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DATE: September 18, 2014

TO: SJVUAPCD Governing Board

FROM: Seyed Sadredin, Executive Director/APCO
Project Coordinator: Sheraz Gill

RE: **ITEM NUMBER 7: ADOPT PROPOSED
AMENDMENTS TO THE DISTRICT'S RESIDENTIAL
WOOD BURNING PROGRAM**

RECOMMENDATION:

1. Adopt proposed amendments to Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters).
2. Adopt proposed amendments to the District Burn Cleaner Program to offer additional financial incentives to Valley residents for the purchase of cleaner devices, including:
 - a. Increase per-unit incentive amounts from current amounts (\$100-\$500) to a maximum of \$1,500 with an additional \$500 for installation of gas-fired units;
 - b. Increase per-unit incentive amounts for low-income qualified applicants from up to \$1,500 to up to \$2,500 with an additional up to \$500 for installation of gas-fired units;
 - c. Expand low-income provisions to include property owners who rent to low-income qualified tenants; and
 - d. Work with retailers to allow qualified low-income applicants to purchase devices through the Burn Cleaner program without requiring up-front payment.
3. Adopt proposed new Rule 3901 (Fees for Registration of Wood Burning Heaters).
4. Authorize the Chair to sign the attached Resolution.



BACKGROUND:

On December 20, 2012, your Board adopted the District's 2012 *PM2.5 Plan* which laid out a host of strategies aimed at attaining the 2006 federal ambient air quality standard for PM2.5. One of the measures contained in the plan was amendments to District Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters). Your Board directed the staff to develop the necessary amendments for implementation in the winter of 2014-15. The Governing Board directed the staff to craft amendments that lower the threshold for daily residential wood burning prohibitions during winter seasons while increasing the number of permissible burn days for Valley residents that have invested in cleaner wood burning devices. The District staff was also directed to investigate the feasibility of enhanced financial incentives to encourage Valley residents to upgrade to cleaner devices. Today's recommendations were developed through an extensive public process including multiple workshops, public meetings, and consultations with various stakeholders including representatives from the hearth industry.

DISCUSSION:

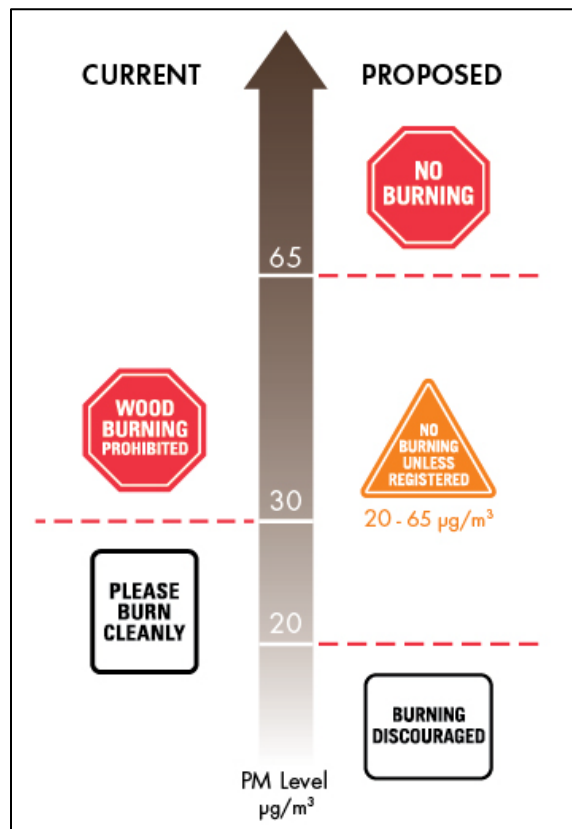
Due to the Valley's geography, topography, and meteorology, the challenges that we face in meeting the federal health-based ambient air quality standards are unmatched by any other region in the nation. In response to these federal mandates and to improve quality of life for Valley residents, the District has developed and implemented multiple generations of rules on various sources of air pollution. Since 1992, the District has adopted over 500 rules, requiring the installation and operation of the most effective air pollution control technologies and processes. Valley businesses are currently subject to the most stringent air quality regulations in the nation. Despite significant progress in improving the Valley's air quality, more reductions in emissions are needed to attain the ever toughening federal standards. The District's attainment plans contain a comprehensive set of local and state measures to reduce air pollution from stationary and mobile sources throughout the Valley. However, attaining the 2006 federal PM2.5 standard is impossible without significant further reductions in wood smoke emissions.

