SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Draft Staff Report
Proposed Amended Rule 445 – Wood-Burning Devices

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EXECUTIVE SUMMARY

Rule 445 – Wood Burning Devices was adopted in March 2008 to implement the PM2.5[1] Control Measure BCM-03 of the 2007 Air Quality Management Plan (AQMP) to reduce PM2.5 emissions from wood-burning devices. Rule provisions apply to manufacturers, vendors, commercial firewood sellers, and persons owning or operating a wood-burning device. The majority of wood-burning devices in the South Coast Air Basin (Basin) [2] are fireplaces and wood-stoves, but include any similar permanently installed, indoor or outdoor wood-burning devices. The rule also prohibits burning of products not intended for use as fuel, sale of unseasoned wood, and mandates curtailment of wood-burning on "No-Burn" days. Wood-burning curtailment is mandatory on No-Burn days where ambient PM2.5 concentration is forecast to exceed a threshold limit (currently at 30 $\mu g/m^3$)[3]. The rule was amended in May 2013 to implement Control Measure BCM-01 in the 2012 AQMP to address the U.S. EPA's lowering of the PM2.5 annual standard from 15 to 12 $\mu g/m^3$ to reflect a more health protective standard. The 2013 amendments expanded the wood-burning curtailment or No-Burn day restrictions by lowering the curtailment threshold from 35 to 30 $\mu g/m^3$, establishing criteria for Basin-wide curtailment, and also setting standards for commercially sold solid-fuel labeling. Exemptions are included for low income households, where the device is the sole source of heating or no natural gas service is available within 150 feet of the property line, geographic elevations 3,000 feet or higher above mean sea level, and ceremonial fires.

South Coast Air Quality Management District (South Coast AQMD) staff conduct extensive outreach to ensure that the public and other stakeholders are aware of the wood-burning curtailment requirements. In addition to the South Coast AQMD Check Before You Burn web page with program information including links and videos and the Check Before You Burn map, information regarding No-Burn days is disseminated through e-mail notifications and a toll-free number. The South Coast AQMD Media Office also updates the South Coast AQMD website, publishes press releases, sends email blasts to media contacts, and news pitches to local news desks, coordinates press interviews, notifies the public on social media (Facebook, Twitter and Instagram), posts Facebook Ads on No Burn Days, runs a Check Before You Burn video advertisement on Facebook during the wood-burning curtailment season, and places door hangers with information on the program throughout communities with elevated wood-smoke and high overall PM2.5 concentrations (via The Walking Man, Inc.).

The Basin is currently in compliance with both the 1997 24-hour and annual PM2.5 National Ambient Air Quality Standard (NAAQS) of 65 $\mu g/m^3$ and 15 $\mu g/m^3$, respectively. However, the Basin is in nonattainment status for both the 2006 24-hour and the 2012 annual PM2.5 NAAQS standards of 35 $\mu g/m^3$ and 12 $\mu g/m^3$, respectively. The Basin is currently classified as serious nonattainment for the 2006 24-hour standard and moderate nonattainment for the 2012 annual

1 Airborne fine particulate matter ≤ 2.5 micrometers in aerodynamic diameter (μm).

2 The South Coast Air Basin (SCAB or Basin) is a geographic region that encompasses the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange County as defined in California Code of Regulations, Title 17, Section 60104. The Basin is shown as the shaded region on the map in Appendix B.

3 Micrograms per cubic meter.

standard[4], with attainment deadlines of December 31, 2019 and December 31, 2021, respectively. Despite significant reductions in ambient PM2.5 concentrations, it is likely that the Basin will fail to attain the 2006 24-hour PM2.5 standard by the December 31, 2019 deadline.[5]

The proposed amendments to Rule 445 are necessary to implement the backstop Contingency Control Measure BCM-09 in the 2016 AQMP and will also address the Clean Air Act (CAA) Section 172(c)(9) contingency measure requirements for the PM2.5 standards. The proposed amendments would extend the No-Burn day requirement Basin-wide when the daily PM2.5 air quality is forecast to exceed 30 μg/m^3 in any source receptor area (SRA) and would also automatically lower the No-Burn day thresholds subject to specific contingency measure triggers as set forth in 40 CFR § 51.1014(a). Specifically, No-Burn day threshold reductions would be triggered upon a final determination of a failure to meet any Reasonable Further Progress (RFP) or quantitative milestone requirement in an approved plan, to submit a required quantitative milestone report, or to attain either the 2006 24-hour or 2012 annual PM2.5 NAAQS by the applicable attainment date.

Contingency measures would reduce ambient PM2.5 by increasing the number of No Burn days and by expanding curtailment Basin-wide in all cases. Staff estimates a 25.4 ton per year (TPY) reduction from implementing the Basin-wide curtailment at 30 μg/m^3 in all cases and a 46.3 TPY reduction after triggering the first contingency measure which will reduce the Basin-wide No-Burn day threshold from the current 30 μg/m^3 to 29 μg/m^3. Additional contingency measures, if triggered, would lower the Basin-wide No-Burn day threshold incrementally to 28 μg/m^3, 27 μg/m^3, and 26 μg/m^3 and result in cumulative additional estimated emissions reductions of 67.1, 81.0 and 100.1 TPY, respectively.

BACKGROUND

Numerous studies have linked higher concentrations of PM2.5 with health effects such as increased mortality, respiratory and cardiovascular disease. In July 1987, U.S. EPA promulgated a health protective based 24-hour NAAQS of 150 micrograms per cubic meter (μg/m^3) for particulate matter less than 10 microns (PM10), which the Basin has met since 2008. In July 1997, U.S. EPA strengthened the NAAQS for PM2.5 setting a more health protective 15 μg/m^3 annual standard and 65 μg/m^3 24-hour standard. The Basin is currently in compliance with the both the 24-hour and annual 1997 PM2.5 NAAQS of 65 μg/m^3 and 15 μg/m^3, respectively. On December 17, 2006, the U.S. EPA revised the 24-hour PM2.5 NAAQS, lowering it from 65 μg/m^3 to 35 μg/m^3. The Basin was subsequently designated as "moderate" nonattainment for the 2006 24-hour PM2.5 NAAQS on December 14, 2009. On December 14, 2012, the U.S. EPA revised the annual PM2.5 standard, lowering it to 12 μg/m^3 and issued a final nonattainment designation for the Basin on December 18, 2014. Table 1 summarizes the historical timeline for these standards applicable to the Basin.

4 South Coast AQMD requested re-designation to serious nonattainment status for the 2012 annual PM2.5 standard in the 2016 AQMP. Re-designation to serious non-attainment will change the attainment due date to no later than December 31, 2025.

5 Staff anticipates analysis of preliminary data to be finalized in the second quarter of 2020. EPA will make a final determination on South Coast AQMD's attainment status based on finalized data.

Table 1 – Historical Summary for PM2.5 24-Hour and Annual Standards

Year	24-Hour Average	Annual Average
1997	65 μg/m^3	15 μg/m^3
2006	35 μg/m^3	No Change
2012	No Change	12 μg/m^3

Area-wide sources contribute approximately 42% or 27.7 tons per day (TPD) to the estimated 66.0 TPD of total directly emitted PM2.5 inventory in the Basin. This total includes both stationary and mobile sources. [6] An estimated 5.2 TPD or almost one-fifth of the area-wide PM2.5 comes from wood-burning devices, such as wood-burning fireplaces and wood stoves.[7] . Approximately 90% of wood-smoke PM by weight is comprised of PM2.5.[8] Accordingly, control measures for residential wood combustion were included in the 2007 and 2012 AQMPs. Rule 445 – Wood-Burning Devices was adopted in June 2008 and was then amended in May 2013, in response to U.S. EPA lowering the PM2.5 NAAQS. The 2013 amendments lowered the threshold for triggering a wood-burning curtailment, established criteria for a basin-wide curtailment, and require commercial firewood sellers to label packaged wood and wood-based products with a No-Burn day advisory.

The 2012 AQMP projected attainment of the 2006 24-hour PM2.5 NAAQS by 2014; however, largely due to the region's long-running drought conditions, attainment within this time frame was not possible. In July 2015, the South Coast AQMD requested that U.S. EPA reclassify the Basin as a serious nonattainment area and committed to demonstrate attainment of the 24-hour PM2.5 NAAQS as expeditiously as practicable, but not beyond December 31, 2019. As a consequence of the re-designation, more stringent requirements now apply including implementation of Best Available Control Measures / Best Available Control Technology (BACM/BACT), a lower major source threshold (from 100 tons per year to 70 tons per year), and an update to the reasonable further progress (RFP) analysis.

Annual PM2.5 standard attainment is achieved when the 3-year average of the annual averages does not exceed 12.0 μg/m^3. Under the CAA, moderate nonattainment areas have until 2021 to meet 2012 PM2.5 standard, and if necessary, up to four additional years (i.e. 2025) if the area is re-classified as serious nonattainment[9]. Table 2 shows that ambient PM2.5 concentrations in the

6 Final 2016 AQMP. Chapter 3. Base Year and Future Emissions. Annual Average TPD. P. 3-14 and 3-15.

7 Final 2016 AQMP. Appendix IV-A. BCM-09 Further Reductions From Wood Burning Fireplaces and Woodstoves. P. IV-A-222.

8 CARB. "Speciation Profiles Used in ARB Modeling." https://ww3.arb.ca.gov/ei/speciate/speciate.htm#assnfrac (reviewed January 29, 2018).

9 South Coast AQMD requested re-designation to serious nonattainment status for the 2012 annual PM2.5 standard in the 2016 AQMP. Re-designation to serious non-attainment will change the attainment due date to no later than December 31, 2025.

Basin have been trending downwards toward attainment with both the 2006 24-hour and 2012 annual NAAQS.

Table 2 – Basin-wide Historical Federal Reference Method Ambient PM2.5 Concentration ($\mu g/m^3$)[10]

Calendar Year	Basin Maximum of Annual Average Concentrations	3-Year Design Value of Annual PM2.5	Basin Maximum of 24-hour PM2.5 Concentrations[11]	3-Year Design Value of 24-hour PM2.5
2008	17.3	20.0	48.3	53
2009	17.2	18.8	42.9	49
2010	15.5	16.9	35.6	41
2011	15.9	15.9	50.0	38
2012	15.1	15.2	35.6	36
2013	14.1	14.8	37.5	36
2014	14.5	15.1	40.0	41
2015	14.5	14.5	43.2	44
2016	14.9	14.5	35.2	43
2017	14.6	14.7	53.4	39
2018	14.5	14.7	36.1	38
2019[12]	12.7	13.8	36.2	37

Table 3 summarizes the current status of the Basin for the 2006 24-hour and 2012 annual average standards. The Basin is currently classified as moderate nonattainment for the annual standard and serious nonattainment for the 24-hour standard. As shown in Table 2, since the adoption of Rule 445, ambient 24 hour and annual PM2.5 concentrations have decreased from 48.3 to 36.1 $\mu g/m^3$, and from 17.3 to 14.5 $\mu g/m^3$, respectively. Despite these significant reductions and nearing compliance with the 24-hour average and 2012 annual NAAQS, the Basin will likely fail to attain the 35 $\mu g/m^3$ PM2.5 24-hour average NAAQS by the December 31, 2019 attainment deadline.

10 Federal Reference Method and Design Value are discussed further in the Forecasting section of this report. The average of three consecutive data points given in the "Basin Maximum of Annual Average Concentrations" or "Basin Maximum of 24-hour PM2.5 Concentrations" will not equal the 3-year Design Values given in the 3rd and 5th columns, if Basin Maximum Concentrations occurred at different locations during the 3-year time period.

11 98th percentile of 24-hour PM2.5 for a given year

12 2019 data is preliminary and subject to change. Data collected during exceptional events are not removed. Final values may be lower when accounting for exceptional events.

