Table of Contents

I. Summary .............................................................................................................. 5

II. Importance of Reducing Residential Wood Burning Emissions ....................... 6
   A. PM2.5 Attainment .......................................................................................... 6
      1. Valley’s Unique Air Quality Challenges ................................................. 6
      2. Residential Wood Burning Emissions ...................................................... 7
      3. PM2.5 Plan Modeling .............................................................................. 8
   B. Health Benefits from Reducing Wood Smoke Exposure ............................... 9

III. Understanding Influence of Meteorological Conditions on Elevated PM2.5 ......... 11
   A. Wind and Temperature Instability Provide the Strongest Mechanisms for
      Pollution Diffusion ...................................................................................... 11
   B. Humidity and Sunlight Contribute to PM2.5 Concentrations ....................... 11

IV. Current Multifaceted Approach to Reduce Emissions ........................................ 12
   A. District Rule 4901 .................................................................................... 12
   B. Burn Cleaner Incentive Program ............................................................... 12
   C. Public Education and Outreach .................................................................. 15

V. Evaluation of Potential Regulatory Opportunities to Reduce Emissions ............. 18
   A. Increase No Burn Days for Non-Registered Wood Burning Heaters and Wood
      Burning Fireplaces by Lowering the Curtailment Level ............................... 18
   B. Encourage Transition to Clean Burning Heaters ........................................ 19
   C. Allow more burning days for clean burning heaters .................................... 21
   D. Expanded Wood Burning Season ................................................................ 22
   E. Re-evaluate Current Exemptions ................................................................. 23
   F. EPA Proposed New Source Performance Standards (NSPS) ......................... 23

VI. Proposed Amendments to the District’s Residential Wood Burning Program ....... 25
   A. Proposed Amendments to Rule 4901 .......................................................... 25
      1. Section 1.0 (Purpose) ............................................................................ 25
      2. Section 2.0 (Applicability) ...................................................................... 25
      3. “Phase II” rule clarifications .................................................................... 26
      4. Addition of “NSPS” for clarification of federal requirements .................... 26
      5. Section 3.0 (Definitions) ......................................................................... 26
      6. Section 4.0 (Exemptions) ........................................................................ 27
7. Section 5.1 (Sale or Transfer of Wood Burning Heaters) ...................................... 27
8. Section 5.2 (Sale or Transfer of Real Property) .................................................. 28
9. Section 5.3 (Limitations on Wood Burning Fireplaces or Wood Burning Heaters in New Residential Developments) ......................................................... 28
10. Section 5.5 (Prohibited Fuel Types) ................................................................. 29
11. Section 5.6 (Episodic Wood Burning Curtailments) .......................................... 29
12. Section 5.7 (Registration of Wood Burning Heaters) ...................................... 32
13. Section 5.8 (Renewal of Registration) ............................................................... 33
14. Section 5.9 (Disqualification of Registration) .................................................. 33
15. Section 5.10 (Registration of Wood Burning Heater Professionals) .................. 33
16. Section 5.11 (Inspection of Registered Wood Burning Heaters) ...................... 35
17. Section 6.0 (Administrative Requirements) .................................................... 35
18. Section 7.0 (Test Methods) .............................................................................. 35

B. Proposed New Rule 3901 (Fees for Registration of Wood Burning Heaters) ........ 36

C. Enhancements to the District’s Burn Cleaner Incentive Program ....................... 36
1. Proposed Increased Incentive Amounts ............................................................. 36
2. Additional Low-Income Provisions .................................................................. 37
3. Updates to Program Documents ...................................................................... 38

D. Enhanced Forecasting ......................................................................................... 38

VII. Additional Analyses ......................................................................................... 39
A. Global Climate Change and Greenhouse Gases ............................................... 39
B. Health Benefits .................................................................................................. 39
C. Emission Reduction Analysis ............................................................................ 40
D. Economic Analyses ........................................................................................... 40
1. Cost Effectiveness Analysis ............................................................................. 40
2. Socioeconomic Analysis ................................................................................ 40
E. Rule Consistency Analysis ............................................................................... 40
F. California Environmental Quality Act Analysis ............................................... 41

VIII. Rule Development Process ............................................................................. 42
A. 2012 PM2.5 Plan Development ...................................................................... 42
B. Technical Workgroup Committee Meetings .................................................... 42
C. Public Opinion Survey Related to Residential Wood Burning ....................... 43
D. Public Workshops .............................................................................................. 44
E. Public Hearing ................................................................. 44

LIST OF FIGURES

Figure 1  San Joaquin Valley Topography Traps Air Pollution .............. 7
Figure 2  Burn Cleaner Graphic .................................................. 13
Figure 3  District's Check Before You Burn Graphic ......................... 15
Figure 4  District RAAN and iPhone App Images .......................... 16
Figure 5  District Healthy Air Living Graphics .............................. 16
Figure 6  Proportion of Residents with a Wood-Burning Fireplace, Wood Stove or Pellet Stove ......................................................... 20
Figure 7  Average PM2.5 emissions based on wood burning heater type .... 21
Figure 8  Illustration of Section 5.3.1 Requirements ......................... 29
Figure 9  Illustration of Section 5.3.2 Requirements ......................... 29
Figure 10 Current and Proposed Wood Burning Curtailment Levels ....... 30

LIST OF TABLES

Table 1 Winter Average Emissions (tons per day) from Residential Wood Combustion 8
Table 2 Average Number of Days Forecast Above Curtailment Thresholds* .......... 19
Table 3 Days with PM2.5 ≥ 30µg/m³ .............................................. 22
Table 4 Proposed Standards for New Wood Stoves and Pellet Stoves ............... 24
Table 5 Amendments from Implementing the Contingency Provision .......... 31
Table 6 Summary of Proposed Increased Incentive Funding Amounts ............ 37

APPENDICES

Appendix A  Comments and Responses
Appendix B  Emission Reduction Analysis
Appendix C  Economic Analysis
Appendix D  Health Benefit Analysis
Appendix E  Public Survey Reports
Appendix F  EPA List of Certified and Exempt Wood Burning Heaters
I. SUMMARY

The U.S. Environmental Protection Agency (EPA) periodically reviews and establishes health-based air quality standards (often referred to as National Ambient Air Quality Standards, or NAAQS) for ozone, particulates, and other pollutants. Although the San Joaquin valley’s (Valley) air quality is steadily improving, the Valley experiences unique and significant difficulties in achieving these increasingly stringent standards. The San Joaquin Valley Air Pollution Control District (District) has implemented several generations of emissions control measures for those stationary and area sources under its jurisdiction. Similarly, the California Air Resources Board (ARB) has adopted stringent regulations for mobile sources. Together, these efforts represent the nation’s toughest air pollution emissions controls and have greatly contributed to reduced ozone and particulate matter concentrations in the Valley. Despite the significant progress under these regulations, greatly aided by the efforts of Valley businesses and residents, many air quality challenges remain, including attainment of EPA’s most recent NAAQS for particulate matter that is 2.5 microns or less in diameter (PM2.5), which is set at a 24-hour average of 35 µg/m³.

The District left no stone unturned in evaluating all potential opportunities to reduce directly emitted PM2.5 emissions and precursors guided by the District’s Board adopted Guiding Principles and Health-Risk Reduction Strategy. One result of this extensive effort was the commitment to amend District Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters). Studies discussed later in this report show that emissions from residential wood burning are not only a major contributor to exceedances of the NAAQS but are also toxic to human health and can even cause premature death. Modeling performed during the development of the Districts 2012 PM2.5 Plan demonstrates that reductions from this source are an essential component of attaining the NAAQS.

The District takes a multifaceted and proactive approach to reducing emissions in the Valley. This philosophy is especially true for reducing emissions from residential wood burning with a combination of regulatory controls through Rule 4901, public outreach and education, and the District’s Burn Cleaner incentive program. Proposed amendments to the District’s Residential Wood Burning Program will encourage Valley residents to transition from older more polluting wood burning heaters and wood burning fireplaces (also commonly called open hearth fireplaces) to cleaner alternatives. The proposed amendments to Rule 4901 would implement a tiered episodic wood burning curtailment program which would increase the number of No Burn days for higher polluting wood burning heaters and wood burning fireplaces and increase the number of days that qualified registered wood burning heaters would be allowed to be used during the wood burning season (November through February). Updating the District’s Burn Cleaner program incentive amounts and accessibility will also assist with encouraging this transition. Emissions reduced through amendments to the program are significantly greater than those achieved by reducing the curtailment threshold alone, as demonstrated in this report.
II. **IMPORTANCE OF REDUCING RESIDENTIAL WOOD BURNING EMISSIONS**

Traditional regulatory controls are a core component of the District’s multi-faceted strategies to attain the PM2.5 NAAQS. The extreme air quality challenges of the Valley demand that the District and the community take extraordinary measures to improve air quality and public health. As a result, the District has developed the most stringent rules in the nation through the implementation of multiple generations of regulations. Since 1992, the District has adopted over 500 rules and rule amendments, requiring the installation and implementation of new technologies and methods far beyond minimum control levels. With emissions from stationary sources having been reduced by more than 80 percent, Valley businesses have already achieved such significant emissions reductions that the Valley is at the point of diminishing returns from new regulatory controls on stationary and area sources, and new opportunities for more stringent regulatory controls continue to become increasingly scarce. Achieving additional emission reductions from stationary sources beyond those already achieved will require significant investments on the part of Valley businesses. Yet the Valley continues to face significant challenges under current and upcoming NAAQS. The District thus pursues comprehensive, multi-faceted strategies that reach beyond traditional regulations, which include incentive programs, technology advancement efforts, extensive public outreach and education, and more.

A. **PM2.5 Attainment**

Photochemical modeling conducted for the development of the District’s 2012 PM2.5 Plan demonstrates that further reducing emissions from residential wood burning would contribute to improved PM2.5 air quality in the Valley, thus improving public health and expediting attainment of the PM2.5 NAAQS.

1. **Valley’s Unique Air Quality Challenges**

The Valley’s geography and meteorology exacerbate the formation and retention of high levels of air pollution. The surrounding mountains trap pollution and block air flow, and the mild climate keeps pollutant-scouring winds at bay most of the year. Temperature inversions, while present to some degree throughout the year, can last for days during the winter holding in nighttime accumulations of pollutants including wood smoke. It is during the winter that these days of stagnant weather lead to most of the exceedances of PM2.5 NAAQS in the Valley.