Further reducing residential wood smoke emissions is also a high priority under the District's Health Risk Reduction Strategy given the significant localized health impacts associated with residential wood smoke. Scientific studies show that prolonged inhalation of wood smoke contributes to lung disease, pulmonary arterial hypertension, and pulmonary heart disease, which can eventually lead to heart failure. The proposed rule is designed to improve public health by reducing toxic wood smoke emissions in Valley neighborhoods during the peak PM2.5 winter season (November through February).

Summary of the Proposed Wood Burning Curtailment Strategy

The proposed amendments to the residential wood burning program will enable Valley residents to play a major role in reducing emissions at almost no cost, and, in many cases, with savings in heating-related energy costs. The District will encourage the transition to less polluting wood burning heaters by decreasing the number of allowable burn days for high polluting wood burning heaters and fireplaces while at the same time increasing the number of burn days allowed for registered clean wood burning heaters through a tiered episodic wood burning curtailment program. The proposed amendments to Rule 4901 will lower the No Burn threshold for high polluting wood burning heaters and fireplaces from the current limit of $30 \mu\text{g}/\text{m}^3$ to $20 \mu\text{g}/\text{m}^3$. The proposed amendments will significantly increase the number of permissible burn days for cleaner certified wood burning devices by raising the No Burn threshold to $65 \mu\text{g}/\text{m}^3$. If approved, the proposed amendments will double the number of No Burn days for high polluting units that are the source of over 95% of the wintertime residential wood smoke emissions. By contrast, under the proposed rule, clean certified units will be subject to minimal number of No Burn days ranging from zero to six days depending on the location in the Valley during the winter season.

Figure 1 Current and Proposed Curtailment Thresholds



Additionally, the proposed enhancements to the District's Burn Cleaner Program will provide additional financial incentives to Valley residents for the purchase of cleaner devices. The proposed regulatory and financial incentives which encourage the purchase of cleaner units will result in significant additional emission reductions throughout the season even on permissive burn days. Overall, the proposed wood burning strategy is expected to reduce over 5.1 tons per day of PM2.5 valley-wide during the winter season.

Table 1 below provides the potential number of wood burning prohibitions that will occur in each county at the proposed curtailment thresholds. These estimates are based on the District's wood burning forecasts as averaged over the last five wood burning seasons.

Table 1 Potential Change in No Burn Days Based on Proposed Amendments

County	Current Average No Burn Days ($\geq 30 \mu\text{g}/\text{m}^3$)	Proposed Level 1 (20 – 65 $\mu\text{g}/\text{m}^3$)	Proposed Level 2 (above 65 $\mu\text{g}/\text{m}^3$)	TOTAL No Burn Days for Non-Registered units (L1 + L2)
San Joaquin	24	53	0	53
Stanislaus	36	70	2	72
Merced	19	55	0	55
Madera	29	66	1	67
Fresno	49	79	6	85
Kings	39	64	6	70
Tulare	36	65	4	69
Kern	44	73	6	79

Registration Program for Wood Burning Heaters

The approach under the proposed rule that will allow clean units to burn on days when burning is prohibited for conventional units will be nearly impossible to enforce without a mechanism to readily identify and verify qualifying devices. To provide the District with an enforceable mechanism for allowing certified devices to burn during a level one curtailment (greater than 20 $\mu\text{g}/\text{m}^3$ but less than 65 $\mu\text{g}/\text{m}^3$), the District proposes a registration program for these cleaner burning devices. Without preregistering qualifying devices the District would be forced to resort to more intrusive enforcement techniques which would involve routine access to private property. The preregistration will also enhance enforcement capabilities by allowing the District to better focus resources. Registration will also ensure that the equipment is maintained in proper working condition and provides the expected reduction in emissions.

Registration would be voluntary and will only be necessary if the owner of a certified unit wishes to take advantage of the additional burn days provided under the proposed rule. Under the proposed approach, registrations would be valid for three wood burning seasons and registered devices would be required to operate with no visible smoke

under normal operating conditions, be maintained properly, and refrain from burning prohibited materials. Wood burning devices found to be in violation of Rule 4901 requirements by the District may be disqualified.