Table 3 – Summary of Basin PM2.5 Attainment Status

PM2.5 NAAQS	NAAQS ($\mu g/m^3$)	Status	Attainment Deadline
2006 24-Hour	35	Serious	December 31, 2019
2012 Annual	12	Moderate	December 31, 2021[13]

HEALTH EFFECTS & ENVIROMENTAL IMPACTS

Health studies have shown a significant association between exposure to particle pollution and health risks, including premature death. Smaller particles in the PM2.5 range are particularly dangerous since they can penetrate and deposit deep in lung tissues. Appendix I of the 2016 Final AQMP describes in more detail the health effects of fine particulates based on numerous studies including data on increased hospital admissions, emergency room and physician office visits and school absences. In addition to increased mortality other health effects include the exacerbation of respiratory and cardiovascular diseases (asthma and non-fatal myocardial infarction) and effects on lung function as well as lung morphology. Recent studies have shown an association with changes in the brain leading to both memory and cognitive decline[14] and also to the development of benign and malignant brain tumors.[15]

Residential wood-burning is a significant source of PM emissions. Emissions from residential wood-burning devices are caused primarily by incomplete combustion and include PM, CO, NOx, SOx, and VOCs. Studies indicate that the vast majority of particulate emissions from residential wood combustion are in the fine (2.5 micrometers or less) fraction. Additionally, incomplete combustion of wood produces polycyclic organic matter (POM), a group of compounds classified as hazardous air pollutants under Section 112 of the CAA. Biomass burning is also a source of black carbon (soot) which studies suggest can influence climate by directly absorbing light, reducing the reflectivity of snow and ice through deposition and interacting with clouds. According to CARB[16], soot from residential wood combustion is forecast to be the largest individual anthropogenic (man-made) source of black carbon in 2030 if no new programs are implemented.

FORECASTING

South Coast AQMD staff use weather forecasts, air pollution measurements, satellite data, and mathematical models to predict particle (PM2.5 and PM10), ozone, nitrogen dioxide, and carbon monoxide concentrations. Forecast models are tools for making predictions, which are trained and evaluated with air pollution measurements. Traditionally, South Coast AQMD staff issued a daily

13 South Coast AQMD requested re-designation to serious nonattainment status for the 2012 annual PM2.5 standard in the 2016 AQMP. Re-designation to serious non-attainment will change the attainment due date to no later than December 31, 2025.

14 Younan, Diana & Petkus, Andrew (2019). Particulate matter and episodic memory decline mediated by early neuroanatomic biomarkers of Alzheimer's disease. Brain: a journal of neurology. 143. 10.1093/brain/awz348.

15 https://www.aqmd.gov/nav/about/groups-committees/bltap-foundation/bltap-6th-annual-report.

16 CARB. Short-Lived Climate Pollutant Reduction Strategy. March 14, 2017. https://ww3.arb.ca.gov/cc/shortlived/meetings/03142017/final_slcp_report.pdf.

air quality forecast summarizing conditions expected over the entire day for geographical areas in the region called Source Receptor Areas (SRAs) as shown in Appendix B. However, with new models developed and maintained by NOAA[17] scientists, South Coast AQMD staff can now issue hourly forecasts of PM2.5 and ozone for the next day. These models are customized using local measurements and state-of-the-science models of air pollution levels, resulting in more accurate predictions. The predicted pollutant levels are reported as an Air Quality Index (AQI). The higher the AQI, the higher the level of air pollution and potentially greater health concerns for the exposed population.

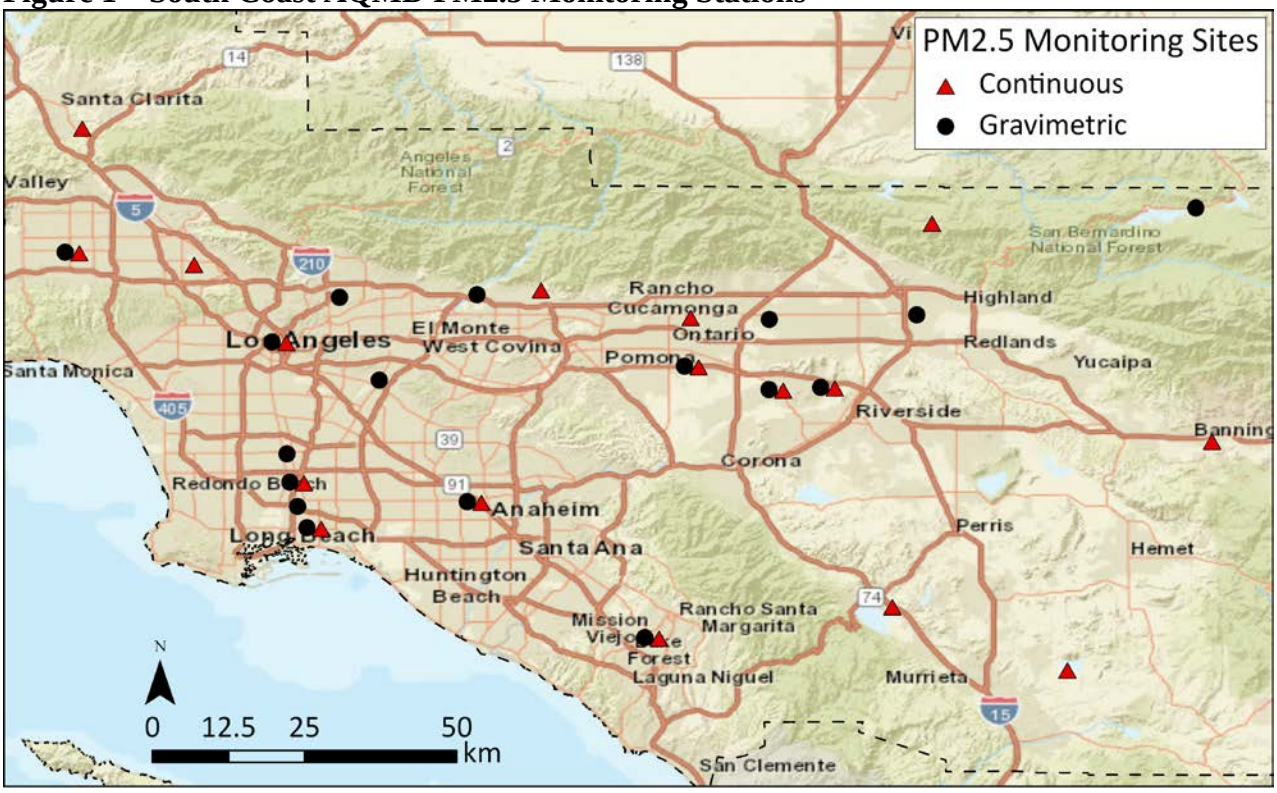
Figure 1 shows the location of PM2.5 monitoring stations in the Basin. PM10 and PM2.5 concentrations are monitored throughout the South Coast AQMD by samples collected on quartz or Teflon filters in samplers with size selective inlets. These are known as the Federal Reference Methods (FRMs) and shown as "gravimetric" in Figure 1. Some stations also have continuous PM10 and/or PM2.5 measurements, using either Beta Attenuation Monitor (BAM) or Tapered Element Oscillating Microbalance (TEOM) instrumentation. This data is available in real-time and is used for air quality forecasting and public reporting of current conditions. Where the continuous BAM or TEOM PM10 monitors have been certified by U.S. EPA to be Federal Equivalent Methods (FEM), the continuous PM10 data is averaged for the 24-hour period (midnight to midnight) and used for comparison to the standards on days when a valid FRM filter measurement was not collected. For PM2.5, there can be significant differences between the FEM and FRM results that have been recognized by national assessments of the technologies. South Coast AQMD measures FRM PM2.5 on a daily basis at the critical stations in the Basin and does not use the continuous PM2.5 data to compare to the NAAQS for attainment purposes.

Hourly forecasts provide more detailed information about pollution levels throughout the day. This can be useful, for example in planning out what time of the day would be best for outdoor activities. For regulatory purposes however, a daily average forecast is used. The proposed rule amendments include a definition for the daily PM2.5 air quality forecast as the predicted ambient average PM2.5 concentration, for the entire consecutive 24-hour period, beginning at midnight of the current day and spanning the entire time period which ends on the following midnight. This is to distinguish the daily PM2.5 forecast which is used for forecasting No-Burn days from the hourly PM2.5 forecast which is provided for informational purposes only. Both hourly and daily Basin forecasts can be found on the South Coast AQMD website at: http://www.aqmd.gov/forecast.

Compliance with the annual PM2.5 NAAQS is determined using a three (3) year average of the annual mean PM2.5 ambient concentrations at the monitoring station with the highest average. Compliance determination for the 24-hour standard is evaluated using the highest Design Value (DV). The DV is defined as the 98th percentile of the 24-hour average concentrations measured in a year, averaged over a consecutive three (3) year term. In both cases the monitoring site with the highest measured values in an area is used for compliance purposes. Air quality forecasts are generated on the SRA level with models that are trained with monitoring data. However, not all SRAs contain a PM2.5 monitoring station/equipment, in which case the forecast is interpolated.

17 The National Oceanic and Atmospheric Administration is a federal agency providing weather forecasts. https://www.noaa.gov/

Figure 1 – South Coast AQMD PM2.5 Monitoring Stations



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

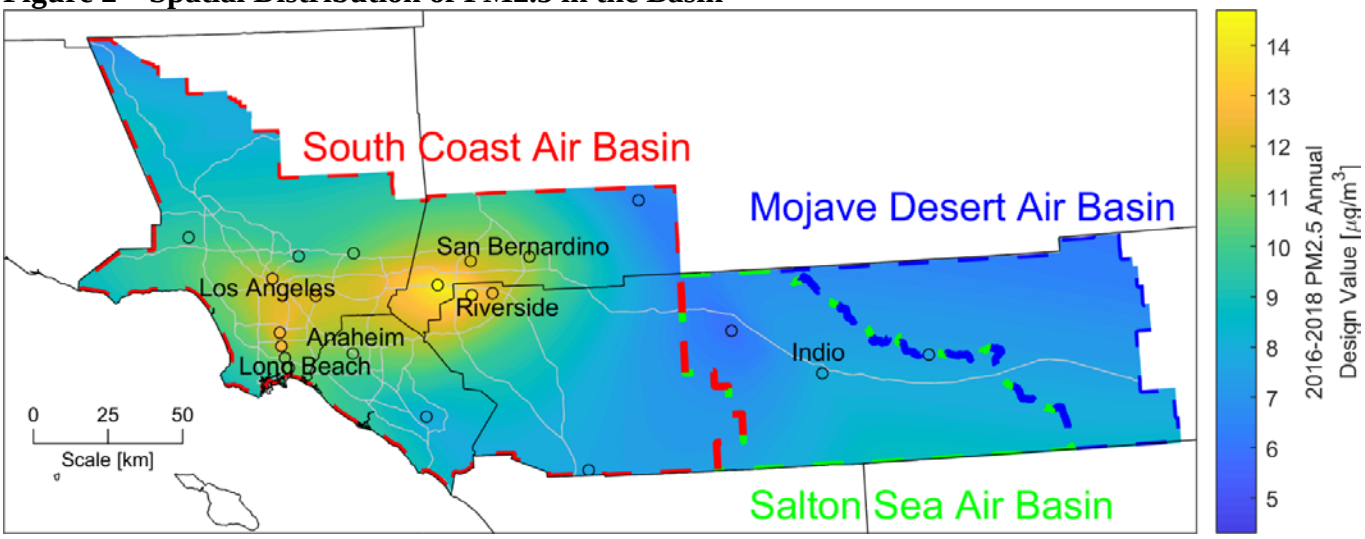
PM2.5 concentrations are generally higher in the inland valley areas of Metropolitan Riverside County and San Bernardino County. These higher PM2.5 concentrations are mainly due to the secondary formation of smaller particles resulting from emissions of precursor gases (NOx, SOx, NH_3, VOC) that are converted to particulate matter in the atmosphere. Atmospheric chemistry and dispersion are a strong function of topography and weather, leading to strong geographic variations in PM2.5 concentrations. The geographical distribution of PM2.5 precursor emissions also govern PM2.5 concentration variations throughout the Basin. Figure 2 shows the distribution of annual average PM2.5 concentrations in the Basin. This figure shows peak annual average concentrations for the Basin in the Metropolitan Riverside area where transport and secondary chemical processes are most important. It also shows another peak in the most urbanized portions of Los Angeles area due to the emissions from abundant motor vehicle sources.