Due to these unique circumstances, no other region in California faces the enormous degree of difficulty that the Valley faces in meeting NAAQS for ozone and particulate matter. The Valley has far fewer pollutant emissions per square mile (“emission density”) than other regions in California that have equivalent or even better air quality than the Valley. This is but one illustration of the unique challenges facing the Valley due to our geography and topography.
The Valley’s natural challenge in cleaning out accumulated pollutants requires that the District and Valley businesses and residents take greater efforts to meet the challenging PM2.5 NAAQS and reduce significant amounts of wintertime emissions. The episodic and seasonal nature of high PM2.5 concentrations helps to narrow the focus of emissions reductions, but it also limits the number of months that strategies are most effective in reducing peak PM2.5 concentrations.

2. Residential Wood Burning Emissions

Wood smoke contains PM2.5 and an additional large number of ultrafine particles less than 0.1 microns (PM0.1). It is also a rich source of gases including carbon monoxide, formaldehyde, sulfur dioxide, irritant gases, and known and suspected carcinogens, such as polycyclic aromatic hydrocarbons. People can be exposed to wood smoke when they or their neighbors use their wood burning heaters, wood burning fireplaces, or outdoor wood burning devices. Windows and doors cannot keep the particles in wood smoke out of homes. A recent ARB-funded study of residential wood smoke impacts on indoor air quality was conducted in Cambria, California and published in 2011.¹ Using aethalometers designed to monitor carbon black as the definitive chemical signature of wood smoke, the study found night-time outdoor concentrations in Cambria neighborhoods that were two to ten times higher than the cleanest part of the city. Most significantly, over the course of the winter season, indoor concentrations of carbon black in non-burning homes were found to be 74% as high as concentrations measured just outside the same homes. This combination of processes results in a

very high intake fraction (the portion of the total emissions that actually end up being inhaled) from residential wood burning when compared to other sources of particulate matter that are less proximate. The following table is a summary of the winter average emissions in the Valley from the residential wood combustion source category as identified in the District’s 2012 PM2.5 Plan.2

Table 1  Winter Average Emissions (tons per day) from Residential Wood Combustion

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PM2.5</td>
<td>8.35</td>
<td>8.35</td>
<td>8.35</td>
<td>8.35</td>
<td>8.35</td>
<td>8.35</td>
</tr>
<tr>
<td>NOx</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
<td>0.94</td>
</tr>
<tr>
<td>SOx</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
</tbody>
</table>

The emissions from residential wood combustion contribute 15.6% of average winter PM2.5 emitted from stationary and area sources in the Valley’s 2012 emission inventory. The 2012 emission inventory is comprised of thousands of sources, making residential wood burning one of the Valley’s largest sources of directly-emitted PM2.5. Refer to Table 1 for the emission inventory for the residential wood combustion source category. Also, emissions associated with residential wood burning are confined to the time of year when the Valley experiences air quality with PM2.5 concentrations that exceed the 24-hour PM2.5 NAAQS. These emissions occur during the evening time, when inversions are more likely to occur, thus increasing the potential impacts on air quality and human health. Reducing emissions will expedite attainment and protect public health, which is a priority under the District’s Health-Risk Reduction Strategy.

3.  **PM2.5 Plan Modeling**

The Valley is one of the most studied air sheds in the world in terms of the number of publications in peer-reviewed scientific journals and other major reports. Such scientific analyses, and the field studies providing the data for these analyses, are the foundation of the modeling efforts for the District’s 2012 PM2.5 Plan. Public and private sector partnership through the San Joaquin Valley Air Pollution Study Agency (Study Agency) provided funding and coordination for many of these efforts. In particular, the Study Agency’s $28 million, ongoing California Regional Particulate Air Quality Study (CRPAQS) efforts have improved understanding of the Valley’s PM emissions, composition, and the dynamic atmospheric processes surrounding them. Through CRPAQS and the establishment of a strong scientific foundation about PM2.5 in the Valley, researchers have developed methods to identify the most efficient and cost-effective emissions control strategies to reduce PM2.5 concentrations.

---

In developing the District’s 2012 PM2.5 Plan, the District and ARB took full advantage of the extensive scientific research and knowledge that has been developed to characterize the Valley’s unique air quality chemistry and challenges. CRPAQS and the subsequent research built on its foundation, has shed light on the complexity of PM2.5 in the Valley. Using the extensive body of knowledge regarding formation of PM2.5 in the Valley, ARB performed extensive modeling to predict future PM2.5 concentrations throughout the Valley. This modeling was performed consistent with EPA guidance, and involved thousands of hours of sophisticated computer modeling and review by a team of technical staff, including close coordination with the District. The modeling approach was reviewed and vetted through a technical advisory process that involved researchers and EPA. In addition to the modeling by ARB, the District has also performed extensive analysis that provides additional supporting evidence that the District’s 2012 PM2.5 Plan will effectively bring the Valley into attainment. Because of the concentration effect of winter nighttime inversions, urban residential wood combustion has a disproportionate impact on daily and yearly PM2.5 concentrations at urban monitors making emission reductions from residential wood burning a key contributor to bringing the entire Valley into attainment of the PM2.5 NAAQS.

B. Health Benefits from Reducing Wood Smoke Exposure

Based on a large body of interrelated scientific research conducted in the Valley and elsewhere, episodic curtailments of residential wood combustion under Rule 4901 have resulted in substantial health benefits for the Valley population. The large value of these benefits is related to (1) the high level of cumulative population exposure to urban residential wood combustion emissions compared to other sources, (2) the relative effectiveness of burning curtailments in reducing per capita PM2.5 exposure levels in urban areas where the Valley population is concentrated, (3) the relative toxicity of chemicals found in PM2.5 that are generated by wood combustion, and (4) the overnight penetration of PM2.5 into neighboring homes. As a result of these factors, Rule 4901 is a key component of the District’s Health-Risk Reduction Strategy that was put forward in the District’s 2012 PM2.5 Plan. The Health-Risk Reduction Strategy goes beyond a simple focus on PM2.5 mass and incorporates additional health-related metrics (such as PM0.1 exposure) for prioritizing control strategies for individual emission sources.

Polycyclic aromatic hydrocarbon species are recognized as potential carcinogens and are also highly implicated in the triggering of oxidative stress that promotes the malfunctioning of the immune system, particularly among previously sensitized individuals such as asthmatics. The toxic air pollutants in wood smoke can cause human health impacts such as coughs, headaches, and eye and throat irritation. Studies also show that prolonged inhalation of wood smoke contributes to chronic

---

interstitial lung disease,\textsuperscript{4} pulmonary arterial hypertension,\textsuperscript{5} and pulmonary heart disease,\textsuperscript{6} which can eventually lead to heart failure in adults.\textsuperscript{7} Wood smoke has also been linked to detrimental mutagenic and systemic effects such as oxidative stress and blood coagulation, which can ultimately result in cell damage and possibly lead to cancer.\textsuperscript{8,9,10} Children with the highest exposure to wood smoke show a significant decrease in lung function.\textsuperscript{11}

On a regional level, the enclosed geophysical environment of the Valley acts to magnify the health impacts of wintertime residential wood combustion. The Valley regularly experiences multi-day periods of atmospheric stagnation during which very little air mass is transferred in and out of the Valley. The net result is a day-to-day buildup of PM2.5 levels. Compounding these multi-day stagnation events, the region experiences severe winter inversions upon nightfall, characterized by a marked reduction in the height of the mixing layer. This results in a magnified concentration of directly emitted particulates that envelope urban neighborhoods.

Windows and doors cannot prevent ultrafine particles in wood smoke from penetrating homes, meaning neighboring households that are downwind of wood-burning neighbors during inversion events are exposed to the wood smoke of their neighbors.

In 2008, the Central Valley Health Policy Institute found that District wood burning curtailments on high pollution days reduced annual exposure by 13.6% in daily PM2.5 exposure for Fresno, and an estimated 12.9% for Bakersfield\textsuperscript{12} resulting in 30 to 70 avoided cases of annual premature mortality. The increase in the number of curtailment days resulting from the lower threshold adopted in the 2008 amendments to Rule 4901 has resulted in a proportional increase in the health benefits of the rule. Further proportional health benefits can be expected from lowering the threshold again.

\textsuperscript{4} Defined as a group of lung diseases affecting the interstitium resulting in a progressive scarring of lung tissue. The scarring associated with interstitial lung disease eventually affects the ability to breathe and get enough oxygen into the bloodstream.

\textsuperscript{5} Pulmonary arterial hypertension begins when tiny arteries in the lungs, called pulmonary arteries, and capillaries become narrowed, blocked, or destroyed. Making it harder for blood to flow to the lungs, and raises pressure within lung arteries.

\textsuperscript{6} Defined as an abnormal enlargement of the right side of the heart resulting from high blood pressure in the pulmonary blood vessels (aka pulmonary arterial hypertension).

\textsuperscript{7} Sandoval, J.; Sias, J.; Martinez-Guerra, M.L.; Gomez, A.; Martinez, C.; Portales, A.; Palomar, A.; Villegas, M.; and Barrios, R. Pulmonary Arterial Hypertension and Cor Pulmonale Associated with Chronic Domestic Woodsmoke Inhalation. (1993) \textit{Chest} 103:12-20.


III. UNDERSTANDING INFLUENCE OF METEOROLOGICAL CONDITIONS ON ELEVATED PM2.5

Weather plays a key role in atmospheric PM2.5 concentrations. Various meteorological conditions not only determine how fast PM2.5 particles are dispersed, it also controls how fast photochemistry converts precursor emissions into PM2.5 and controls whether or not certain gases are in a particulate (solid) phase or a gas phase. There are several key meteorological physical properties that influence PM2.5 concentrations.

A. Wind and Temperature Instability Provide the Strongest Mechanisms for Pollution Diffusion

A common misconception is that rainfall is what primarily disperses pollutants; however, horizontal and vertical mixing is required to disperse PM2.5 pollutants in the air. PM2.5 levels will not decrease on days when there is rainfall without significant wind. In order to disperse particulates in the atmosphere, wind flow (horizontal mixing) and/or temperature instability (decreasing temperature with height leading to vertical mixing) provide the strongest mechanisms for dispersing pollutants.

Atmospheric stability refers to the vertical mixing of the atmosphere. An inversion is defined as the temperature increasing with vertical height. Prolonged periods of high pressure and stable conditions with low wind speeds can cause stagnant conditions that trap pollutants near the earth’s surface. PM2.5 concentrations increase during these poor dispersion periods. During low pressure events unstable conditions and stronger wind speeds occur. PM2.5 concentrations can decrease or increase depending on the strength and characteristics of the low pressure system.