Registration Program for Wood Burning Heater Professionals

Proposed rule requirements will require a registered wood burning heater to be inspected by a Wood Burning Heater Professional to verify that the wood burning heater is in good operating condition, including ensuring that the device has been cleaned, maintained, and operated in accordance with manufacturer specifications. To ensure qualified individuals are performing these inspections and verifications, the District proposes a registration program for Wood Burning Heater Professionals. The District will maintain a list of these registered individuals on the District's website for the public to access.

Free Interim Registration during 2014-15 Winter Season

If adopted in September the rule will take effect in November leaving a short amount of time for the public to accommodate significant changes to the rule. To provide for a smooth transition, the District proposes a simplified registration process at no charge to the public for the first year. The interim registration process will rely on self-certification by interested applicants and interim registrations will expire at the end of this first wood burning season on February 28, 2015. The District is committed to educating the public on how the tiered episodic wood burning curtailment program works and how to comply with it, as well as how to register clean wood burning heaters in order to encourage upgrading to cleaner devices through the additional burn days afforded them through the tiered program.

Clarifications to Existing Rule Requirements

Proposed amendments will simplify rule language and clarify existing requirements through the removal of redundant and expired language in the rule. Additionally, in response to EPA's proposed amendments to the Code of Federal Regulations Part 60, Subpart AAA, the District is updating all references of "EPA Phase II Certified" to clarify as "Phase II certified or the most stringent EPA certification as enforced by the NSPS".

New definitions will be added to rule language to clarify existing standards or in support of proposed standards. Proposed new definitions include: Normal Operating Conditions, NSPS, and Wood Burning Season.

The exemptions section of the rule will be amended to add new exemption 4.3 to clarify that open burning is regulated by District's Rule 4103, and as such are not subject to Rule 4901 rule requirements.

Proposed amendments to Section 5.1 (Sale or Transfer of Wood Burning Heaters) will clarify that the section is applicable to the sale and the transfer of new wood burning heaters, and is not strictly limited to the sale of such heaters. Proposed amendments also 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 new wood burning heaters.

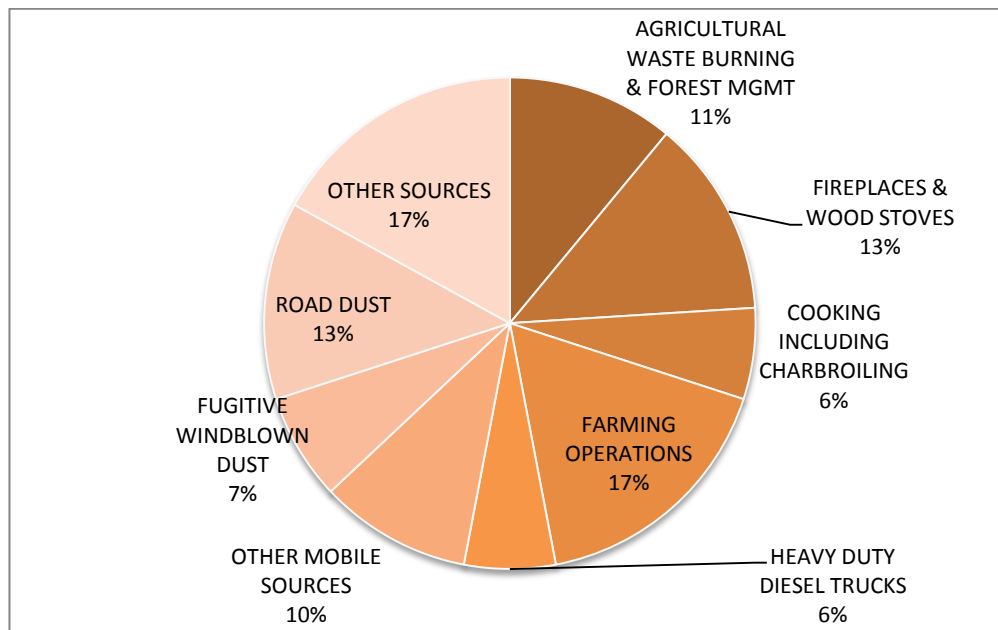
Proposed amendments to Section 5.3 (Limitations on Wood Burning Fireplaces or Wood Burning Heaters in New Residential Developments) will clarify existing requirements in the rule. These amendments will be effective as of January 1, 2015, consistent with the time frame provided in the 2003 amendments to Rule 4901 which first introduced these requirements to the rule.

