

APPENDIX B

Regional Haze State Implementation Plan ***SIP Revision for RAVI Long Term Strategy***

LONG-TERM STRATEGY REVISION
OF
COLORADO'S STATE IMPLEMENTATION PLAN
FOR CLASS I AREA VISIBILITY PROTECTION
ADDRESSING REASONABLY ATTRIBUTABLE
IMPAIRMENT

July 2007
(Updated October 2007)

This document is the Phase I Long-Term Strategy (LTS) revision of the State Implementation Plan of Colorado's Class I Visibility Protection Program addressing reasonably attributable visibility impairment (RAVI). The Phase I RAVI LTS review is a separate document and contains background information and the review/report sections as required by EPA and State law.

The State is adopting this SIP revision in order to update the LTS. This SIP revision is intended to amend the 2004 LTS portion of the Class I Visibility SIP.

References in this SIP revision to Colorado Air Quality Control Commission Regulation No. 9 (Open Burning, Prescribed Fire, and Permits) are intended only to provide information about the location of various aspects of Colorado's smoke management program. Regulation No. 9 is neither being submitted for EPA approval nor incorporated into the SIP by reference. It implements Colorado's program and is not federally required. The State is precluded from submitting this Regulation No. 9 for incorporation into this SIP by C.R.S. 25-7-105.1.

The State of Colorado believes the strategies, activities, and plans outlined below in sections for Existing Impairment, Prevention of Future Impairment, Smoke Management, and Consultation and Communication with Federal Land Managers constitute reasonable progress toward the national visibility goal under Phase I. The following Long-Term Strategy addresses the visibility issues that currently face the State of Colorado's Class I units within the framework of EPA's Phase I of the visibility protection program. The six factors required by the EPA to be considered in a LTS are embedded within the strategies below and marked with an asterisk for reference.

=====

I. EXISTING IMPAIRMENT.

The LTS must have the capability of addressing current and future existing impairment situations as they face the State. Generally, Colorado considers that its Air Quality Control Commission, Regulation No. 3, Part B, §XIV.D (“Existing Impairment”) meets this long-term strategy requirement regarding existing major stationary facilities. The State believes that its existing regulations along with the strategies and activities outlined below have together provided for reasonable progress toward the national visibility goal.

A. Existing Impairment and the Mt. Zirkel Wilderness.

1. The Certification.

The U.S.D.A. Forest Service (USFS) concluded in its July 1993 certification letter to the State of Colorado that it was reasonable to believe that visibility impairment existed in the Mt. Zirkel Wilderness Area (MZWA) and that local existing stationary sources, the Craig and Hayden power stations, contributed to the problem.

2. Reasonable Progress for the Mt. Zirkel Wilderness.

a. Hayden.

The certification of impairment made by the USFS regarding the Hayden Station was resolved through a settlement process that began in late 1995. An agreement, the Hayden Consent Decree, was approved by the federal district court on August 19, 1996. The agreement was between the Sierra Club, State of Colorado, owners of Hayden Station, and Environmental Protection Agency/Department of Justice. The Decree was intended to resolve a number of issues, including a Sierra Club lawsuit against the Hayden Station, the needs of the State’s visibility regulatory program in relation to Hayden, and an EPA complaint against the facility. In addition, the Decree was intended to make progress toward reducing acid deposition in the Mt. Zirkel Wilderness.

Emission limitations, construction schedules, and reporting requirements taken from the Hayden Consent Decree were incorporated into the Visibility SIP by the AQCC. The State believes that these significant emission reductions will effectively eliminate the visibility impairment in the MZWA that could be associated with the Hayden Station. The State further believes that the Hayden Consent Decree effectively resolves the certification of impairment brought by the USFS against the Hayden Station. The Forest Service has indicated that its complaint against Hayden has been satisfied. EPA approved this SIP amendment on January 16, 1997.

The construction of Hayden’s control equipment progressed ahead of schedule. All compliance dates in the SIP and Consent Decree were met and emission limitations for NO_x, SO₂, opacity, and particulate matter are being achieved. The relevant emission limitations and monitoring requirements have been moved into the facility’s Title V operating permit and the permit has been issued. As a result, the Consent Decree has been terminated by the court.

b. Craig Generating Station (Yampa Project).

The certification of impairment made by the USFS regarding the Craig Station Units 1 and 2 was also resolved through a settlement process that began in Fall 1999.