Generally, the higher the wind speed the lower the PM2.5 concentrations. Winds mix pollutants and disperse them over a larger area, which generally improves air quality.

B. Humidity and Sunlight Contribute to PM2.5 Concentrations

Humidity and sunlight can lead to the creation of PM2.5 through photochemistry. In essence, particulate ammonium nitrate (NH4NO3) forms when the concentration product of gas-phase ammonia (NH3) and nitric acid (HNO3) exceeds a saturation point dependent on temperature, relative humidity, and the composition of the pre-existing particles that act as condensation substrate (Wexler and Seinfeld, 1991).13 The fraction of reactive nitrogen that forms nitric acid and/or nitrate depends on the concentration of NOx and VOC as well as meteorological conditions such as temperature, relative humidity, and solar intensity.14, 15

IV. CURRENT MULTIFACETED APPROACH TO REDUCE EMISSIONS

The District takes a multifaceted and proactive approach to reducing emissions from residential wood burning. Equally important to regulatory controls are the District’s public outreach and education efforts which are aimed at giving the public a better understanding of why emissions from residential wood burning are so important and to empower them to know that they too can take actions to reduce emissions. Another component of the Districts efforts includes incentive programs to assist with the cost impacts of replacing older more polluting wood burning heaters and wood burning fireplaces with cleaner alternatives.

A. District Rule 4901

District Rule 4901 is one of the most health protective District rules because it reduces emissions when most needed, such as during multi-day periods of stagnation and in the evening hours; and where the emissions reductions are needed most, in densely populated areas such as neighborhoods.

Adopted in 1993 and subsequently amended in 2003 and 2008, District Rule 4901 has been essential to limiting wintertime directly emitted PM2.5 emissions in the Valley. Applicable to wood burning fireplaces, wood burning heaters, and outdoor wood burning devices, Rule 4901 limits emissions by restricting the sale and transfer of wood burning heaters to EPA certified wood burning heaters; setting limits on the number of wood burning fireplaces and wood burning heaters installed in new residential developments; establishing a list of prohibited fuel types; and implementing episodic wood burning curtailments for days when air quality is forecasted to exceed the curtailment threshold.

B. Burn Cleaner Incentive Program

The District’s Burn Cleaner Wood Stove Change-out Program (Burn Cleaner Program) is an important resource to help Valley residents make positive changes in their residential wood-burning practices. Since 2006, the Burn Cleaner Program has been providing incentive funding to Valley residents to help reduce emissions by replacing higher-emitting wood burning heaters and wood burning fireplaces with new, cleaner-burning alternatives. There are currently more than 30 hearth retailers in the Valley that have partnered with the District to successfully implement the Burn Cleaner Program.

---

The Burn Cleaner Program helps residents overcome some of the financial obstacles in purchasing cleaner alternatives through multiple levels of incentive funding:

- $500 to replace a qualifying unit with a gas heater
- $250 to replace a qualifying unit with a qualifying pellet-fueled wood burning heater
- $100 to replace a qualifying unit with qualifying wood burning heater

The District’s low-income incentive amount of $1,500 per qualifying unit for applicants that meet the District’s low-income criteria continues to be critical in assisting low-income households with the transition to cleaner burning alternatives.

**Figure 2 Burn Cleaner Graphic**

During the 2013-14 wood-burning season the District issued 717 vouchers under the standard incentive funding levels totaling $313,500. Under the low-income incentive component, the District funded $57,000 for the replacement of 38 wood burning heaters. To date, the District has provided funding of over $2.3 million towards the replacement of 4,083 wood burning heaters through the Burn Cleaner Program, of which, 323 are verified low-income Valley residents.

**Recently Implemented Enhancements**

The District recently implemented enhancements to the Burn Cleaner Program in the 2013/14 winter season to further outreach efforts and improve the usability of the program. The following is a summary of some of the key enhancements:

**Low-income provisions**

As part of the District’s ongoing efforts to encourage more low-income qualified applicants to participate in the Burn Cleaner Program, significant enhancements were made to the low-income category of the Burn Cleaner Program. One of the key enhancements includes reducing a substantial portion of the upfront, out-of-pocket cost of a new qualifying unit. The District has partnered with contracted hearth retailers to allow low-income qualified applicants to make the purchase at a reduced price by deducting the incentive amount from the invoice at the point of purchase. Allowing the incentive funding to be directly applied when purchase is made makes it more feasible for additional low-income applicants to take advantage of the program.
Even though a higher incentive amount is provided to low-income applicants under the program, the District recognizes that the upfront cost of a new wood burning heater can still pose a financial challenge for many of those applicants and become a deterrent for them to participate in the program.

Additional enhancements include refining the low-income eligibility form to streamline the determination process and identifying the hearth retailers that provide the reduced upfront cost option.

**Program documents in Spanish**
Program documents are now available in Spanish to further extend the outreach efforts to the local community. While District staff is open and available to assist applicants with explaining how the program works and filling out the forms, the documents in Spanish are accessible for those who would like to review and complete the documents on their own.

**Incentive program documents**
Updates to program documents have made them more user-friendly and has further improved the process during the application, installation, and claim for payment request phases. Key enhancements include:

- Submittal of the pre-installation photo of the old wood burning heater or wood burning fireplace during the application phase to determine eligibility.
- The application now includes a section to provide the retailer’s information and projected installation date as an option. This helps the District work with the applicant and retailer to ensure that everything done is within program guidelines.
- Heater-rated gas fireplaces have been identified in program documents as eligible for the Burn Cleaner Program.

**Document submittal process**
Applications and claim for payment requests can now be emailed to the District for faster processing. Supplemental forms have been developed to further streamline the review process and help keep the retailers and applicants informed on the status of projects.

**Collaboration with participating hearth retailers**
The District has renewed its contracts with the hearth retailers and hosted informational meetings to discuss program changes in order to ensure a smooth roll out of the enhancements. As part of the District’s initiative to increase the effectiveness of the program, District staff has worked closely with the participating hearth retailers on outreach efforts and provided them with promotional tools, such as flyers and quick screens with information about the Burn Cleaner Program.
C. Public Education and Outreach

The District has an extremely successful outreach and education program with regards to residential wood burning and educating Valley residents about air quality, the effects of air pollution on the population’s health, and on options they can take to reduce emissions. In the 2013-14 wood-burning season the District took part in 51 media interviews about extreme weather and wood burning.

The District’s informational Check Before You Burn program minimizes elevated PM2.5 concentrations throughout the winter. The PM2.5 air quality improvements that the Valley has experienced since the adoption of Rule 4901 have been assisted by strong multimedia outreach by the District and a resultant increase in public awareness and participation in winter District programs.

Figure 3 District’s Check Before You Burn Graphic

During the wood-burning season of 2013-14, the District Outreach staff received hundreds of public calls and emails specific to residential wood burning. An interesting new trend has surfaced regarding public opinion, an increased number of the phone calls were in support of an outright ban on residential wood burning year-round (with the exception of residents for whom wood burning is the sole source of heat). This is attributed to heightened awareness among the general population of the deleterious effects of wood burning on public health.

Since the inception of Check Before You Burn, the District’s complementary tools, such as the Real-time Air Advisory Network (RAAN) and the “Valley Air” smart phone app, have continued to gain in popularity. Annual public call and website “hit” statistics, plus growth in the District’s Facebook page activity, also illustrate continued growth in wood-burning awareness. Survey results discussed in this staff report also show an increased public awareness with eight out of ten respondents being aware of the District’s Check Before You Burn program, 78% of whom confirmed reduced wood-burning activities as a direct result of the program.
The District also incorporates wood-burning messaging into other public outreach products, including Healthy Air Living Schools materials, “Blue Sky, Brown Sky … It’s Up to You!” elementary curriculum and other materials.

**Multimedia Advertising Campaign**

The District’s seasonal public outreach advertising campaign is retooled each year to include timely and relevant messaging. In the past few seasons, this messaging has been delivered by the District’s Governing Board members, with billboards in English and Spanish strategically placed throughout the Valley, radio and TV spots, and value-added messaging delivered through media throughout the Valley.

**Expanding New Media Outreach**

The most significant evolution of *Check Before You Burn* messaging has occurred with the expanded and accelerated use of new media: Facebook and Twitter posts. Facebook “likes” have nearly doubled from the 2012-13 season, to more than 1,100 at the end of the 2013-14 season. This has proven to be a valuable way to deliver immediate messaging regarding wood-burning statuses, in addition to providing a platform for direct, two-way interaction with the public.

**Strengthening Media Partnerships**

The District maintains partnerships with television, newspaper, radio, outdoor and print, as well as more non-traditional media, such as on-screen messaging in local movie theaters, internet advertising and video loops in medical offices. During seasonal *Check Before You Burn* campaigns, the District runs media on 11 broadcast television stations in the Fresno and Bakersfield markets, including four Spanish stations, as well as 10 cable networks in four cable markets including zoned cable in Stockton, Modesto,
Turlock and Manteca. In the Sacramento market, which includes the District’s northern counties, the wood-burning message runs on two English language broadcast television stations and one Spanish language broadcast television station.

The District also typically runs messaging on 42 radio stations and 18 newspapers (six of them Spanish) throughout the eight-county area. Check Before You Burn outdoor messaging appears on more than 100 outdoor billboards (including large-format vinyl billboards) and smaller “one-sheets” in Environmental Justice communities throughout the Valley. With these purchases come added value in the form of bonus spots, news sponsorships, and extra billboards and overages in outdoor messaging. Outdoor messaging is strategically placed in high-traffic areas as well as neighborhood and rural communities to ensure a wide reach in those areas where residential wood burning might be common.

The District’s print campaign includes major papers such as the Bakersfield Californian, Fresno and Modesto Bees and Stockton Record, but also rural newspapers such as the Arvin Tiller, Manteca Bulletin and Shafter Press. The District also appears in each issue of the Bakersfield Business Journal, which offers the opportunity to promote seasonal campaigns. Media buys allow leveraging buying power that typically returns an additional $100,000+ in media placement. The related Cinemedia campaign is also regularly featured on 100 movie screens from Stockton to Bakersfield, with more than 25,000 spots that reach more than 475,000 people.
V. **EVALUATION OF POTENTIAL REGULATORY OPPORTUNITIES TO REDUCE EMISSIONS**

The District periodically evaluates stationary sources for potential opportunities to further reduce emissions. Potential opportunities to reduce emissions from the residential wood burning source category that were identified for further evaluation during the development of the District’s *2012 PM2.5 Plan* include lowering the curtailment threshold level, allowing the use of cleaner wood burning heaters under certain circumstances, the possibility of extending the wood burning season, and the possibility of amending the portion of the rule pertaining to the quantity of units allowed in new developments. These potential opportunities were further evaluated as a part of the development of these rule amendments. The following is a summary of those evaluations.