PM2.5 levels have decreased dramatically in the Basin since 1999; however, design value concentrations are still above the current annual 24-hour NAAQS. In 2018, the 24-hour PM2.5 NAAQS was exceeded on 19 days in the Basin. In 2019, there were 12 exceedance days.[18] Because the highest PM2.5 concentrations typically occur during the rainy-season, design values are heavily dependent on the frequency of wintertime storm systems, which increase ventilation and remove PM when rainfall is present. PM2.5 concentrations are also significantly influenced by wildfire smoke, which can be transported across wide distances. Currently, PM2.5 monitors do not

18 Based on preliminary filter data.

attain the 24-hour standards in Compton and Mira Loma, based on preliminary 2017-2019 design values. However, the average of the 2019 and 2020 98th percentile concentrations (two-thirds of the data used to calculate the 2018-2020 design value) are below the federal standard at all locations. The CA-60 near road site in Ontario, Mira Loma, Compton, Rubidoux, and the CA-710 near road station in Long Beach do not meet the annual PM2.5 standard, based on preliminary 2017-2019 design values.[19] The Basin's peak annual average PM2.5 level in 2019 of 12.8 µg/m^3 (preliminary data) at the Ontario-60 near road site was lower than its 2018 value of 14.5 µg/m^3.

Figure 2 – Spatial Distribution of PM2.5 in the Basin



RULE 445

Current provisions of Rule 445 control PM2.5 wood smoke emissions from wood-burning devices through several mechanisms. These include:

- New developments: prohibiting the installation of wood-burning devices in developments where construction began after March 9, 2009.
- Existing developments: by limiting the sale and installation of wood-burning devices to a:
  - U.S. EPA certified wood-burning heater,
  - pellet-fueled wood-burning heater,
  - masonry heater, or
  - dedicated gaseous-fueled fireplace insert.
- A prohibition against the burning of any product not intended for use as a fuel (e.g., trash, plastics, rubber products and treated wood),

19 Data collected during exceptional events such as wildfires and Independence Day fireworks are removed when calculating design values.

- Sale of only seasoned wood fuel (20 percent or less moisture content by weight) by commercial wood-based fuel sellers between July 1, through to the end of February of the following year,
- A labeling requirement for commercial firewood sellers to affix an indelible label to each package of firewood advising at a minimum that there are times during the year (wood-burning season) when there may be a restriction on product usage (No-Burn days). The label or alternatively another form of written material which is provided must also list the No-Burn toll-free number and www.8774NOBURN.org website address. This advisory is intended to let the consumer know that on days declared to be No-Burn days during the wood-burning season November 1, through to the last day in February of the following year, wood-burning is not allowed, and
- No-Burn day: a prohibition on operating an indoor or outdoor wood-burning device, portable outdoor wood-burning device, or wood-fired cooking device during the wood-burning season (November 1 through February of the following year) on days when the PM2.5 ambient concentration is forecast to exceed specific thresholds. Rule 445(c)(6) specifies the conditions for wood-burning curtailment or No-Burn days as follows:

MANDATORY WINTER BURNING CURTAILMENT

(A) Means any calendar day or consecutive calendar days during the wood-burning season so declared to the public by the Executive Officer when ambient levels of particulate matter of 2.5 microns in size or less (PM2.5) is forecast to exceed 30 $\mu g/m^3$ for a specific source/receptor area.

(B) Applies to the entire South Coast Air Basin whenever a PM2.5 level of greater than 30 $\mu g/m^3$ is predicted for a source receptor area containing a monitoring station that has recorded a violation of the federal 24-hour PM2.5 National Ambient Air Quality Standard for either of the two previous three-year design value periods. The design value is the three-year average of the annual 98th percentile of the 24-hour values of monitored ambient PM2.5 data.

Dedicated gaseous fueled fireplaces or electric powered devices are exempt from the provisions of Rule 445. Additional exemptions exist where there is no natural gas service within 150 feet of the property line, locations 3,000 feet or higher above mean sea level, when the device is the sole source of heat, when the device is in low income households, and for ceremonial fires, as defined in the Rule 444 – Open Burning.

CONTINGENCY MEASURES

The federal CAA requires areas not attaining the NAAQS to develop and implement an emissions reduction strategy that will bring the area into attainment at the soonest practicable time, but not later than statutory attainment deadlines[20]. For the South Coast AQMD, this strategy is set forth in the 2016 AQMP. In addition to existing rule requirements such as Rule 445, contingency control measures in AQMPs are designed as backstop measures to be promulgated in the event that a Basin fails or is likely to fail in attaining a NAAQS or to comply with regulatory requirements by the applicable due dates. Control Measure BCM-09 – Further Emission Reductions From Wood-Burning Fireplaces and Wood Stoves is a PM2.5 specific contingency control measure in the 2016 AQMP.

Pursuant to 40 CFR § 51.1014(a) - Contingency Measure Requirements (CFR) specific elements are required for rules promulgated from the control measure as follows:

(a) The state must include as part of each attainment plan submitted under this subpart for a PM2.5 nonattainment area specific contingency measures that shall take effect with minimal further action by the state or the U.S. EPA following a determination by the Administrator that the area has failed:
  (1) To meet any RFP requirement in an attainment plan approved in accordance with § 51.1012;
  (2) To meet any quantitative milestone in an attainment plan approved in accordance with § 51.1013;
  (3) To submit a quantitative milestone report required under § 51.1013(b); or,
  (4) To attain the applicable PM2.5 NAAQS by the applicable attainment date.

(b) The contingency measures adopted as part of a PM2.5 attainment plan shall meet all of the following requirements:
  (1) The contingency measures shall consist of control measures that are not otherwise included in the control strategy or that achieve emissions reductions not otherwise relied upon in the control strategy for the area; and,
  (2) Each contingency measure shall specify the timeframe within which its requirements become effective following a determination by the Administrator under paragraph (a) of this section.
  (3) The attainment plan submission shall contain a description of the specific trigger mechanisms for the contingency measures and specify a schedule for implementation.

CAA Section 172(c)(9) requires contingency measures in the event that an area fails to meet reasonable further progress (RFP) milestones or to attain the national primary ambient air quality standard by the attainment date. U.S. EPA implementing regulations for particulate matter (40CFR § 51.1014(a)) require that these contingency measures take effect with minimal further action following a determination by the U.S. EPA that the area has failed: (1) to meet any approved RFP requirement, (2) to meet any approved quantitative milestone, (3) to submit a required quantitative milestone report, or (4) to attain the standard by the applicable attainment date. Table 4 below provides a

20 CAA Section 172.

summary and analysis of potential control measures, including suggestions from BCM-09 for contingency measures for achieving further direct PM2.5 emissions reductions:

Table 4 – Summary and Analysis of Potential Control Measures

Potential Control Measure	Analysis
Allow for year-round wood-burning curtailment mirroring Bay Area Air Quality Management District (BAAQMD) provisions	Rule 445 defines the Wood-Burning Season as any of the days beginning on November 1 and running through to the end of February in the following year. Due to the temperate climate of the region, about 70% of wood smoke in the Basin is emitted on typically colder days during the wood-burning season. Use of wood-burning devices at other times is generally limited to ambiance purposes. There is some wood smoke in the "shoulder months" of March and October, but it is unlikely that the additional wood smoke during these months would be sufficient to cause an exceedance as total PM2.5 concentrations are much lower than during the wood-burning season.
Requiring that no person sell or transfer real property without assuring that any installed wood-burning heater meets the latest U.S. EPA certification, is a previously exempted wood pellet stove or that it is rendered permanently inoperable mirroring San Joaquin Valley Air Pollution Control District (SJVAPCD) Rule 5.2.2	Currently the rule only allows existing fireplaces to be repaired in order to prevent health or safety impacts. Extending the requirement to removal of non-compliant wood-burning devices upon the sale or transfer of any real property in the Basin would be resource prohibitive. Most wood-burning devices are for ambiance purposes and all devices are already required to curtail wood-burning on No-Burn days. Staff is also looking to expand the existing incentive program for voluntary conversion of existing fireplaces to approved wood-burning devices, natural gas fueled or electric units.
Including a visible emissions/opacity limitation similar to SJVAPCD Rule 5.2.2	Rule 445 currently mandates the use of Seasoned Wood in wood-burning devices and also prohibits the burning of materials not intended to be used as a fuel for wood-burning devices. These two provisions are designed to avoid the use of "wet" wood or other materials such as treated wood that smoke excessively. In addition, sources can be cited pursuant to South Coast AQMD Rule 401- Visible Emissions and/or Rule 402 – Nuisance (where odor complaints are made about wood-smoke) provisions. The visible emissions prohibition in SJVAPCD Rule 1420 mirrors the provisions of South Coast AQMD Rule 401 with both specifying Ringelmann 1 and/or 20% opacity.

Potential Control Measure	Analysis
Including unseasoned wood in the list of banned fuels	The sale of unseasoned firewood in the Basin is only allowed during the months of March through to the end of April. This provides sufficient time for the wood to season. Only seasoned firewood may be sold at other times during the year. Since the majority of wood-burning devices are used for ambiance purposes in the Basin and there is a ban on selling unseasoned wood during most of the year, adding unseasoned wood to the list of non-fuel products is unnecessary. In addition, the properties of unseasoned wood such as excessive smoking and low heat output do not lend to its being used as a fuel. The requirement that commercial wood- fuel sellers, sell only seasoned wood effectively prevents the use of unseasoned wood fuel by providing a point-of-sale control. Determining the moisture content of wood-fuel once it is lit and in use would be an unenforceable provision technically and also since it would pose a safety issue for field staff.
Including a trigger for the annual PM2.5 standard	The total number of No-Burn days forecast after triggering the provisions of the initial contingency measure (at 30 $\mu g/m^3$ for any SRA) are estimated to exceed the number based on an annual design value. As such an annual design value exceedance threshold would lead to a lower number of forecast No-Burn days.
Recommend specifying that only currently certified U.S. EPA wood-burning heaters may be installed in developments over 3,000 feet or higher above mean sea level	Proposed amendments would maintain and clarify the exclusion from Rule 445 applicability to areas of the Basin located 3,000 feet or higher above mean sea level. There have been no exceedances of the 24-hour PM2.5 standard in the last several years in geographic areas located 3,000 feet or higher above mean sea level and emissions modeling shows measurable emissions reductions without including emissions from wood-burning devices located in these areas.
Recommend specifying that only currently certified U.S. EPA wood-burning heaters may be installed in developments where there is no natural gas service within 150 feet of the property line	U.S. EPA certified wood-burning heaters are significantly more efficient, however prices can range anywhere from $2,000 to $8,000 per unit and require professional installation. Natural gas service is generally available in the more densely populated regions of the Basin, so that this will likely not be a cost-effective requirement or a significant source of emissions reductions[21]. Staff is considering expanding the existing Fireplace and Wood Stove Change Out incentive program to include additional zip codes. The program currently provides qualified applicants between $200 to $1,600 towards the

21 https://www.socalgas.com/stay-safe/pipeline-and-storage-safety/natural-gas-pipeline-map.

Potential Control Measure	Analysis
	purchase and installation of an approved wood-burning or gaseous-fueled device that replaces an existing fireplace[22].
Reducing the forecast threshold for No-Burn days to 20 μg/m^3 mirroring the San Joaquin Valley Air Pollution Control District SJVAPCD Rule 1409 5.7.1	The rule amendments primarily impact residential wood-burning and will provide significant emission reduction at the proposed limits. The 24-hour standard is currently at 35 μg/m^3. A No-Burn threshold at 20 μg/m^3 will result in minimal, if any, emission reductions on peak PM2.5 days when the ambient PM2.5 concentration exceeds 35 μg/m^3.