Proposed amendments will clarify that the prohibited fuels are not only not allowed in indoor wood burning heaters but also in the outdoor wood burning devices (Section 5.5) and will add a clarification that butane is not considered natural gas (Section 5.6.3), and clarifications will be added to clarify that the most recent ASTM shall be used to test the moisture content of wood to verify it is seasoned wood (Section 7.1).

Residential Wood Burning Emissions in the Valley

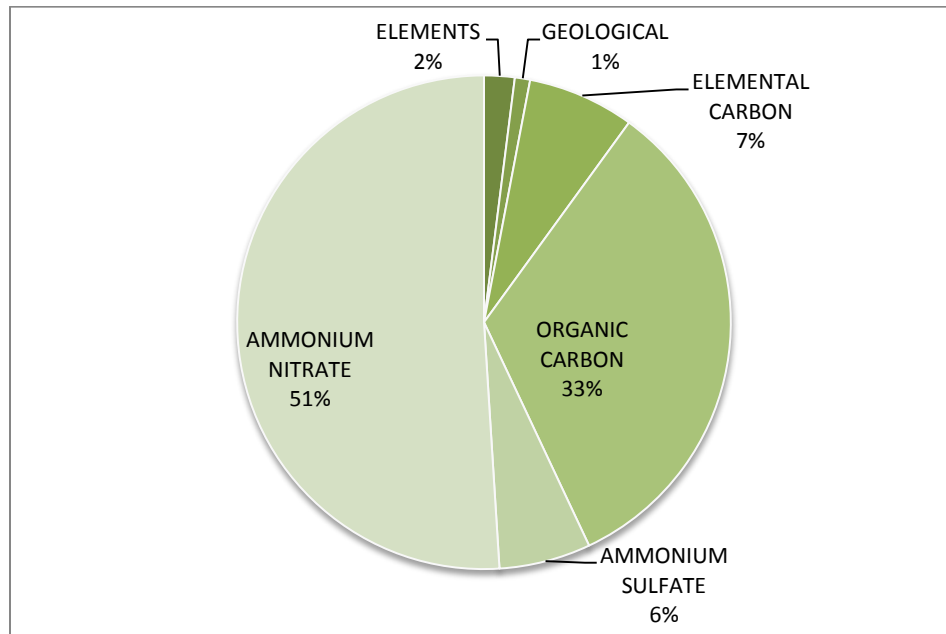
Residential wood burning is a significant contributor to Valley PM_{2.5} emissions during the winter season. Based on data from the Metropolitan Planning Organizations, the U.S. Census, and survey results, the District estimates that there are over 240,000 residences in the Valley contributing 13% of total winter-time PM_{2.5} emissions (see Figure 2).

Figure 2 Wintertime Valley Source Contributions to the PM_{2.5} Emission Inventory



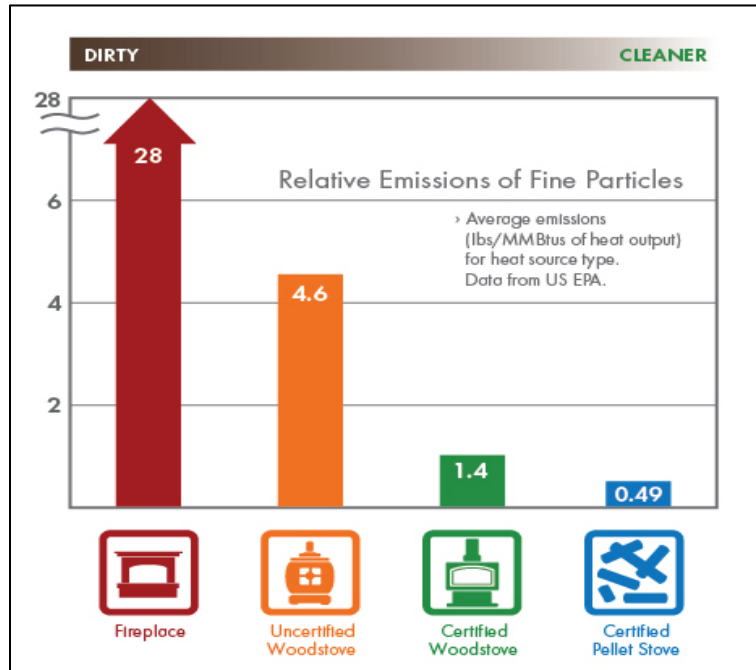
During peak winter days, organic carbon contributes up to 33% of the composition of PM2.5 emissions in the Valley, the vast majority of which is from residential wood burning, as can be seen in Figure 3 below.