**A. Increase No Burn Days for Non-Registered Wood Burning Heaters and Wood Burning Fireplaces by Lowering the Curtailment Level**

Currently the District prohibits residential wood burning activities in each County within the Valley when PM2.5 concentrations are forecast to equal to or exceed 30 µg/m³ in that county. These prohibitions are called No Burn days. Lowering the current episodic curtailment level would reduce emissions by increasing the number of No Burn days. The increase in No Burn days would reduce the build-up of emissions during the long stagnation periods experienced in the Valley during the winter season, as previously discussed.

The District estimated the average number of additional No Burn days likely to occur in future years as a result of lowering the curtailment level from the current threshold level of 30 µg/m³ to the draft threshold level of 20 µg/m³. The average increase in No Burn days in future years in each county was calculated by averaging the historical data from the past five wood burning seasons of the number of days with PM2.5 concentrations were forecast to be equal to or exceed 30 µg/m³ versus 20 µg/m³. This analysis is summarized in Table 2. The estimated average increase in No Burn days in future years would be 34 days per county (an average of the last column in Table 2) per wood burning season. However, the estimation of 34 additional No Burn days per wood burning season in the future will vary. No Burn days are called based on the air quality forecast for each day and are dependent on several variables as discussed in this staff report.
Table 2  Average Number of Days Forecast Above Curtailment Thresholds*

<table>
<thead>
<tr>
<th>County</th>
<th>Current Threshold (≥30 µg/m³)</th>
<th>Proposed Threshold (≥20 µg/m³)</th>
<th>Additional No Burn days</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Joaquin</td>
<td>24</td>
<td>53</td>
<td>29</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>36</td>
<td>72</td>
<td>36</td>
</tr>
<tr>
<td>Merced</td>
<td>19</td>
<td>55</td>
<td>36</td>
</tr>
<tr>
<td>Madera</td>
<td>29</td>
<td>67</td>
<td>38</td>
</tr>
<tr>
<td>Fresno</td>
<td>49</td>
<td>85</td>
<td>36</td>
</tr>
<tr>
<td>Kings</td>
<td>39</td>
<td>70</td>
<td>31</td>
</tr>
<tr>
<td>Tulare</td>
<td>36</td>
<td>69</td>
<td>33</td>
</tr>
<tr>
<td>Kern</td>
<td>44</td>
<td>79</td>
<td>35</td>
</tr>
</tbody>
</table>

*Based on Forecast values from the 2009-10, 2010-11, 2011-12, 2012-13, 2013-14 wood-burning seasons

Although a No Burn day can potentially increase a resident's natural gas costs from using a central heating system in lieu of a wood burning heater, this potential cost is offset by the central heating system since a central heating system more efficiently heats the whole home, resulting in less money being spent on firewood based on the increase in No Burn days. Compared to other District rules, curtailing residential wood burning under Rule 4901 is the most cost effective rule for reducing directly emitted PM2.5 emissions.

B. Encourage Transition to Clean Burning Heaters

The Valley would experience greater air quality and health benefits throughout the wood burning season if more residents transitioned from older more polluting wood burning heaters and wood burning fireplaces to clean burning alternatives beyond the benefits gained by only lowering the episodic curtailment threshold from 30 µg/m³ to 20 µg/m³.

A third party survey of Valley residents (see Appendix E) revealed that the majority of Valley residents do not have wood burning heaters or wood burning fireplaces. However, of those that do have wood burning heaters and wood burning fireplaces, the majority have wood burning fireplaces, refer to Figure 6  Proportion of Residents with a Wood-Burning Fireplace, Wood Stove or Pellet Stove) for a graphical representation of the proportion of Valley residents with wood burning heaters, pellet-fueled wood burning heaters, and wood burning fireplaces.
EPA reports that 75% of wood stoves (also called wood burning heaters) in the United States are non EPA-certified stoves. EPA certified wood burning heaters produce 70% less particle pollution than their older dirtier counterparts, refer to Figure 7 for the EPA reported average PM2.5 emissions based on wood burning heater type.

Survey results indicate the most effective ways to encourage transition to clean burning heaters is to allow more wood burning days for less polluting wood burning heaters and update the District’s Burn Cleaner Program to increase incentive amounts. By encouraging Valley residents to transition to clean wood burning heaters, emissions would not only be reduced on No Burn days but also on days when burning is allowed. This health and air quality benefit would occur because cleaner alternatives such as EPA Phase II Certified wood burning heaters and pellet-fueled wood burning heaters, and gaseous-fueled heaters would be in use instead of the older more polluting wood burning heaters and wood burning fireplaces, as illustrated in Figure 7.
Figure 7  Average PM2.5 emissions based on wood burning heater type\textsuperscript{16}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure7}
\caption{Average PM2.5 emissions based on wood burning heater type.}
\end{figure}

C. Allow more burning days for clean burning heaters

A tiered approach to episodic wood burning curtailments would allow more burn days for less polluting wood burning heaters at the same time as increasing the number of No Burn days for the older more polluting wood burning heaters and wood burning fireplaces. The two tiers under consideration would reduce the curtailment threshold for the more polluting wood burning heaters and wood burning fireplaces from the current level of 30 µg/m\textsuperscript{3} to 20 µg/m\textsuperscript{3} as discussed above, and the second tier would prohibit all residential wood burning when PM2.5 concentrations are forecast to exceed 65 µg/m\textsuperscript{3}. Analysis indicates this tiered curtailment approach would result in greater emissions reductions than would occur from only reducing the curtailment threshold from 30 µg/m\textsuperscript{3} to 20 µg/m\textsuperscript{3} because of the incentive of additional burn days for Valley residents for registered wood burning heaters (see Appendix E). As such, the District recommends implementing a tiered approach to episodic curtailments. See Figure 10 on page 30 for a visual representation of the proposed new tiered episodic curtailment approach.

D. Expanded Wood Burning Season

Extending the wood burning curtailment season was analyzed as a potential opportunity for further reducing emissions from the residential wood burning source category. The current wood-burning season runs from the beginning of November until the end of February. Expanding the wood-burning season to include October and/or March could potentially increase the number of No Burn days in each wood-burning season. Measured Valley concentrations of levoglucosan, a primary indicator for wood burning, are not nearly as high in October or March as found to be during the current wood burning season of November through February. Additionally, a six-year average was calculated for the number of No Burn days in each county from 2008 through 2013 for the months of October and March as illustrated in Table 3. The resulting estimated number of increased No Burn days based on historical data is in the range of less than one day up to six days. Extending the wood burning season would not significantly benefit air quality in the Valley due to the combination of less extensive burning activity and the minute number of additional No Burn days. Therefore, it is not recommended that the wood burning season be extended.

Table 3 Days with PM2.5 ≥ 30µg/m³

<table>
<thead>
<tr>
<th>County</th>
<th>Month</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresno</td>
<td>March</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>Kern</td>
<td>March</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0.8</td>
</tr>
<tr>
<td>Kings</td>
<td>March</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Madera</td>
<td>March</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Merced</td>
<td>March</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>March</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>March</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tulare</td>
<td>March</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>County</th>
<th>Month</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresno</td>
<td>October</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>Kern</td>
<td>October</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>NA</td>
<td>4</td>
</tr>
<tr>
<td>Kings</td>
<td>October</td>
<td>10</td>
<td>9</td>
<td>7</td>
<td>10</td>
<td>2</td>
<td>1</td>
<td>6.5</td>
</tr>
<tr>
<td>Madera</td>
<td>October</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Merced</td>
<td>October</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.8</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>October</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.3</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>October</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>2.2</td>
</tr>
<tr>
<td>Tulare</td>
<td>October</td>
<td>4</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>3</td>
<td>3.2</td>
</tr>
</tbody>
</table>
E. **Re-evaluate Current Exemptions**

District Rule 4901 currently has two exemptions in the Exemptions Section (Section 4.0). Section 4.1 exempts heaters that are exclusively gaseous-fueled and Section 4.2 exempts Cookstoves. Evaluation of these two exemptions did not reveal potential opportunities to reduce emissions; therefore, no amendments to the exemption section of Rule 4901 are recommended at this time.

F. **EPA Proposed New Source Performance Standards (NSPS)**

On February 3, 2014, EPA published proposed amendments to 40 CFR Part 60 Subpart AAA, Standards of Performance for New Residential Wood Heaters.\(^\text{17}\) The proposed rule lowers emission limits for currently certified wood heaters and sets certification emission limits for a broader range of wood- or pellet-burning heaters, stoves, and home heating appliances not previously included in the regulation, including all pellet stoves, single burn rate wood or pellet-burning stoves and heaters. Additionally, the proposed rule strengthens testing methods and certification procedures of wood or pellet-burning heaters.

**Current NSPS Requirements**

Under the current NSPS (adopted in 1988), only those wood or pellet-burning units meeting the following criteria require certification and all other units are not required to obtain certification and are therefore considered exempt:

1. Units that have an air-to-fuel ratio averaging less than 35-to-1;
2. Units with a usable firebox volume less than 20 cubic feet;
3. Units with a minimum burn rate less than 5 kilograms per hour (11 pounds per hour); and
4. Units that weigh 1,760 pounds or less.

For wood heaters meeting these requirements, the current certification emissions limits are 4.1 grams per hour (g/hr) of PM for units equipped with a catalytic combustor and 7.5 g/hr for units without a catalytic combustor. Units certified to these emission limits are said to be *Phase-II Certified* and will maintain that certification until the certification expires, which is up to 5 years from the issuance date.

Under the current NSPS, pellet stoves are not explicitly exempt from required certification; however, most models currently sold fall outside the regulation because they operate on an air-to-fuel ratio greater than 35-to-1. Single burn rate wood heaters are also not explicitly exempt from the current NSPS but are not regulated by it because they operate below the burn rate criteria of 5 kilograms per hour.

\(^{17}\) 40 CFR Part 60 Subpart AAA, Standards of Performance for New Residential Wood Heaters (FR 79 6330–6416)
Proposed NSPS
The proposed NSPS significantly lowers the certification emission limits for wood-burning heaters that are currently required to be certified and sets certification limits for a broader range of wood-burning heaters by removing the existing certification criteria 1–4 above. Moving forward, if the proposed NSPS is finalized as-is with no amendments prior to finalization, then certification will be required for all pellet stoves and heaters, all single burn rate wood heaters, and all existing previously certified adjustable burn rate wood heaters once their current certification expires.

