

Redesignation Request and Maintenance Plan
for the
Truckee Meadows 24-Hour PM₁₀ Non-
Attainment Area

August 28, 2014

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ACRONYMS

| | |
|------------------|---|
| ADT | Average Daily Traffic |
| AERR | Air Emissions Reporting Requirements |
| AIRS | Aerometric Information Retrieval System |
| AQI | Air Quality Index |
| AQMD | Washoe County Health District - Air Quality Management Division |
| AQS | Air Quality System |
| BACM | Best Available Control Measure |
| BAM | Beta Attenuation Monitor |
| CAA | Clean Air Act |
| CERR | Consolidated Emissions Reporting Rule |
| CFR | Code of Federal Regulations |
| EI | Emissions Inventory |
| EPA | United States Environmental Protection Agency |
| FR | Federal Register |
| HA | Hydrographic Area |
| HDD | Heating Degree Days |
| MPO | Metropolitan Planning Organization |
| MVEB | Motor Vehicle Emissions Budget |
| NAA | Non-Attainment Area |
| NAAQS | National Ambient Air Quality Standard |
| NCore | National Core Multi-Pollutant Monitoring Station |
| NO _x | Nitrogen oxides |
| NRS | Nevada Revised Statute |
| NSR | New Source Review |
| PM ₁₀ | Particulate matter less than or equal to a nominal 10 microns in aerodynamic diameter |
| PSD | Prevention of Significant Deterioration |
| RACM | Reasonably Available Control Measure |
| RACT | Reasonably Available Control Technology |
| RE | Rule Effectiveness |
| RP | Rule Penetration |
| RTC | Regional Transportation Commission |
| RWC | Residential Wood Combustion |
| SIP | State Implementation Plan |
| SLAMS | State and Local Air Monitoring Station |
| SMP | Smoke Management Program |
| SPM | Special Purpose Monitoring |
| ULSD | Ultra Low Sulfur Diesel |
| VMT | Vehicle Miles Traveled |
| WCDBOH | Washoe County District Board of Health |

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CHAPTER 1

INTRODUCTION

The Washoe County Health District - Air Quality Management Division (AQMD) is requesting the U.S. Environmental Protection Agency (EPA) to redesignate the Truckee Meadows¹ non-attainment area (NAA) to attainment/maintenance status for the 24-hour Particulate Matter less than 10 microns in aerodynamic diameter (PM₁₀) National Ambient Air Quality Standard (NAAQS). The Truckee Meadows has not violated the NAAQS since 2002 and is currently classified as a “Serious” NAA.²

The AQMD also requests that the “Redesignation Request and Maintenance Plan for the Truckee Meadows, 24-Hour PM10 Non-Attainment Area” submitted to EPA on July 13, 2009 be withdrawn.

Washoe County is located in the northwest portion of Nevada and is bounded by the states of California, Oregon, and the counties of Humboldt, Pershing, Storey, Churchill, Lyon, and Carson City (Figure 1-1). The Truckee Meadows is approximately 200 square miles in size and situated in the southern portion of Washoe County. It is geographically identified as Hydrographic Area (HA) 87 as defined by the State of Nevada, Division of Water Resources. It is surrounded by mountain ranges, which can lead to wintertime temperature inversions, where a layer of cold air is trapped in the valley. Warmer air above the inversion acts as a lid, containing and concentrating air pollutants. Much of Washoe County’s urban population lives in the Truckee Meadows. Anthropogenic activities, such as automobile use and residential wood combustion, are also concentrated here.

The Truckee Meadows covers an area governed by three political entities - the County of Washoe, the City of Reno, and the City of Sparks. The AQMD is the designated agency responsible for air quality management throughout the entire county.

This Redesignation Request and Maintenance Plan was prepared in accordance with Section 107(d)(3)(E) of the Clean Air Act (CAA) as amended in 1990 and follows guidance contained in the Calcagni Memorandum.³ The following five sections are structured and organized as presented in Subsections (i) through (v) of Section 107(d)(3)(E).

Figure 1-1
Washoe County, Nevada



¹ Identified as the “Reno Planning Area” in 40 CFR 81.329.

² 40 CFR 81.329.

³ “Procedures for Processing Requests to Redesignate Areas to Attainment”; John Calcagni, Director; Air Quality Management Division (MD-15); September 4, 1992.

CHAPTER 2

ATTAINMENT OF THE STANDARD

The first condition for redesignation is demonstration of attaining the NAAQS. This condition is met when ambient PM₁₀ monitoring data are representative, complete, quality-assured, and reported in accordance with 40 Code of Federal Regulations (CFR) 50, 53, and 58, and meet the NAAQS. Ambient air monitoring data demonstrate that the Truckee Meadows area attained the NAAQS in 2002. The following information further validates the long-term air quality improvements within the Truckee Meadows.

National Ambient Air Quality Standard

The level of NAAQS for PM₁₀ is 150 µg/m³ over a 24-hour averaging period; the number of times a monitor is expected to exceed this concentration must be less than one per year for the NAAQS to be attained. The rounding convention in the standard specifies that values be rounded to the nearest 10 µg/m³ (i.e., values ending in 5 or greater are to be rounded up). If less than everyday sampling occurs, an adjustment factor must be applied to the number of measured exceedances to determine the number of expected exceedances.⁴

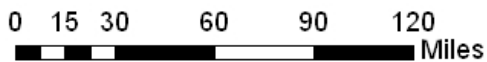
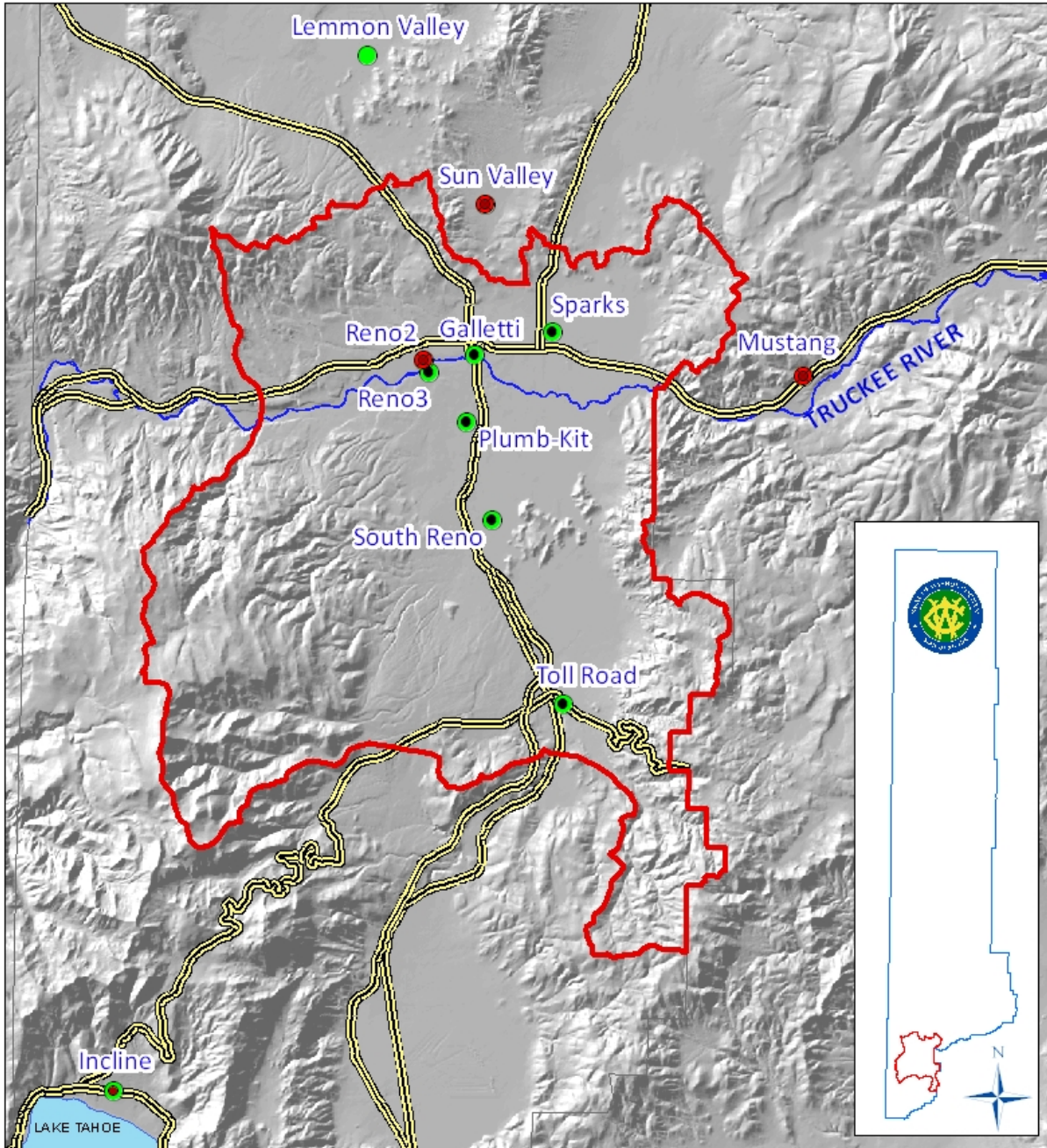
Washoe County Monitoring Network

Between 1999 and 2012, the AQMD maintained eight State and Local Air Monitoring Stations (SLAMS), one of which is also a National Core Multi-Pollutant Monitoring Station (NCore), within Washoe County (Figure 2-1). Six of the eight active monitoring sites were located within the Truckee Meadows. All of these sites were sited in accordance with 40 CFR 58 and utilized monitoring equipment designated as reference or equivalent methods under 40 CFR 53. In addition, Washoe County's PM₁₀ monitoring network was reviewed annually pursuant to 40 CFR 58.10 to ensure the network meets the monitoring objectives defined in 40 CFR 58, Appendix D. The data were collected and quality assured in accordance with 40 CFR 58 and recorded in the Air Quality System (AQS), formerly referred to as Aerometric Information Retrieval System (AIRS).

⁴ 40 CFR 50, Appendix K.

Figure 2-1
 PM₁₀ Monitoring Network (1999-2012)

Washoe County Active & Historic Monitoring Sites



Legend

- Active PM10 Sites
- Inactive PM10 Sites
- Historic Monitoring Sites
- Active Monitoring Sites
- Hydrographic Area 87

Monitoring Data

PM₁₀ monitoring data were collected, complete, quality assured, recorded in AQS, and available for public review in accordance with 40 CFR 58. Expected exceedance rates were calculated following guidance in the 40 CFR 50, Appendix K. Table 2-1 summarizes the exceedances and expected number of exceedances from 1999 to 2012. These data are from SLAMS and NCore sites within Washoe County, including the Truckee Meadows.

Based on these data, the Truckee Meadows violated the 24-hour PM₁₀ NAAQS as recent as 2001. However, the long-term trend has been a decline in ambient PM₁₀ exceedances (See Table 2-1 and Figure 2-2). Since 2002, the Truckee Meadows expected exceedance rate has been equal to or less than one and therefore, has attained the NAAQS in accordance with 40 CFR 50.6.

On April 19, 2011, EPA published a final rule determining that the Truckee Meadows area is currently attaining the PM₁₀ NAAQS, based upon complete, quality-assured PM₁₀ air quality monitoring data during the years 2007-2009.⁵ Certified data through December 2012 contained in EPA’s AQS are also consistent with continued attainment of the 24-hour PM₁₀ NAAQS. Because the Truckee Meadows area is currently attaining the PM₁₀ NAAQS, EPA also finalized its determination that the obligation to make submissions to meet certain CAA requirements related to attainment is not applicable for as long as the area continues to attain the PM₁₀ NAAQS.⁶

Table 2-1
Seasonal PM₁₀ Concentrations and Exceedances (1999-2012)

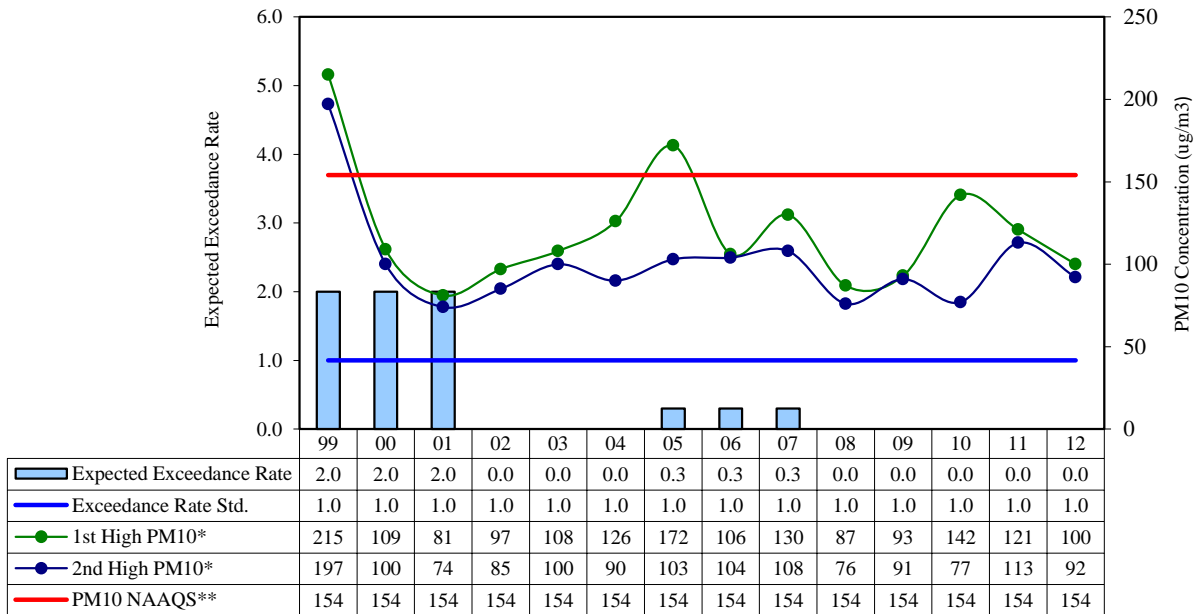
| Monitored Concentration and Exceedances* | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1 st High (ug/m ³) | 215 | 109 | 81 | 97 | 108 | 126 | 172 | 106 | 130 | 87 | 93 | 142 | 121 | 100 |
| 2 nd High (ug/m ³) | 197 | 100 | 74 | 85 | 100 | 90 | 103 | 104 | 108 | 76 | 91 | 77 | 113 | 92 |
| Exceedances (Measured) | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Exceedances (Expected) | 6.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3-Year Average of Expected | 2.0 | 2.0 | 2.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

* For the PM₁₀ Season (November, December, January).

