

Sections and Subsections

7.1 Executive Summary

- 7.1.1 Overview
- 7.1.2 Background on PM2.5
- 7.1.3 Designating the FNSB PM2.5 Nonattainment Area
- 7.1.4 Developing an Air Quality Attainment Plan
- 7.1.5 Analysis Framework for the Plan
- 7.1.6 Reducing PM2.5 Air Pollution
- 7.1.7 Findings and Demonstrating Attainment
- 7.1.8 Serious Area Attainment Date Extension Request
- 7.1.9 The Public Review Process

7.2 Background and Overview of PM2.5 Rule

- 7.2.1 What is Particulate Matter?
- 7.2.2 Health Effects
- 7.2.3 Environmental Effects
- 7.2.4 Annual and 24 hour NAAQS
- 7.2.5 Non-Attainment Designation
 - 7.2.5.1 Clean Air Act and Alaska Air Quality
- 7.2.6 Fairbanks PM2.5 Non-Attainment Designation
- 7.2.7 SIP Requirements and Compliance with Clean Air Act
- 7.2.8 State Implementation Plan (SIP) Due Date
- 7.2.9 Attainment Dates
- 7.2.10 Consultation and Planning Process for SIP
- 7.2.11 Fairbanks Metropolitan Area Transportation Systems and Authority
- 7.2.12 Plan Development Process
- 7.2.13 Air Quality Goals and Objectives
- 7.2.14 Public Participation Process

7.3 Nonattainment Area Boundary, Air Quality Control Zones, and Design Day Episode Selection

- 7.3.1 Nonattainment Area Boundary
- 7.3.2 Air Quality Control Zones
 - 7.3.2.1 North Pole Control Zone
 - 7.3.2.2 Fairbanks Control Zone
 - 7.3.2.3 Goldstream Control Zone
- 7.2.3 Summary of Design Day/Episode Selection for the Fairbanks PM2.5 Nonattainment

7.4 Ambient Air Quality and Trends

- 7.4.1 Overview of PM2.5 Monitoring Network
- 7.4.2 Trends in Monitored PM2.5 Concentrations
- 7.4.3 Calculation of Design Values
- 7.4.4 Representativeness of Meteorological Conditions Used in Design Value Calculations
- 7.4.5 Exceptional Events

7.5 PM2.5 Network and Monitoring

PM2.5 Network and Monitoring Program

7.6 Emission Inventory Data

- 7.6.1 Introduction
 - 7.6.1.1 Purpose of Emission Inventory
 - 7.6.1.2 Description of Inventories and Geographic Area
 - 7.6.1.3 Seasonal Inventory Representation
 - 7.6.1.4 Sources Not Inventoried