In the proposed NSPS, EPA is proposing either a two-step five-year phase in of new standards or a three-step eight-year phase in of new standards. Both phase-in timelines ultimately end up at the same emission limit of 1.3 g/hr for all woodstoves and pellet stoves. Refer to Table 4 for the proposed standards and phase-in schedules. With implementation of the proposed NSPS, all existing previously certified adjustable burn rate wood heaters will be required to either obtain certification under the new emission limits or cease production once their current certification expires.

Although they do not require EPA certification, 96 percent of pellet heaters meet the proposed Step 1 PM emissions limit of 4.5 grams per hour. Single burn rate wood heaters are incapable of operating at the lowest burn rates, and it is the lower burn rates that result in the highest level of PM emissions; therefore, most single burn rate wood heaters will also meet the proposed Step 1 PM emissions limit. Manufacturers of such units will not initially be required to modify their design if they already meet the emissions standard, but they will be required to go through the certification process. Each adjustable burn rate wood heater or pellet stove manufactured on or after the effective date of the final rule or sold at retail for use in the United States on or after six months after the effective date of the final rule must comply with the emission limits specified in Table 4.

<table>
<thead>
<tr>
<th>Step</th>
<th>Proposed PM limit</th>
<th>Compliance deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.5 g/hr</td>
<td>60 days after final rule is published in Federal Register</td>
</tr>
<tr>
<td>2</td>
<td>1.3 g/hr</td>
<td>5 years after effective date of final rule</td>
</tr>
<tr>
<td>1</td>
<td>4.5 g/hr</td>
<td>60 days after final rule is published in Federal Register</td>
</tr>
<tr>
<td>2</td>
<td>2.5 g/hr</td>
<td>3 years after effective date of final rule</td>
</tr>
<tr>
<td>3</td>
<td>1.3 g/hr</td>
<td>8 years after effective date of final rule</td>
</tr>
</tbody>
</table>

18 Two types of woodstoves: adjustable and single burn-rate. Adjustable burn-rate are covered by EPA’s current requirements. Single burn-rate are not covered by EPA’s current requirements.

19 Most pellet stoves are exempt from current NSPS. Under proposed rule, all pellet stoves would have to meet same emission limits as for woodstoves, in the same two-step process.
VI. PROPOSED AMENDMENTS TO THE DISTRICT’S RESIDENTIAL WOOD BURNING PROGRAM

Proposed amendments to the District’s Residential Wood Burning Program would encourage owners and users of older more polluting wood burning heaters and wood burning fireplaces to transition to less polluting alternatives. This transition would benefit Valley air quality throughout the wood burning season regardless of episodic wood burning curtailments because clean wood burning heaters produce significantly less emissions than older more polluting wood burning heaters and wood burning fireplaces as illustrated in Figure 7 in this staff report. Emissions reduced as a result of amendments to the Residential Wood Burning Program are greater than those achieved through lowering the curtailment threshold alone, as discussed later in this section of the staff report.

The District recommends the following amendments to the District’s Residential Wood Burning program:

1. Amendments to Rule 4901 language
   a. Incorporate tiered episodic wood burning curtailments
   b. Add a registration program for qualified wood burning heaters, as defined in Rule 4901 to participate in the additional wood burning days provided through the tiered episodic wood burning curtailments
   c. Add a registration program for qualified Wood Burning Heater Professionals to perform inspections on qualified wood burning heaters
   d. Provide clarifications to existing rule requirements
2. Proposed new Rule 3901 (Fees for Registration of Wood Burning Heaters)
3. Enhancements to the District’s Burn Cleaner incentive program
4. Enhancements to the District’s forecasting activities to support the tiered curtailments

A. Proposed Amendments to Rule 4901

Refer to this section for a description of the rule amendments to Rule 4901 and refer to the proposed rule for the proposed language changes.

1. Section 1.0 (Purpose)
   The purpose of the rule would be updated to remove outdated language stating that the District will establish a public education program. The removed language is no longer relevant because the District has already established a robust educational program for residential wood burning heaters as discussed in other sections of this staff report.

2. Section 2.0 (Applicability)
   The applicability of Rule 4091 would be amended to clarify that the rule is applicable to outdoor wood burning heaters, as mentioned throughout the rule, and to remove “wood
burning stove” from section 2.3 because this is included in the definition of “wood burning heater” and therefore redundant.

3. **“Phase II” rule clarifications**

EPA’s proposal of amending the existing NSPS for certification requirements for new wood burning heaters does not currently include the “Phase II” style nomenclature to identify new emission limit levels. To be proactive and ensure the rule language remains timely, all mention of Phase II will have been replaced with language to clarify it as Phase II certified or the most stringent EPA certification as enforced by the NSPS. This additional language will vary slightly in each section due to the meaning of the rule and necessity of the verbiage to enforce the requirements.

Updates to “Phase II” in rule language will affect the following sections:

- Section 3.6 (Definition of “EPA Certified”)  
- Section 5.1 (Sale or Transfer of Wood Burning Heaters)  
- Section 5.2 (Sale or Transfer of Real Property)  
- Section 5.3 (Limitations on Wood Burning Fireplaces or Wood Burning Heaters in New Residential Developments)  
- Section 6.0 (Administrative Requirements)

4. **Addition of “NSPS” for clarification of federal requirements**

To ensure compliance with the most recent and up-to-date federal standards, the rule would be amended to add the “NSPS” as the acronym representing the Code of Federal Regulations Part 60, Subpart AAA.

5. **Section 3.0 (Definitions)**

The Definitions section of the rule would have several amendments to clarify existing rule requirements and to support new rule requirements. As a result of the amendments to Section 3.0, the numbering will also be affected. For purposes of this staff report, the following amendment summaries are discussed using the updated draft numbering.

Section 3.6 (EPA Phase II Certified) would be amended to replace the Code of Federal Regulations Part 60, Subpart AAA with NSPS consistent with the previous discussion.

Section 3.10 (Masonry Heater) would be updated to make it consistent with rule requirements in Section 5.1.2, and to clarify that a solid fuel is wood fuel.

Section 3.13 (Normal Operating Conditions) would be added to the rule to establish what the District considers and will enforce as normal operating conditions for a registered wood burning heater, this new definition is in support of new Section 5.6.1.2.4.
Section 3.14 (NSPS) would be added to the rule to define NSPS. Doing so will simplify rule language by allowing reference to the NSPS instead of the full language of “Code of Federal Regulations, Part 60, Title 40, Subpart AAA.”

Section 3.15 (Outdoor Wood Burning Device) would be amended to remove the redundant “wood burning stove” language, and clarify that “fire rings” includes “fire pits” to better clarify rule requirements.

Section 3.18 (Pellet-Fueled Wood Burning Heater) would be updated to clarify the definition of a pellet-fueled wood burning heater and remove superfluous language regarding certification of such heaters that is included in Section 5.0 in the rule.

Section 3.19 (Pellet Fuel) would be updated to clarify that fuel used as pellet fuel must be compressed.

Section 3.20 (Permanently Inoperable) would be updated to clarify requirements by replacing “device” with “wood burning heater.”

Section 3.23 (Sole Source) would be removed from rule language because it is redundant to rule requirements in Section 5.6.3.2.

Section 3.28 (Wood Burning Fireplace) would be updated to clarify that even factory built wood burning heaters are intended to only burn wood and no other fuels such as those listed in Section 5.5.

Section 3.29 (Wood Burning Heater) would be amended to clarify that pellet-fueled wood burning heaters are a type of wood burning heater as supported by the definition of Pellet-Fueled Wood Burning Heater.

Section 3.30 (Wood Burning Season) would be added to rule language to clarify which months of the year are included in the wood burning season.

6. **Section 4.0 (Exemptions)**

New Section 4.3 would clarify that open burns are regulated by the District's Rule 4103 (Open Burning). This is not a new exemption, but a clarification of existing requirements by referencing the other District rule.

7. **Section 5.1 (Sale or Transfer of Wood Burning Heaters)**

Section 5.1 is applicable to any person who advertises, sells, offers for sale, supplies, installs, or transfers a new wood burning heater. This section would be amended to clarify that these requirements are applicable to the sale and to the transfer of new and used wood burning heaters. Rule language would be amended to clarify that the certification of wood burning heaters is pursuant to the NSPS to ensure that the most recent and stringent requirements in the NSPS are being implemented for these wood burning heaters and to account for changes proposed by EPA in the NSPS for the
certification criteria of wood burning heaters. Amendments to this section reflect the proposed EPA amendments to the NSPS, as these amendments have not been finalized by EPA at the time of this rule amendment, the District is taking proactive steps to ensure the language in the rule is consistent with new EPA NSPS language.

a) **Section 5.1.1 (New Wood Burning Heaters)**
Requirements in Section 5.1.1 requires that if a new wood burning heater is sold or installed in the Valley that it is the cleanest available wood burning heater to ensure emissions continue to decrease from this source category. As such this section would be amended to clarify that the wood burning heater must have the most stringent EPA certification as currently enforced by EPA. If the wood burning heater is a pellet-fueled unit, then it must be either exempt from EPA certification requirements pursuant to language in the NSPS or it must be certified pursuant to the NSPS, whichever is more stringent at the time of purchase or installation of the pellet-fueled wood burning heater.

b) **Section 5.1.2 (Used Wood Burning Heaters)**
Section 5.1.2 would be amended to simplify rule language.

c) **Section 5.1.3 (Public Awareness Information)**
Section 5.1.3 would be amended to require retailers to provide public awareness information to their customers about the new episodic wood burning curtailment levels as defined in the rule.

8. **Section 5.2 (Sale or Transfer of Real Property)**
Section 5.2 would be amended to incorporate NSPS language as discussed earlier, and to simplify rule language.