PROPOSED AMENDMENTS TO RULE 445

Based on the analysis of the potential control measures above the proposed amendments incorporate the requirements of the CFR as follows:

- Subsequent to rule adoption by the Governing Board contingency provisions will automatically take effect upon a final determination of either a failure to attain or a failure to comply with requirements in subdivision (f) of the proposed rule;

- Control measures under the proposed rule achieve emissions reductions not otherwise relied upon in the current control strategy by incrementally lowering the No-Burn day threshold with both incremental and cumulative emissions reductions quantified;

- There are specific trigger mechanisms for the proposed contingency measures and the schedule for implementation in paragraph (f)(1) of the proposed rule which lists the four (4) requirements or contingency measure triggers in subparagraphs (f)(1)(A) through (D) pursuant to 40 CFR § 51.1014(a). There is no set order in which these contingency triggers may potentially be activated. However, as each contingency trigger is activated the increasingly more stringent Basin-wide No-Burn thresholds in subparagraphs (f)(2)(A) through (D) are automatically implemented. Based on the proposal, and upon the final determination by U.S. EPA of a failure by South Coast AQMD to attain the 24-hour PM2.5 standard by the December 31, 2019 attainment date the first proposed contingency measure would be automatically triggered. While failing to "attain the applicable PM2.5 NAAQS by the applicable attainment date" is the fourth contingency trigger (D) in paragraph (f)(1) when the final determination of failure with the provision is made it triggers the first contingency measure (A) in paragraph (f)(2).

- The first contingency measure automatically lowers the ambient PM2.5 24-hour forecast threshold for calling a No-Burn day from the current 30 to the more stringent 29 μg/m^3. Staff does not anticipate any additional contingency triggers in paragraph (f)(1) will be activated, however, upon a final determination by U.S. EPA of a failure to attain any second

22 South Coast AQMD. Wood Stove & Fireplace Change-Out Incentive Program http://www.aqmd.gov/home/programs/community/community-detail?title=wood-device-incentive-program.

requirement the next most stringent contingency measure would be triggered. As an example, assume that subsequent to triggering the initial contingency measure at 29 µg/m^3, there is a final determination of a failure to "meet any RFP requirement in an attainment plan approved in accordance with §51.1012" pursuant to subparagraph (f)(1)(A) which is the first trigger in paragraph (f)(1) of the proposed rule. This event would trigger the second, and next most stringent, contingency measure in subparagraph (f)(2)(B) automatically lowering the ambient PM2.5 24-hour forecast threshold for calling a No-Burn day from 29 to 28 µg/m^3. Any subsequent, third, final determination of a failure to comply would trigger the third and next most stringent 27 µg/m^3 forecast threshold and in the unlikely event that a fourth final determination of a failure to comply with any of the contingency triggers is made the forecast threshold would automatically be lowered to 26 µg/m^3.

Staff is proposing to strengthen the mandatory wood-burning curtailment provision of the rule in order to achieve additional PM2.5 emission reductions from the operation of wood-burning devices. The proposed amendments would generally reduce emissions by increasing the number of No-Burn days and expanding the affected geographic area thereby decreasing both the number of days and number of wood-burning devices allowed to operate during the wood-burning season (defined as November, 1 through to the last day in February of the following year). Proposed amendments to Rule 445 are shown in Table 5, as follows:

Table 5 – Proposed Amendments to Rule 445

Proposed Rule Reference	Proposed Amendment
(c)(3) - Daily PM2.5 Air Quality Forecast	This definition clarifies that for the purposes of Rule 445 a daily PM2.5 ambient concentration is used for forecasting whether a No-Burn day should be declared. Also, that this daily forecast is based on an average forecast modeled using a 24 consecutive hour period from midnight to the subsequent midnight. Once forecast, the daily forecast number remains static for that day. Conversely, the hourly PM2.5 forecast may vary hourly depending on ambient conditions. The hourly air quality forecast may be used to for example better determine optimal times for exercising or other outdoor activities on any given day whereas the daily PM2.5 ambient concentration is used for the purpose of forecasting No-Burn days pursuant to Rule 445. Text: <u>DAILY PM2.5 AIR QUALITY FORECAST means the predicted ambient average PM2.5 concentration, for the entire consecutive 24-hour period, beginning at midnight of the current day and ending upon the subsequent midnight.</u>
(c)(6) - Mandatory Winter Burning Curtailment	Mandatory wood-burning curtailment provisions are currently covered in subdivision (e) of Rule 445. Since this provision is a rule requirement related to ambient PM2.5 concentration threshold triggers it is removed from the definitions section and dove-tailed into the existing mandatory wood-burning curtailment provision in subdivision (e). In addition, this re-write facilitates

Proposed Rule Reference	Proposed Amendment
[This provision of the rule is moved from the definitions to the implementation section of the rule]	having all the requirements for the mandatory wood-burning curtailment program in one rule subdivision that immediately precedes the proposed subdivision on contingency measures, and to which for contingency purposes, subdivision (e) refers. Text: ~~MANDATORY WINTER BURNING CURTAILMENT~~ ~~(A) Means any calendar day or consecutive calendar days during the wood burning season so declared to the public by the Executive Officer when ambient levels of particulate matter of 2.5 microns in size or less (PM2.5) is forecast to exceed 30 µg/m3 for a specific source/receptor area.~~ ~~(B) Applies to the entire South Coast Air Basin whenever a PM2.5 level of greater than 30 µg/m3 is predicted for a source receptor area containing a monitoring station that has recorded a violation of the federal 24-hour PM2.5 National Ambient Air Quality Standard for either of the two previous three-year design value periods. The design value is the three-year average of the annual 98th percentile of the 24-hour values of monitored ambient PM2.5 data~~
(c)(12) – PM2.5	The definition of PM2.5 previously contained in the definition of Mandatory Winter Burning Curtailment as a parenthetical is re-written as a stand-alone definition. The definition and meaning of PM2.5 remain unchanged. Text: PM2.5 means particulate matter with an aerodynamic diameter less than 2.5 microns.
(c)(16) – Source Receptor Area (SRA)	Formally defines source receptor in the rule. The map shown in the proposed rule as Attachment 1 is listed in this report as Appendix B. Text: SOURCE RECEPTOR AREA (SRA) means any of the numbered areas in the Basin as shown on the map in Attachment 1.
(c)(19) – U.S. EPA Certified Wood-Burning Heater	The reference to the latest U.S. EPA wood-burning device performance and emission standards is updated as follow: Text: U.S. EPA CERTIFIED WOOD-BURNING HEATER means any device certified by the U.S. EPA to meet the performance and emission standards as defined in Title 40 Code of Federal Regulations, Part 60, Subpart AAA, ~~February 28, 1988~~March 16, 2015, or any subsequent revision.

Proposed Rule Reference	Proposed Amendment
(e) – Wood-Burning Season Mandatory Burning Curtailment	Subsequent to a determination by U.S. EPA, pursuant to 40 CFR § 51.1014(a) of non-attainment with either a referenced PM2.5 standard or reporting requirement the No-Burn day parameters in contingency subdivision (f) of the proposed rule become effective. Note that the current rule only requires curtailment in the SRA for which an exceedance is forecast if there is no DV exceedance. However, it has proven to be difficult to call an SRA only No-Burn day, therefore the rule is being amended to call a Basin-wide No-Burn day in all cases of a forecast threshold exceedance. The proposed contingency measures will continue the trend of increased emissions reductions as discussed below. The term "winter" is removed since in the Basin this is a period of time that spans mid-December through mid-March while the Wood-Burning Season runs from November 1 thru to the end of February. Clarification is provided that provisions of the rule are not applicable in areas located 3,000 feet or more above mean sea level. Text: Wood-Burning Season Mandatory ~~Winter~~ Burning Curtailment (No-Burn day) No person shall operate an indoor or outdoor wood-burning device, portable outdoor wood-burning device, or wood-fired cooking device on a calendar day during the wood-burning season so declared to the public by the Executive Officer to be a mandatory ~~winter~~ wood-burning curtailment day (No-Burn day) ~~during the wood-burning season when a mandatory winter burning curtailment~~ based on the specified geographic area below 3,000 feet above mean sea level and applicable daily PM2.5 air quality forecast as follows: ~~is forecast for the specific region where the device is located, or on a Basin-wide basis as defined in paragraph (c)(6).~~ (1) Basin-wide if the daily PM2.5 air quality forecast for any source receptor area exceeds 30 $\mu g/m^3$, or (2) subsequent to a determination by U.S. EPA, pursuant to 40 CFR § 51.1014(a) of a failure to comply with either a referenced PM2.5 standard or reporting requirement; the applicable daily PM2.5 air quality forecast as set forth in subdivision (f) Contingency Measures.
(f) – Contingency Measures	Under the current rule provisions, a Basin-wide No-Burn ban is only declared if an exceedance is forecast for an SRA that contains a monitor that has not met the 24-hour PM2.5 standard over the past two immediately preceding 3-year periods. SRAs are shown on the map in Appendix B. A small number of SRAs such as 12, 23 and 33 typically have had design values that have not-attained the 24-hour standard over the two immediately preceding design value periods. A fair number of exceedances are often forecast for other SRAs which based on the current rule language would trigger a curtailment in the

<table>
<tr><th>Proposed Rule Reference</th><th>Proposed Amendment</th></tr>
<tr><td></td><td>
SRA-only. Table 6 shows that under the current rule, about a fifth of the time the SRA would be required to curtail:

Table 6 – Exceedances in DV and non-DV Monitor SRAs
<table>
<tr><th>Year</th><th>Number of DV Exceedance Days</th><th>Number of SRA (non-DV) Exceedance Days</th><th>SRA Only Percentage</th></tr>
<tr><td>2017</td><td>19</td><td>6</td><td>24%</td></tr>
<tr><td>2018</td><td>24</td><td>6</td><td>20%</td></tr>
<tr><td>2019</td><td>17</td><td>4</td><td>19%</td></tr>
</table>

The proposed amendments would strengthen the No-Burn provision by expanding the geographic area impacted from individual SRAs to Basin-wide in all cases when any SRA, regardless of design value exceedance, is forecast to exceed the compliance threshold.

In addition to expanding the geographic area the triggering threshold for forecasting a No-Burn day would be lowered incrementally based on missed milestones or attainment dates as specified in 40 CFR § 51.1014(a). Proposed amendments to Rule 445 would increase the scope and expected number of mandatory winter wood-burning curtailment days, based on either a failure to attain the PM2.5 24-hour or annual average NAAQS, or upon a failure to meet any associated reporting requirements, by the applicable due dates.

Text:
f) Contingency Measures
(1) Upon the issuance of a final determination by U.S. EPA, pursuant to 40 CFR §51.1014(a), that the South Coast Air Basin has failed to comply with the following requirements by the applicable date to:
(A) meet any Reasonable Further Progress (RFP) requirement in an attainment plan approved in accordance with §51.1012;
(B) meet any quantitative milestone in an attainment plan approved in accordance with §51.1013;
(C) submit a quantitative milestone report required under §51.1013(b); or,
(D) attain the applicable PM2.5 NAAQS by the applicable attainment date,
(E) the contingency measure(s) specified in paragraph (f)(2) shall be implemented, sequentially and in the order of stringency.
(2) A Basin-wide, mandatory wood-burning curtailment during the wood-burning season if the daily PM2.5 air quality forecast for any SRA exceeds:
(A) 29 µg/m^3, upon a final determination of a failure to comply with any of the provisions of paragraph (f)(1);
</td></tr>
</table>

Proposed Rule Reference	Proposed Amendment
	(B) 28 µg/m^3, upon a final determination of a failure to comply with any two of the provisions in paragraph (f)(1) (C) 27 µg/m^3, upon a final determination of a failure to comply with any three of the provisions in paragraph (f)(1) (D) 26 µg/m^3, upon a final determination of a failure to comply with any four of the provisions in paragraph (f)(1).
(g) - Exemptions	Clarification that the exemption reference remains unchanged due to the relabeling of subdivision (f) to (g) and that there are no other changes in exemptions in relation to subdivision (f) Text: (7) The provisions of subdivisions (e) and (f) shall not apply under the following circumstances
Other	Other minor amendments include typographical corrections and clarifications (e.g., wood burning is corrected to wood-burning).

