel engines allowing an alternative low-sulfur diesel transition for Alaska (<http://www.epa.gov/EPA-AIR/2006/June/Day-06/a5053.htm>). This rule kept urban/road system portions of Alaska on the national rule's timeline but allowed for flexibility and some additional time for rural Alaska to fully comply. By 2010, all onroad and nonroad diesel engines in Alaska must meet EPA's national requirements for 15 ppm S diesel fuel. In addition to the regulatory programs, ADEC is also promoting voluntary projects to reduce diesel emission reductions throughout the state.

In addition to the federal and state programs described above, the two CO maintenance areas in Fairbanks and Anchorage have local programs to address mobile source emissions that will also reduce visibility impairing pollutants. Both communities have transit programs that assist in reducing vehicle emissions in their respective areas. In Anchorage, specific local programs included in the SIP are a vanpool/ridesharing program, which reduces overall vehicle miles travelled, and efforts to encourage the use of block heaters in the winter to reduce cold start emissions from motor vehicles. In Fairbanks, the local —plug-in— program for engine block-heater use and electrification of parking lots also assists with reducing mobile source emissions from cold starts.

#### **g. Implementation of Programs to Meet PM<sub>10</sub> NAAQS**

The community of Eagle River and the Mendenhall Valley in Juneau are either currently or formerly nonattainment areas with respect to the NAAQS for coarse particulate matter (PM<sub>10</sub>). These areas exceeded the standards due primarily to wood burning and road dust sources. Other communities in Alaska face similar problems, particularly with regards to road dust. Both wood burning and road dust sources can contribute to visibility impairment. While most of Alaska's communities are not in close proximity to Class I areas, improvements made through PM control programs—such as wood smoke control, road paving, or dust suppression—may assist in mitigating visibility impacts, depending on the proximity to Class I areas.

In addition to the ongoing emission reductions in PM<sub>10</sub> nonattainment and maintenance areas, ADEC has a new PM<sub>2.5</sub> nonattainment area in the Fairbanks North Star Borough, which will require the adoption of new measures to reduce emissions.

## **2. Measures to Mitigate Impacts of Construction Activities**

In developing this LTS, ADEC has considered the impact of construction activities on visibility in Alaska's Class I areas. Alaska's Class I areas are remote with little to no significant growth in close proximity to each area. Based on this general knowledge of growth and construction activity in Alaska, and without conducting extensive research on the contribution of emissions from construction activities on visibility, ADEC believes that current state and federal regulations already adequately address this emission source.

State regulations contained at 18 AAC 50.045(d) require that entities who cause or permit bulk materials to be handled, transported, or stored or who engage in industrial activities or construction projects shall take reasonable precautions to prevent particulate matter from being emitted into the ambient air. This regulation allows the state to take action on fugitive dust emissions from construction activities.

In addition to state regulation, federal rules establishing emission standards and fuel requirements for diesel non-road equipment will significantly reduce emissions of particulate matter, nitrogen oxides, and sulfur oxides from emission sources in the construction sector over the first planning period. Prior to 2006, Alaska had fuel sulfur exemptions from the EPA for mobile sources. In June 2006, EPA finalized a rule in 40 CFR Part 69 for controlling air pollution from motor vehicles and nonroad diesel engines allowing an alternative low-sulfur diesel transition for Alaska (<http://www.epa.gov/EPA-AIR/2006/June/Day-06/a5053.htm>). This rule kept urban/road system portions of Alaska on the national rule's timeline but allowed for flexibility and some additional time for rural Alaska to fully comply. By 2010, all onroad and nonroad diesel engines in Alaska must meet EPA's national requirements for 15 ppm S diesel fuel.

## **3. Emission Limitations and Schedules for Compliance**

Promulgated state and federal regulations under the Clean Air Act have unique emission limits and compliance schedules specified for the affected sources. These limitations and schedules are identified in the specific rules. The schedules for compliance in implementing BART controls are described in Section III.K.6. ADEC's four-factor analysis did not identify any additional measures that were appropriate to implement during this first regional planning period. As a result, no other emission limitations or schedules of compliance are included in this plan. It is anticipated that further evaluation of control programs for future SIP updates may identify additional emission controls that could be implemented. Emission limitations and compliance schedules will be included as needed during the periodic plan updates.

## **4. Source Retirement and Replacement Schedules**

The construction of new sources to replace older, less well-controlled sources can aid in progress toward achieving visibility goals. Alaska's continued implementation of NSR and PSD requirements with FLM involvement for Class I area impact review will assist in maintaining the least impaired days from further degradation and assure that no Class I area experiences degradation in visibility resulting from expansion or growth of stationary sources in the state.

ADEC will continue to track source retirement and replacement and include known schedules in periodic revisions to this plan.

## **5. Smoke Management Techniques for Agricultural and Forestry Burning**

SIP requirements related to smoke management are found in Section 308(d)(3)(iv)(E) of the Regional Haze rule. Smoke from wildland fires is a major contributor to visibility impairing air pollution in Alaska, including in Class I areas. Alaska's implementation of effective smoke management techniques through regulation and an Enhanced Smoke Management Plan will mitigate impacts of planned burning on visibility in Class I areas.