After Hayden was resolved in August 1996, the State’s attention turned to Craig Station

Units 1 and 2. In addition to the State and the USFS visibility certification, there are other issues concerning the emissions from Yampa Valley power plants. The USFS has strong concerns about local emissions of SO₂ and NO_x that may be associated with acid deposition and aquatic and terrestrial ecosystem effects in the MZWA. As well, a citizen lawsuit under the Clean Air Act by the Sierra Club directed against Craig Station Units 1 and 2 regarding opacity issues was initiated in late 1996.

After several years of preliminary efforts, studies and workshops, in Fall 1999 the Sierra Club, Craig Owners, EPA, the State, and the USFS began global settlement talks with an independent mediator. The Craig owners and Sierra Club concluded a Consent Decree and filed it with the federal district court on January 10, 2001. It was approved by the court on March 19, 2001. The State resolved the certification of impairment in relation to Units 1 and 2 of Craig Station by the AQCC adopting emission limitations, schedules, and reporting requirements from the Craig Consent Decree into the Visibility SIP. The Forest Service concluded that all of its concerns related to the Craig Station and the 1993 Certification of Impairment are now resolved. Work was completed on Unit 1 during 2003 and on Unit 2 in 2004. All compliance dates in the SIP and Consent Decree were met and the emission limitations for NO_x, SO₂, opacity, and particulate matter have been consistently achieved in actual operation. The relevant emission limitations and monitoring requirements have been moved into the facility's Title V operating permit and the permit has been issued. As a result, the Consent Decree has been terminated by the court.

3. BART and Emission Limitations.

Although BART determinations were not made by the State regarding Hayden and Units 1 and 2 of Craig generating stations, emission limitations* for the two power plants were incorporated into the LTS SIP in August 1996 (Hayden) and April 2001 (Craig Units 1 and 2) and these SIP revisions remain incorporated into the Colorado SIP. These SIP amendments also address the enforceability of Hayden's and Craig's emission limitations* (the dates when the facilities must comply with emission limitations and the enforcement structure have been previously adopted into this LTS). Source retirement and replacement* and construction activities* are not required in the SIP or LTS at this time as the Division is unaware of any relevant issues triggering such a necessity.

a. Hayden's Emission Limitations.

The contents of the August 1996 LTS SIP revision incorporating emission limitations, construction and compliance schedules, and reporting requirements for Hayden generating station Units 1 and 2 are incorporated into this LTS SIP by reference.¹ EPA approved this SIP amendment on January 16, 1997.²

b. Craig's Emission Limitations.

The contents of the April 2001 LTS SIP revision incorporating emission limitations, construction and compliance schedules, and reporting requirements for the Craig generating station Units 1 and 2 are incorporated into this LTS SIP by reference. The SIP revision was adopted by the AQCC on April 19, 2001³ and EPA published final approval of the SIP amendment after a public comment period on July 5, 2001.⁴

* A factor that must be considered in a LTS SIP revision according to EPA regulation.

4. Monitoring.

It is important to track the effects of the emission changes on visibility and other Air Quality Related Values in and near Mt. Zirkel Wilderness Area. The Division commits to coordinating a monitoring strategy with other agencies and providing periodic assessments of various monitored parameters in “before” compared to “after” emission reductions periods. The Division worked collaboratively in 2005 with the U. S. Geological Survey to assess the effects of Hayden’s emission reductions. The Division plans on conducting a more comprehensive evaluation of both Craig’s and Hayden’s effects combined. This work should be completed in 2009 after a suitable period of data has been collected.

B. Other Stationary Sources and Colorado Class I Areas and Additional Emission Limitations and Schedules for Compliance*.

There are no outstanding certifications of visibility impairment in Colorado. In addition, the Division has found no evidence that other stationary sources potentially subject to BART may reasonably be attributed to cause or contribute to visibility impairment at MZWA or any other Class I area in Colorado under Phase I of EPA’s visibility program. The USFS certification of visibility impairment at Mt. Zirkel Wilderness Area has been completely resolved. The Division recognizes that regional haze impacts all of Colorado’s Class I areas, including MZWA. The State is prepared to respond to any future certifications as per AQCC Regulation No. 3 § XIV.D.