EMISSION REDUCTION

Appendix A provides a detailed methodology for the estimated PM2.5 emission reductions from the proposed rule. The methodology is based on a statistical analysis of relevant historical daily PM2.5 concentrations in the Basin. Since Rule 445 prohibits the installation of wood-burning devices in new construction, and wood-burning devices already installed have significantly extended useful lifetimes, the baseline emissions from the 2016 AQMP are used to estimate the emission reductions for the proposed amended rule. The methodology evaluates the additional PM2.5 emission reductions associated with the Basin-wide curtailment as well as the increased number of No-Burn days as the curtailment threshold is lowered. Table 5 of Appendix A shows the additional emission reductions from the Basin-wide curtailment at 30 µg/m^3 and for each proposed decrease in the curtailment threshold. The current rule only requires curtailment in the specific SRA for which the daily PM2.5 air quality is forecast to exceed 30 µg/m^3. Basin-wide curtailment is only required if the exceedance is forecast for an SRA containing a monitoring station that has recorded a violation of the federal 24-hour PM2.5 National Ambient Air Quality Standard for either of the two previous three-year design value periods[23]. Under the proposed amendments, the curtailment will be implemented Basin-wide when daily PM2.5 air quality forecast for any SRA exceeds 30 µg/m^3, due to potential difficulties with SRA-specific outreach. The emission reduction from the current rule provisions is estimated to be 139.7 TPY. The Basin-wide curtailment at the current threshold of 30 µg/m^3 instead of SRA-specific curtailment in the proposed amendment will result in an additional 25.4 TPY. After triggering the first contingency

23 Design value is the three-year average of the annual 98th percentile of the 24-hour values of monitored ambient PM2.5 data.

measure the curtailment threshold will automatically decrease to 29 µg/m^3 resulting in an estimated addition emission reduction of 46.3 TPY. While it is not anticipated that any additional contingency measures will be triggered, if that occurs, additional emission reductions are anticipated as the curtailment threshold is lowered as shown in Table 5 of Appendix A.

AFFECTED SOURCES

An estimated 1.4 million[24] wood-burning devices are subject to the provisions of Rule 445. The number of affected sources is not anticipated to change greatly since wood-burning devices have lengthy useful lifetimes and Rule 445 prohibits the installation of wood-burning devices in new developments. Rather it is anticipated that the proposed amendments will decrease the number of days that the devices can be operated resulting in emissions reductions.

No additional costs are expected to be incurred. Provisions of the proposed amended rule would extend the prohibition on use of wood-burning devices to additional days almost exclusively for ambiance use of these devices. Wood-burning devices that are the sole source of heat for a dwelling or structure are specifically exempted from the No-Burn mandate.

PUBLIC PROCESS

PAR 445 is being developed through a public process. A Public Workshop was held on February 27, 2020, with close of comments on March 13, 2020 and the proposal was presented at the Stationary Source Committee on March 20, 2020.

SOCIOECONOMIC ASSESSMENT

PAR 445 would affect commercial firewood sellers in the Basin and the general public. Commercial firewood sellers belong to the industry of fuel dealers (NAICS 454319). Based on a South Coast AQMD staff survey, there are about 86 commercial firewood sellers in the Basin, out of which 31 are located in Los Angeles County, 24 in Orange County, 16 in Riverside County, and the remaining 15 in San Bernardino County. Additionally, PAR 445 would affect the general public who use wood-burning fireplaces and other wood-burning devices.

The cost impacts of Basin-wide curtailment on firewood sellers are expected to be minimal because the additional number of No-Burn days due to this proposed amendment is expected to be small (about 12 days) during the wood-burning season. The majority of commercial firewood sellers are expected to be small facilities. A lack of data on number of employees and gross annual sales of the affected commercial firewood sellers precludes staff from determining their small business status. Cost impacts to the general public are also expected to be minimal as wood-burning in the South Coast AQMD is done mainly for aesthetic purposes and there are cost-effective alternatives to burning wood for heating.

24 James E. Houck and Brian N. Eagle, "Residential Wood Combustion Emission Inventory South Coast Air Basin and Coachella Valley Portion of Salton Sea Air Basin 2002 Base Year" Based on a 2002, www.omni-test.com, October 24, 2006, http://www.omni-test.com/publications/SCAQMD-RWC4.pdf.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

Pursuant to the California Environmental Quality Act (CEQA), the South Coast AQMD, as Lead Agency, will prepare a Notice of Exemption pursuant to CEQA Guidelines Section 15062 - Notice of Exemption for the proposed project. Proposed Amended Rule 445 has been reviewed pursuant to: 1) CEQA Guidelines Section 15002(k) – General Concepts, the three-step process for deciding which document to prepare for a project subject to CEQA; and 2) CEQA Guidelines Section 15061 – Review for Exemption, procedures for determining if a project is exempt from CEQA. Since Proposed Amended Rule 445 is comprised of administrative amendments that codify an existing South Coast AQMD practice and would not cause any physical changes that would adversely affect any environmental topic area, it can be seen with certainty that there is no possibility that the proposed project may have a significant adverse effect on the environment. Therefore, the proposed project is exempt from CEQA pursuant to CEQA Guidelines Section 15061(b)(3) – Common Sense Exemption. In addition, the proposed project is considered an action to protect or enhance the environment pursuant to CEQA Guidelines Section 15308 – Actions by Regulatory Agencies for Protection of the Environment. Further, there is no substantial evidence indicating that any of the exceptions to the categorical exemption apply to the proposed project pursuant to CEQA Guidelines Section 15300.2 – Exceptions. If the project is approved, the Notice of Exemption will be filed with the county clerks of Los Angeles, Orange, Riverside, and San Bernardino counties.

CONCLUSION

PAR 445 amendments are necessary to promulgate contingency measures required to take effect without further action upon a final determination by U.S. EPA that the Basin has failed to attain standards or comply with any of the milestones by the applicable due dates as set forth in 40 CFR § 51.1014. Specifically, it is anticipated that U.S. EPA likely will determine that the 2006 24-hour PM2.5 NAAQS (35 $\mu g/m^3$) was not attained by the December 31, 2019 attainment deadline. The proposed amendments accomplish this mandate by incrementally lowering the wood-burning curtailment threshold for each determination and also expand the applicability of the curtailment Basin-wide in all cases of a forecast exceedance. The proposed amendments would become effective, after adoption by the Governing Board, without any further action, and are anticipated to result in additional No-Burn days during the wood-burning season. PM2.5 emissions reductions beyond those achieved based on the current rule are estimated at 46.3 TPY after triggering the first contingency by lowering the No-Burn day threshold to 29 $\mu g/m^3$. The proposed amendments are anticipated to have negligible cost impacts and no significant environmental impacts.

DRAFT FINDINGS UNDER CALIFORNIA HEALTH AND SAFETY CODE SECTION 40727

Requirements to Make Findings California Health and Safety Code Section 40727 requires that prior to adopting, amending or repealing a rule or regulation, the South Coast AQMD Governing Board shall make findings of necessity, authority, clarity, consistency, non-duplication, and reference based on relevant information presented at the public hearing and in the staff report.

Necessity Proposed Amended Rule 445 is needed to promulgate contingency measures required to be put into effect should the South Coast Air Basin fail to attain the NAAQS for PM2.5, as required by Title 40 of the Code of Federal Regulations (CFR) Section 51.1014.

Authority The South Coast AQMD Governing Board has authority to adopt Proposed Amended Rule 445 pursuant to the California Health and Safety Code Sections 39002, 40000, 40001, 40440, 40702, 40725 through 40728, and 41508 and 40 CFR Section 51.1014

Clarity Proposed Amended Rule 445 is written or displayed so that its meaning can be easily understood by the persons directly affected by it. The addition of definitions will improve the clarity.

Consistency Proposed Amended Rule 445 is in harmony with and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.

Non-Duplication Proposed Amended Rule 445 will not impose the same requirements as any existing state or federal regulations. The proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the South Coast AQMD.

Reference By adopting Proposed Amended Rule 445 the South Coast AQMD Governing Board will be implementing, interpreting or making specific the provisions of the Title 40 CFR 51.1014.

COMPARATIVE ANALYSIS

Under California Health and Safety Code Section 40727.2, the South Coast AQMD is required to perform a comparative written analysis when adopting, amending, or repealing a rule or regulation. The comparative analysis is relative to existing federal requirements, existing or proposed South Coast AQMD rules and air pollution control requirements and guidelines which are applicable to wood-burning devices. The proposed amendments to Rule 445 would not conflict with existing federal requirements for wood-burning devices in U.S. EPA's New Source Performance Standards (NSPS). Existing Rule 444 regulates only open burning, and does not conflict with or have any overlapping requirements with the proposed amendments to Rule 445. See Table 7 for the comparative analysis by rule element with the NSPS.

Table 7 – PAR 445 Comparative Analysis

Rule Element	PAR 445	U.S. EPA NSPS 40 CFR pt. 60, Sub. AAA
Purpose	To reduce the emission of particulate matter from wood-burning devices	To establish the best system of emission reduction for new residential wood heaters

Rule Element	PAR 445	U.S. EPA NSPS 40 CFR pt. 60, Sub. AAA
Applicability	Manufacturers, sellers, installers of wood-burning devices; commercial firewood sellers; owners or operators of wood-burning devices.	Manufacturers, sellers, testers, owners, installers and operators of wood heaters.
New Installations of wood-burning devices	Prohibits permanent installation of wood-burning devices into any new development.	None
Wood-burning devices offered for Sale / Manufactured / Installed	Prohibits sale, offer, supply, or offer to install indoor or outdoor wood-burning device unless: (A) A U.S. EPA Certified wood-burning heater; or (B) A pellet-fueled wood-burning heater; or (C) A masonry heater; or (D) A dedicated gaseous-fueled fireplace	Establishes manufacturer certification; requires certified manufacture in some instances.
Prohibited Fuel	Prohibits burning any product not intended for use as fuel in a wood-burning device including, but not limited to: • garbage • treated wood • particle board • plastic products • rubber products • waste petroleum products • paints coatings or solvents • coal	Prohibits burning in an affected wood heater: (1) Residential or commercial garbage; (2) Lawn clippings or yard waste; (3) Materials containing rubber, including tires; (4) Materials containing plastic; (5) Waste petroleum products, paints or paint thinners, or asphalt products; (6) Materials containing asbestos;

Rule Element	PAR 445	U.S. EPA NSPS 40 CFR pt. 60, Sub. AAA
		(7) Construction or demolition debris; (8) Paper products, cardboard, plywood, or particleboard. The prohibition against burning these materials does not prohibit the use of fire starters made from paper, cardboard, sawdust, wax and similar substances for the purpose of starting a fire in an affected wood heater; (9) Railroad ties, pressure-treated wood or pallets; (10) Manure or animal remains; (11) Salt water driftwood or other previously salt water saturated materials; (12) Unseasoned wood; (13) Any materials that are not included in the warranty and owner's manual for the subject wood heater; or (14) Any materials that were not included in the certification tests for the subject wood heater.
Averaging Provisions	None	None
Operating Parameters	Wood-burning devices may not be used when No Burn Day is declared.	The user of an affected residential wood heater must operate in a manner consistent with the owner's manual. The owner's manual

Rule Element	PAR 445	U.S. EPA NSPS 40 CFR pt. 60, Sub. AAA
		must clearly specify that operation in a manner inconsistent with the owner's manual would avoid the warranty.
Monitoring, Reporting, Recording keeping	None	None

REFERENCES

South Coast AQMD, 2008. Staff Report: Proposed Rule 445 – Wood Burning Devices. South Coast Air Quality Management District, March 2008.

South Coast AQMD, 2013. Staff Report: Proposed Amended Rule 445 – Wood Burning Devices. South Coast Air Quality Management District, May 2013.

South Coast AQMD, 2017. Final 2016 Air Quality Management Plan. South Coast Air Quality Management District, March 2017.

Board Letter Proposed Amendments to Rule 4901– Wood Burning Fireplaces and Wood Burning Heaters. San Joaquin Valley Air Pollution Control District, June 2019.