⁵ 76 FR 21807 (April 19, 2011).

⁶ Ibid.

Figure 2-2
Seasonal PM₁₀ Concentrations and Exceedances (1999-2012)



* For the PM₁₀ Season (January, November, and December).

** PM₁₀ NAAQS is 150 µg/m³; however, due to EPA's rounding convention for PM₁₀, a concentration of 154 µg/m³ would still be considered not exceeding the NAAQS.

Historically, the regular PM₁₀ sampling schedule using manual methods in the Truckee Meadows is once every six days,⁷ with the exception of air pollution episodes when monitoring was conducted more frequently. However, more frequent monitoring after the PM₁₀ exceedance in January 1999 was not initiated. In accordance with the procedures in Appendix K of 40 CFR 50, this single measured exceedance equals six expected exceedances.

In January 2005, another PM₁₀ episode occurred resulting from record snowstorms followed by strong temperature inversions. The storms required many applications of road sand that was eventually ground into smaller particles and re-entrained by vehicle traffic. The regular PM₁₀ sample day was Sunday, January 16. Because PM₁₀ concentrations were increasing to unhealthy levels at two monitoring sites (Reno3 and Sparks sites), additional PM₁₀ sampling began at the Galletti site on Friday, January 14. The PM₁₀ concentration on January 14 was 172 µg/m³ and everyday sampling, as required by 40 CFR 58.12, continued at this site through the end of calendar year 2005 (Table 2-2). Due to the daily sampling of this site, the single measured exceedance equals one expected exceedance for 2005.

⁷ "Waivers for PM₁₀ Sampling Frequency"; William F. Hunt, Jr., Director, Emissions, Monitoring, and Analysis Division (MD-14); December 2, 1997.

Table 2-2
Galletti Ambient Air Monitoring Data (2005)

| Quarter | Number of Samples | | Data Capture | Concentration ($\mu\text{g}/\text{m}^3$) | | Exceedances | |
|-----------|-------------------|----------|--------------|--|----------------------|-------------|----------|
| | Valid | Possible | | 1 st High | 2 nd High | Measured | Expected |
| Jan - Mar | 74 | 90 | 0.82 | 172 | 153 | 1 | 1 |
| Apr - Jun | 88 | 91 | 0.97 | 116 | 90 | 0 | 0 |
| Jul - Sep | 87 | 92 | 0.95 | 91 | 86 | 0 | 0 |
| Oct - Dec | 79 | 92 | 0.86 | 103 | 102 | 0 | 0 |
| Summary | | | | 172 | 153 | 1 | 1 |

Per 40 CFR 50, Appendix K, Section 3.1(f), the number of measured and expected exceedances is one because: 1) There was only one exceedance in the calendar quarter, 2) everyday sampling was initiated and maintained for four calendar quarters, and 3) data capture of at least 75% was achieved for each quarter.

As of 2006, there are six PM₁₀ monitoring sites in the Truckee Meadows (Figure 2-1). Currently, each monitoring site utilizes the continuous PM₁₀ Beta Attenuation Monitor (BAM) method, with the exception of the Reno site, which has an additional manual PM₁₀ method. Table 2-3 delineates the timeline and transition dates of the PM₁₀ monitoring methods from manual to continuous sampling for each site.

Table 2-3
Operational History of PM₁₀ Monitoring Network and Sampling Methods

| Monitoring Site | Sampling Method | Sampling Frequency | AQS Submittal Period |
|-------------------|-----------------|--------------------|----------------------|
| Galletti | Manual | 1:6 | Jan 1990 - Dec 2012 |
| | BAM | Continuous | Dec 2012 - present |
| Incline | Manual | 1:6 | Oct 1999 - Mar 2002 |
| Plumb-Kit | Manual | 1:6 | Jan 2006 - Nov 2011 |
| | BAM | Continuous | Nov 2011 - present |
| Reno | Manual | 1:6 | Apr 1988 - Mar 2009 |
| | Manual | 1:3 | Mar 2009 - present |
| | BAM | Continuous | Dec 2010 - present |
| S. Reno | Manual | 1:6 | Jan 1990 - Oct 2011 |
| | BAM | Continuous | Oct 2011 - present |
| Sparks Designated | Manual | 1:6 | Apr 1988 - Dec 2012 |
| | BAM | Continuous | Dec 2012 - present |
| Sparks Collocated | Manual | 1:6 | Jan 1990 - Dec 2012 |
| | BAM | Continuous | Dec 2012 - present |
| Toll | Manual | 1:6 | Jan 2002 - Oct 2011 |
| | BAM | Continuous | Oct 2011 - present |

Summary

The EPA has determined that the Truckee Meadows is currently attaining the 24-hour PM₁₀ NAAQS, based upon complete, quality-assured PM₁₀ air quality monitoring data during the years 2007 - 2009.⁸ Certified data through December 2012 contained in EPA's AQS are also consistent with continued attainment of the 24-hour PM₁₀ NAAQS.

From 1999 through 2012, PM₁₀ ambient air monitoring data from the Truckee Meadows:

- Were collected from a PM₁₀ monitoring network that was sited, operated, and maintained in accordance with 40 CFR 53 and 58; and
- Were complete, quality assured, and reported in accordance with 40 CFR 58.

From 2002 through 2012, PM₁₀ ambient air monitoring data from the Truckee Meadows:

- Demonstrated that the number of times a monitor was expected to exceed a 24-hour PM₁₀ concentration of 150 µg/m³ (as determined in accordance with 40 CFR 50, Appendix K) was less than one per year.

Therefore, the Truckee Meadows has attained the 24-hour PM₁₀ NAAQS in accordance with 40 CFR 50.6.

⁸ 76 FR 21807 (April 19, 2011).

CHAPTER 3

STATE IMPLEMENTATION PLAN APPROVAL

The second condition for redesignation is that the applicable implementation plan requirements have been fully approved by the EPA under Section 110(k) of the CAA.

On November 15, 1990, the date of enactment of the 1990 CAA Amendments, PM₁₀ areas meeting the qualifications of Section 107(d)(4)(B) of the CAA were designated non-attainment by operation of law. Once an area is designated non-attainment, Section 188 of the CAA outlines the process for classification of the area and establishes the area's attainment date. Pursuant to Section 188(a), all PM₁₀ non-attainment areas were initially classified as "Moderate" by operation of law upon designation as non-attainment. The Truckee Meadows "Moderate" non-attainment designation was codified in 40 CFR 81.329 in a Federal Register (FR) notice published on November 6, 1991.⁹

States containing areas, which were designated as "Moderate" non-attainment by operation of law under section 107(d)(4)(B), were to develop and submit state implementation plans (SIPs) to provide for the attainment of the PM₁₀ NAAQS. Pursuant to section 189(a)(2), those SIP revisions were to be submitted to EPA by November 15, 1991.

EPA has the responsibility, pursuant to sections 179(c) and 188(b)(2) of the Act, of determining within six months of the applicable attainment date, whether PM₁₀ NAAs have attained the NAAQS. Section 179(c)(1) of the Act provides that these determinations are to be based upon an area's "air quality as of the attainment date", and section 188(b)(2) is consistent with this requirement. EPA makes the determinations of whether an area's air quality is meeting the PM₁₀ NAAQS based upon air quality data gathered at monitoring sites in the non-attainment area. These data are reviewed to determine the area's air quality status in accordance with EPA guidance in 40 CFR 50, Appendix K.

Pursuant to Appendix K, attainment of the 24-hour standard is determined by calculating the expected number of exceedances of the 150 µg/m³ limit per year. The 24-hour standard is attained when the number of times a monitor is expected to exceed this concentration is equal to or less than one per year. A total of three consecutive years of clean air quality data is generally necessary to show attainment of the 24-hour standard for PM₁₀. A complete year of air quality data, as referred to in 40 CFR 50, Appendix K, is comprised of all four calendar quarters with each quarter containing data from at least 75% of the scheduled sampling days.

Under section 188(b)(2)(A), a "Moderate" PM₁₀ NAA must be reclassified as "Serious" by operation of law after the statutory attainment date if the Administrator finds that the area has failed to attain the NAAQS. Pursuant to section 188(b)(2)(B) of the Act, EPA must publish a notice in the FR identifying those areas that failed to attain the standard and the resulting reclassifications. As a result, the Truckee Meadows was reclassified to a "Serious" NAA on February 7, 2001.

⁹ 56 FR 56694 (November 6, 1991).

In response to the “Serious” designation, the AQMD prepared a PM₁₀ SIP. The SIP included a periodic emission inventory that identified the significant wintertime PM₁₀ sources in the Truckee Meadows as construction/grading, street sanding, street sweeping, and residential wood combustion (RWC). In “Serious” PM₁₀ NAAs, Best Available Control Measures (BACM) is required to be applied to these sources. To ensure that BACM is properly applied, the AQMD follows EPA guidance, consults with EPA during the rule development process, and participates in the EPA Region IX PM₁₀ SIP BACM working group. This group meets twice per year to discuss and share knowledge about control measures affecting “Serious” PM₁₀ NAAs in the Pacific Southwest. However, no meeting has taken place after 2009.

The “Serious” PM₁₀ SIP was adopted by the Washoe County District Board of Health (WCDBOH) on July 26, 2002 and submitted to EPA on August 5, 2002. Additional SIP elements were submitted in 2006 to address deficiencies in the RWC regulation and emergency episode plan. EPA has approved many of these submittals, but has not fully approved the PM₁₀ SIP.

CHAPTER 4

PERMANENT AND ENFORCEABLE IMPROVEMENT IN AIR QUALITY

The third condition for redesignation is EPA must determine that air quality improvements are due to permanent and enforceable emission reductions. Long-term air quality improvements in the Truckee Meadows are attributed to permanent and enforceable federal, state, and local emission reduction programs. In addition, improvements were not a result of temporary reduction in emission rates or unusually favorable meteorology.

Federally Enforceable Control Programs in the Truckee Meadows Portion of the Nevada SIP

The following programs have significantly reduced PM₁₀ emissions and contributed to the air quality improvements in the Truckee Meadows. These programs are federally enforceable and included in the Truckee Meadows portion of the Nevada PM₁₀ SIP. They are implemented by federal, state, and local regulatory agencies. Emission reductions from the state and local programs are summarized in Table 4-1. Detailed documentation is located in Appendix A.

1. Residential Wood Combustion Program: RWC has been identified as a significant source of wintertime PM₁₀ emissions. WCDBOH Regulation 040.051¹⁰ addresses and reduces these emissions. This regulation: 1) Establishes wood stove / fireplace insert control areas; 2) requires use of seasoned wood; 3) clarifies “Prohibited Fuels”; 4) requires removing or upgrading existing solid fuel combustion devices upon real estate sale; and 5) includes a mandatory burning curtailment during Stage 1 episodes. Approximately 784 lbs/day of PM₁₀ emissions were reduced from the Truckee Meadows in 2011 due to the RWC program.

In addition, the AQMD implements a “Green, Yellow, Red” Program¹¹ from November through February to reduce wintertime RWC PM₁₀ emissions. This public outreach program consists of a daily burn code that provides the community a recommendation on whether RWC will impact air quality in Washoe County. RWC is discouraged when the burn code is Yellow and prohibited when the code is Red. As part of the carbon monoxide maintenance plan SIP, the AQMD is committed to conducting an RWC survey at least once every three years.¹² A recent survey conducted in 2013 indicated 88% of all respondents who burned wood were aware of the “Green, Yellow, Red” Program, and 74% of those respondents followed the Yellow and Red recommendations.¹³ Emission reductions from the “Green, Yellow, Red” Program are quantified under the Emergency Episode Plan.

Additional benefits are realized in the Truckee Meadows because the RWC Program is applicable to the entire geographic area of Washoe County.

¹⁰ 72 FR 33397 (June 18, 2007).

¹¹ The “Green, Yellow, Red” was updated and rebranded to “Keep it Clean, Know the Code” in November 2012.

¹² 73 FR 38124 (July 3, 2008).

¹³ “Washoe County Health District; Air Quality Management Division; Residential Wood Use Survey”; InfoSearch International; May 2013.

2. Street Sanding and Sweeping Program: The Truckee Meadows receives approximately 23 inches of snow per year. Wintertime traction control is a significant source of PM₁₀ emissions. Emissions are generated directly from application of traction control material (i.e., sand, salt, and chlorides) and indirectly from the increased silt loading on the paved streets. Motor vehicle traffic grinds and re-entrains the material into the atmosphere.

In 2002, the WCDBOH adopted revisions to Regulations 040.031 and 040.032.¹⁴ These revisions required municipalities to: 1) Use a harder and cleaner type of sand, 2) reduce the sand application rate by 50% compared to 1999 rates, 3) remove the sand within four days after a storm event, and 4) only purchase new sweepers that are PM₁₀ certified.

Approximately 1,555 lbs/day of PM₁₀ emissions were reduced in the Truckee Meadows in 2011 because of the Street Sanding and Sweeping program. Additional benefits are realized in the Truckee Meadows because the Street Sanding and Sweeping Programs are applicable to additional geographic areas of Washoe County. This area encompasses all of the urbanized portions of Washoe County south of Township 22N, which includes the cities of Reno and Sparks.

3. Dust Control: Fugitive PM₁₀ generating sources, such as construction activities and unpaved roads, are subject to WCDBOH Regulation 040.030.¹⁵ The current regulation implements BACM and was adopted by the WCDBOH in 2002. In addition, projects that disturb one acre or more of land are required to obtain a Dust Control Permit from the AQMD. The Dust Control permit includes additional control and contingency measures that are to be implemented before, during, and after completion of the project.