Figure 3 Wintertime Peak Day PM2.5 Emission Speciation (Fresno)



According to EPA, of the wood stoves in use today, 75% are not EPA certified. Because these devices produce so much more pollution than EPA certified wood stoves, these older wood burning heaters and fireplaces represent 95% of the overall emissions from residential wood burning. An EPA certified wood burning heater is at least 20 times cleaner than a wood burning fireplace, as demonstrated in the figure below. This tremendous difference in emissions between these units highlights the importance of replacing existing high polluting devices with cleaner burning alternatives.

Figure 4 Average PM2.5 Emissions Based on Wood Burning Heater Type



Emission Reductions from Proposed Amendments

The total emission reductions achieved from the proposed amendments to Rule 4901 is calculated to be 5.1 tons per wood burning season day which includes:

- 3.33 tons of reductions from simply lowering the threshold from 30 $\mu\text{g}/\text{m}^3$ to 20 $\mu\text{g}/\text{m}^3$,
- 0.065 tons/day increase in emissions if all existing clean certified units registered and burned on days when PM2.5 concentrations are projected to be between 30 $\mu\text{g}/\text{m}^3$ to 65 $\mu\text{g}/\text{m}^3$,
- 0.22 tons/day increase in emissions if 24% of existing higher polluting devices transition to clean certified units and all registered and burned on days when PM2.5 concentrations are projected to be between 20 $\mu\text{g}/\text{m}^3$ to 65 $\mu\text{g}/\text{m}^3$, and
- 2.04 tons/day of reductions from the transition of older dirtier wood burning heaters and wood burning fireplaces to cleaner certified devices.

Wood Smoke Reductions Critical to Attaining the PM2.5 Standard

Based on the modeling conducted for the 2012 PM2.5 Plan, reaching attainment requires reductions of 68.6 tons per day of NOx, 4.3 tons per day of PM2.5, and 1.8 tons per day of SOx. These numbers reflect the average daily reductions needed based on a 180 day winter season (November through April). The bulk of these reductions will come from a multitude of measures targeted at mobile and stationary sources of pollution throughout the Valley. However, modeling indicates that attainment is not possible without the reductions in directly-emitted PM2.5 emissions from

residential wood burning. The projected 5.1 tons per day reductions from the proposed rule represents the average reductions during the 120-day wood burning season (November through February).

Health Impacts of Wood Smoke Particulate Matter Emissions

Reducing emissions from residential wood burning is a priority under the District's Health Risk Reduction Strategy because multiple scientific studies show that prolonged inhalation of wood smoke has adverse impacts on human health. Inhalation of wood smoke contributes to lung disease, pulmonary arterial hypertension, and pulmonary heart disease, which can eventually lead to heart failure. Wood smoke has also been linked to oxidative stress and blood coagulation and can ultimately lead to cancer. Children with the highest exposure to wood smoke show a significant decrease in lung function.