Staff Report Regulation 6; Particulate Matter and Visible Emissions, Rule 3: Wood Burning Devices. Bay Area Air Quality Management District, September 2015.

APPENDIX A - EMISSION REDUCTIONS EXPECTED FROM THE RULE 445 AMENDMENT

1. Baseline Emissions

Annual average PM2.5 emissions developed for the 2016 AQMP were utilized to estimate reductions expected from the proposed amended Rule 445. Two emission categories subject to the rule are Residential Wood combustion for Wood Stoves and Fireplaces. The total PM2.5 emissions from the two categories are 4.944 tons per day in 2017 in annual average emissions. The rule baseline emissions do not change in future years due to full implementation of the current rule in year 2015.

The rule baseline emissions were allocated to each Source Receptor Area (SRA), using a spatial allocation factor which is developed based on the U.S. Census American Community Survey (ACS) data regarding fuel type used to heat households. ACS is conducted every year to update a portion of the population. Excluding mountainous areas with altitude higher than 3000 ft, the basin-wide total emissions subject to the rule is 4.416 TPD in annual average emissions.

Wood-burning season daily emissions were estimated using the methodology included in the South Coast AQMD staff report[1]. 69% of PM2.5 emissions is estimated to occur during wood-burning season months (November through February) according to CARB's temporal allocation factors[2]. In addition, a 75 percent compliance rate was assumed as indicated in the staff report. Table 1 below provides a step-by-step calculation of an average winter day emission.

Table 1. Estimate of 2017 Winter Day Emissions for Wood-Burning Devices

2017 Annual Average Day (tons per day)	Emissions below 3000 ft altitude (tons per day)	Days per year	Annual Total Emissions (tons)	Percent of Emissions Occurring During Wood-Burning Season Months (%)	Wood-Burning Season Emissions (tons)	Number of Days in the Wood-Burning Season (Nov to Feb)	Wood-Burning Season Daily Emissions (tons per wood-burning season day)
4.944	4.416	365	1611.84	69	1112.17	120	9.268

1 South Coast AQMD Governing Board Agenda No. 37, March 7, 2008, Staff Report.

2 CARB Methodology Updates: Residential Wood Combustion, 2015. Available at https://ww3.arb.ca.gov/ei/areasrc/fullpdf/full7-1_2011.pdf.

2. Emission Reductions from the Existing Rule

Rule 445, amended in March 2013, has two mechanisms to mandate residential wood-burning curtailment. One is a curtailment for a specific SRA where the SRA is forecast to have PM2.5 higher than 30 μg/m^3. The other is a Basin-wide curtailment when an SRA which is forecasted to exceed 30 μg/m^3 of PM2.5 has recorded a violation of the federal 24-hour PM2.5 National Ambient Air Quality Standard (NAAQS) of 35 μg/m^3 for either of the two previous three-year design value periods. The design value (DV) is the three-year average of the annual 98th percentile of the 24-hour values of monitored ambient PM2.5 data. Federal Reference Method (FRM) data were used to determine DVs. During the two 3-year periods (2015-2017 and 2016-2018), three monitoring stations showed DVs exceeding 35 μg/m^3, the 2006 24-hour PM2.5 NAAQS. They are Compton, Mira Loma, and Freeway 60 near-road sites, located in SRA 12, 23 and 33, respectively.

Under the March 2013 amendment, if any of the three sites were forecasted to have a daily PM2.5 average higher than 30 μg/m^3, a Basin-wide curtailment would be triggered. Continuous PM2.5 measurements taken by Beta Attenuation Method (BAM) indicate that there are 79 days in which any of the three stations had high PM readings exceeding the threshold. Note that the District's daily air quality forecast, which wood-burning curtailment is based on, utilizes BAM, not FRM. 79 occurrences in four years is equal to 19.75 day per year on average. The emission reductions from the 19.75-day Basin-wide curtailment are 137 tons per year (0.376 tons per day), using the wood-burning season-day average emission and 75% of compliance assumption.

Table 2. Reductions from Basin-wide curtailment

Wood-Burning Season Daily Emissions (Tons per Wood-Burning Season Day)	Number of Curtailment Days	Compliance Rate (%)	Total Reductions from the curtailment (Tons per Year)
9.268	19.75	75	137.3

While high PM2.5 levels were mostly recorded at the three monitors, 29 occurrences of an SRA specific exceedance were identified during the four-year period. This does not include the three SRAs that triggered the 79 days of Basin-wide curtailment. This SRA count is a cumulative accounting of all SRAs, except the three SRAs, including multiple SRAs on a single day.

Reductions from an SRA specific curtailment were estimated with SRA-specific emissions multiplied by the number of high PM days occurring at the specific SRA and 75% compliance rate. High PM day means that BAM reading of PM2.5 concentration is higher than 30 μg/m^3. For example, SRA4, South Coast LA, recorded 12 high PM days during the four-year period. PM2.5 emissions of 0.459 TPD allocated for SRA4 was multiplied by 3 days and 75% compliance to calculate reductions per year. Repeating the calculation for the 29 high PM occurrences, reductions due to an SRA specific curtailment is estimated to be 2.396 TPY in annual average emissions. Table 3 lists SRAs that recorded high PM days and its associated PM2.5 emissions.

Combining the basin-wide and SRA specific curtailments, total reductions from the existing rule are 139.7 TPY (0.376 TPD) in annual average emissions.

Table 3. Reductions Associated with Curtailment at an Individual SRA

	High PM Days per year (4-year Average)	Emissions below 3000ft Altitude per SRA (Tons per Year)	Wood-Burning Season Daily Emission per SRA (Tons per Day)	Reduction due to curtailment (Tons per Year)
SRA1	0.50	87.546	0.503	0.189
SRA2	0.25	76.252	0.438	0.082
SRA3	0.50	110.405	0.635	0.238
SRA4	3.00	79.863	0.459	1.033
SRA6	0.75	85.430	0.491	0.276
SRA7	0.50	78.287	0.450	0.169
SRA8	0.25	37.784	0.217	0.041
SRA13	0.25	22.508	0.129	0.024
SRA15	0.25	19.049	0.110	0.021
SRA16	0.25	29.930	0.172	0.032
SRA17	0.50	134.823	0.775	0.291
SRA29	0.00	12.934	0.074	0.000
Total	7.25	-	-	2.396

3. Emission Reductions from the Proposed Amendment

The proposed amendments include five measures designed to reduce emissions and to comply with the contingency measure requirements listed in 40 CFR § 51.1014(a). The following sections provides emission reductions associated with each of the measures.

According to subparagraph (f)(2)(A) of the proposed amendment, an SRA-specific curtailment is suggested to expand to the entire Basin. BAM data taken in the last four-year period indicates 95 days that any SRA in the Basin exceeded the 30 $\mu g/m^3$ threshold. This would be 23.75 days of Basin-wide curtailment days per year, bringing approximately 165.1 TPY reductions, with 25.4 TPY net additional reduction from the existing rule.

Net additional emission reductions associated with subsequent lower thresholds are expected to be 20.9, 20.9, 13.9, and 19.1 TPY for the curtailment thresholds of 29, 28, 27, and 26 $\mu g/m^3$ respectively. These estimates are based on the number of high PM days exceeding the thresholds

in the four-year analysis period. Emission reductions from the curtailment were calculated with the average-wood-burning season daily emissions provided in Table 2 and 75% compliance assumption. The number of high PM days occurred during the four-year period are provided in Table 4. Net emission reductions expected from the proposed rule amendment are summarized in Table 5.

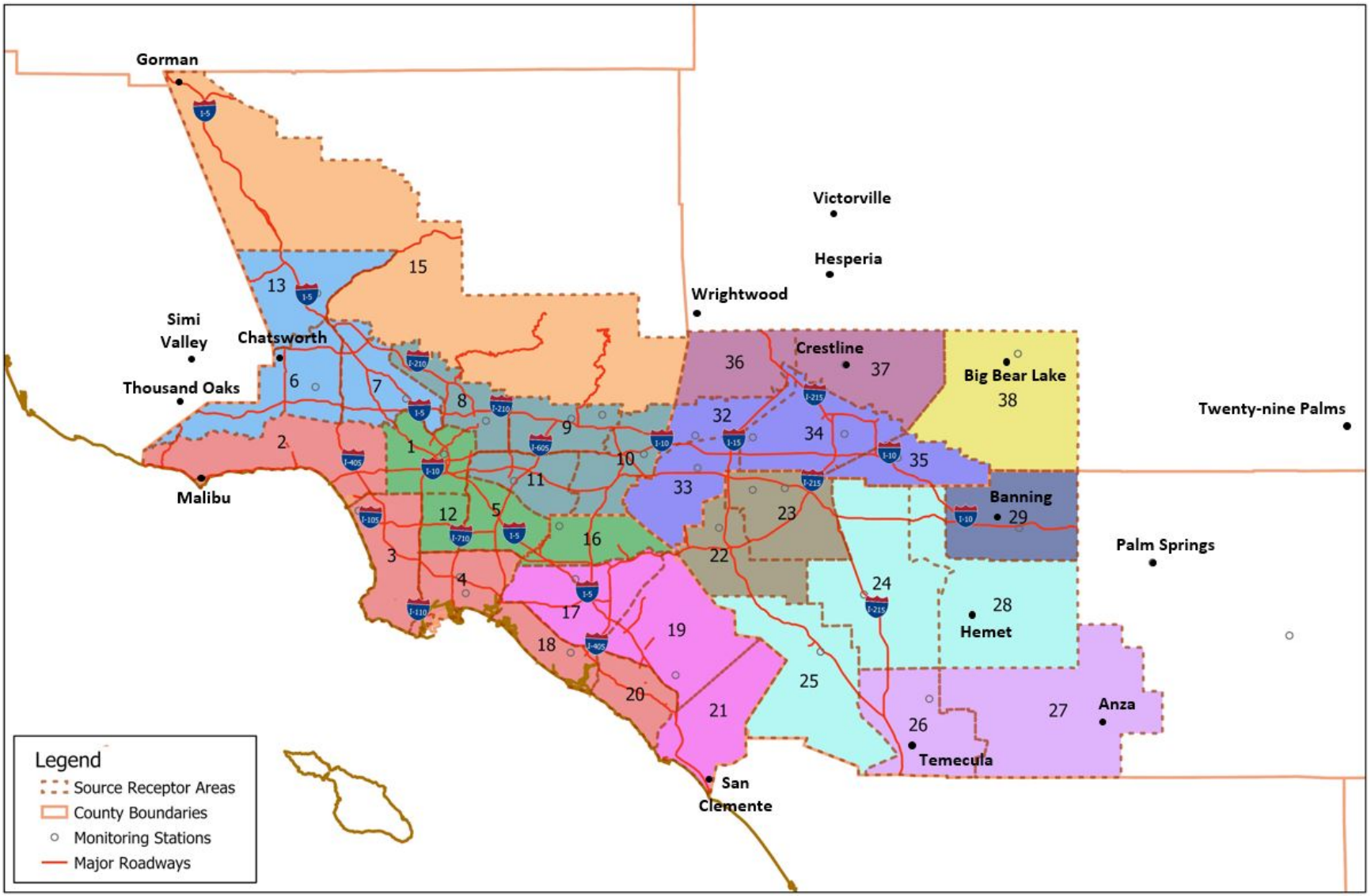
Table 4. Number of days exceeding proposed curtailment thresholds

Year	30 µg/m^3	29 µg/m^3	28 µg/m^3	27 µg/m^3	26 µg/m^3
2016	23	27	29	33	37
2017	24	26	30	31	33
2018	27	33	34	36	38
2019	21	21	26	27	30
Average	23.75	26.75	29.75	31.75	34.5