Approximately 431 lbs/day of PM₁₀ emissions were reduced in the Truckee Meadows because of the Dust Control program. Additional benefits are realized in the Truckee Meadows because the Dust Control regulation is applicable to the entire geographic area of Washoe County.

4. Emergency Episode Plan: WCDBOH Regulation 050.001¹⁶ addresses actions that the AQMD shall take during periods of elevated ambient PM₁₀ concentrations. When 24-hour PM₁₀ concentrations reach, or are predicted to reach, Stage 1 levels (154 µg/m³), the regulation: 1) Implements notification procedures to the public about potential health problems 2) prohibits all open and prescribed burning, 3) prohibits the use of permitted incinerators, crematoriums, and pathological incinerators, 4) prohibits the use of solid fuel burning devices, and 5) activates control plans for the largest PM₁₀ sources in the county.

Approximately 4,331 lbs/day of PM₁₀ emissions were reduced in the Truckee Meadows because of the Emergency Episode Plan. The Truckee Meadows receives additional benefits from the Emergency Episode Plan because it is applicable to the entire geographic area of Washoe County.

¹⁴ 71 FR 14386 (March 22, 2006).

¹⁵ 72 FR 25969 (May 8, 2007).

¹⁶ 72 FR 33397 (June 18, 2007).

Table 4-1
2011 Emission Reductions from Federally Enforceable Programs

| Federally Enforceable Program | Emissions (lbs / Typical PM ₁₀ Season Day) | | |
|-------------------------------|--|--------------|--------------|
| | Uncontrolled | Controlled | Reductions |
| Residential Wood Combustion | 1,784 | 1,000 | 784 |
| Street Sanding and Sweeping | 1,894 | 339 | 1,555 |
| Dust Control | 861 | 431 | 431 |
| Emergency Episode Plan | <u>5,888</u> | <u>1,557</u> | <u>4,331</u> |
| Total | 10,427 | 3,327 | 7,100 |

* Totals may not add up due to rounding.

Other Programs That Provide Additional PM₁₀ Benefits

The Truckee Meadows also benefits from other PM₁₀ control programs. Although these programs are not part of the Truckee Meadows portion of the Nevada PM₁₀ SIP, they contribute to air quality improvements in the area. These programs are applicable to the entire geographic area of Washoe County.

1. Non-Road Diesel Emission Standards: The Clean Air Non-Road Diesel Rule, which was signed in 2004, established stringent Tier 4 PM and Nitrogen Oxides (NO_x) emission standards. This rule is the most recent of a series of regulations addressing non-road diesel emissions. These standards will dramatically reduce PM emissions nationwide as the diesel fleet turns over.
2. Ultra Low Sulfur Diesel (ULSD): The Clean Air Non-Road Diesel Rule, along with the 2007 Highway Rule, lowers the sulfur content of diesel fuel. All diesel fuel for on-road and non-road uses will have a maximum sulfur content of 15 ppm by 2014.
3. Washoe County Smoke Management Program: Particulate matter is a major component of smoke. The AQMD has developed and implemented a Smoke Management Program (SMP) to balance the need for forest fuels management while maintaining clean air requirements. Major components of the SMP are: 1) Consideration of alternatives; 2) stringent meteorological prescriptions; 3) notification procedures; and 4) contingency measures. Section C.2.a.(2) of WCDBOH Regulation 050.001 addresses PM₁₀ impacts from prescribed burning by prohibiting these projects during Stage 1 air pollution episodes. Washoe County's SMP was adopted by the WCDBOH in 2003 and submitted to EPA Region IX in 2006.

Economic Conditions

Between 1990 and 2011, Washoe County, including the Truckee Meadows, experienced growth in population, full and part-time employment, total industry earnings, and vehicle miles traveled (VMT). Table 4-2 lists these indicators and their overall rate of growth.

Table 4-2
Washoe County Demographic and Economic Indicators (1990-2011)

| Indicator | Source* | 1990 | 2011 | 2011/1990 Ratio |
|--|---------|-------------|--------------|-----------------|
| Population | A | 257,120 | 421,593 | 1.640 |
| Full- and Part-time Nonfarm Employment | B | 173,790 | 244,438 | 1.407 |
| Total Nonfarm Industry Earnings** | C | \$4,541,507 | \$11,732,922 | 2.583 |
| Vehicle Miles Traveled*** | D | 4,225,134 | 7,870,307 | 1.863 |

- * A: Nevada State Demographer, Washoe County Population.
 B: Bureau of Economic Analysis, "CA25N Total full-time and part-time employment for Washoe County", 1990 is by SIC industry and 2011 is by NAICS industry.
 C: Nevada Workforce Informer, Nevada Department of Employment, Training and Rehabilitation, 2011 Annual Employment and Wages for Washoe County.
 D: 1990 Emission Inventory of Carbon Monoxide, Amended Final; November 2, 1993; 2011 Periodic Emissions Inventory; November 2012; Table 1-2.
- ** Total Industry Earnings are in 2012 Dollars (1,000's).
- *** Vehicle Miles Traveled are in miles per day and represent only the Truckee Meadows PM₁₀ NAA portion of Washoe County.

Washoe County's air quality continued to improve despite substantial growth in population, economic activity, and VMT. Based on these demographic and economic data, long-term improvement in Washoe County's air quality was not due to temporary reductions in emission rates.

Meteorological Conditions

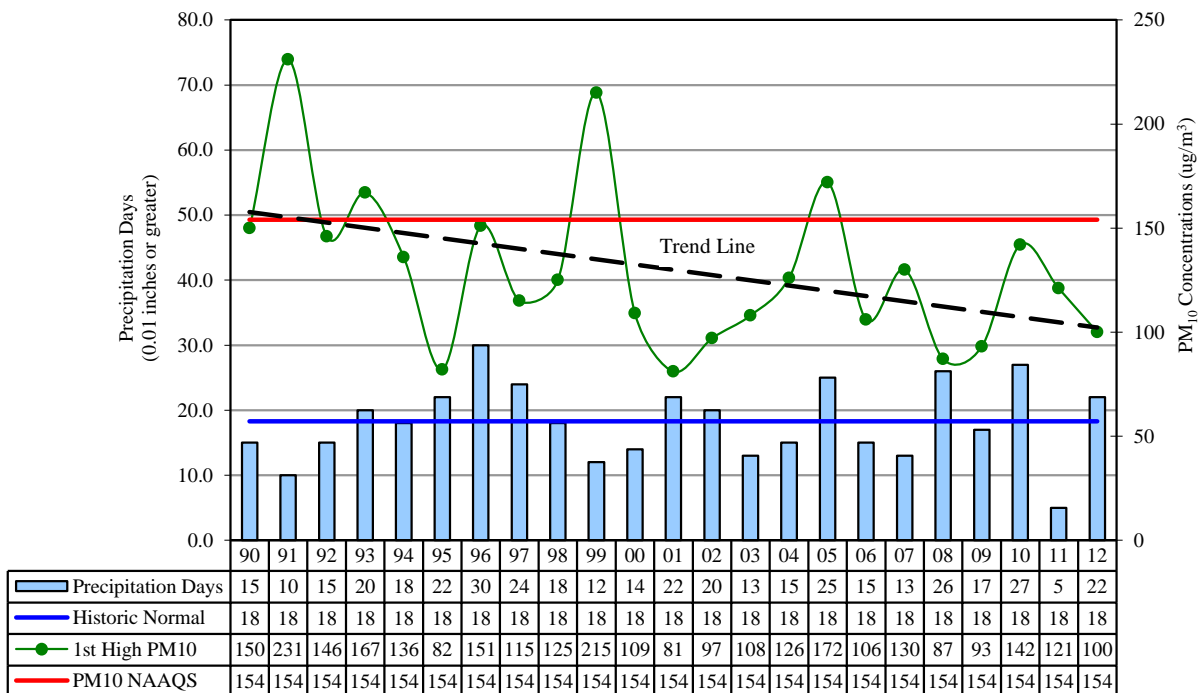
As described earlier, the Truckee Meadows sits in a valley surrounded by mountain ranges. Wintertime high-pressure systems are characterized by stable atmospheric conditions, light winds, sunny days, and clear, cold nights. Cold nights, combined with local topography, can create temperature inversions where a layer of cold air is contained in the valley. Warm air above the inversion acts as a lid trapping and concentrating pollutants. The low winter sun angle provides only slight warmth deterring the break-up of the inversion without wind or a storm front. This wintertime atmospheric condition is the major contributor to the Truckee Meadows experiencing its highest PM₁₀ concentrations.

An indicator of unusually favorable wintertime meteorology is periods of unstable atmospheric conditions. Wind, clouds, milder night temperatures, good dispersion, and precipitation characterize these unstable conditions. Figure 4-1 displays the annual number of days of precipitation of 0.01 inches or greater during the months of November, December, and January. The historic normal number of days (18.3) is also included as a reference. These data were

recorded at the Reno-Tahoe International Airport.¹⁷ Favorable meteorology conditions leading to low PM₁₀ concentrations would mean a greater than normal number of precipitation days.

Wintertime precipitation data indicate that 12 of the 23 years between 1990 and 2012 were above the historic normal number of 18.3 precipitation days per year. Of the four years with PM₁₀ exceedances, two were above (1993 and 2005) and two were below (1991 and 1999) the historic normal number of precipitation of days. Over the years, the monitored PM₁₀ exceedances and expected exceedance rate declined while the number of precipitation days fluctuated above and below the historic normal. Therefore, improvements in air quality cannot be solely attributed to favorable precipitation conditions.

Figure 4-1
Precipitation Days (1990-2012)

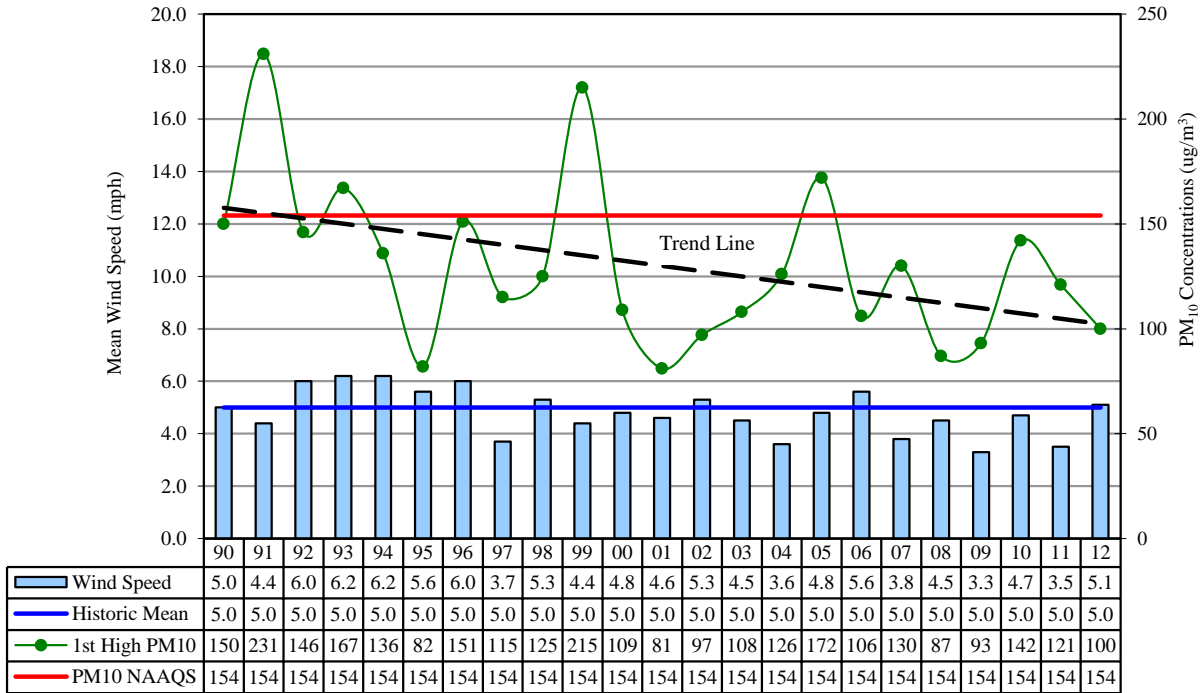


Wind speed is another meteorological indicator for PM₁₀ concentrations. In the Truckee Meadows, higher wind speeds typically reflect unstable conditions and favorable PM₁₀ conditions. Figure 4-2 displays the mean wintertime wind speeds from 1990 through 2012.

Of the 13 years with wind speeds below the historic mean, three years had at least one PM₁₀ exceedance and the other 10 had zero. Because the monitored PM₁₀ exceedances and expected exceedance rate declined while the mean wind speed fluctuated above and below the historic mean, improvements in air quality cannot be solely attributed to favorable wind speeds.