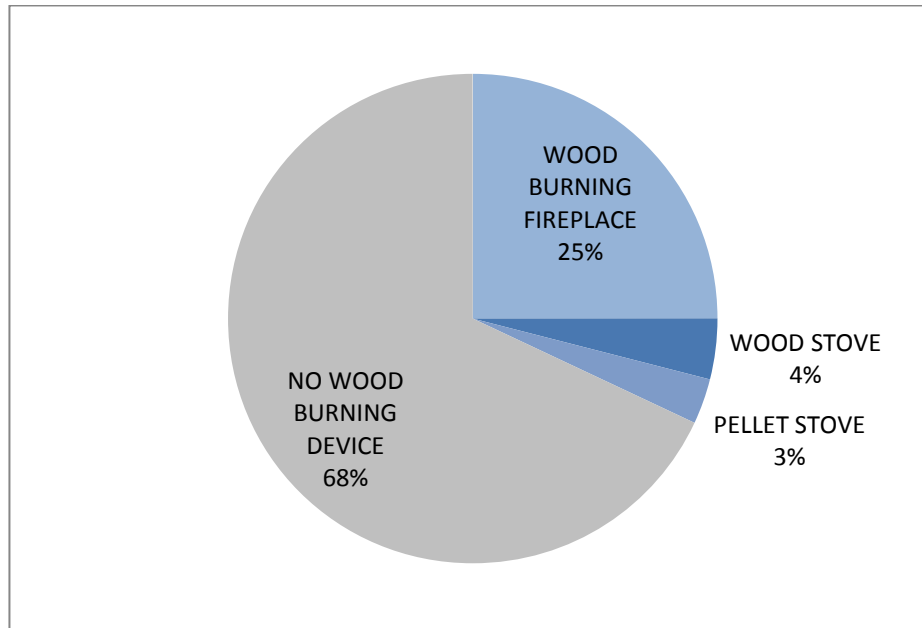
Health benefits from reducing emissions from residential wood burning are related to the high level of population exposure to urban residential wood burning emissions with relation to other stationary sources. People can be exposed to wood smoke when they use their wood burning devices. Additionally, people can be exposed to wood smoke when people in their neighborhoods use their wood burning devices because windows and doors cannot keep the particles in wood smoke out of people's homes. A Central Valley Health Policy Institute Study found that wood burning curtailments on high pollution days reduced annual exposure by 13.6% in Fresno, and an estimated 12.9% in Bakersfield resulting in 30 to 70 avoided cases of annual premature deaths.

Proposed Rule Amendments Guided by Scientific Public Survey

In January 2014, the District hired a third party company to perform a telephone survey of Valley residents. One of the primary goals of this study was to learn more about residential wood burning habits and attitudes. Survey results support the implementation of a tiered episodic wood burning curtailment program and increasing incentive amounts for the Burn Cleaner Program. Some of the results of the survey are summarized below in Figure 5. Refer to Appendix E of the final draft staff report for the complete survey:

- 32% of those surveyed reported having a wood burning device in their residence
- 80% of people surveyed are aware of the *Check Before You Burn* program
 - 78% of whom have reduced wood burning activities as a direct result of this program
- 29% of survey respondents stated that they would upgrade their existing wood burning device to a clean alternative if doing so meant that they could use their device more days than they currently can
- 24% of respondents said they would upgrade their existing wood burning device to a clean alternative if they were given up to a 50% discount on a new unit.

Figure 5 Percentage of Wood Burning Devices in the Valley (Survey Results)



Summary of Proposed Amendments to Burn Cleaner Incentive Program

The District's Burn Cleaner Wood Stove Change-out Program (Burn Cleaner Program) plays a key role in the success of the transition from older more polluting wood burning heaters and fireplaces to cleaner wood burning heaters. Since 2006, the Burn Cleaner Program has been helping residents overcome some of the financial obstacles in purchasing cleaner alternatives. The District continues to take proactive steps to enhance the Burn Cleaner Program and as such proposes the following changes to the District's current Burn Cleaner Program as a complementary strategy to the proposed regulatory amendments:

Increased Incentive Amounts

The results of the scientific survey 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.¹ 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 Program projects.

The increase in incentive funding amounts will 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

¹ Gomez Research. *Residential Wood Burning, Lawn Care, and Commuting Survey Final Report*. February 2014. Retrieved from http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2014/march/final/09.pdf.

replacement costs more feasible. More importantly, the proposed funding amount for low-income qualified applicants will 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 2 below.

Table 2 Proposed Amendments to Burn Cleaner Program Incentive Amounts

New Heater	Current Funding	Proposed Funding
Gas Insert/Stove/Fireplace*	\$500	\$1,500
- Additional Incentive for Installation of Gas Infrastructure*	Not Available	\$500**
EPA Certified Pellet Insert/Stove	\$250	\$1,500
EPA Certified Wood Insert/Stove	\$100	\$1,500
Low-Income Qualified Applicants	\$1,500	\$2,500
- Additional Incentive for Installation of Gas Infrastructure*	Not Available	\$500**

*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.