C. Ongoing Air Pollution Programs*.

1. PM₁₀.

The State of Colorado has attained and maintained the PM₁₀ standard in its non-attainment areas throughout the State. PM₁₀ attainment and maintenance plans have been approved by EPA for Aspen, Canon City, Denver, Lamar, Pagosa Springs, Steamboat Springs, and Telluride. These various plans contain numerous air pollution control programs that are effectively reducing emissions. The attainment and maintenance of the PM₁₀ standard will likely have some small effect (since the standard is only rarely exceeded) on improving visibility in pristine and scenic areas. The Division is committed to maintaining the PM₁₀ standard throughout the State.

2. Urban Haze -- Brown Cloud.

There is a concern about urban haze in the eastern Front Range urban corridor from the Denver metropolitan area to Fort Collins. This Front Range area is approximately 25-50 miles from Rocky Mountain National Park, a Class I area. The National Park Service, the federal land manager of the Park, has not certified visibility impairment in the Park. Analysis of urban Brown Cloud data in Denver indicates it has improved approximately 28% between 1991 and 2003. Poor data collection from the transmissometer since 2003 has impeded more recent analyses. The Division will provide periodic trend analysis of the urban Brown Cloud as data permits and continue to provide technical support to efforts to understand and reduce the Brown Cloud.

3. Emissions in the Four Corners Area.

The cumulative growth of many minor sources of air pollution, including mobile, area and

* A factor that must be considered in a LTS SIP revision according to EPA regulation.

stationary sources, can slowly lead to degradation of air quality and have visibility impacts. Federal land managers have commented in previous Phase I LTS review/revision cycles regarding concerns about the cumulative emissions and their possible impacts on Class I areas in the southwest portion of Colorado.

In response to these challenges, the affected states, tribes and federal land managers in the region have come together to plan for control strategies for future air quality impacts from development. The concept of a Task Force emerged that would allow for a broad and inclusive collaborative process to regional air quality planning. An executive/steering committee of the Four Corners Task Force that includes representatives from the states of Colorado, New Mexico, and Utah, the U.S. Environmental Protection Agency, the U.S. Department of Agriculture - Forest Service, and the U.S. Department of the Interior - National Park Service and the Bureau of Land Management has been formed to help guide the Task Force's progress. Timelines for workgroup deliverables are being developed to ensure that all options developed are timely. The Task Force will work over a two-year period and deliver a final report by December 2007. The Division commits to continue to staff and support the Task Force as needed and follow through on action items coming from its final report.

4. Plan for Rocky Mountain National Park.

The National Park Service (NPS), other federal agencies, and academic researchers have actively pursued ecosystem and air quality monitoring and data collection programs in and near the Park for over twenty years. Findings from these data published in over 80 peer reviewed research articles document ecosystem changes from nitrogen (N) deposition on the east side of the Continental Divide including changes in the type and abundance of aquatic plant species, elevated levels of nitrate in surface waters, elevated levels of N in spruce tree chemistry, long-term accumulation of N in forest soils, and a shift in alpine tundra plant communities favoring sedges and grasses over the natural wildflower flora.

The Rocky Mountain National Park Initiative was created to study and promote action to remedy air quality issues facing the Park, primarily the adverse ecosystem impacts from increasing nitrogen deposition. Other air quality issues are being addressed by other means: visibility impairment by the regional haze program development and Early Action Compact/SIP preparation for ozone.

Using a collaborative approach, the participating agencies -- the Colorado Department of Public Health and Environment (CDPHE), the U.S. Environmental Protection Agency Region 8 (EPA), and the NPS -- have worked effectively to develop a Nitrogen Deposition Reduction Plan (Plan or NDRP). A public participation process facilitated by a Colorado Air Quality Control Commission (AQCC) Subcommittee has helped to involve the public, and a memorandum of understanding (MOU) has been used by the involved agencies to guide the Initiative's progress leading to development of the Plan.

The agencies have initially focused their efforts in developing the Plan on voluntary approaches first, together with programs that are pending or under way, in lieu of developing a new regulatory program to achieve nitrogen deposition reductions. The agencies believe this strategy has the potential to provide benefits in the near term to reducing nitrogen deposition. However, the agencies support a process to require regulatory measures specific to reducing nitrogen deposition if voluntary and anticipated reductions prove insufficient in making planned progress goals under this Plan. Development and implementation of a contingency plan is one

mechanism supported by the agencies to ensure reduction of adverse ecosystem impacts in RMNP.

The NDRP was approved by the AQCC in April 2007. Implementation of the Plan will likely benefit visibility at RMNP to an unknown degree. The Division maintains a website that is a clearinghouse for information related to the Initiative. The Division commits to continued participation in the process to implement the Plan.