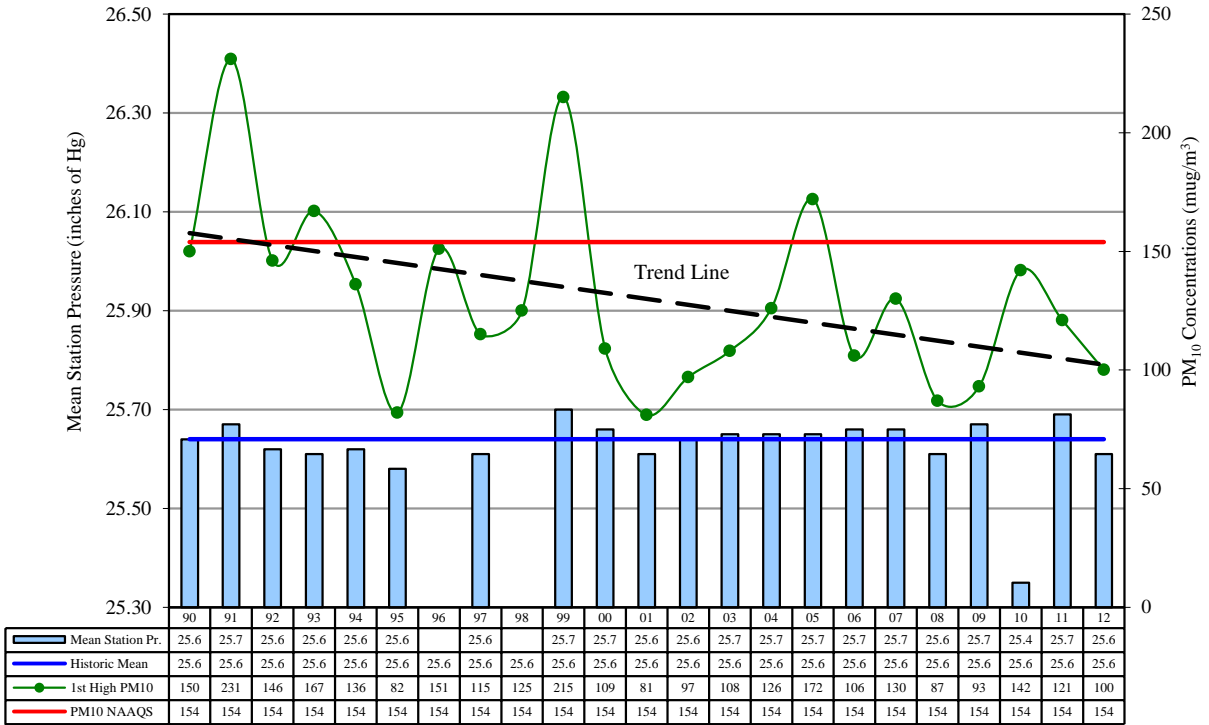
¹⁷ The official site where precipitation, wind speed, and atmospheric pressure data are recorded was relocated three times since 1931. The precipitation data collected were from sites located: 1) within a two mile radius of each other; 2) at the same elevation (less than ten feet difference); and 3) within the Truckee Meadows PM₁₀ NAA.

Figure 4-2
Mean Wind Speed (1990-2012)



Another indicator of favorable meteorological conditions is barometric pressure. Lower pressures are associated with unstable conditions, increased atmospheric mixing, weaker temperature inversions, and lower PM₁₀ concentrations. Figure 4-3 displays the mean barometric pressures in the Truckee Meadows. Only January and November data were available for 1996 and 1998. These years are not included in the figure, but the mean pressures for the two months of these two years were below the historic mean.

Figure 4-3
Mean Station Barometric Pressure (1990-2012)



Note: blank cells indicate incomplete data for 1996 and 1998; however, partial data indicated both years were below the historic mean.

Of the 21 years with complete mean barometric pressure data, 12 years were above and nine years were below the historic mean of 25.63 inches of mercury. Eight of the 12 years with barometric pressures at or above the historic mean did not have a monitored PM₁₀ exceedance.

The monitored PM₁₀ exceedances and expected exceedance rate declined over the years while the precipitation days, wind speeds, and barometric pressures fluctuated above and below the historic averages. Therefore, improvements in air quality cannot be solely attributed to favorable meteorological conditions.

Summary

The Truckee Meadows experienced long-term air quality improvements attributed to federal, state, and local control measures. In addition, Washoe County did not experience an economic downturn or unusually consistent favorable meteorology.

CHAPTER 5

SECTION 110 AND PART D REQUIREMENTS

For the purposes of redesignation, all of the general non-attainment area requirements of the 1990 CAA Section 110 and Part D must be met.

Section 110 Requirements

In general, the requirements of Section 110(a)(2) are:

- The establishment and implementation of enforceable emission limitations;
- The monitoring, compiling, and analyzing of ambient air quality data;
- Pre-construction reviews and permitting of new and modified major stationary sources;
- Consulting with and providing for the participation of local governments that are affected by the plan;
- Assurance that the State has the adequate funds and authority to enforce the SIP element and the associated regulations; and
- Permit fees for stationary sources.

Nevada Revised Statute (NRS) 445B.500¹⁸ addresses the Section 110(a)(2) requirements by authorizing the WCDBOH to implement and administer air quality management programs within the boundaries of Washoe County. These programs are managed through the AQMD. The AQMD currently consists of 18 allocated full-time staff with an annual budget of \$2.2 million. Primary funding sources are: 1) Operating permit fees; 2) EPA grants; 3) Nevada DMV funds; and 4) the City of Reno, City of Sparks, and County of Washoe County via an inter-local agreement with the Washoe County Health District.

Should the AQMD be unable to meet the Section 110 requirements, NRS 445B.520¹⁹ and 445B.530²⁰ allows the State Environmental Commission to assume jurisdiction over the local air quality management program to ensure that the CAA requirements are satisfied. In addition, EPA has authority to impose sanctions on a State where EPA “. . . finds that any requirement of an approved plan (or approved part of a plan) is not being implemented . . .”.²¹

¹⁸ “Establishment and administration of program; contents of program; designation of air pollution control agency of county for purposes of federal act; powers and duties of local air pollution control board; notice of public hearings; delegation of authority to determine violations and levy administrative penalties; cities and smaller counties; regulation of certain electric plants prohibited”; May 23, 2007.

¹⁹ “Commission may establish or supersede county program”.

²⁰ “Commission may assume jurisdiction over specific classes of air contaminants”.

²¹ 1990 CAAA; Section 179 “Sanctions and Consequences of Failure to Attain”.

Part D Requirements

The 1990 CAA lists the requirements for “Serious” PM₁₀ NAAs in Part D, Subparts 1 and 4, and the General Preamble. These requirements were completed, implemented, and submitted to EPA by the dates specified in Section 187(a). A summary of these SIP elements is detailed in Table 5-1. EPA has not taken formal action on these elements. Table 5-1 also describes current activities by AQMD to revise and resubmit certain materials previously submitted to EPA based on consultation between the AQMD and EPA. In accordance with the Calcagni Memorandum, the AQMD requests that EPA simultaneously approve the applicable SIP elements and redesignation request.

PM₁₀ NAAs reclassified as “Serious” under section 188(b)(2) of the CAA are required to submit, within 18 months of the area’s reclassification, SIP revisions providing for the implementation of BACM no later than four years from the date of reclassification. The SIP must also contain, among other things, a demonstration that the implementation of BACM will provide for attainment of the PM₁₀ NAAQS no later than December 31, 2001 (See CAA sections 188(c)(2) and 189(b)). EPA has provided specific guidance on developing “Serious” area PM₁₀ SIP revisions in an addendum to the General Preamble to Title I of the Clean Air Act.²²

In response to the “Serious” designation, the AQMD prepared a PM₁₀ SIP. The SIP included a periodic emission inventory that identified the significant wintertime PM₁₀ sources in the Truckee Meadows as construction/grading, street sanding, street sweeping, and RWC. In “Serious” PM₁₀ NAAs, BACM is required to be applied to these sources. To ensure that BACM is properly applied, the AQMD follows EPA guidance, consults with EPA during the rule development process, and participates in the EPA Region IX PM₁₀ SIP BACM working group. This group meets twice per year to discuss and share knowledge about control measures affecting “Serious” PM₁₀ NAAs in the Pacific Southwest. However, no meetings have taken place since 2009.

The “Serious” PM₁₀ SIP was adopted by the WCDBOH on July 26, 2002 and submitted to EPA on August 5, 2002. Additional SIP elements were submitted in 2006 to address deficiencies in the RWC regulation and emergency episode plan. EPA has approved many of these submittals, but has not fully approved the PM₁₀ SIP.

In order to ensure that the Prevention of Significant Deterioration (PSD) program will become fully effective immediately upon redesignation (to replace the Part D new source review program), the County must either be delegated the Federal PSD program or make any needed modifications to its rules to have the approved PSD program apply to the affected area upon redesignation. EPA granted full delegation of the Federal PSD program (40 CFR 52.21) to Washoe County in March 2008.

²² 59 FR 41998 (August 16, 1994).

Table 5-1
Part D Requirements and Actions for the Truckee Meadows PM₁₀ NAA

| CAA Section | Requirement | Reference | Submitted to EPA | Comments |
|-------------|---|--|--|--|
| 172(c)(1) | Reasonably Available Control Measure (RACM)/ Reasonably Available Control Technology (RACT) | --- | --- | BACM subsumes RACM. |
| 172(c)(2) | RFP | EPA's General Preamble, ²³ Calcagni Memorandum at page 6, ²⁴ and Clean Data Policy ²⁵ | --- | Attained the 24-hour PM ₁₀ NAAQS in 2002 based on ambient air monitoring data. Attained the 24-hour PM ₁₀ NAAQS based on EPA's clean data finding for 2007-2009. ²⁶ |
| 172(c)(3) | Emission Inventories | EPA's General Preamble, ²⁷ Calcagni Memorandum at page 6. ²⁸ | Baseline and periodic inventories submitted at various times, most recently in January 2013. | The 2011 periodic inventory was also used as a baseline for the 2011 attainment inventory and is included in Chapter 6, Maintenance Plan. |
| 172(c)(4) | Identification and Quantification | EPA's General Preamble, ²⁹ Calcagni Memorandum at page 6. ³⁰ | --- | N/A |

²³ 57 FR 13498, 13564 (April 16, 1992).

²⁴ "Procedures for Processing Requests to Redesignate Areas to Attainment"; John Calcagni, Director; Air Quality Management Division (MD-15); September 4, 1992.

²⁵ "Clean Data Policy for the Fine Particulate National Ambient Air Quality Standards"; Stephen D. Page, Director, Office of Air Quality Planning and Standards; December 14, 2004.

²⁶ 76 FR 21807 (April 19, 2011).

²⁷ 57 FR 13498, 13564 (April 16, 1992).

²⁸ "Procedures for Processing Requests to Redesignate Areas to Attainment"; John Calcagni, Director; Air Quality Management Division (MD-15); September 4, 1992.

²⁹ 57 FR 13498, 13564 (April 16, 1992).

³⁰ "Procedures for Processing Requests to Redesignate Areas to Attainment"; John Calcagni, Director; Air Quality Management Division (MD-15); September 4, 1992.

Table 5-1 (continued)
Part D Requirements and Actions for the Truckee Meadows PM₁₀ NAA

| CAA Section | Requirement | Reference | Submitted to EPA | Comments |
|-------------|-----------------------------------|--|------------------|---|
| 172(c)(5) | NSR | EPA's General Preamble, ³¹ Calcagni Memorandum at page 6, ³² 030.500-030.508, ³³ and Nichols Memo ³⁴ | April 7, 1994 | Lack of approval of NAA NSR program not an obstacle to redesignation. Washoe County's PSD program will become fully effective immediately upon redesignation, pursuant to EPA delegation. ³⁵ |
| 172(c)(6) | Other Measures as Necessary | EPA's General Preamble, ³⁶ Calcagni Memorandum at page 6. ³⁷ | --- | N/A |
| 172(c)(7) | Compliance with Section 110(a)(2) | NRS 445B.500 ³⁸ | --- | Addressed earlier (first page) in this chapter. |
| 172(c)(8) | Equivalent Techniques | EPA's General Preamble ³⁹ and Calcagni Memorandum at page 6. ⁴⁰ | --- | N/A |

³¹ 57 FR 13498, 13564 (April 16, 1992).

³² "Procedures for Processing Requests to Redesignate Areas to Attainment"; John Calcagni, Director; Air Quality Management Division (MD-15); September 4, 1992.

³³ WCDBOH Regulations Governing Air Quality Management; Section 030.050-030.508, "Federal New Source Review (NSR)".

³⁴ "Part D New Source Review (part D NSR) Requirements for Areas Requesting Redesignation to Attainment"; Mary D. Nichols, Assistant Administrator for Air and Radiation (6101); October 14, 1994.

³⁵ Agreement for Delegation of the Federal Prevention of Significant Deterioration (PSD) Program by the United States Environmental Protection Agency, Region 9 to the Washoe County District Health Department, 3/13/08.

³⁶ 57 FR 13498, 13564 (April 16, 1992).

³⁷ "Procedures for Processing Requests to Redesignate Areas to Attainment"; John Calcagni, Director; Air Quality Management Division (MD-15); September 4, 1992.

³⁸ "Establishment and administration of program; contents of program; designation of air pollution control agency of county for purposes of federal act; powers and duties of local air pollution control board; notice of public hearings; delegation of authority to determine violations and levy administrative penalties; cities and smaller counties; regulation of certain electric plants prohibited".

³⁹ 57 FR 13498, 13564 (April 16, 1992).

⁴⁰ "Procedures for Processing Requests to Redesignate Areas to Attainment"; John Calcagni, Director; Air Quality Management Division (MD-15); September 4, 1992.

Table 5-1 (continued)
Part D Requirements and Actions for the Truckee Meadows PM₁₀ NAA

| CAA Section | Requirement | Reference | Submitted to EPA | Comments |
|--------------|---|---|---|--|
| 172(c)(9) | Contingency Measures | EPA's General Preamble, ⁴¹ Calcagni Memorandum at page 12, ⁴² and Clean Data Policy | (Maintenance plan contingency measures supersede the 172(c)(9) attainment contingency measure requirement.) | Attained the 24-hour PM ₁₀ NAAQS in 2011 based on ambient air monitoring data. Attained the 24-hour PM ₁₀ NAAQS based on EPA's clean data finding for 2007-2009. |
| 176(c) | Conformity | --- | March 21, 2013 | No EPA action. Lack of approval not an obstacle to redesignation. |
| 189(a)(1)(A) | NSR | 030.500-030.508 ⁴³ and Nichols Memo | April 7, 1994 | No EPA action. Lack of approval not an obstacle to redesignation. |
| 189(a)(1)(B) | Demonstration of Attainment or Impracticality | Clean Data Policy | --- | Attained the 24-hour PM ₁₀ NAAQS in 2011 based on ambient air monitoring data. Attained the 24-hour PM ₁₀ NAAQS based on EPA's clean data finding for 2007-2009. |
| 189(a)(1)(C) | RACM | --- | --- | BACM subsumes RACM. |

⁴¹ 57 FR 13498, 13564 (April 16, 1992).

⁴² "Procedures for Processing Requests to Redesignate Areas to Attainment"; John Calcagni, Director; Air Quality Management Division (MD-15); September 4, 1992.