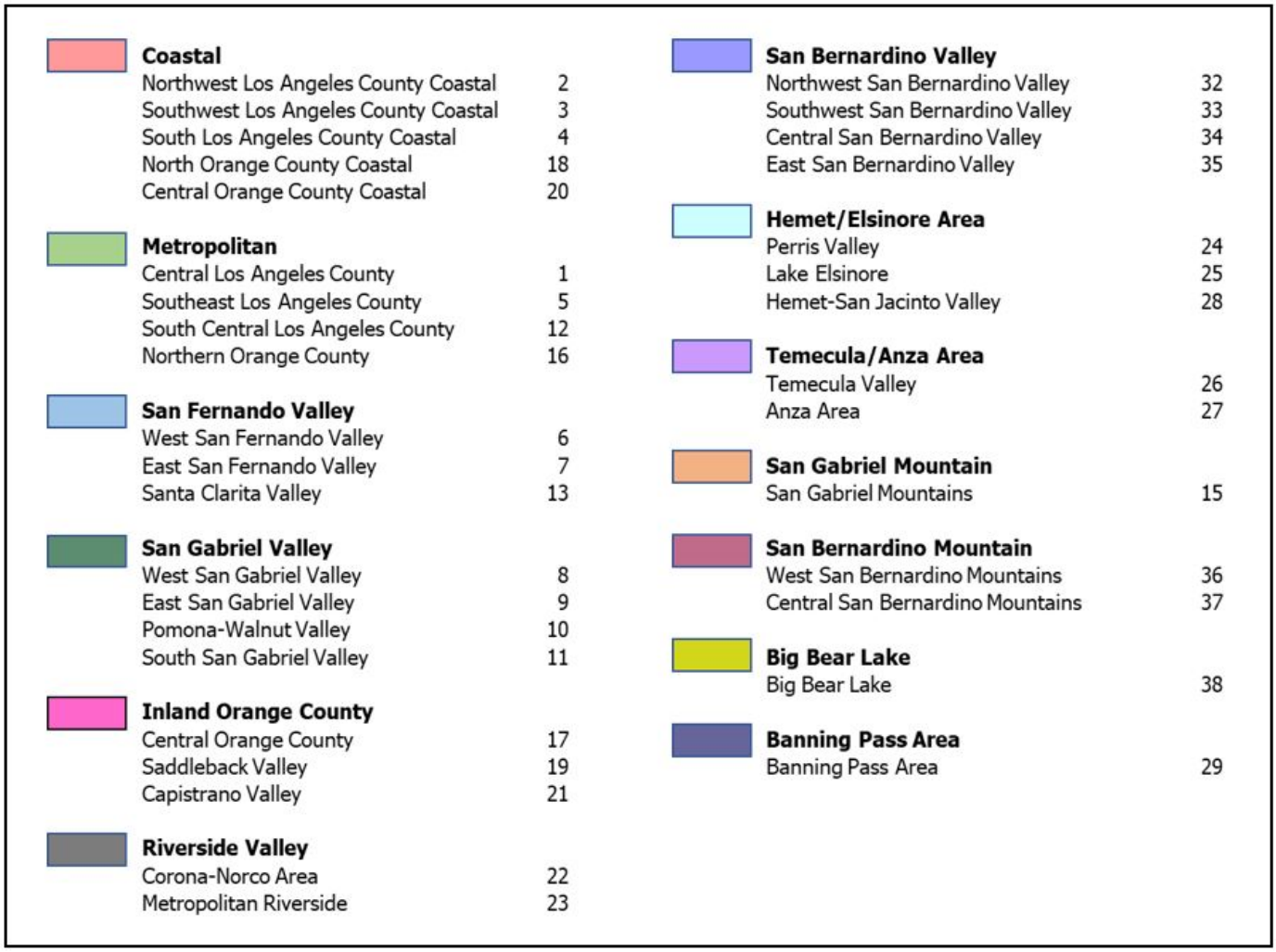
Table 5. PM2.5 emission reductions expected due to the proposed rule amendment (tons per year)

Category	Total Reduction	Additional Reductions beyond Current Rule	Incremental Reductions
Existing Rule	139.7		
Proposed amendment - Basin-wide expansion of 30 µg/m^3 threshold	165.1	25.4	25.4
Proposed amendment - Lowering Threshold to 29 µg/m^3	186.0	46.3	20.9
Proposed amendment - Lowering Threshold to 28 µg/m^3	206.8	67.1	20.9
Proposed amendment - Lowering Threshold to 27 µg/m^3	220.7	81.0	13.9
Proposed amendment - Lowering Threshold to 26 µg/m^3	239.8	100.1	19.1

APPENDIX B – SOURCE RECEPTOR AREAS (SRAS) IN THE SOUTH COAST AIR BASIN



Source Receptor Area (SRA) Map Index



APPENDIX C

COMMENTS AND RESPONSE TO COMMENTS

Comment Email #1

Christine Vineyard
Vineyard.Christine@epa.gov

March 13, 2020

Dear Henry:

Thank you for another opportunity to comment on draft Rule 445, Wood-Burning Devices. We appreciate you incorporating many of our comments on the previous draft rule such as a definition for source-receptor area and updating the reference to the current New Source Performance Standard (NSPS). However, we still have the following concerns/comments on draft Rule 445, dated March 6, 2020, for your consideration: 1-1

- We recommend considering adding a provision for removal of fireplaces during remodel. See, e.g. SJVAPCD Rule 4901, section 5.3. 1-2
- We recommend considering extending the wood burning season beyond November-February. For example, BAAQMD recently revised its wood-burning rule to provide for curtailments year round. SCAQMD notes that 70% of smoke is emitted on colder days but that indicates that there are emissions in warmer months. Even if wood-burning doesn't cause an exceedance by itself, decreasing the contribution from woodstoves during these months could reduce concentrations. 1-3
- We recommend considering removing the exemption for devices above 3000 feet and/or specifying that only wood-burning heaters (not fireplaces) are allowed under the exemption. SCAQMD notes that there have been no exceedances in areas located above 3000 feet and that measurable emissions reductions are achieved without including emissions from devices in these areas. If SCAQMD wishes to keep this exemption as written, we recommend providing an explanation of why emissions from devices at 3000+ feet are not expected to contribute to exceedances of either the 24-hour or annual NAAQS in other areas. 1-4
- We recommend considering lower curtailment thresholds. The San Joaquin Valley has basin-wide curtailments as low as 20 $\mu g/m^3$ for uncertified stoves. It is not clear why lowering the threshold could be cost prohibitive, as SCAQMD indicates. 1-5
- We recommend requiring removal or replacement of non-certified devices upon transfer or clarify and document why it would be "resource prohibitive" and therefore not feasible. See SJVACPD Rule 4901 section 5.2. 1-6

- We recommend considering requiring exempt households to have EPA-certified devices. See, e.g. BAAQMD Rule 6-3-110. 1-7

If you have any questions, please do not hesitate to contact Christine Vineyard (415) 947-4125, or Doris Lo, Manager, Rules Office (415) 972-3959.

Response to Comment 1-1
Thank you for taking the time to review the proposed draft materials and for providing feedback.

Response to Comment 1-2
Regarding the remodeling provison in SJVAPCD Rule 4901 the staff report associated with the June 20, 2019 rulemaking states that installation of a U.S. EPA certified, gas-fueled, or electric device is required during a remodel of a fireplace or chimney that exceeds $15,000 and also requires a building permit where the application for the permit is submitted after January 1, 2020. SJVAPCD Rule 4901 defines a remodel as a physical modification to a fireplace or chimney that impacts the physical structure of the fireplace or chimney, however aesthetic modifications that do not affect the physical structure of the fireplace are not considered a remodel, i.e. installing decorative stone/tile in front of fireplace. BAAQMDs Regulation 6 Rule 3 has a similar provision and the staff report associated with the November 20, 2019 rulemaking states that "Enforcement of this provision would be by the local city or county where the building permit is received". There are over 160 incorporated cities in the jurisdiction of the South Coast AQMD with approximately 17 million inhabitants. As discussed in Table 4, staff does not have the necessary resources required for co-ordinating a residential level program that mandates replacement of residential fireplaces, even with a project cost minimum. Rule 445 already prohibits new fireplaces from being built or installed in new developments. The rule also already prohibits sale, supply, offer, or installation of a wood-burning device other than those specified. Rule 445, is more stringent in that it does not allow remodeling of existing wood-burning fireplaces. Fireplaces may be repaired where there is a health or safety concern. Replacement of existing units is limited to one of four approved wood-burning device types. Additionally, South Coast AQMD has incentivized the conversion of more than 10,000 fireplaces to gaseous fueled, where practicable, and continues to do so by providing up to $1,600 per unit in areas that typically see the highest concentrations of ambient PM2.5, to ecourage voluntary conversion of existing wood-burning fireplaces. The program is currently being implemented with success and staff is exploring ways to expand eligibility criteria to encourage further voluntary participation.

Response to Comment 1-3
Expanding on the discussion in Table 4, there are a minimal number of exceedencs during the non-wood-burning season months, the typical exception being July 4th. In addition, the exceedances outside the wood-burning season months are unlikely to affect the 24-hour design values. The past three Basin maximum 24-hour design values were not affected by the few exceedances occuring outside the wood-burning season. Note that events (e.g., wildfires or July 4) that would reasonably be considered exceptional events were removed from this analysis. Climate in the Basin is typically more moderate than in the Bay Area and during the non-wood-burning season months, wood-burning devices are used mainly for ambience purposes. For example, based on NOAA data during the four month wood-burning season from November 2019 through February 2020 average

ambient temperatures in the Los Angeles Downtown Area were 64.9, 59.4, 60.9 and 62.6 degrees fahrenheit, respectively. In contrast, at San Francisco International Airport (BAAQMD) for the same time period temperatures were 56.4, 53.5, 52.1 and 55.3 degrees fahrenheit, respectively. Similarly, for the same time period temperatures in the Fresno area (SJVUAPCD) were 57.9, 51.0, 49.0 and 55.0 degrees fahrenheit, respectively. In both cases, significantly lower average temperatures than typically experienced in the South Coast Air Basin.

Furthermore, staff believes that extending the wood-burning season may inadvertantly increase PM2.5 emissions. Governor Newsom's 2019 Executive Order N-16-19 is designed to reduce fuel loads through prescribed burns in a controlled manner. Prescribed burns are allowed on days where no exceedences are forecast under Rule 444 - Open Burning. Residential No-Burn days also trigger a prohibiton on prescribed burns under 3,000 feet above mean sea level. An increase in the number of residential No-Burn days may create an undue burden on fire agencies and reduce the number of days suitable for prescribed burns, especially in the winter and early-spring months when prescribed burning is more common and atmospheric conditions are advantageous. A reduction in the prescribed burn acreage increases the potential of larger wildfires on No-Burn days due to higher fuel loads. This could lead to more exposure to PM2.5 during the No-Burn season and throughout the year. The mitigation of wildfires is not only critical to prevent excessive air pollution but also to prevent major economic loss and loss of life as evidenced by the 2019 Sandalwood wildfire in the area of Calimesa in Riverside county with an estimated 74 structures destroyed, 16 structures damaged, and 2 civilian fatalities. Staff also believes based on extensive experience with outreach that, a year round wood-burning season could result in a less effective program by de-sensitizing the public to such announcements.

Response to Comment 1-4

The only areas 3,000 ft or higher above mean sea level with large populations in the Basin are Idyllwild, Lake Arrowhead, and Big Bear. The only Federal Reference Method PM2.5 monitor located at 3,000 feet or higher above mean sea level in the South Coast Air Basin is in Big Bear. This monitor is well below the 24-hour PM2.5 standards. On days when meteorology is favorable for high PM2.5 concentrations, these areas are all downwind of monitors that do not attain the 24-hour or annual standards. Therefore, these areas are not expected to contribute to exceedances of the 24-hour or annual standards.