II. PREVENTION OF FUTURE IMPAIRMENT.

The LTS must establish mechanisms to address the prevention of future impairment and outline strategies to ensure progress toward the national goal.

A. Ongoing Air Pollution Programs*.

1. PSD and NSR.

Generally, Colorado considers that its NSR and PSD programs meet the long-term strategy requirements for preventing future impairment from proposed major stationary sources or major modifications to existing facilities. The State believes that its existing regulations along with the efforts outlined below have together provided for reasonable progress toward the national visibility goal.

a. Modeling.

The Division has published modeling guidance that presents methods for estimating impacts from stationary sources of air pollution. The guidance is intended to help permit applicants, air quality specialists, and others understand the Division's expectations for the ambient air impact analysis and to prevent unnecessary delays in the permit process. It provides a starting point for modeling, but allows the use of professional judgment. The guidance contains sections on visibility modeling. In 2001, a technical peer review of the guidance was completed. A more general public review process was finished toward the end of that year. The finalized and updated (as of December 27, 2005) guidance document is available via the Air Pollution Control Division's web site at: <http://apcd.state.co.us/permits/cmng.html> The Division will continue to update its modeling guidance as needed to insure estimated impacts are projected in as technically sound a manner as reasonably possible.

III. SMOKE MANAGEMENT PRACTICES*.

The LTS requires that smoke management practices of prescribed burning be addressed.

A. The Colorado Smoke Management Memorandum of Understanding and AQCC Regulation No 9.

Until 2002, Colorado's open burning regulation did not specifically address wildland prescribed fire. In this absence, operational understandings evolved over many years between the Division and the users of prescribed fire for grassland and forestland management. Until January 2002, these understandings regarding the details of permitting and reporting of prescribed fire activity were contained in the Colorado Smoke Management Plan and Memorandum of Understanding (MOU). The Colorado Department of Public Health and

* A factor that must be considered in a LTS SIP revision according to EPA regulation.

Environment, the Forest Service, National Park Service, Bureau of Land Management, Fish and Wildlife Service, Air Force Academy, U.S. Army (Fort Carson), U.S. D.O.E. Rocky Flats Field Office, City of Boulder Wildland Fire Department, Colorado Division of Wildlife, and the Colorado State Forest Service were voluntary signatories to the MOU. The AQCC adopted Regulation No. 9 (Open Burning, Prescribed Fire and Permitting) on January 17, 2002. Adopting this regulation includes the voluntary requirements contained in the MOU and applies them to all users of prescribed fire. In addition, the regulation implements Senate Bill 01-214. Overall, Regulation No. 9 is the main vehicle in Colorado for addressing smoke management from general open burning as well as prescribed wildland burning.

B. SB01-214 and Smoke Management Program Development.

Colorado Senate Bill 01-214 (“Concerning the Application of State Air Quality Standards to the Use of Prescribed Fire for Management Activities Within the State and Making an Appropriation Therefor”) became law in 2001. Regulations implementing it were adopted as part of Regulation No. 9. The statute and implementing regulations require significant users of prescribed fire for grassland and forestland management to conform to the State standard to “minimize emissions using all available, practicable methods that are technologically feasible and economically reasonable in order to minimize the impact or reduce the potential for such impact on both the attainment and maintenance of national ambient air quality standards and achievement of federal and state visibility goals.” All significant users are to submit planning documents to the Commission. The regulation asks that planning documents explain the decision process and criteria the significant user applies to making choices about fuel treatment alternatives to achieve various land management goals and must demonstrate how the significant user will comply with the State standard. Each planning document will have a public hearing before the AQCC. The AQCC is to review and make recommendations and comments for each planning document. Starting in July 2002, the Division cannot issue burning permits to any significant user of prescribed fire if their plan for an area is not consistent with Commission comments and recommendations. The Commission has had hearings on the planning documents of the U.S.D.A. Forest Service, U.S.D.I. Bureau of Land Management, Colorado Division of Wildlife, U.S.D.I. National Park Service, U.S.D.O.D. Fort Carson, U.S.D.I. Fish and Wildlife Service, U.S.D.O.D. Air Force Academy, Jefferson County, Banded Peak Area Ranches, Colorado State Parks, Colorado State Land Board, the Forbes/Trinchera Ranch, and the Denver Water Board.