⁴³ WCDBOH Regulations Governing Air Quality Management; Section 030.500-030.508, "Federal New Source Review (NSR)".

Table 5-1 (continued)
Part D Requirements and Actions for the Truckee Meadows PM₁₀ NAA

| CAA Section | Requirement | Reference | Submitted to EPA | Comments |
|--------------|-----------------------------|---|---------------------------------------|--|
| 189(b)(1)(A) | Attainment Demonstration | Clean Data Policy | --- | Attained the 24-hour PM ₁₀ NAAQS in 2011 based on ambient air monitoring data. Attained the 24-hour PM ₁₀ NAAQS based on EPA's clean data finding for 2007-2009. |
| 189(b)(1)(B) | BACM | 010.117, ⁴⁴ 040.005, ⁴⁵ 040.030, ⁴⁶ 040.031, ⁴⁷ 040.032, ⁴⁸ and 040.051 ⁴⁹ | Various times from 2002 through 2006. | Adopted BACM for dust control, street sanding, street sweeping, and residential wood combustion. |
| 189(c) | Milestones | EPA's General Preamble, ⁵⁰ Calcagni Memorandum at page 6, ⁵¹ and Clean Data Policy | --- | Attained the 24-hour PM ₁₀ NAAQS in 2011 based on ambient air monitoring data. Attained the 24-hour PM ₁₀ NAAQS based on EPA's clean data finding for 2007-2009. |
| 189(e) | PM ₁₀ Precursors | 2011 periodic emissions inventory and attainment of the NAAQS | N/A | No Major sources of direct PM ₁₀ or PM ₁₀ precursor emissions (NO _x , SO _x , or VOC) sources in the Truckee Meadows NAA. |

⁴⁴ 72 FR 33397 (June 18, 2007).

⁴⁵ 72 FR 33397 (June 18, 2007).

⁴⁶ WCDBOH Regulations Governing Air Quality Management, Section 040.030, "Dust Control". Submitted to EPA August 2002.

⁴⁷ 71 FR 14386 (March 22, 2006).

⁴⁸ 71 FR 14386 (March 22, 2006).

⁴⁹ 72 FR 33397 (June 18, 2007).

⁵⁰ 57 FR 13498, 13564 (April 16, 1992).

⁵¹ "Procedures for Processing Requests to Redesignate Areas to Attainment"; John Calcagni, Director; Air Quality Management Division (MD-15); September 4, 1992.

CHAPTER 6

MAINTENANCE PLAN

Pursuant to the Calcagni Memorandum and Section 107(d)(3)(E) of the CAA, the EPA must fully approve a maintenance plan, including a contingency plan, which meets the requirements of Section 175A. This maintenance plan meets these requirements by including the following core provisions to ensure maintenance of the 24-hour PM₁₀ NAAQS.

- Attainment Inventory;
- Maintenance Demonstration;
- Motor Vehicle Emissions Budget;
- Monitoring Network;
- Verification of Continued Attainment; and
- Contingency Plan.

In accordance with Section 175A(b) of the CAA, the AQMD will prepare and submit another maintenance plan eight years after this redesignation/maintenance plan is approved. The purpose of this revision is to provide for maintenance of the 24-hour PM₁₀ NAAQS for an additional ten years following the first 10-year period.

Attainment Inventory

According to the Calcagni Memorandum, “The State should develop an attainment emissions inventory to identify the level of emissions in the area which is sufficient to attain the NAAQS.” Since 1990, the AQMD has been compiling PM₁₀ emissions inventories on a triennial schedule with the most recent inventory prepared for 2011. These inventories were prepared using EPA guidance and models.

Below is a summary of procedures used to ensure that PM₁₀ emissions were calculated and apportioned accurately for the Truckee Meadows. Complete documentation is included in “Washoe County, Nevada 2011 Periodic Emissions Inventory”.

Point Sources: Latitude/Longitude coordinates are maintained for each point source. Geographic Information Systems (GIS) software was used to overlay HA 87 onto all point sources to determine if it was to be included in the Truckee Meadows PM₁₀ emissions inventory.

Nonpoint Sources: Nonpoint sources with an AQMD operating permit are managed in the emissions inventory as if it were a point source (see above). Other nonpoint sources are grouped by Source Classification Code (SCC) and assigned a surrogate, which is spatially representative of that process. Typical surrogates are population, dwelling units, employment, and VMT. Surrogates are spatially disaggregated into a variety of geographies such as census areas (blocks, block groups, and tracts), Transportation Analysis Zones (TAZ), and ZIP codes. GIS is used to determine what portion of each

surrogate is included in HA 87. This fraction is applied to county-level emissions for each SCC emissions to determine Truckee Meadows PM₁₀ emissions.

Non-Road Mobile Sources: Non-Road Mobile Sources are grouped by SCCs and assigned a surrogate which is spatially representative of that process. Surrogate fractions are applied to county-level emissions for each SCC emissions to determine Truckee Meadows PM₁₀ emissions.

On-Road Mobile Sources: The Metropolitan Planning Organization (MPO) manages the regional transportation demand model. The model includes planning assumptions, such as population and VMT, for each TAZ in the county. GIS software was used to overlay HA 87 onto all TAZs to determine if it was to be included in the Truckee Meadows PM₁₀ emissions inventory. Data from TAZs within HA 87 were combined and incorporated into the MOVES model to calculate on-road mobile source PM₁₀ emissions.

As discussed earlier in Chapter 2, the Truckee Meadows attained the 24-hour PM₁₀ NAAQS in 2002. Because air quality improvements were a result of the SIP, any periodic emissions inventory from 2002 to 2011 could represent the attainment inventory. This is consistent with the Calcagni Memorandum, which indicated that “any emission inventories available at the time and including the emissions during the time period associated with the monitoring data showing attainment” can be used to represent the attainment inventory. Therefore, the 2011 emissions inventory (Table 6-1)⁵² is identified as the attainment inventory because it used the best and updated methodologies for all sources, and it has the most comprehensive and current emission inventory that is sufficient to attain the NAAQS.

Table 6-1
2011 PM₁₀ Attainment Inventory (lbs/day)

| Category | 2011 Attainment Inventory |
|------------------|------------------------------|
| Point Sources | 25 |
| Nonpoint Sources | 22,812 |
| Non-Road Mobile | 606 |
| On-Road Mobile | <u>1,183</u> |
| Total* | 24,626 |

* Totals may not add up due to rounding.

Maintenance Demonstration

Maintaining the PM₁₀ NAAQS may be demonstrated by showing that future emissions will not exceed the level of the attainment inventory. Also, attainment must be demonstrated for the 10-

⁵² Washoe County, Nevada; 2011 Periodic Emissions Inventory; November 2012; Table 1-4.

year period following EPA’s approval action on the redesignation request. The final year of this maintenance demonstration is 2030.

Truckee Meadows Maintenance Emissions Limit

The 2011 periodic emissions inventory⁵³ was used as a baseline to develop a maintenance emissions limit for the Truckee Meadows. This limit is the level considered to be sufficient to ensure continued attainment of the NAAQS in future planning years. Growth and control factors were applied to many of the emission categories of the 2011 inventory to generate a 2030 Truckee Meadows emissions budget. The growth factors were based on demographic, economic, VMT, and meteorological data (Appendix B, Table B-2), and the control factors were based on planned emission reduction strategies. Several PM₁₀ categories were recalculated because they were either significant (i.e., paved roads and RWC) or had models available that could provide specific year emissions (i.e., non-road and on-road motor vehicles).

2011 was an unusually high emission year for wildfires during the PM₁₀ season. To approximate a more normal wildfire emission during the PM₁₀ season, an average of the four previous inventory years’ (1999, 2002, 2005, and 2008) wildfire emissions were used for planning year projections (Table 6-2). The rationale is that wildfire emission alone should not drive future year planning purposes. Future large scale wildfires during PM₁₀ season will be treated as exceptional events and will be submitted to the EPA for exclusion when they occur.

Table 6-2
Historic Truckee Meadows PM₁₀ Wildfire Emission Inventories (lbs/day)

| Inventory Year | PM ₁₀ Emissions |
|---------------------|----------------------------|
| 1999 | 19 |
| 2002 | 40 |
| 2005 | 10 |
| 2008 | 15 |
| 2011 | 10,947 |
| Average (1999-2008) | 21 |
| Average (1999-2011) | 2,206 |

The 2011 Truckee Meadows PM₁₀ maintenance emissions limit was established at 13,700 lbs/day (Table 6-3).

⁵³ See Appendix C. Washoe County, Nevada; 2011 Periodic Emissions Inventory and Appendices A, B, C

Table 6-3
Truckee Meadows PM₁₀ Emission Inventories (lbs/day)

| Source Category | 2011 | 2011 |
|-----------------|--------------------|----------------------------|
| | Periodic Inventory | Maintenance Emission Limit |
| Point | 25 | 25 |
| Nonpoint | 22,812 | 11,885 |
| Non-Road Mobile | 606 | 606 |
| On-Road Mobile | <u>1,183</u> | <u>1,183</u> |
| Total* | 24,626 | 13,700 |

* Totals may not add up due to rounding.

The 2011 Truckee Meadows maintenance emission limit satisfies Condition 5.a of the Calcagni Memorandum because it:

- Uses the most accurate emissions inventory methodologies;
- Is a comprehensive and current emissions inventory;
- Identifies the level of emissions in the Truckee Meadows sufficient to attain the NAAQS; and
- Will be the emissions inventory most consistent with the 2030 projected inventory required for demonstrating maintenance of the NAAQS.

Maintenance of the NAAQS

The projected 2030 emissions inventory used the 2011 Truckee Meadows Maintenance Emissions Limit as its baseline. Each of the emission categories in the 2011 Truckee Meadows Maintenance Emissions Limit (Appendix C) were projected to 2030 levels using one of the following EPA emission methodologies or models.⁵⁴

1. Baseline Emission Projections: Washoe County’s 2030 population, dwelling units, employment, and VMT forecasts (Appendix B, Table B-2) were used as surrogates to project the 2030 emissions. These forecasts were consistent with those used by the local MPO.
2. EPA Models: The non-road and on-road motor vehicle categories accounted for approximately 6% of the 2011 Truckee Meadows emissions budget. To ensure consistency throughout the maintenance demonstration period, the same non-road and on-road models (NONROAD2008a and MOVES2010b) were used to estimate the 2030 inventory.

The 2030 on-road vehicles category incorporated the latest planning assumptions for the transportation network including VMT and vehicle speeds. As with previous

⁵⁴ “Procedures for Preparing Emissions Projections” (EPA-450/4-91-019).

periodic emission inventories, these planning assumptions were consistent with those used by the MPO for their transportation plans.

3. Emission Category Surveys: Residential wood combustion is a significant source of PM₁₀ emissions. The RWC category is updated on a regular basis via an emission category survey. As part of the carbon monoxide maintenance plan SIP, the AQMD is committed to conducting this survey at least once every three years.⁵⁵

Table 6-5 lists the 2011 Truckee Meadows Maintenance Emission Limit and the 2015, 2020, 2025, and 2030 projected emissions for the four major PM₁₀ emission categories. A more detailed inventory can be found in Appendix C.

Table 6-4
Truckee Meadows PM₁₀ Maintenance Emission Inventories (lbs/day)

| Category | 2011* | 2015 | 2020 | 2025 | 2030 |
|------------------|--------------|------------|------------|------------|------------|
| Point Sources | 25 | 28 | 32 | 37 | 42 |
| Nonpoint Sources | 11,885 | 11,510 | 11,379 | 11,361 | 11,512 |
| Non-Road Mobile | 606 | 501 | 386 | 328 | 307 |
| On-Road Mobile | <u>1,183</u> | <u>953</u> | <u>839</u> | <u>828</u> | <u>883</u> |
| Total** | 13,700 | 12,992 | 12,637 | 12,554 | 12,744 |

* Truckee Meadows Maintenance Emissions Limit.

** Totals may not add up due to rounding.

Summary

Population, households, employment, and VMT are projected to increase through 2030 and beyond. Federally enforceable PM₁₀ control programs targeting RWC, diesel-powered motor vehicles, and diesel fuel will help offset this growth. Because future emissions are not projected to exceed the level of the 2011 Truckee Meadows maintenance emissions limit, the 24-hour PM₁₀ NAAQS will be maintained through the attainment demonstration period.

Although more stringent control strategies will be in place for RWC, direct PM₁₀ and PM₁₀ precursor emissions from RWC are likely to increase on cold winter nights. Their proportion of the entire inventory is also likely to increase. If PM₁₀ concentrations approach the 24-hour NAAQS, Washoe County's emergency episode plan⁵⁶ is activated and includes a mandatory curtailment. A recent survey indicated that this program reduces RWC emission 74% during Stage I alerts.⁵⁷ This contributes to a 22% reduction of total PM₁₀ emission for the Truckee Meadows for the horizon year of 2030.

⁵⁵ 73 FR 38124 (July 3, 2008).

⁵⁶ 72 FR 33397 (June 18, 2007).

⁵⁷ "Washoe County Health District; Air Quality Management Division; Residential Wood Use Survey"; InfoSearch International; May 2013.

Motor Vehicle Emissions Budget

Transportation conformity is required by Section 176(c) of the CAA. Under EPA’s transportation conformity regulations,⁵⁸ transportation plans and improvement programs must be consistent with, or conform to, the motor vehicle emissions budget (MVEB) defined in the applicable SIP. These budgets specify the level of on-road motor vehicle emissions that are consistent with attainment and maintenance of air quality standards and should include an adequate safety margin.⁵⁹

Emissions inventory data for the years 2015 through 2030 were used to establish the MVEB. The MVEB includes road construction fugitives, paved road fugitives, unpaved road fugitives, on-road vehicles, diesel idling, and a safety margin. The safety margin is the excess emissions between the total projected emissions for a specific year and the 2011 maintenance emissions limit (Table 6-5).