Response to Comment 1-5

Appendix VI-A: RACM/BACM Demonstration of the 2016 AQMP provides an analysis of why lowering the contingency threshold to 20 $\mu g/m^3$ is more stringent than comparable existing programs in other jurisdictions. The SJVAPCD provision in Rule 4901 for episodic curtailment thresholds implements a two-tiered curtailment program. During a Level One Curtailment, which is triggered when PM2.5 concentrations are forecast to be between 20 and 65 $\mu g/m^3$, operation of a wood-burning fireplace or an unregistered wood-burning heater is prohibited while properly operated wood-burning heaters that meet certification requirements (U.S. EPA Phase II-certified or equivalent) and have a current registration with SJVAPCD may be used. Only during a Level Two Curtailment, which is triggered when the 24-hour average PM2.5 concentration is forecast to be above 65 $\mu g/m^3$ or PM10 > 135 $\mu g/m^3$, is operation of any wood-burning device prohibited. In contrast, South Coast AQMD Rule 445 wood-burning curtailment is mandatory whenever ambient PM2.5 concentrations are forecast to exceed 30 $\mu g/m^3$. PAR 445 would also extend the No-Burn

ban to Basin-wide in all cases while the SJVUAPCD No-Burn thresholds are county based. The SCAQMD curtailment threshold applies to all solid fuel devices, including wood-based residential cooking devices regardless of certification. In 2016, 2017, and 2018 PM2.5 24-hour average values in the Basin did not exceeded 65 $\mu g/m^3$, and hence, no Level Two Curtailments would have been called if SJVAPCD's two-tiered program had been implemented in the Basin, leading to an increase in ambient PM2.5 emissions. A two-tiered system as adopted in the SJVAPCD would also likely be unenforceable, since it would require staff to identify and monitor the use of a disparate population of devices. South Coast AQMDs current approach is more stringent and readily enforceable in that no wood-burning device may operate based on a single forecast threshold of 30 $\mu g/m^3$.

Response to Comment 1-6

The staff report associated with the SJVAPCD Rule 4901 June 20, 2019 rulemaking addressing compliance upon property sale or transfer states that "during the sale or transfer of all residential properties, the seller submit verification of complaince to the buyer and the District that wood-burning heaters on the property are compliant or exempt at the time of heater purchase/install or such devices have been rendered permenantly inoperable." As such this provision would only apply to wood-buring heaters and those that were not compliant at the time of purchase/install. Also as stated in Response 1-2, staff would not have the resources for the magnitude of a residential level program designed to ensure compliance with such a mandate, in the Basin. In addition, staff has faced strong resistance from trade and building association groups as well as realtor associations, to implementation of such a program, including the high cost of mandating and enforcing such a program. We also do not believe that such a provision is warranted given the clear downward trend in Basin-wide ambient PM2.5 concentrations and our estimates that the proposed amendments are sufficient to attain the standard.

Response to Comment 1-7

Households currently exempt from Rule 445 requirements include the following: where there is no existing infrastructure for natural gas service within 150 feet of the property line; locations 3,000 feet or more above mean sea level; requiring all wood-burning devices be U.S. EPA certified or equivalent when selling or transferring an existing development including Historical sites; low-income households; and sole source of heat. The exemption for wood-based fuel intended for the cooking, smoking, or flavoring of food is solely for the No-Burn advisory labeling. Ceremonial fires are regulated pursuant to the provisions of Rule 444 – Open Burning.

As discussed in Table 4, certified wood-burning heaters can range in price anywhere from $2,000 to $8,000 per unit and require professional installation. This would be a significant financial hardship for low income households and also those not within 150 feet of natural gas service or where the unit is the sole source of heat (which are generally located in more rural and economically disadvantaged areas in the Basin). Natural gas service is generally available in the more densely populated regions of the Basin, so that with the number of units required to switch over this will likely not be a cost-effective requirement or a significant source of emissions reductions as detailed in Table 4. Also as stated in Table 4, staff is exploring ways to expand the existing Fireplace and Wood Stove Change Out incentive program to include additional zip codes. The program currently provides qualified applicants between $200 to $1,600 towards the purchase and installation of an approved wood-burning or gaseous-fueled device that replaces an existing

fireplace. Similarly, the number of historical sites is likely not a significant emissions source. Units at these sites are subject to No-Burn day requirements. There may also be regulatory impediments to non-conforming structural modifications at such sites, including replacement of wood-burning devices. As discussed in Response 1-4 wood-burning devices located 3,000 feet or higher above mean sea level are not a significant source for attainment of the PM2.5 standards in the Basin. Response 1-2 details why a sale or transfer requirement for wood-burning devices would be unenforceable in the Basin.

Comment Email #2

Mary Giacoletti
mpowergiacoletti@gmail.com

March 11, 2020

Dear Mr. Pourzand,

I appreciate all efforts made by the AQMD staff in what must be a tremendous effort to keep us from polluting ourselves into oblivion.

I am particularly interested in the pollution generated by wood-burning, and feel, in that regard, that the AQMD could, and should, take a stronger stand. 2-1

In a new book on what he prefers to call Global Pollution, a Canadian writer points out the primary need to deal with wood-as-fuel in developing countries. More urgent than anything else, he states with a certain logical insistence.

Zero in on California, a state of wealth and privilege, and mostly good weather, and what do we see? Almost every real estate ad emphasizes, underlines, the luxury of wood-burning fireplaces. The more desirable homes have two or three and a wood-fired outdoor barbecue pit. New, upscale hotels are proposed and leading the parade of their amenities is the wood-fired oven, kept stoked 24-7 by the equally upscale chef. 2-2

Have we become as deprived, in our own ignorance, as poverty-stricken Nigerians who have nothing else than the primitive fire by which to cook?

There are few things more polluting than wood smoke. Two things, actually. Green waste smoke and dung-burning smoke. Coal is a bit cleaner. 2-3

The proposed amendments are too weak. Too weak for health. Too weak for common sense. I realize that there is an ardent wood-burning population out there and that you fear stepping on the toes of liberty. The first liberty, however, is to breathe. 2-4

On behalf of all those who want to breathe, whether they know it or not, I suggest the following:

1. Upon the sale of any property that uses a wood-burning device, replace device(s) with an equivalent natural gas device. 2-5
2. Have no exemptions, such as low-income, 3000 feet, ceremonial, no natural gas (there is electric, solar). Everyone should have equal responsibility for keeping the air clean. 2-6

3. Follow the saner standards of the Bay Area with a year-round wood-burning curtailing, and that of the San Joaquin Valley with a No-Burn threshold level of 20 micro-grams per cubic meter, not the proposed 29. 2-7
4. Educate the children, so that eventually we will have no gratuitous burning. 2-8
5. Discard the cowardly word "ambience," behind which hides a ton of harm. (Actually 4.944 tons a day.)
6. Seasoned, treated, oil-coated, pine cones, garbage: How can anyone know for sure who is burning what? 2-9
7. The amount of smoke to which Californians are being exposed should simply not be allowed. 2-10

Thank you for allowing me to comment. 2-11

Mary Giacoletti 9349 Jasper Way, San Simeon, CA 93452
(805) 215-0003 mpowergiacoletti@gmail.com

Response to Comment 2-1
Thank you for your recognition regarding our efforts to reduce ambient PM2.5 concentrations. The proposed amendments are designed to achieve further emission reductions as we work toward attainment with the 2006 hourly and 2012 annual health based National Ambient Air Quality Standards (NAAQS) in the South Coast Air Basin. Regarding wood-as-fuel in developing countries our rulemaking is limited to the jurisdiciton of the South Coast AQMD.

Response to Comment 2-2
In regards to new developments within the South Coast Air Basin, Rule 445 generally prohibits the installation of residential indoor and outdoor wood-burning devices in new developments below 3,000 feet above mean sea level. For those communities above 3,000 feet, Rule 445 also limits the sale and installation of wood-burning devices to U.S. EPA Certified wood-burning heaters, pellet-fueled wood-burning heaters, masonry heaters, or dedicated gaseous-fueled fireplaces which are cleaner or as clean burning as the existing device. These sale and installation provisions limit the proliferation of non-compliant wood-burning devices at all developments in the District, including existing developments.

Response to Comment 2-3
In order to avoid excess smoke/visible emissions Rule 445(d)(3) specifically prohibits the burning of any product not intended for use as a fuel and that is not seasoned wood.

Response to Comment 2-4
Numerous studies have been conducted on the link between exposure to ambient particulates and health risks. The PM2.5 NAAQS adopted by U.S. EPA are health protective based, and both the short-term exposure (24-hour average) and long-term exposure (annual average) PM2.5 standards have been revised downwards as the health science has evolved. Prior to the adoption of any rules or regulations the South Coast AQMD conducts extensive public outreach including public

noticing of meetings, working group and stake holder meetings, public workshops and consultation meetings, and committee meetings during which testimony is received from all stakeholders and interested parties. The South Coast AQMD Governing Board then takes appropriate action on the rule or regulation at a publicly held hearing on the matter. Adopted rules and regulations represent the most reasonable and cost-effective ways for achieving emissions reductions and compliance goals. Specifically with respect to PAR 445, these amendments will help South Coast AQMD to reduce PM emissions to a level that is at or below the national air quality standard, a standard which is set to be health-protective.

Response to Comment 2-5
See response to comment 1-2.

Response to Comment 2-6
See response to comment 1-4 regarding exemption of wood-burning devices located at 3,000 feet or higher above mean sea level. A total solar (off-the-grid) solution is likely not technically feasible for all households. An exemption is provided for low income households to avoid financial hardship. Ceremonial fires are covered under the provisions of Rule 444 – Open Burning.

Response to Comment 2-7
See responses to comments 1-3 and 1-5.

Response to Comment 2-8
As detailed in the staff report PM emisison inventories have declined signifcantly within the last two decades. In addition, South Coast AQMD conducts extensive education and outreach. The Why Healthy Air Matters (WHAM) Program is South Coast AQMD's high school air quality education program. The WHAM Program utilizes Kids Making Sense®, a Science, Technology, Engineering and Math (STEM) based educational curriculum that teaches students about air quality issues. Also as discussed in the Executive Summary, staff conducts extensive outreach to ensure that the public and other stakeholders are aware of wood-burning curtailment requirements. In addition to the South Coast AQMD Check Before You Burn web page with program information including links and videos and the Check Before You Burn map, information regarding No-Burn days is disseminated through e-mail notifications and South Coast AQMD social media. There is also a Check-Before-You-Burn program toll-free informational phone number at 1-866-066-3293. For more information refer to the South Coast AQMD web address at: http://www.aqmd.gov/home/programs/community/community-detail?title=check-before-you-burn.

Response to Comment 2-9
Instances of unlawful burning, in the Basin, of products not intended to be used as a fuel should be reported to the South Coast AQMD. Complaints should be called in to 1-800-CUT-SMOG.

Response to Comment 2-10
Staff agrees and has endeavored to craft rules and regulations, including PAR 445 with provisons that significantly mitigate particulate matter and smoke emissions.

Response to Comment 2-11

Thank you for participating in the public process.

Comment Email #3

Mary Giacoletti
mpowergiacoletti@gmail.com

March 13, 2020

I should be clear it's not just fossil fuels. Burning anything, so it could be indoor pollution from cook stoves. It could be burning agricultural waste. It could be burning wood. It could be wildfire. Air pollution is strongly associated with people's risk of getting pneumonia and getting sicker when they do get pneumonia. We don't really have much in the way of evidence to show that connection with the COVID epidemics. 3-1

Given what we know now, it would be very surprising to find that air pollution didn't affect the risk of people either getting the disease or getting sicker when they do get the disease. 3-2

Why is that?

We **have lots of research that shows** that air pollution, particularly particulate matter air pollution, increases the risk of people getting sick with bacterial and viral pathogens that cause pneumonia, and that people who are exposed to more air pollution get sicker when they get exposed to those kinds of pathogens. 3-3

Sent from my iPhone

Response to Comment 3-1
South Coast AQMD has numerous rules and regulations for the control of air emissions from a variety of sources including agricultural, commercial cooking and other sources of air contaminants. See http://www.aqmd.gov/home/rules-compliance/rules for specific information. Health studies have shown a significant association between exposure to particle pollution and health risks, including premature death. The proposed amendments are designed to reduce PM2.5 air pollution and thereby decrease health impacts.

Response to Comment 3-2
As detailed in this report, the NAAQS for PM are based on numerous health studies, including those that evaluate PM2.5 impacts on infection risk, and how people with existing respiratory diseases may be more susceptible to the negative health effects of PM2.5. The objective of the proposed amendments is to further reduce ambient PM2.5 levels to help in attaining these health-based standards and improve public health outcomes.

Response to Comment 3-3
See response to comment 3-2.