As described previously, ADEC has regulations related to open burning in 18 AAC 50.065 and included open burning requirements in the SIP (Volume II, Section III.F). ADEC requires approvals for open burning or controlled burning to manage forest land, vegetative cover, fisheries, or wildlife habitat if the cumulative area to be burned exceeds 40 acres yearly. ADEC also requires approvals for open burns for firefighter training exercises. In addition to this ongoing regulation, ADEC has developed and implemented an Alaska Enhanced Smoke Management Plan (ESMP) and is including this plan as part of this long-term strategy. Open burn approvals require that entities conducting planned burns follow the provisions in the ESMP.

ADEC works cooperatively with the Alaska Wildland Fire Coordinating Group (AWFCG) to address air quality impacts from wildland fire through the ESMP. The AWFCG was formed in 1994 and provides a forum that fosters cooperation, coordination and communication for wildland fire and for planning and implementing interagency fire management statewide. The AWFCG membership includes state, federal and Native land management agencies/owners that have fire management responsibilities for the lands they manage/own.

One of the objectives of the AWFCG is to provide a forum for anticipating smoke intrusions into sensitive areas, including communities and Class I areas; resolving on-going smoke management issues; and improving smoke management techniques. Another objective is to ensure that prescribed fire, as a tool to reduce risk and/or future smoke emissions, is considered by ADEC when promulgating policy, procedures and regulations. Without the use of prescribed fire on the landscape, the state could see large, catastrophic fires whose smoke would create larger impacts on Alaskans and Class I areas than the smoke of controlled burns. The AWFCG Smoke Management/Air Quality Committee addresses the AWFCG smoke management objectives and assists ADEC with the development and revision of the ESMP for Prescribed Fire and propagation of policies, procedures and regulations related to smoke management.

The ESMP helps fulfill Alaska's responsibilities for protection of air quality and human health under federal and state law and reflects the Clean Air Act requirement to improve regional haze in Alaska's Class I areas. The ESMP outlines the process, practices and procedures to manage smoke from prescribed and other open burning and identifies issues that need to be addressed by ADEC and land management agencies or private landowners/corporations to help ensure that prescribed fire (e.g. controlled burn) activities minimize smoke and air quality problems. The ESMP provides accurate and reliable guidance and direction not only to and from the fire authorities who use prescribed fire as a resource management tool, but also to the private landowners and/or corporations who conduct agricultural or land-clearing burns. The ESMP

describes and clarifies the relationship between fire authorities and ADEC. These agencies must work together effectively to combine planned burning, resource management and development with smoke, public health and Class I area visibility goals.

Alaska's ESMP was last adopted by the AWFCG **June 3, 2015** ~~in June 2009~~ and is evaluated annually by the AWFCG and interested parties. The ESMP may be revised annually as needed, but will be revised at least every 5 years in accordance with EPA's Interim Policy on Wildland and Prescribed Fires. The ESMP dated **June 3, 2015** ~~June 2009~~ is included in Appendix III.K.8 (please note that this plan may be revised annually based on routine evaluation of its effectiveness).

## **6. Enforceability of Emission Limitations and Control Measures**

Section 51.308(d)(3)(v)(F) of the Regional Haze Rule requires that emission limitations and control measures used to meet reasonable progress goals be enforceable. Enforceability of BART emission limits will occur through this SIP rule and Alaska regulations (18 AAC 50.260). Alaska has ensured that all emission limits and control measures used to meet reasonable progress goals are enforceable by embodying these in state regulation (18 AAC 50). ADEC has adopted this Regional Haze Plan into the Alaska Air Quality Control Plan (Alaska's State Implementation Plan) at 18 AAC 50.030, which ensures that all elements in the plan are enforceable.

## **7. Anticipated Net Effect on Visibility Over the Period of the Long-Term Strategy**

The anticipated net effect on visibility from emission reductions by point, area, and mobile sources during the period of the LTS is estimated in Section III.K.9. The reasonable progress demonstration, based on monitoring, emission inventory, and modeling projections, indicates that measures included in the long term strategy provide for an improvement in visibility on the 20% worst days consistent with the uniform rate of progress target in 2018.

The results of the reasonable progress demonstration in Section III.K.9 show many anthropogenic emission sources declining significantly in Alaska through 2018. Overall visibility benefits of these reductions are somewhat offset, however, by emissions from natural sources such as wildfire and dust, and other uncontrollable sources. This includes international sources in Canada Asia, and Europe, global transport of emissions, and offshore shipping in the Pacific Ocean. Despite this, it is clear that visibility improvements will be made due to the control of BART sources, as well as numerous on-the-books regulations such as state and federal mobile source rules, the marine emission control area, smoke management, and other elements contained in the LTS that address PM<sub>2.5</sub> over the next five to ten years and may provide additional improvements by 2018.

As part of the requirement to submit five-year progress reports on this plan, ADEC will include in the five-year update any additional visibility improvements expected due to updated or new information related to the demonstration of reasonable progress in Section III.K.9 of this plan.