Table 6-5
Truckee Meadows PM₁₀ Safety Margin (lbs/day)

| Category | 2015 | 2020 | 2025 | 2030 |
|---|---------------|---------------|---------------|---------------|
| 2011 Maintenance Emissions Limit | 13,700 | 13,700 | 13,700 | 13,700 |
| PM ₁₀ Maintenance Emissions Inventory* | <u>12,992</u> | <u>12,637</u> | <u>12,554</u> | <u>12,744</u> |
| Safety Margin | 708 | 1,063 | 1,146 | 955 |

* Projected 2015, 2020, 2025, 2028, and 2030 emission inventories from Table 6-4.

The MVEB is set at a level that keeps the intermediate (2015, 2020, and 2025) and horizon (2030) year Truckee Meadows emissions less than the 2011 Truckee Meadows maintenance emissions limit. For years beyond 2030, the MVEB will remain at the 2030 level of 6,927 bs/day (Table 6-6).

Table 6-6
Truckee Meadows PM₁₀ MVEB (lbs/day)

| Category | 2015 | 2020 | 2025 | 2030 |
|--------------------------------|------------|--------------|--------------|------------|
| Road Construction | 183 | 189 | 185 | 180 |
| Paved Roads - Fugitives | 1,414 | 1,517 | 1,627 | 1,736 |
| Unpaved Roads - Fugitives | 2,380 | 2,479 | 2,688 | 3,174 |
| On-Road Vehicles | 946 | 835 | 825 | 880 |
| Diesel Idling | 7 | 4 | 3 | 3 |
| Safety Margin | <u>708</u> | <u>1,063</u> | <u>1,146</u> | <u>955</u> |
| Motor Vehicle Emissions Budget | 5,638 | 6,088 | 6,473 | 6,927 |

⁵⁸ 40 CFR 93.

⁵⁹ Safety margin means the amount by which the total projected emissions from all sources of a given pollutant are less than the total emissions that would satisfy the applicable requirement for reasonable further progress, attainment, or maintenance. (40 CFR 93.101)

Monitoring Network

Once the Truckee Meadows has been redesignated to an attainment/maintenance area, the AQMD will continue to operate an appropriate PM₁₀ monitoring network, in accordance with 40 CFR 58, to verify the attainment status of the area. In addition, Washoe County's PM₁₀ monitoring network will be reviewed annually pursuant to 40 CFR 58.10 to ensure the network meets the monitoring objectives defined in 40 CFR 58, Appendix D. Funding to meet these objectives has, and will be, primarily obtained from: 1) EPA Section 105 grants, and 2) Nevada Department of Motor Vehicles funds.

Ambient PM₁₀ monitoring data will be collected and quality assured in accordance with 40 CFR 58, recorded in the AQS, and will be available for public review. Figure 6-1 features the South Reno monitoring site as an example, and Figure 2-1 is a map of all current PM₁₀ monitoring sites in Washoe County.

Figure 6-1
South Reno Monitoring Site



Verification of Continued Attainment

As described in the previous section, the AQMD will continue to operate and maintain an appropriate PM₁₀ monitoring network. Ambient air monitoring data will be used to verify attainment and maintenance of the 24-hour PM₁₀ NAAQS.

Tracking actual emissions can identify potential increases in ambient PM₁₀ levels. The AQMD has three existing mechanisms to track emissions. These mechanisms, listed below, will remain in place and be used to screen for significant increases in actual PM₁₀ emissions.

1. Periodic Emissions Inventories: The AQMD will continue to prepare, and submit to EPA, comprehensive periodic PM₁₀ emissions inventories via the Emissions Inventory Gateway on a triennial schedule. The last periodic emissions inventory was prepared for calendar year 2011.
2. Consolidated Emissions Reporting Rule (CERR) and Air Emissions Reporting Rule (AERR): The CERR and AERR simplify and streamline emissions reporting requirements. It requires regular updates of point and area sources within Washoe County. The AQMD will continue to meet the requirements of the CERR and AERR.
3. Residential Wood Use Survey: Residential wood combustion is a significant PM₁₀ source during the winter season. The AQMD has completed nine residential wood use surveys between 1993 and 2013. These surveys estimated the device (fireplaces, woodstoves, and pellet stoves) population, amount of wood burned, and PM₁₀ emissions in Washoe County. As part of this maintenance plan, as well as the carbon monoxide maintenance plan,⁶⁰ the AQMD is committed to conducting this survey at least once every three years.

⁶⁰ 73 FR 38124 (July 3, 2008).

Furthermore, the AQMD's Enforcement Branch will continue to enforce the permanent and enforceable programs addressed in Chapter 4. Currently, the Enforcement Branch consists of five inspectors to ensure compliance with local air quality regulations. They inspect for permit conditions, respond to complaints (dust and permit), patrol and enforce no-burn days during the burn season, and issue warnings and citations for any violations found.

When no-burn days are issued, the enforcement staff will patrol neighborhoods for visible smoke from chimneys. They also respond to complaints from neighbors of the home owners who are burning their wood burning devices during a no-burn day. They will order the home owner to stop burning immediately and issue the home owner a warning for the first offense. Then they will return three to four hours later to ensure that the smoke has ceased to be emitted from the chimney. If the smoke continues, the home owner would then be issued a citation.

To ensure an effective Street Sanding and Sweeping Program (DBOH regulations 040.031 and 040.032), the AQMD holds working group meetings twice a year. The street sanding and sweeping working group is made up of public works road department personnel from all the municipalities. It meets twice a year (once in Fall, before snow fall, and once in Spring) to share information on sweeping/sanding equipment and discuss sanding and sweeping related issues. As part of the enforcement and compliance component of the program, each jurisdiction is required to submit its sanding and sweeping report on an annual basis (July to June), which included such information as date of each storm event, amount of sand and salt or brine applied to roadways, as well as the sand pick up date after each storm event.

There is a gradual shift over the last several years from sand to more brine solutions for roadway deicing. The shift was in part due to the proactive approach taken by the jurisdictions to apply the brine solutions before an impending storm to prevent accidents. In doing so, it also saves vehicle fuel, reduces emissions, and lowers the need for manpower and time associated with sand removal after a storm event.

Continued ambient air monitoring, emissions tracking, and enforcement will ensure verification of continued attainment and maintenance of the 24-hour PM₁₀ NAAQS.

Contingency Plan

Section 175A of the CAA requires that a maintenance plan include contingency provisions, as necessary, to promptly correct any violation of the PM₁₀ NAAQS that occurs after redesignation of the area. The plan should clearly identify:

- Specific indicators, or triggers, which will be used to determine when contingency measures need to be implemented;
- The contingency measures to be adopted;
- A schedule and procedure for adoption and implementation; and
- A specific time limit for action.

The typical PM₁₀ season in the Truckee Meadows is November, December, and January. This is when the highest ambient PM₁₀ concentrations, and possible exceedances, are most likely to

occur. If monitoring data indicate a PM₁₀ violation, then Contingency Plan “A” begins control measure development and implementation.

Contingency Plan “A”

Trigger Mechanism “A”: A violation of the 24-hour PM₁₀ NAAQS verified from any SLAMS, Special Purpose Monitor (SPM), or NCore site operated by the AQMD. Violation of the NAAQS is defined as when the expected number of days per calendar year with a 24-hour concentration above 150 µg/m³, as determined in accordance with 40 CFR 50, Appendix K, is greater than one.

Contingency Measure “A”: The AQMD will maintain a list of potential contingency measures and provide recommendations for implementation to the WCDBOH. Recommendations to the WCDBOH shall occur at their next regularly scheduled meeting, but no later than 45 days after reaching Trigger Mechanism “A” levels. The recommendations will also include a timeline for adoption and implementation. Contingency measures recommended to the WCDBOH shall be adopted and implemented as promptly and expeditiously as possible. Any rule revision should be adopted and implemented before the next PM₁₀ season (November, December, and January). Prompt action and implementation of contingency measures may prevent future exceedances and violations of the PM₁₀ NAAQS.

The list of potential contingency measures will concentrate on the significant emission categories impacting PM₁₀ season emissions. Table 6-7 summarizes the current list. Because of changes in growth and technology, the effectiveness of each measure may vary over time. A triennial review and reprioritization of the measures in coordination with the periodic PM₁₀ emissions inventory should be adequate to anticipate the need for additional emission reductions. In addition, the EPA Regional Office will be notified within 30 days of implementation of Contingency Measure “A”.

Table 6-7
Potential PM₁₀ Contingency Measures

| Emission Category | Potential Contingency Measure |
|-----------------------------|---|
| Paved Streets | <ul style="list-style-type: none"> • Increase stringency of street sanding and sweeping programs • Improve unpaved shoulders • Transportation control measures to reduce VMT |
| Unpaved Streets | <ul style="list-style-type: none"> • Improve unpaved streets and shoulders • Post speed limits to decrease vehicle speeds • Restrict access to decrease Average Daily Trips (ADT) and VMT |
| Dust Control | <ul style="list-style-type: none"> • Phased mass grading • Mass grading allocation system • Stabilize projects during PM₁₀ season • Decrease one acre dust control permit exemption |
| Residential Wood Combustion | <ul style="list-style-type: none"> • Increase one acre lot size exemption • Mandatory curtailment at lower PM₁₀ concentrations • Change-out program to cleaner burning device |
| Mobile Sources (Diesel) | <ul style="list-style-type: none"> • Non-road & on-road diesel engine repowers and rebuilds • Non-road & on-road diesel tailpipe controls (i.e., filters and catalysts) • Truck Stop Electrification systems for heavy-duty vehicles • More stringent heavy-duty diesel vehicle idling limits • Fleet modernization • More stringent inspection & maintenance program of light-duty, medium-duty, and heavy-duty vehicles |

Summary

The AQMD contingency plan meets Condition 5.e of the Calcagni Memorandum by promptly and expediently addressing future exceedances of the PM₁₀ NAAQS with clearly defined trigger mechanisms, contingency measures, adoption schedules, and implementation schedules.

Appendix A

Permanent and Enforceable Reduction Calculations

Appendix A.1 – Quantification of RWC Program

The 2011 PM₁₀ emission reductions from Washoe County’s RWC program are summarized below.

Methodology:

1. The emission reductions were determined by applying the difference between the uncertified (30.6 lbs/ton) and certified (17.15 lbs/ton) woodstove emission factors to the certified woodstove activity level (6,630 [NAA] and 14,051 tons [County]).

Assumptions:

1. Washoe County’s RWC program is responsible for 100% of the certified woodstoves/inserts within Washoe County. Without this program, all woodstoves/inserts in Washoe County would be uncertified.

References:

1. Activity levels, SAF, days per week, emission factors, and PM fractions from Washoe County, Nevada’s 2011 Periodic Emissions Inventory; “2011 RWC Em projected from 2009-10 RWC survey.xlsx”.

The same methodology and assumption were also used to determine CO and PM_{2.5} emission reductions.

| Activity Level and Emission Factors – Certified Woodstoves/Inserts | | | | |
|--|--------------------------------|--|------------------------|-------------------------|
| | | Emission Factor* (lbs/ton of wood burned) | | |
| <u>Area</u> | <u>Tons of Wood Burned</u> | <u>CO</u> | <u>PM₁₀</u> | <u>PM_{2.5}</u> |
| HA 87 | 6,630 | 71.5 | 13.45 | 13.45 |
| County | 14,051 | 71.5 | 13.45 | 13.45 |

| Emission Benefits – Certified Woodstoves/Inserts | | | | |
|--|--|--|------------------------|-------------------------|
| | | Emission Reductions (lbs/typical PM10 season day) | | |
| <u>Area</u> | | <u>CO</u> | <u>PM₁₀</u> | <u>PM_{2.5}</u> |
| HA 87 | | 4,167 | 784 | 784 |
| County | | 8,832 | 1,662 | 1,662 |

* Difference between uncertified and certified woodstoves/inserts.

Appendix A.2 – Quantification of Street Sanding and Sweeping Programs

The 2011 PM₁₀ emission reductions in the Truckee Meadows from Washoe County's street sanding and sweeping programs are summarized below.

1999 emissions = 1,894 lbs/day
2011 emissions = 339 lbs/day
2011 emission reductions = 1,555 lbs/day

Methodology:

1. The emission reductions were determined by the difference between the 1999 and 2011 emission inventories.

Assumptions:

1. The 1999 emissions inventory assumed no controls.
2. The 2011 emissions inventories assumed full implementation of WCDBOH Regulations Governing Air Quality Management Sections 040.031 and 040.032.
3. Weather conditions in 1999 were similar to 2011.

References:

1. PM₁₀ "Serious" SIP submittal, Section V, Control Strategies, pages 12-16, August 2002.
2. Washoe County, Nevada; 1999 Emissions Inventory for Particulate Matter; Table 3-4.
3. Washoe County, Nevada; 2011 Periodic Emissions Inventory; Table 3-4.

Appendix A.3 – Quantification of Dust Control Program

The 2011 PM₁₀ emission reductions from Washoe County's Dust Control program are summarized below.

2011 controlled emissions = 430.5 lbs/day

2011 uncontrolled = 2 x 430.5 lbs/day = 861 lbs/day

2011 emission reductions = 430.5 lbs/day

Methodology:

1. Activity level and emission factors obtained from Table 3-10 of the 2011 Periodic Emissions Inventory.
2. Emission calculations same as those used for the 2011 inventory with the exception of control efficiency. Control efficiency used is the difference between uncontrolled (0%) and controlled (50%) efficiencies.

Assumptions:

1. Washoe County's dust control program is responsible for the 50% control efficiency used in the periodic emissions inventory calculations.

References:

Washoe County, Nevada; 2011 Periodic Emissions Inventory; Table 3-10.

Appendix A.4 - Quantification of the Emergency Episode Plan

The 2011 PM₁₀ emission reductions in the Truckee Meadows from Washoe County's street emergency episode plan are summarized below.