7.6.1.5 Inventory Preparation Personnel and Responsibilities

7.6.1.6 Organization of the SIP Inventory Documentation

7.6.2 2013 Baseline Inventory

7.6.2.1 Sector Overview

7.6.2.2 Stationary Point Sources

7.6.2.3 Space Heating Area Sources

7.6.2.4 Other Area Sources

7.6.2.5 On-Road Mobile Sources

7.6.2.6 Non-Road Mobile Sources

7.6.2.7 Modeling and Planning Inventory Processing

7.6.2.8 2013 Baseline Emissions

7.6.3 Projected Baseline Inventories

7.6.3.1 Emissions Projection Methodology

7.6.3.2 2019 Projected Baseline Emission Inventory

7.6.4 2019 Required Attainment Year Inventory

7.6.4.1 2019 Control Benefits Analysis

7.6.4.2 2019 Attainment Year Emissions

7.6.5 Inventory Validation and Quality Assurance

7.6.5.1 Introduction

7.6.5.2 Responsible Personnel

7.6.5.3 Data Collection and Analysis

7.6.5.4 Data Handling and Validation

7.7 Control Strategies

7.7.1 BACT - requirements

7.7.2 BACM - requirements

7.7.3 Evidence of Compliance with Moderate SIP - existing and continuing control measures

7.7.4 Control Strategy origination/summary

7.7.4.1 Preliminary Draft BACM Report

7.7.4.2 Stakeholder recommendations (discuss process in 7.1.8 - the public review process?)

7.7.4.3 Other control measures for consideration

7.7.4.4 Control Measure Selection

7.7.5. Adopted control measures (specific regulations)

7.7.5.1 Area Source - space heating controls

7.7.5.1.1 registration

7.7.5.1.2 Device Requirements - wood-fired & coal-fired standards

7.7.5.1.3 Device Requirements - operations & curtailment

7.7.5.1.4 Fuel Requirement - dry wood

7.7.5.1.5 Fuel Requirement - home heating oil

7.7.5.1.6 compliance and enforcement

7.7.5.1.7 Education

7.7.5.2 Area sources - small sources (incinerator, charbroilers, used oil)

7.7.5.3 Non-road

7.7.5.4 Mobile sources

7.7.5.5 Mass transit - FNSB transit fleet natural gas efforts?

7.7.5.6 Federal Diesel Emission Reductions Program

7.7.5.7 Federal Motor Vehicle Control

7.7.6 MSMs

7.7.7 Calculating benefits of control measures (all those above?)

7.7.8 BACT

7.7.8.1 Ammonia Controls - Point Sources

7.7.8.2 Chena Power Plant

7.7.8.2.1 NOx Controls for Chena Power Plant

7.7.8.2.2 PM2.5 Controls for Chena Power Plant

7.7.8.2.3 SO2 Controls for Chena Power Plant

7.7.8.3 Fort Wainwright

7.7.8.3.1 NOX Controls for Fort Wainwright

7.7.8.3.2 PM2.5 Controls for Fort Wainwright

7.7.8.3.2 SO2 Controls for Fort Wainwright

7.7.8.4 Zehnder Facility

7.7.8.4.1 NOx Controls for Zehnder Facility

7.7.8.4.2 PM2.5 Controls for Zehnder Facility

7.7.8.4.3 SO2 Controls for Zehnder Facility

7.7.8.5 North Pole Power Plant

7.7.8.5.1 NOx Controls for North Pole Power Plant

7.7.8.5.2 PM2.5 Controls for North Pole Power Plant

7.7.8.5.3 SO2 Controls for North Pole Power Plant

7.7.8.6 Fairbanks Campus Power Plant

7.7.8.6.1 NOx Controls for Fairbanks Campus Power Plant

7.7.8.6.2 PM2.5 Fairbanks Campus Power Plant

7.7.8.6.3 SO2 Fairbanks Campus Power Plant

7.7.9 DEC Stationary Source Control

7.7.10 Potential Future Control Measures Currently Undergoing Research Efforts or Development

7.7.10.1 RCD - retrofit control devices (ESP)

7.7.10.2 Expanded Availability and Use of Natural Gas

7.7.10.3 Continuation of AHFC Energy Programs

7.7.11 Future Re-Evaluation of Control Strategies

7.8 Modeling

7.8.1 Overview

7.8.2 Sources of PM2.5 Emissions In and Around Fairbanks

7.8.3 Fairbanks PM2.5 Source Apportionment Estimates Study

7.8.4 Using the CALPUFF Dispersion Model to Characterize the Fairbanks Power Plant Plumes

7.8.5 Sulfur Formation in Fairbanks

7.8.6 Organics Analysis for Residential Oil Burner Emissions

7.8.7 Rationale For Model Selections

7.8.7.1 Meteorology Model

7.8.7.2 CMAQ Model

7.8.8 Model Setup

7.8.8.1 WRF Set UP

7.8.8.2 Air Quality Model Set Up

7.8.9 Model Performance

7.8.9.1 Weather Research and Forecasting Model (WRF)

7.8.9.2 Photochemical Transport Modeling

7.8.9.3 Modeling Ambient Air Quality Data Using Sandwich and SMAT Methods

7.8.9.4 SMAT Methods

7.8.9.5 Sensitivity Modeling Analysis - Speciation Profile Changes

7.8.10 2013 Base Year Modeling

7.8.11 2019 Projected Baseline Modeling

7.8.12 Precursor Demonstration for 2013 and 2019

7.8.12.1 Fairbanks Ambient Air Quality Overview for Precursor Demonstration**7.8.12.2 Precursor Gas Chemistry Overview****7.8.12.2.1 Nitrogen Oxide Precursors and Nitrates****7.8.12.2.2 Sulfur Dioxide Precursor Gas and Sulfate****7.8.12.2.3 Ammonia Precursor Gas and Ammonium****7.8.12.2.4. Volatile Organic Compounds****7.8.12.3 2013 Precursor Demonstration****7.8.12.3.1 Concentration Based Ambient Data Analysis****7.8.12.3.2. Concentration Based Air Quality Modeling Analysis****7.8.12.3.3 Nitrate Chemistry Comparison****7.8.12.4 Precursor Demonstration Updates for 2019 for NOx and VOCs****7.8.12.5 SO2 Analysis****7.8.13 2019 Control Run****7.8.13.1 2019 Control Run Modeling****7.9. Attainment Demonstration 2024 & 2029****7.9.1 Attainment Demonstration - 2024 Extension Year Date****7.9.2 Attainment Demonstration - 2029 Expedient Alternative Date****7.9.3 Future Attainment Demonstrations****7.10 Reasonable Further Progress and Quantitative Milestones****7.10.1 Reasonable Further Progress Plan and Quantitative Milestones****7.10.2 RFP/QM Schedule and Metrics****7.10.3 RFP Plan Analysis****7.10.4 QM Report Commitment****7.11 Contingency Measures****7.11. Contingency Measures****7.11.1 State Regulatory Contingency Measures****7.11.1.1 Requiring Older EPA certified devices to be removed****7.11.1.2 Requiring removal of Older EPA certified devices When Properties are Sold****7.11.2 Process for Identifying Additional Contingency Measures****7.12 Emergency Episode Plan****7.12.1 Forecasting PM2.5 Air Quality Episodes****7.12.2 State Episode Program****7.13 Assurance of Accuracy****7.13.1 Local legal Authority****7.13.2 State Commitment to Implement Program****7.14 Air Quality Conformity and Motor Vehicle Emission Budget****7.14.1 Regulatory Overview****7.14.2 Regional Transportation Conformity and Motor Vehicle Emission Budget****7.14.3 Project-Level Conformity****7.14.4 General Conformity****7.15 Acronyms and Abbreviations**