9. **Section 5.3 (Limitations on Wood Burning Fireplaces or Wood Burning Heaters in New Residential Developments)**
Section 5.3 sets limits for the quantity of wood burning fireplaces or wood burning heaters that can be installed in new residential developments. Current language is not completely clear as to the number of heaters allowed to be installed if that number falls between two whole numbers. The rule language will be strengthened by amending this section to clarify the number of heaters allowed for installation in a given area, in addition to the language being clarified with regards to the applicability of the density requirements by the removal of the term “new” from rule language. These amendments would be effective as of January 1, 2015 to provide time for builders to comply with new standards, which is consistent with the time frame provided in the 2003 amendments to Rule 4901 which first introduced these requirements to the rule.

a) **Section 5.3.1 (Effective until December 31, 214)**
Current language provides for:
- 5.3.1.1: >2 dwellings/acre: no wood burning fireplaces
- 5.3.1.2: ≥3 dwellings/acre: max of two certified units
- 5.3.1.3: ≤2 dwellings/acre: max of one wood burning fireplace or wood burning heater per dwelling
b) **Section 5.3.2 (Effective on and after January 1, 2015)**

New language provides for:
- 5.3.2.1: >2 dwellings/acre: no wood burning fireplaces
- 5.3.2.2: >2 dwellings/acre: max of two certified units
- 5.3.2.3: ≤2 dwellings/acre: max of one wood burning fireplace or certified wood burning heater per dwelling

10. **Section 5.5 (Prohibited Fuel Types)**

Section 5.5 would be updated to clarify that prohibited fuels are not only not allowed in indoor wood burning heaters but also in outdoor wood burning devices. Rule language would also be clarified by replacing the term “solid fuel burning device” with an identification of the applicable units – wood burning fireplace, wood burning heater, or outdoor wood burning device.

11. **Section 5.6 (Episodic Wood Burning Curtailments)**

Section 5.6 (Episodic Wood Burning Curtailments) would be amended to replace existing language with a two-tiered episodic wood burning curtailment program. The first tier would lower the existing residential wood burning curtailment threshold from the current threshold of 30 µg/m³ to a new more stringent limit of 20 µg/m³. This will increase the number of No Burn days for residential wood burning. The addition of a second tier would effectively create a window of additional burn days for individuals who have the cleanest wood burning heaters that choose to register those wood burning heaters with the District.

a) **Section 5.6.1 (Level One Episodic Wood Burning Curtailment)**

Section 5.6.1 would be amended to provide requirements for Level One Episodic Wood Burning Curtailments. Level One Episodic Wood Burning Curtailments would be called...
when the PM2.5 concentrations are forecast to be equal to or exceed 20 µg/m³ but not to exceed 65 µg/m³. The use of registered wood burning heaters would be allowed provided it is operated in compliance with rule requirements. When PM2.5 concentrations are in this range it is generally because the air has become stagnant and the pollutant concentrations are rising. Prohibiting the use of dirty wood burning heaters and wood burning fireplaces would dramatically slow down or even stop the PM2.5 concentrations from building up.

**Figure 10 Current and Proposed Wood Burning Curtailment Levels**

b) **Section 5.6.2 (Level Two Episodic Wood Burning Curtailment)**

Section 5.6.2 would be amended to add provisions to the rule for Level Two Episodic Wood Burning Curtailments. A Level Two Wood Burning Curtailment would be called when the PM2.5 concentrations are forecast to exceed 65 µg/m³ for a given region. No wood burning heaters, wood burning fireplaces, or outdoor wood burning devices located in the region shall be operated during a Level Two Episodic curtailment.

The PM10 135 µg/m³ threshold in the existing rule would also be in the Tier Two Episodic Curtailment level because these events are extremely rare and generally only become elevated above this level due to wind-blown dust events.
c) **Section 5.6.3**
Section 5.6.3.1 would be amended to add butane to the list of gases that are not considered natural gas. This addition clarifies for the public an existing and current understanding of what is and what is not interpreted to be natural gas.

d) **Section 5.6.4 (Episodic Wood Burning Curtailment Notice)**
Section 5.6.4 would be amended to simplify and clarify rule requirements.

e) **Section 5.6.5 (Contingency Provision)**
Section 5.6.5 would be deleted from the rule because it is no longer relevant, as the proposed curtailment threshold would be equivalent to the contingency provision. The contingency provision was added to Rule 4901 during the 2008 amendments to lower the mandatory curtailment level to 20 µg/m³ for PM2.5 effective immediately if the Valley failed to attain the 1997 PM2.5 federal air quality standards by April 2015 as mandated by ARB upon their approval of the 2008 PM2.5 Plan. Proposed amendments would lower the current curtailment threshold limit of 30 µg/m³ to 20 µg/m³ making the rule limit equivalent to the contingency provision limit.

Proposed amendments to the District’s residential wood burning program would reduce even more emissions than lowering the curtailment threshold alone. Proposed amendments to the residential wood burning program will reduce 5.15 tons per day (tpd) of directly emitted PM2.5 emissions (see Appendix B Table B-10); whereas, the contingency provision would result in 3.40 tpd PM2.5 emission reductions (see Table 5 below).

### Table 5 Amendments from Implementing the Contingency Provision

<table>
<thead>
<tr>
<th>Source/Formula</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>Table B-2</td>
<td>Table B-5</td>
<td>A x B</td>
<td>C / 120</td>
</tr>
<tr>
<td>Fresno</td>
<td>2.11</td>
<td>36</td>
<td>76.07</td>
<td>0.63</td>
</tr>
<tr>
<td>Kern</td>
<td>1.21</td>
<td>35</td>
<td>42.49</td>
<td>0.35</td>
</tr>
<tr>
<td>Kings</td>
<td>0.23</td>
<td>31</td>
<td>7.04</td>
<td>0.06</td>
</tr>
<tr>
<td>Madera</td>
<td>0.66</td>
<td>38</td>
<td>25.16</td>
<td>0.21</td>
</tr>
<tr>
<td>Merced</td>
<td>1.04</td>
<td>36</td>
<td>37.44</td>
<td>0.31</td>
</tr>
<tr>
<td>San Joaquin</td>
<td>2.48</td>
<td>29</td>
<td>72.04</td>
<td>0.60</td>
</tr>
<tr>
<td>Stanislaus</td>
<td>1.87</td>
<td>36</td>
<td>67.14</td>
<td>0.56</td>
</tr>
<tr>
<td>Tulare</td>
<td>2.45</td>
<td>33</td>
<td>80.98</td>
<td>0.67</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>408.35</strong></td>
<td><strong>3.40</strong></td>
</tr>
</tbody>
</table>
12. **Section 5.7 (Registration of Wood Burning Heaters)**

A District enforced registration program for qualifying wood burning heaters will ensure enforceability of rule requirements. A registration program would ensure that wood burning heaters being used during Level 1 Episodic Curtailments are clean burning wood burning heaters; it would also ensure that the wood burning heaters are properly maintained and operated according to manufacturer specifications ensuring that these wood burning heaters burn as cleanly as certified by the EPA. This voluntary registration program provides the flexibility to registered wood burning heaters to participate in, and take advantage of, additional wood burning days during the Level 1 Episodic Wood Burning Curtailments. If a resident has a qualifying wood burning heater and chooses to not register that unit, then that resident is choosing to not use the qualifying wood burning heater during Level 1 episodic wood burning curtailments. The registration program is strictly limited to those individuals who choose to use their wood burning heaters during Level 1 Episodic Curtailments. To confirm heaters are maintained according to manufacturer instructions, the District will require registrations be renewed every three years. Registrations and renewals will require an administrative fee that will be determined by the District prior to implementation.

a) **Section 5.7.1 (Eligibility for Registration)**

New Section 5.7.1 would establish eligibility requirements for the voluntary registration of a qualifying wood burning heater so that it may be used during a Level One Episodic Wood Burning Curtailment.

The EPA Proposed NSPS Subpart AAA requirements will strengthen the standard and eliminate the “phase” nomenclature, making the use of clean burning heaters during Level One Episodic Curtailments challenging to define. The District recognizes that Valley residents have invested significant amounts of money to install and transition from dirty heaters to clean burning EPA Phase II certified heaters and pellet stoves that are exempt from Phase II certification requirements. The District has also invested grant funds, as discussed in Section IV.B of this staff report, to assist with the purchase of these heaters.

Wood burning heaters that qualify for registration include heaters that are EPA Phase II certified or have a more stringent certification pursuant to requirements in the Code of Federal Regulations (CFR), Part 60, Title 40, Subpart AAA at the time of purchase and/or installation, or an exempt pellet-fueled wood burning heater that is exempt pursuant to the aforementioned CFR at the time of purchase and/or installation.

b) **Section 5.7.2 (Interim Registration of Wood Burning Heaters)**

New Section 5.7.2 would provide a one season (2014-15) interim registration period to aid with the transition to the registration program for Valley residents. This interim period of transition will be a simplified version of the full registration program in that supplemental documentation, a registration fee, and a verification of inspection would not be required for this interim period. This section also clarifies that an interim registration obtained under false information is void and also an interim registration may
be disqualified pursuant to Section 5.9 of the rule. This interim registration program would not violate the District’s commitment in the 2012 PM2.5 Plan because that plan committed to amend Rule 4901 effective beginning in the 2016-17 wood burning season. Emissions reduced during the 2016-17 wood burning season as a result of these proposed amendments will exceed plan commitments.

c) **Section 5.7.3 (Registration Process)**
New Section 5.7.3 would define the registration process. This registration process would be effective during and after the 2015-16 wood burning season. This process would be much more in-depth than the interim registration process and be accompanied by a fee. The rule defines required information, documentation, operation requirements, and reference to new Rule 3901 for the registration fee.

The applicant will be required to verify that the wood burning heater qualifies for registration through the submittal of a receipt or invoice from the installation of purchase of the wood burning heater that includes the manufacturer and the model name of the wood burning heater or a certification from a District Registered Wood Burning Heater Professional. Additionally, if the wood burning heater is older than twelve months, then the registration application will also require a certification of inspection from a District Registered Wood Burning Heater Professional.

13. **Section 5.8 (Renewal of Registration)**
New Section 5.8 would provide information related to the renewal of wood burning heater registrations. Similar to the initial registration process, registration renewals would also be accompanied by a fee. Section 5.8.1 states that a District issued registration for a wood burning heater would be valid for a period of up to three wood burning seasons. This section defines how often heater registrations would be required to be renewed and the documentation that would be required to apply for a renewal. The purpose of registration renewals is to provide the District with a mechanism to ensure that registered wood burning heaters are operated and maintained per manufacturer specifications and continue to burn as cleanly as certified by the EPA. This registration renewal program would potentially reduce emissions beyond those already achieved from the clean burning EPA Phase II certified wood burning heaters because there is no way to guarantee the owners of said wood burning heaters are cleaning and maintaining them on a regular basis.

14. **Section 5.9 (Disqualification of Registration)**
New Section 5.9 would provide information on the disqualification process for heater registrations. This section discusses what actions would qualify for a disqualification of wood burning heater registration, how the District would notify someone of a potential disqualification and work with them to resolve any issues, and how a disqualification could be resolved.

15. **Section 5.10 (Registration of Wood Burning Heater Professionals)**
New Section 5.10 would define the requirements for a Registered Wood Burning Heater Professional. This section states what certifications would be required to qualify as a
registered Wood Burning Heater Professional and the application process for registering as one. A list of registered Wood Burning Heater Professionals would be posted on the District’s webpage and made available upon request.