1) RWC

2011 PM₁₀ RWC emissions = 5,888 lbs/day

2011 PM₁₀ RWC emission from emergency episode = $EM_{RWC} \times [1 - (RP)(RE)(CE)]$
= $(5,888)[1 - (0.85)(0.86)(1.00)] = 1,584$ lbs/day

2011 PM₁₀ RWC emission reductions from emergency episode = 4,304 lbs/day

2) Prescribed Burnings

2011 PM₁₀ emissions from prescribed burning = 0 lbs/day

2011 PM₁₀ prescribed burning emission reductions from emergency episode = 0 lbs/day

3) Open/Permit Burns

2011 PM₁₀ emissions from open/permit burns = 18 lbs/day

2011 PM₁₀ open/permit burns emission reductions from emergency episode = 18 lbs/day

4) Human/Animal Cremation

2011 PM₁₀ emissions from human/animal cremation = 9 lbs/day

2011 PM₁₀ human/animal cremation emission reductions from emergency episode = 9 lbs/day

5) Total Emission Reductions = $(4,304 + 0 + 18 + 9)$ lbs/day = 4,331 lbs/day

Methodology:

1. The emission reductions for RWC were determined by applying rule effectiveness (RE), rule penetration (RP), and a control efficiency (CE) to the RWC category.
2. The emission reductions for the other categories are enforced by Health District regulations, which included mandatory no burn days during episodic events.

Assumptions:

1. For the RWC emission reduction: RP = 0.85, RE = 0.86, and CE = 1.00.

References:

1. Washoe County, Nevada; 2011 Periodic Emissions Inventory; Table 3-4.
2. "Washoe County Health District, Air Quality Management Division, Residential Wood Use Survey"; InfoSearch International; May 2010.

Appendix B

Growth Factors for Emission Projections

Appendix B.1 – Growth Factors for 2015, 2020, 2025, and 2030 Projections

Appropriate and reasonable growth and control assumptions ensure that planning emissions for 2015 through 2030 are realistically projected. Control factors were developed based on historic data and reasonable assumptions.

Growth and control factors for each emission category are listed in Table B-1. Detailed data for the growth factors are further listed in Table B-2.

Portions of the growth factors are based on various data from the Washoe County Consensus Forecast, used by the MPO in the development of its 2035 Regional Transportation Plan (RTP), provided in 5-year increment.

The historic climatic data were obtained from the National Oceanic and Atmospheric Agency, with future data based on 30-year normal averages between 1980 and 2010.

Table B-1 – Growth & Control Factors used for Truckee Meadows PM₁₀ Emissions Projection

| Major Category | Sub-Category | Growth Surrogate(s) | Control Factor(s) |
|-------------------------|--|--------------------------|---|
| POINT SOURCES | | | |
| | Geothermal | POP | None |
| | Printing | EMP | None |
| | Airports & Heliports | | |
| | GSE | AP | None |
| | Military Aircraft | UNI | None |
| | Commercial Aircraft | AP | None |
| | Gen Aviation - piston | AP | None |
| | Gen Aviation - turbine | AP | None |
| | Air Taxi - piston | AP | None |
| | Air Taxi - turbine | AP | None |
| | APU | AP | None |
| | Buffer Zone | POP&EMP | None |
| NONPOINT SOURCES | | | |
| | Stationary Source Fuel Combustion | | |
| | Industrial Fuel Combustion | EMP | None |
| | Com/Inst Fuel Combustion | EMP | None |
| | Res. Fuel Combustion | HH&HDD | None |
| | Res. Wood Combustion | | |
| | Fireplaces | HDD | No new solid fuel device is allowed w/in HA87, unless the property has ≥ 1 acre. Since not many parcels w/in HA87 are ≥ 1 acre, assumed that no new FPs will be installed. Also assumed that 1%/year of wood FPs will be replaced with gas FPs. |
| | Woodstoves/Inserts <i>Non-certified</i> | HDD | No new non-certified WS allowed. Older stoves being removed upon real estate transaction. Assumed future replacement apportionment of 75% Phase II WS, 20% Pellet stoves, and 5% gas FPs. Replacement % derived from historic data for Ph II WS & PS. |
| | <i>Certified, Phase 1</i> | HDD | No new Phase I WS allowed. Older stoves gradually being removed due to age. Assumed 5% reduction per year. |
| | <i>Certified, Phase 2</i> Pellet Stoves | Growth&HDD Growth&HDD | |
| | Industrial Processes | | |
| | Chemical Manufacturing | EMP | None |
| | Commercial Cooking | POP | None |
| | Food & Kindred Products - Manufacturing | EMP | None |
| | Mineral Processes | EMP | None |
| | Rubber/Plastic Processes | EMP | None |
| | Fabricated Metals | EMP | None |
| | Construction - Stationary | | |
| | <i>Road Construction*</i> | PGR | None |
| | <i>Residential Dust Projects (Non-Road Const.)</i> | PGR | None |
| | <i>Commercial Dust Projects (Non-Road Const.)</i> | EGR | None |
| | <i>Asphalt, Sand and Gravel, Abrasive Blasting</i> | EGR | None |
| | Machinery | EMP | None |
| | Mining and Quarrying - Stationary | EMP | None |
| | Miscellaneous Industrial Processes | EMP | None |
| | Solvent Utilization | | |
| | Architectural Coatings | HH | None |
| | Auto Refinishing | EMP | None |
| | Wood Furniture | EMP | None |
| | Paper | EMP | None |
| | Plastic Products | EMP | None |
| | Machinery & Equipment | EMP | None |
| | Electronic & Other Electrical | EMP | None |
| | Misc. Manufacturing | EMP | None |
| | Other Solvent Utilization | | |
| | Degreasing | EMP | None |
| | Dry Cleaning | EMP | None |
| | Graphic Arts | EMP | None |
| | Misc. Industrial Processes | EMP | None |
| | Misc. Commercial Processes | EMP | None |
| | Misc. Consumer/ Com. Solv. | EMP | None |
| | Cutback Asphalt Application | EMP | None |

| | | |
|--|----------------------|--|
| Emulsified Asphalt Appl. Pesticide, Fungicide & Rodenticide | EMP EMP | None None |
| Storage and Transport Gas Service Station Organic Chemical Storage | EMP EMP | None None |
| Waste Disp/Treat/Recovery Commercial/Industrial Incineration Publicly Owned Treatment Works Remediation/Reclamation/ Recycle | EMP POP/HH EMP | None None None |
| Misc. Non-Point Sources Paved Road Fugitive Emissions* Paved Road Fugitive Emissions, Sanding & Salting | VMT(RTP) SNO | Sand:Salt ratio shifted over the years. Based on historic data, anticipate 15% reduction in sand usage per year. |
| Unpaved Road Fugitive Emissions* | LVMT | |
| Dirt Road Fugitive Emissions | - | - |
| Wildfires | UNI | None |
| Structure Fires | UNI | None |
| Motor Vehicle Fires | UNI | None |
| Firefighting Training | UNI | None |
| Open/Permit Burning | UNI | None |
| Prescribed Burning | UNI | None |
| Refuse Fires | UNI | None |
| Auto & Misc. Repair Shops | POP | None |
| Health Services, Hospitals | POP | None |
| Essay Labs | EMP | None |
| Human & Animal Cremation | POP | None |
| NON-ROAD MOBILE SOURCES | | |
| CNG Engines | NR2008a | None |
| Diesel Engines | NR2008a | None |
| Gasoline Engines | NR2008a | None |
| LPG Engines | NR2008a | None |
| Locomotives | EMP | None |
| ON-ROAD MOBILE SOURCES | | |
| On-Road Vehicles* | MOVES2010b | None |
| HDDV Diesel Idling* | MOVES2010b | None |
| * Sub-Category included in MVEB | | |

Table B-2 – Growth Factors for 2015-2030 Projections for the Truckee Meadows Hydrographic Area

| Growth Factors | 2010 | 2011 | 2015 | 2020 | 2025 | 2030 | Reference |
|---|-----------|-----------|-----------|-----------|-----------|-----------|--|
| Uniform (UNI) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | --- |
| Daily Vehicle Miles Traveled (VMT) Ratio using 2011 Baseline | 5,773,560 | 6,080,990 | 6,157,848 | 6,596,915 | 7,040,489 | 7,390,867 | RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Local Vehicle Miles Traveled (LVMT) Ratio using 2011 Baseline | 472,725 | 497,198 | 503,316 | 539,802 | 585,265 | 634,418 | RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Population (POP) Ratio using 2011 Baseline | 280,881 | 283,288 | 292,914 | 313,771 | 328,272 | 341,696 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Population Growth Rate (PGR) Ratio using 2011 Baseline | 1.000 | 1.009 | 1.034 | 1.071 | 1.046 | 1.016 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Households (HH) Ratio using 2011 Baseline | 113,418 | 114,468 | 118,666 | 127,912 | 134,278 | 140,216 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Household Growth Rate (HHGR) Ratio using 2011 Baseline | 1.000 | 1.009 | 1.037 | 1.078 | 1.050 | 1.017 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Employment (EMP) Ratio using 2011 Baseline | 211,596 | 215,663 | 231,931 | 252,698 | 274,153 | 297,252 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Employment Growth Rate (EGR) Ratio using 2011 Baseline | 1.000 | 1.019 | 1.075 | 1.090 | 1.085 | 1.032 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Ag/Mining/Constr Employment (AMC) Ratio using 2011 Baseline | 14,869 | 15,114 | 16,096 | 17,439 | 18,847 | 20,348 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| AMC Emp Growth Rate (AMCGR) Ratio using 2011 Baseline | 1.000 | 1.017 | 1.065 | 1.083 | 1.081 | 1.030 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Mfg/Trans/Com/Util/wholesale (MTCUW) Ratio using 2011 Baseline | 29,049 | 29,531 | 31,457 | 34,059 | 36,803 | 39,768 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| MTCUW Emp Growth Rate (MTCUWGR) Ratio using 2011 Baseline | 1.000 | 1.017 | 1.065 | 1.083 | 1.081 | 1.031 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| Service & Office Emp (SVCOF) Ratio using 2011 Baseline | 61,942 | 63,181 | 68,139 | 74,567 | 81,173 | 88,221 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| SVCOF Emp Growth Rate (SVCOGR) Ratio using 2011 Baseline | 1.000 | 1.020 | 1.078 | 1.094 | 1.089 | 1.033 | 2012 WC Consensus data, as interpreted by RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. |
| RNO Airport Passenger (AP) Ratio using 2011 Baseline | 3,823,393 | 3,945,186 | 4,432,360 | 5,138,320 | 5,876,196 | 6,720,031 | RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. 2010 is actual data, the rest projected. |
| Airport Passenger Growth Rate (APGR) Ratio using 2011 Baseline | 1.000 | 1.032 | 1.123 | 1.159 | 1.144 | 1.053 | RTC of Washoe County; "2035 Regional Transportation Plan", April 19, 2013. 2010 is actual data, the rest projected. |
| Heating Degree Days (HDD)* Ratio using 2011 Baseline | 2,368 | 2,499 | 2,501 | 2,501 | 2,501 | 2,501 | National Climatic Data Center. Normal, Means and Extremes; Reno, NV (RNO) 30-year Normals (1980-2010) for 2015 forward. |
| Rainfall >= 0.01 inch (Rain)* Ratio using 2011 Baseline | 34.0 | 5.0 | 18.3 | 18.3 | 18.3 | 18.3 | National Climatic Data Center. Normal, Means and Extremes; Reno, NV (RNO) 30-year Normals (1980-2010) for 2015 forward. |
| Snowfall >= 1 inch (SNO)* Ratio using 2011 Baseline | 3.0 | 1.0 | 3.8 | 3.8 | 3.8 | 3.8 | National Climatic Data Center. Normal, Means and Extremes; Reno, NV (RNO) 30-year Normals (1980-2010) for 2015 forward. |

Episodic RWC EI Factors:

| | | | | | | | |
|--------------------|------|------|------|------|------|------|--|
| Rule Penetration | 0.85 | 0.85 | 0.88 | 0.88 | 0.88 | 0.88 | Washoe County Residential Wood Use Survey |
| Rule Effectiveness | 0.86 | 0.86 | 0.74 | 0.74 | 0.74 | 0.74 | Reports compiled by InfoSearch for 2009-2010 |
| Control Efficiency | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | (May 2010) & 2012-2013 (May 2013). |

Note: 2011 data is from Washoe County's Emissions Inventory compilation.

* Includes Jan, Nov, & Dec., 2015 - 2030 data are 30-year normal from 1981-2010, from 2013 NOAA Weather Summary file.

Note: The population and employment data are not specifically included in the main body of the RTP, but were used as inputs for the transportation model that generates VMT data. These data (2010, 15, 20, 25, 30) came from 2012 Washoe County Consensus Forecast, as provided by Judy Althoff/RTC. Airport passenger data, which was also used in the RTP, were provided by Peter Bang/RTC.

Appendix B.1 – Residential Wood Combustion

The 2009-2010 RWC survey was used for the 2011 emissions inventory calculation. An adjustment factor of 0.921 based on heating degree days and households was applied to the 2009-2010 survey to estimate the 2011 emission. This factor accounts for the colder 2009-2010 winter season and higher population as compared to the 2011-2012 winter season and population.

The most recent survey was completed for the 2012-2013 winter season. Likewise, adjustment factor based on heating degree days (HDD) was applied to the 2012-2013 survey to calculate the emissions from 2015 through 2030. Since non-certified woodstoves are not allowed within the Truckee Meadows, and new installation of certified phase II or fireplaces are only allowed on a property with greater or equal to one acre in size, the growth factors for the various RWC devices vary. Table A-3 is a summary of the adjustment methodologies used to project future RWC emissions. This factor accounts for the milder 2011-2012 winter season (2,499 heating degree days) compared to the historic normal (2,501 heating degree days) (Appendix A). This estimate is conservative and assumes that projected PM₁₀ emissions stay consistent with the heating degree days and allowable future RWC devices within the Truckee Meadows. It is used because RWC in the Truckee Meadows is controlled by a regulation that: 1) is permanent and enforceable, 2) does not allow non-EPA certified devices in new dwelling units, and 3) requires non-EPA certified devices to be upgraded or removed upon real estate transactions.