The statute also requires fees. Regulation No. 9 specifies that significant users shall pay fees of \$59.98/hour to the Division for review of planning documents. Prescribed fire permittees also pay for the cost of the prescribed fire program based on a cost distribution methodology described in the regulation. The cost of the program is currently about \$175,000 annually.

It is the State’s intention that through this processes described above, the plans and practices of significant users will continue to consider air quality and visibility concerns into their fuel management decision making.

The Division will also continue to annually produce a report on prescribed burning activity and estimated emissions. The report will contain estimates of acres burned, piles burned, and estimated resulting emissions. The Division has annually prepared such reports since 1990.

The regulation, encompassing the new permitting regulation and the implementation of

SB01-214, embodies a comprehensive smoke management program with elements relating to review and approval of wildland fuel management planning documents, permitting of specific fires, reporting actual activity, and a fee program regarding open burning. During 2005, the Division certified its program as consistent with EPA's *Interim Air Quality Policy on Wildland Prescribed Fire*, May 1998. Each prescribed fire project is reviewed by Division staff consistent with Regulation No. 9 in the course of establishing smoke permit conditions. Approximately 300-350 wildland fire permit applications are processed each year.

IV. FEDERAL LAND MANAGER CONSULTATION AND COMMUNICATION.

The plans, goals, and comments of the federal land managers are to be addressed during SIP and LTS revisions. Good communication with the federal land managers is important to implementing the LTS and making reasonable progress toward the national goal.

A. Consultation.

The federal land managers (FLMs) with Class I areas in Colorado will be given opportunities to comment and provide input during the LTS review and revision process. The Division will provide, at a minimum, the opportunity for consultation with the FLMs at least 60 days prior to any public hearing on any element of the Class I Visibility SIP including LTS revisions and review.

B. Monitoring Plan.

C.R.S. 25-7-212(3)(a) requires the federal land management agencies of Class I areas in Colorado (i.e., U.S.D.I. National Park Service and U.S.D.A. Forest Service) to "develop a plan for evaluating visibility in that area by visual observation or other appropriate monitoring technique approved by the federal environmental protection agency and shall submit such plan for approval by the division for incorporation by the commission as part of the state implementation plan." The agencies have indicated that they have developed, adopted, and implemented a monitoring plan through the Class I visibility monitoring collaborative known as IMPROVE. EPA's Regional Haze Rule (40CFR51.308(d)(4)) indicates, "The State must submit with the implementation plan a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is representative of all mandatory Class I Federal areas within the State... Compliance with this requirement may be met through participating in the Interagency Monitoring of Protected Visual Environments network." The federal agencies' monitoring plan relies on this network and ensures that each Class I area in Colorado will have an on-site monitor or an off-site monitor that is representative of visibility in the Class I area. In the 2004 LTS revision, the Division provided letters from the federal land managers and approval letters from the Division. This information is repeated in the 2007 revision and is included here to conform to the requirements of state law to incorporate the monitoring plans in this manner into the SIP.

V. ENDNOTES AND REFERENCES

1. “Long-Term Strategy Review and Revision of Colorado's State Implementation Plan For Class I Visibility Protection, Part I: Hayden Station Requirements, Section VI. C ‘Enforceable Parts of the SIP Revision: Definitions, Emission Controls and Limitations, Continuous Emission Monitors, Construction Schedule, Emission Limitation Compliance Deadlines, and Reporting’”, August 15, 1996, Colorado Department of Public Health and Environment, Air Pollution Control Division, adopted August 19, 1996 by the Colorado Air Quality Control Commission.
2. “Clean Air Act Approval and Promulgation of Air Quality Implementation Plan Revision for Colorado; Long-Term Strategy of State Implementation Plan for Class I Visibility Protection, Part I: Hayden Station Requirements,” January 16, 1997, 62 *Federal Register*, 2305.
3. “Revision of Colorado’s State Implementation Plan for Class I Visibility Protection, Craig Station Units 1 and 2 Requirements, Section III ‘Enforceable Portion of the SIP Revision, Definitions, Emission Controls and Limitations, Continuous Emission Monitors, Construction Schedule, Emission Limitation Compliance Deadlines, and Reporting’, March 13, 2001, Colorado Department of Public Health and Environment, Air Pollution Control Division, adopted April 19, 2001 by the Colorado Air Quality Control Commission.
4. “Clean Air Act Approval and Promulgation of Air Quality Implementation Plan Revision for Colorado; Long-Term Strategy of State Implementation Plan for Class I Visibility Protection: Craig Station Requirements,” 66 *Federal Register*, 35374.