\textbf{a) Section 5.10.1}

New Section 5.10.1 would provide the qualification requirements that an individual must meet in order to register with the District as a Wood Burning Heater Professional. The District would require a professional certification from the Fireplace Investigation Research and Education (F.I.R.E), the Chimney Safety Institute of America (CSIA), or from the National Fireplace Institute (NFI) or an equivalent qualification as determined by the APCO. Each of the three certifications are voluntary certifications to establish standardized criteria for certification and are recognized as such industry-wide.

The F.I.R.E. certification recognizes individuals as having the minimum professional training, education, and experience to inspect, investigate fire and explosion incidents, and/or participate in related civil and criminal litigation. This certification includes a training materials and a certification exam. Depending on options selected, the certification costs range between $1,795 and $2,385. Certifications are valid for three years. Inspectors become re-certified by either passing a test based on changes within the current edition of the International Residential Building Code/International Building Code, or by attending, completing, and showing proof of attendance of a qualified eight-hour educational class.\footnote{Fireplace Investigation Research and Education. (2014). Obtained from \url{http://www.f-i-r-e-service.com/Landing-Certified-Inspector.php}}

The CSIA Certified Chimney Sweep (CCS) credential program verifies a chimney sweep’s knowledge of the evaluation and maintenance of chimney and venting systems. The non-profit organization is governed by volunteer industry professionals and technical experts, and is an American Society of Home Inspectors (ASHI) Affiliate. Certification includes an online or in-person review session, completion of exams, payment of annual certification fees, and signing of the CSIA Code of Ethics. Costs range from $249 to $1080 depending on course options selected and membership with the National Chimney Sweep Guild (NCSG). Certification is valid for one year and must be renewed by paying a $159 certification fee. Every three years certificate holders must re-certify by passing the exam again or submitting proof of the completion of required courses.\footnote{Chimney Safety Institute of America. (2014). Obtained from \url{http://www.csia.org/}}

The NFI certifies technicians to properly plan and install hearth products and associated venting systems. NFI is the professional certification division of the Hearth, Patio & Barbecue Association (HPBA), a non-profit education organization for the hearth industry. Certification costs $399 for HPBA members and $598.50 for non-members. Certification is valid for three years and re-certification is achieved by submitting proof of
completing required courses and a $139 certification fee, re-testing directly with NFI for $289.\textsuperscript{22}

\textit{b) Section 5.10.2}
New Section 5.10.2 would outline the registration process for individuals to register with the District, including a description of required supplemental documentation.

c) Section 5.10.3
New Section 5.10.3 defines that a registration with the District as a Wood Burning Heater Professional is valid for up to three years. Conversation with industry representatives indicates that the certifications identified in Section 5.10.1 are generally valid for three years; therefore, to coincide with the certifications, the registrations with the District will mirror the professional certifications and be valid until said certification expires, or three years, whichever is shorter. For those individuals without one of the aforementioned certifications who registers with the District as a Wood Burning Heater Professional as determined by the APCO, their registration would be valid for three years from the date of issuance from the District.

d) Section 5.10.4
New Section 5.10.4 would require the District to maintain a list of registered Wood Burning Heater Professionals on the District’s web page to make it accessible to the public.

16. \textit{Section 5.11 (Inspection of Registered Wood Burning Heaters)}
New Section 5.11 would allow District staff to inspect any wood burning heater registered with the District in order ensure enforceability of rule requirements.

17. \textit{Section 6.0 (Administrative Requirements)}
New Section 6.2 would require the person who registers a qualified wood burning heater to keep a copy of the District issued wood burning heater registration and to make it available upon District request.

18. \textit{Section 7.0 (Test Methods)}
Section 7.1 would be amended to clarify that the ASTM that shall be used to test the moisture content of wood shall be the most recent and current version of the ASTM to ensure that the rule enforces the most up-to-date test methods at all times without necessitating the amendment of the rule further.

New Section 7.2 would specify the test method for determining compliance with the visible smoke requirements for the operation of a registered wood burning heater pursuant to Section 5.6.1.2.4

\textsuperscript{22} National Fireplace Institute. (2014). Obtained from \url{http://nficertified.org/pages_industry/industry-1v2.cfm}.  

B. Proposed New Rule 3901 (Fees for Registration of Wood Burning Heaters)

New Rule 3901 (Fees for Registration of Wood Burning Heaters) would be created to complement amendments to Rule 4901. This rule would specify specific fee amounts and process requirements for the registration of heaters pursuant to Section 5.7.1 of Rule 4901.

The applicant would be required to pay a registration fee of $12.50 with an equivalent fee for renewal of registrations. Analysis of administrative processes incurred by the District to create and implement a registration program identified that resources would be required from the ITS Department, the Finance Department, and the Compliance Department to implement the registration program. Conservative estimates determined an average of one hour of staff time (at $100/hr) would be needed for each application. However, the District recognizes that additional costs will be incurred by the applicant for verification, operation, maintenance, and inspection of the registered heaters and therefore set the fee cost at $12.50 per registration and renewal.

Registrations would be valid for three seasons unless the registration is disqualified by the District. The District commits to notify persons with registered heaters 60 days prior to expiration of said registration of the upcoming expiration date.

C. Enhancements to the District’s Burn Cleaner Incentive Program

The District continues to work with its program partners and the community to enhance the Burn Cleaner Program, which is a voucher program that provides incentives for eligible applicants to purchase cleaner burning heaters for their residential property in the San Joaquin Valley. The District is also actively engaged with the community and hearth industry to encourage participation in the program, particularly among low-income Valley residents. In conjunction with amending Rule 4901, the District is proposing to increase the incentive amounts and add more provisions for low income residents. Proposed enhancements to the District’s Burn Cleaner incentive program under include the following:

1. Proposed Increased Incentive Amounts

Survey results indicated that 24% of Valley residents with wood burning heaters would transition to cleaner burning heaters if they were provided a discount of up to 50% off the total cost of the heater. In light of this new information, the District is proposing to increase the current incentive amounts to about half of the total cost of entry level heaters. The dollar amounts are based on information gathered from local hearth retailers and the District’s database of funded Burn Cleaner projects.

---

The increase in incentive funding amounts would encourage more residential property owners to replace their existing heaters with cleaner burning heaters sooner in conjunction with the upcoming proposed Rule 4901 amendments by making the replacement costs more feasible. More importantly, the proposed funding amount for low-income qualified applicants would help them pay for a majority of the costs of a replacement, as many are unable to afford these expensive new heaters. The proposed funding amounts are summarized in Table 1 below.

<table>
<thead>
<tr>
<th>New Heater</th>
<th>Current Funding</th>
<th>Proposed Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas Insert/Stove/Fireplace*</td>
<td>$500</td>
<td>Up to $1,500</td>
</tr>
<tr>
<td>EPA Certified Pellet Insert/Stove</td>
<td>$250</td>
<td>Up to $1,500</td>
</tr>
<tr>
<td>EPA Certified Wood Insert/Stove</td>
<td>$100</td>
<td>Up to $1,500</td>
</tr>
<tr>
<td>Any Eligible Heaters for Low Income Qualified Applicants</td>
<td>Up to $1,500</td>
<td>Up to $2,500</td>
</tr>
<tr>
<td>Additional Incentive for the Installation of Gas Insert/Stove/Fireplace*</td>
<td>Not Available</td>
<td>Up to $500**</td>
</tr>
</tbody>
</table>

*Gas fireplaces must be certified as heater-rated (ANSI Z21.88/CSA 2.33)
**Applies only to eligible installation costs beyond the proposed funding amount for the new gas heater.

2. **Additional Low-Income Provisions**

The District recognizes that a significant number of low-income residents in the San Joaquin Valley rent their homes (tenants). District staff has continued to look for ways to assist low-income residents and has evaluated the option of providing low-income tenants an opportunity to reduce their emissions from residential wood burning through the Burn Cleaner Program. The tenants are directly affected by the emissions produced from using older, higher-polluting heaters, and any associated utility costs with the home. As a result, the District is proposing to extend the low-income provisions to homeowners who rent to low-income qualified tenants, provided specific criteria are met through a careful District review and approval process.

The proposed criteria include the following:

- Residential properties owned by local Public Housing Authorities are ineligible.
- Residential properties with eligible heaters must have existing tenants that either:
  1) Qualify under the Housing Choice Voucher Program (Section 8); or
  2) Meet the program’s low-income eligibility requirements (verification required).
- Eligible low-income tenants must obtain written consent from residential property owners to participate in the program. Residential property owners can apply on behalf of eligible tenants.
Residential property owners must have valid signed lease/rental agreements with eligible low-income tenants with at least 6 months remaining on the lease.

3. **Updates to Program Documents**
The District proposes to update program guidelines and applications to allow applicants the option to receive their approved voucher packets via email. This option will help the qualified applicant move forward with the purchase and installation of their new heater more quickly instead of waiting for approval by standard mail.

**D. Enhanced Forecasting**

Calling residential wood-burning curtailments at lower levels minimizes direct PM2.5 emissions, thus lowering the rate of PM2.5 build-up during periods of atmospheric stagnation. The District already dedicates sufficient resources and technological tools to the forecasting staff for the existing episodic curtailment program. However, the new tiered curtailment approach will require additional time and effort to ensure that forecasts account for the two proposed threshold levels instead as opposed to just one threshold level. Accurate forecasts are vital to the success of reducing emissions through a tiered episodic wood burning curtailment approach. Accuracy of forecasts will ensure that the appropriate episodic curtailment level is called by the District based on the weather conditions and pollutant concentrations forecast for each day.
VII. ADDITIONAL ANALYSES

A. Global Climate Change and Greenhouse Gases

The California Global Warming Solutions Act of 2006 (AB 32) created a comprehensive, multi-year program to reduce greenhouse gas (GHG) emissions in California, with the overall goal of restoring emissions to 1990 levels by the year 2020. ARB and the State Legislature developed policies and programs to implement AB 32. The District believes that the evidence and the rationale that climate change is occurring is compelling and convincing. In addition to the long-term consequences of climate change, the District is concerned with the potential ramifications of more moderate but imminent changes in weather patterns. The Valley depends heavily on agriculture for its economy and has developed agricultural practices based on the last several decades of weather patterns. Unanticipated and large fluctuations in these patterns could have a devastating effect on the Valley’s economy.