Table B-3 – Truckee Meadows PM₁₀ Emission Projection Calculation Methodologies for RWC

| RWC Device | Future Emission Projection Methodology | Rationale |
|-----------------------------------|---|--|
| Fireplaces | Device number set at 2011 EI level, adjusted by HDD. | No new fireplaces can be installed within the Truckee Meadows unless the property is greater or equal to 1 acre in size. Also assumed when aging fireplaces are replaced with newer ones, 1% per year will be replaced by gas fireplaces. |
| Non-certified woodstoves | Device number decreases by 128 per annum from 2011 EI level, based on the average number of devices removed from 2006 - 2012, adjusted by HDD. | Non-certified woodstoves are prohibited from installation within the Truckee Meadows. Assumed 100% of the non-certified woodstoves are replaced by 75% Phase II woodstoves, 20% pellet stoves, and 5% gas fireplaces. |
| EPA Certified Phase I woodstoves | Device number is capped at the 2011 EI level, adjusted by HDD and 5% replacement per year. | Since these Phase I devices were replaced by Phase II devices in 1990, no new Phase I devices are allowed within the Truckee Meadows. |
| EPA Certified Phase II woodstoves | Device number increases by 96 per annum from 2011 EI level, which is 75% of the average non-certified stoves being removed annually, adjusted by HDD. | Assumed that 75% of the non-certified woodstoves are replaced with EPA certified phase II devices. This is a more conservative estimate, not accounting for some of the non-certified woodstoves that could have been removed without being replaced. |
| Pellet stoves | Device number increases by 26 per annum from 2011 EI level, which is 20% of the average non-certified stoves being removed annually, adjusted by HDD. | Assumed that 20% of the non-certified woodstoves are replaced with pellet stoves. This is a more conservative estimate, not accounting for some of the non-certified woodstoves that could have been removed without being replaced. |

Appendix B.2 – Paved Road Fugitive Emissions

Paved road fugitive emissions were calculated using the Predictive Emission Factor equations from AP-42, section 13.2.1.3, updated January 2011. Equation 1 is the annual predictive emission factor and Equation 2 is the Daily predictive emission factor, derived from Equation 1.

$$E = k (sL)^{0.91} W^{1.02} \quad \text{Equation 1}$$

Where:

- E = particulate emission factor (having units matching the units of k);
- K = particle size multiplier for particle size range and units of interest;
- sL = road surface silt loading (grams per square meter, g/m²); and
- W = average weight (in tons) of the vehicles traveling the road

$$E_{ext} = [k (sL)^{0.91} W^{1.02}] \left(1 - \frac{P}{4N}\right) \quad \text{Equation 2}$$

Where:

- E_{ext} = annual or other long-term average emission factor (in the same units as k);
- P = number of "wet" days ≥ 0.01 inch of precipitation during the averaging period; and
- N = number of days in the averaging period (e.g., 365 for annual, 91 for seasonal, 30 for monthly).

Facility class Average Daily Trips (ADT) were based on RTC planning assumption when they generated the corresponding VMTs .

Silt loading factors for different road way classifications were based on a combination of Washoe County and EPA data. A survey of Clark County and San Joaquin Valley Air Pollution Control District determined that a silt loading factor of 0.02 g/m² were used to calculate paved road fugitive emissions for interstate freeways, highways and expressways. 0.02 is between the range of AP-42’s data of 0.015 - 0.03 for high ADT roadways.

Table B-4 – Silt Loading Assumption for Facility Types

| Facility Type | ADT Classification | Silt Loading (g/m ²) | Source |
|--------------------------|--------------------|----------------------------------|-------------------------------|
| Interstate | >10,000 | 0.02 | AP-42, 13.2.1.3, updated 1/11 |
| Other FWYs & ExpWays | >10,000 | 0.02 | AP-42, 13.2.1.3, updated 1/11 |
| Other Principal Arterial | >10,000 | 0.02 | AP-42, 13.2.1.3, updated 1/11 |
| Minor Arterial | 5,000 – 10,000 | 0.06 | AP-42, 13.2.1.3, updated 1/11 |
| Collector | 500 – 5,000 | 0.16 | Washoe County |
| Local | 500 – 5,000 | 0.16 | Washoe County |

Appendix B.3 – Unpaved Road Fugitive Emissions

The following assumptions were made when calculating the unpaved road emissions:

1. Dirt roads were not included in the emissions calculation because they have very low ADT and are used for weekend recreational activities, such as dirt biking.
2. Paving records for the Washoe County Community Services Department (formally Public Works Department) indicated on average between 1985 and 2011, 8.2% of unpaved roads were paved per annum. More recent data from 1990 to 2011 showed a 6.4% paving rate. However, either of these rates may be too optimistic for future projections; instead, a lower rate of 2.6% was used for calculating unpaved road emissions. This rate was based on the information from GIS for the average rate of unpaved roads being paved across jurisdiction for 2011 and 2013. The rationale was that because 2011 and 2013 data reflect more current conditions. It is assumed that the region would pave at least 2.6% of the unpaved roads, as the economy continues to improve.

Appendix B.4 – Paved Road Fugitive Emissions, Sanding & Salting

Historically, various jurisdictions in Washoe County used more sand than salt for winter time anti-skid reduction. Over the years, the practices have shifted to a higher ratio of salt being used instead of sand, partly due to the fact that sand had to be swept up after a storm event, whereas the salt just melted into the snow and discharged into drain basins. Based on historic data, a 15% sand reduction was applied in addition to the growth factor to project emissions from 2015 through 2030.

Appendix C

Truckee Meadows Projected PM₁₀ Seasonal Emissions

Table C-1 – Truckee Meadows Projected PM₁₀ Seasonal Emissions (lbs/day)

| Major Category | Sub-Category | 2011 Attain EI | 2011 Maint Em Limit | Projected Emissions (lbs/day) | | | |
|-------------------------|--|-------------------|------------------------|-------------------------------|-------|-------|-------|
| | | | | 2015 | 2020 | 2025 | 2030 |
| POINT SOURCES | | | | | | | |
| | Geothermal | N/A | N/A | N/A | N/A | N/A | N/A |
| | Printing | N/A | N/A | N/A | N/A | N/A | N/A |
| | Airports & Heliports | | | | | | |
| | GSE | 5 | 5 | 5 | 6 | 7 | 8 |
| | Military Aircraft | - | - | - | - | - | - |
| | Commercial Aircraft | 12 | 12 | 13 | 15 | 18 | 20 |
| | Gen Aviation - piston | N/A | N/A | N/A | N/A | N/A | N/A |
| | Gen Aviation - turbine | 1 | 1 | 1 | 2 | 2 | 2 |
| | Air Taxi - piston | N/A | N/A | N/A | N/A | N/A | N/A |
| | Air Taxi - turbine | 0 | 0 | 1 | 1 | 1 | 1 |
| | APU | 6 | 6 | 7 | 8 | 10 | 11 |
| | Buffer Zone | N/A | N/A | N/A | N/A | N/A | N/A |
| | Subtotal | 25 | 25 | 28 | 32 | 37 | 42 |
| NONPOINT SOURCES | | | | | | | |
| | Stationary Source Fuel Combustion | | | | | | |
| | Industrial Fuel Combustion | 56 | 56 | 60 | 65 | 71 | 77 |
| | Com/Inst Fuel Combustion | 37 | 37 | 39 | 43 | 47 | 50 |
| | Res. Fuel Combustion | 18 | 18 | 19 | 20 | 21 | 22 |
| | Res. Wood Combustion | | | | | | |
| | Fireplaces | 3,535 | 3,535 | 3,396 | 3,229 | 3,070 | 2,919 |
| | Woodstoves/Inserts | | | | | | |
| | <i>Non-certified</i> | 1,266 | 1,266 | 1,062 | 805 | 549 | 292 |
| | <i>Certified, Phase 1</i> | 550 | 550 | 445 | 334 | 250 | 141 |
| | <i>Certified, Phase 2</i> | 449 | 449 | 551 | 671 | 783 | 814 |
| | Pellet Stoves | 88 | 88 | 93 | 98 | 104 | 106 |
| | Subtotal | 5,998 | 5,998 | 5,663 | 5,264 | 4,893 | 4,420 |
| | Industrial Processes | | | | | | |
| | Chemical Manufacturing | 8 | 8 | 8 | 9 | 10 | 11 |
| | Commercial Cooking | 519 | 519 | 537 | 575 | 602 | 626 |
| | Food & Kindred Products - Manufacturing | 159 | 159 | 171 | 186 | 202 | 219 |
| | Mineral Processes | 40 | 40 | 43 | 47 | 51 | 55 |
| | Rubber/Plastic Processes | 68 | 68 | 73 | 80 | 87 | 94 |
| | Fabricated Metals | 10 | 10 | 11 | 12 | 13 | 14 |
| | Construction - Stationary | | | | | | |
| | <i>Road Construction*</i> | 178 | 178 | 183 | 189 | 185 | 180 |
| | <i>Residential Dust Projects (Non-Road Const.)</i> | 143 | 143 | 146 | 151 | 148 | 144 |
| | <i>Commercial Dust Projects (Non-Road Const.)</i> | 110 | 110 | 116 | 117 | 117 | 111 |
| | <i>Asphalt, Sand and Gravel, Abrasive Blasting</i> | 29 | 29 | 31 | 31 | 31 | 29 |
| | Machinery | 6 | 6 | 6 | 7 | 7 | 8 |
| | Mining and Quarrying - Stationary | 85 | 85 | 92 | 100 | 109 | 118 |
| | Miscellaneous Industrial Processes | 34 | 34 | 37 | 40 | 43 | 47 |
| | Subtotal | 1,389 | 1,389 | 1,453 | 1,545 | 1,603 | 1,655 |
| | Solvent Utilization | | | | | | |
| | Architectural Coatings | - | - | - | - | - | - |
| | Auto Refinishing | - | - | - | - | - | - |
| | Wood Furniture | - | - | - | - | - | - |
| | Paper | - | - | - | - | - | - |
| | Plastic Products | - | - | - | - | - | - |
| | Machinery & Equipment | - | - | - | - | - | - |
| | Electronic & Other Electrical | - | - | - | - | - | - |
| | Misc. Manufacturing | - | - | - | - | - | - |
| | Subtotal | - | - | - | - | - | - |
| | Other Solvent Utilization | | | | | | |
| | Degreasing | - | - | - | - | - | - |
| | Dry Cleaning | - | - | - | - | - | - |
| | Graphic Arts | - | - | - | - | - | - |
| | Misc. Industrial Processes | - | - | - | - | - | - |
| | Misc. Commercial Processes | - | - | - | - | - | - |
| | Misc. Consumer/ Com. Solv. | - | - | - | - | - | - |
| | Cutback Asphalt Application | - | - | - | - | - | - |
| | Emulsified Asphalt Appl. | - | - | - | - | - | - |
| | Pesticide, Fungicide & Rodenticide | - | - | - | - | - | - |
| | Subtotal | - | - | - | - | - | - |

| | | | | | | |
|--|---------------|---------------|---------------|---------------|---------------|---------------|
| Storage and Transport | | | | | | |
| Gas Service Station | - | - | - | - | - | - |
| Organic Chemical Storage | - | - | - | - | - | - |
| Subtotal | - | - | - | - | - | - |
| Waste Disp/Treat/Recovery | | | | | | |
| Commercial/Industrial Incineration | - | - | - | - | - | - |
| Publicly Owned Treatment Works | N/A | N/A | N/A | N/A | N/A | N/A |
| Remediation/Reclamation/ Recycle | - | - | - | - | - | - |
| Subtotal | - | - | - | - | - | - |
| Misc. Non-Point Sources | | | | | | |
| Paved Road Fugitive Emissions* | 1,453 | 1,453 | 1,414 | 1,517 | 1,627 | 1,736 |
| Paved Road Fugitive Emissions, Sanding & Salting | 339 | 339 | 516 | 490 | 466 | 442 |
| Unpaved Road Fugitive Emissions* | 2,623 | 2,623 | 2,380 | 2,479 | 2,688 | 3,174 |
| Dirt Road Fugitive Emissions | - | - | - | - | - | - |
| Wildfires | 10,947 | 21 | 21 | 21 | 21 | 21 |
| Structure Fires | 15 | 15 | 15 | 15 | 15 | 15 |
| Motor Vehicle Fires | 3 | 3 | 3 | 3 | 3 | 3 |
| Firefighting Training | - | - | - | - | - | - |
| Open/Permit Burning | 18 | 18 | 18 | 18 | 18 | 18 |
| Prescribed Burning | - | - | - | - | - | - |
| Refuse Fires | 16 | 16 | 16 | 16 | 16 | 16 |
| Auto & Misc. Repair Shops | 0 | 0 | 0 | 0 | 0 | 0 |
| Health Services, Hospitals | - | - | - | - | - | - |
| Essay Labs | 0 | 0 | 0 | 0 | 0 | 0 |
| Human & Animal Cremation | 9 | 9 | 9 | 10 | 10 | 11 |
| Subtotal | 15,425 | 4,499 | 4,394 | 4,571 | 4,865 | 5,437 |
| TOTAL NONPOINT SOURCES | 22,812 | 11,885 | 11,510 | 11,379 | 11,361 | 11,512 |
| <u>NON-ROAD MOBILE SOURCES</u> | | | | | | |
| CNG Engines | 1 | 1 | 1 | 1 | 1 | 1 |
| Diesel Engines | 377 | 377 | 302 | 174 | 102 | 65 |
| Gasoline Engines | 192 | 192 | 176 | 186 | 198 | 211 |
| LPG Engines | 22 | 22 | 7 | 8 | 8 | 9 |
| Locomotives | 15 | 15 | 16 | 17 | 19 | 21 |
| Subtotal | 606 | 606 | 501 | 386 | 328 | 307 |
| <u>ON-ROAD MOBILE SOURCES</u> | | | | | | |
| On-Road Vehicles* | 1,171 | 1,171 | 946 | 835 | 825 | 880 |
| HDDV Diesel Idling* | 12 | 12 | 7 | 4 | 3 | 3 |
| Subtotal | 1,183 | 1,183 | 953 | 839 | 828 | 883 |
| Grand Total | 24,626 | 13,700 | 12,992 | 12,637 | 12,554 | 12,744 |
| Safety Margin | | | 708 | 1,063 | 1,146 | 955 |
| * Sub-Category included in MVEB | | | 5,638 | 6,088 | 6,473 | 6,927 |