While there are many win-win strategies that can reduce both GHG and criteria/toxic pollutant emissions, when faced with situations that involve tradeoffs between the two, the District believes that the more immediate public health concerns that may arise from an increase in criteria or toxic pollutant emissions should take precedence. The District Governing Board adopted the Climate Change Action Plan (CCAP) in August 2008. For California Environmental Quality Act (CEQA) requirements, one of the goals of the CCAP is to establish District processes for assessing the significance of greenhouse gas impacts. The District has developed a policy and guidance for addressing greenhouse gases under CEQA.

B. Health Benefits

The District is a public health agency whose mission is to improve the health and quality of life for all Valley residents through efficient, effective and entrepreneurial air quality management strategies. The District periodically compiles attainment plans to identify individual regulations and other strategies that will achieve the emissions reductions needed for the Valley to meet federal health-based air quality standards (National Ambient Air Quality Standards, or NAAQS). Guided by its Health-Risk Reduction Strategy, the District develops and implements both attainment plans and regulations to attain the NAAQS in the quickest, most health-protective, and most cost-effective manner. The control strategy as a whole, then, has important public health benefits and health costs savings. This amendment to Rule 4901 and adoption of new Rule 3901 is one component of this overall control strategy. Since amendments to Rule 4901 reduce NOx emissions, it benefits public health by contributing to improved ozone and PM2.5 air quality.
C. Emission Reduction Analysis

District staff evaluated the emissions reductions that would result from amendments to Rule 4901. The results of this analysis were used to complete the cost effectiveness analysis. The District’s 2012 PM2.5 Plan committed the District to reduce 1.5 tons per day of directly emitted PM2.5 upon full implementation of rule amendments; this commitment has been satisfied. Refer to Appendix B (Emission Reduction Analysis) for the analysis for Rule 4901. Rule 3901 has no emissions reductions associated with it therefore there is no emission reductions analysis for Rule 3901.

D. Economic Analyses

1. Cost Effectiveness Analysis

Pursuant to California Health & Safety Code (CH&SC) Section 40920.6(a), the District analyzes the cost effectiveness of new rules or rule amendments. The amendments are cost effective. Refer to Appendix C (Economic Analyses) for the analysis for Rule 4901. Rule 3901 does not have emissions reductions associated with it; therefore there is no cost effectiveness analysis for Rule 3901.

2. Socioeconomic Analysis

Pursuant to CH&SC Section 40728.5(a), “Whenever a district intends to propose the adoption, amendment, or repeal of a rule or regulation that will significantly affect air quality or emissions limitations, that agency shall to the extent data are available perform an assessment of the socioeconomic impacts of the adoption, amendment, or repeal of the rule or regulation.” No significant socioeconomic impacts are expected from these rule amendments. Refer to Appendix C (Economic Analyses) for the analysis for amendments to Rule 4901. Rule 3901 will not significantly affect air quality or emissions limitations; therefore, is not subject to a socioeconomic analysis.

E. Rule Consistency Analysis

Pursuant to Sections 40727 and 40727.2 of the California Health and Safety Code, prior to adopting, amending, or repealing a rule or regulation, the District performs a written analysis that identifies and compares the air pollution control elements of the rule or regulation with corresponding elements of existing or proposed District rules, existing statues, and state and federal rules, regulations, and guidelines that apply to the same source category. The rule elements analyzed are emission limits, monitoring and testing requirements, recordkeeping and reporting requirements, and operating parameters and work practice requirements. Amendments to Rule 4901 and requirements in new Rule 3901 do not conflict with any District or federal rules, regulations, or policies applicable to similar stationary sources, as demonstrated below.
District Rules
There are no other District prohibitory rules or regulations or fee rules tailored specifically for wood burning fireplaces or wood burning heaters; therefore, there are no rules in conflict with or inconsistent with the requirements of Rule 4901 and Rule 3901.

State Rules, Regulations, and Policies
There are no identified California state rules, regulations, or policies specific to reducing emissions from residential wood combustion.

Federal Rules, Regulations, and Policies
Rule 4901 is as stringent as the current federal New Source Performance Standards (NSPS) (40 CFR 60 Subpart AAA (Standards of Performance for New Residential Wood Heaters). Additionally there are no EPA Control Techniques Guidelines (CTG), Alternative Control Techniques (ACT), National Emission Standards for Hazardous Air Pollutants (NESHAP), or Maximum Achievable Control Technology (MACT) guidelines for this source category.

EPA New Source Performance Standard (NSPS)
EPA proposed revisions to 40 CFR Subpart AAA (Standards of Performance for New Residential Wood Heaters) on February 3, 2014. Although proposed amendments in Rule 4901 account for the EPA proposed amendments to the NSPS, the standard has not yet been finalized at the time of these proposed rule amendments and therefore cannot be compared to the existing or the proposed rule.

F. California Environmental Quality Act Analysis

According to the California Environmental Quality Act (CEQA) statutes and pursuant to Section 15061 of the CEQA Guidelines, the District investigated the possible environmental impacts of the amendments to Rule 4901. Based on the lack of evidence to the contrary, the District has concluded that the rule amendments will not have any significant adverse effects on the environment. As such, the District finds that the rule amendment project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061 (b)(3)). Therefore pursuant to Section 15062 of the CEQA Guidelines, Staff will file a Notice of Exemption upon Governing Board approval of amendments to Rule 4901.
VIII. RULE DEVELOPMENT PROCESS

The public process for these rule amendments began with the development of the District’s 2012 PM2.5 Plan. The District has been providing updates on the development and progress of potential amendments to Rule 4901 to the Governing Board, Citizen’s Advisory Committee (CAC), and Environmental Justice Advisory Group (EJAG) since February 2013.

Additionally, to increase public outreach and educational opportunities, in the first quarter of 2014, District has created a web page to serve as a central location for residential wood burning. The web page includes information about the existing rule and proposed amendments under consideration, District incentive programs, compliance information including how to report a violation, and EPA and ARB informational and educational materials. The web page is located at http://www.valleyair.org/rule4901 and can also be linked to from the District home page at www.valleyair.org.

A. 2012 PM2.5 Plan Development

During the development of the District’s 2012 PM2.5 Plan staff evaluated all potential opportunities to reduce emissions to expedite attainment of the federal NAAQS for PM2.5. This thorough and comprehensive effort resulted in the identification of Rule 4901 as a feasible opportunity to reduce emissions of directly emitted PM2.5 in the Valley. Additionally, because emission reductions from residential wood burning activities occur at the neighborhood level, amending this rule is a priority under the District’s Health-Risk Reduction Strategy; therefore, the District committed to amend this rule in the 2012 PM2.5 Plan. The public participated in the development of this commitment in that they were invited to attend public workshops to provide verbal comments and to provide additional comments beyond those provided at the public workshops throughout the plan development process until and including at the Governing Board Public Hearing to adopt the plan. Public comments specific to the potential of amending Rule 4901 were received throughout the plan development process and incorporated into the plan as appropriate.

B. Technical Workgroup Committee Meetings

In preparation for the rule and incentive amending efforts, the District formed an Ad Hoc Technical Workgroup Committee consisting of District staff and management, retailers of residential wood burning heaters, and representatives of the Hearth, Patio & Barbeque Association. The technical workgroup committee met once a month for five months during the summer of 2013 to discuss individual aspects of rule requirements, implementation, and alternatives. Topics of discussion at these proactive, productive, and cooperative meetings included the pros and cons of implementing a tiered curtailment approach in the Valley; enforcement of existing and future rule
requirements; the Districts current Burn Cleaner incentive program and potential opportunities to improve it in the future; and the District’s approach to public outreach and education with regard to residential wood burning heaters, regulations, and incentive programs. Information gained during these technical workgroup meetings has been incorporated into the staff report, amendments to the rule, amendments to the District’s Burn Cleaner incentive program, and outreach and education efforts as appropriate.

C. Public Opinion Survey Related to Residential Wood Burning

In September 2013 the District hired a third party company, Gomez Research, to develop and administer a bilingual user survey of residential wood combustion, lawn care and personal commuting activity in the Valley. In January 2014 the telephone survey of 1,000 random Valley residents took place, the final draft report was drafted in February 2014 and presented to the District’s Governing Board in March 2014. Information gained from this survey has been incorporated into the proposed amendments to the rule, the Burn Cleaner incentive program, and District public outreach and education efforts.

The study results show a great understanding of and compliance with the Check Before You Burn program. While the Check Before You Burn program is very recognizable with Valley residents, the survey revealed that awareness of the Burn Cleaner incentive program is relatively low despite this program being hugely popular and, at times, oversubscribed. The following is a summary of some of the survey results relevant to residential wood burning:

- Of the 1,000 respondents, 32% reported having a wood-burning heater
  - Of the 32% of respondents with a wood-burning heater, more than half of those households reported not using their heater
  - Of those that reported having a wood-burning heater, 37 percent live in the northern region (San Joaquin, Stanislaus and Merced counties)
- 80% of respondents were aware of the District’s Check Before You Burn Program
  - 75% of whom have reduced wood-burning activity in response to the program
- Just 17% of respondents knew about the Districts’ Burn Cleaner incentive program
- In assessing what would motivate an owner of a wood-burning heater to upgrade to a cleaner heater
  - 29% indicated they would upgrade if allowed to burn more often
  - 12% would be willing to do it with a 15% rebate
  - 24% would be willing to do it with a 50% rebate

To view the final survey reports presented to the Governing Board refer to Appendix E (Public Survey Reports).
D. Public Workshops

The District hosted a public Scoping Meeting on March 27, 2014. At that meeting the District presented conceptual information and plan commitments, new NSPS regulations, potential methods of public outreach, and potential incentive program enhancements. The District then solicited feedback and comments from the public at the workshop and for a two week comment period after the workshop that ended at 5:00 PM on Thursday, April 10, 2014. Refer to Appendix A (Comments and Responses) for a summary of significant comments and District responses.

The District hosted a public workshop on the evening of July 31, 2014. The draft rules were made available for the public workshop. The Public workshop was followed by a two-week public comment period ending at 5:00 PM on August 14, 2014. All significant comments received before the comment period deadline were reviewed and incorporated into the proposed rule, staff report, and appendices as appropriate ahead of the September Governing Board Public Hearing.

E. Public Hearing

In accordance with CH&SC Section 40725, the proposed amendments to Rule 4901 and proposed new Rule 3901 and the final draft staff report will be publicly noticed and made available prior to the Governing Board public hearing to consider adoption of the proposed rule amendments. These rule amendments are tentatively scheduled to be presented to the Governing Board at a public hearing on September 18, 2014. The public is invited to provide comments to District Governing Board Members during the public hearing.