Additional Assistance for Low-Income Residents

As a part of the District's ongoing efforts to encourage more low-income qualified applicants to participate in the Burn Cleaner Program, the District sought feedback and suggestions from the Environmental Justice Advisory Group (EJAG), the Citizen's Advisory Committee (CAC), the public at public workshops, and the Ad Hoc Technical Workgroup Committee on how to make the program more accessible. The District is proposing to make several enhancements to the existing Burn Cleaner Program, including:

- Increased per-unit incentive amounts for low-income qualified applicants from \$1,500 to \$2,500 with an additional \$500 for the installation of natural gas infrastructure,
- Reducing the upfront cost of purchasing and installing a new unit for low-income applicants. 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 time of purchase. Allowing the incentive funding to be directly applied to the cost of the unit makes it more feasible for low-income applicants to take advantage of the program, and
- Expanding low-income provisions to include property owners who rent to low-income qualified tenants;

Check Before You Burn Campaign Outreach and Education

The success of implementing the proposed amendments to the residential wood burning program will hinge on the expansion of the District's comprehensive multi-lingual *Check Before You Burn* outreach and education program. 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 populations' health, and on options they can take to reduce emissions. The District's *Check Before You Burn* program is the District's public education program most recognized by Valley residents. In both the District's 2010 and 2014 public opinion surveys, over 80 percent of Valley residents indicated that they were familiar with the program.

The PM2.5 air quality improvements that the Valley has experienced since adoption of Rule 4901 have been assisted by strong multimedia outreach by the District and the resultant increase in public awareness and participation in winter District programs. 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.

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 in older neighborhoods where open hearth fireplaces and older devices are most likely to be, targeted radio and TV spots, and value-added messaging delivered through media throughout the Valley.

The key message of this outreach is to ask residents to call the District's 1-800 number, check the website, check their local news outlet, check their smart phone or visit social media to assess their county's burn status. 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.

Looking forward, the *Check Before You Burn* outreach messaging will expand to focus on three areas:

- Educating the public and the media about the new tiered episodic wood burning curtailment program,
- Encouraging residents to upgrade to cleaner certified devices and take advantage of the enhanced Burn Cleaner Program, and
- Educating Valley residents regarding the severe health impacts associated with wood smoke.

Continued emphasis will be placed on reaching those communities that might be heavily impacted by neighborhood smoke from older devices and open hearth fireplaces. The District is prepared to work with retail partners, media partners and non-profit stakeholders to launch these new outreach and education efforts immediately after the adoption of proposed amendments.

Summary of Proposed New Rule 3901

Proposed new Rule 3901 (Fees for Registration of Wood Burning Heaters) will create the fee structure for the registration of wood burning heaters with the District pursuant to Rule 4901. The registration fee and registration renewal fee will be established at \$12.50. In order to ensure a smooth transition for registered devices, there will be no fee for this coming season (2014-15 wood burning season) and the registration process will be truncated by eliminating third party verification.

Public Process for Developing Proposed Amendments

The District has conducted a robust public process for developing the proposed amendments to Rule 4901 and the *Check Before You Burn* program. The public has been actively participating and providing feedback and comments on potential amendments to Rule 4901 since the beginning of the development of the District's 2012 *PM2.5 Plan*, through subsequent public workshops and meetings, and through a scientific public opinion survey of Valley residents.

2012 PM2.5 Plan Development

The District hosted a series of public workshops and updates at public meetings such as the Governing Board meetings, Citizen Advisory Committee meetings, and Environmental Justice Advisory Group meetings throughout the plan development process. Potential opportunities to reduce emissions were discussed at these meetings, including potential emission reductions opportunities from Rule 4901. Public comments specific to Rule 4901 were received throughout the plan development process and incorporated into the plan as appropriate.

Technical Workgroup Committee meetings

In preparation for amendments to the District's Residential Wood Burning Program, the District formed an Ad Hoc Technical Workgroup Committee consisting of District staff, retailers of residential wood burning heaters, and representatives of the Hearth, Patio & Barbeque Association. The technical workgroup committee met monthly for five months during the summer of 2013 to discuss concepts related to potential rule amendments, implementation issues, outreach considerations, and enhancements to the Burn Cleaner Program. The expertise and suggestions from the Ad Hoc Technical Workgroup Committee were invaluable in helping the District to craft the proposed innovative amendments to the District's Residential Wood Burning Program.

Public Opinion Survey of Valley Residents

In September 2013 the District hired a third party company 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 Residential Wood Burning Program.

Public Workshops and Meetings

The District held two public workshops in the evening hours at all three District offices. On the evening of March 27, 2014 the District presented conceptual information and plan commitments, new NSPS regulations, potential methods of public outreach, and potential incentive program enhancements. On the evening of July 31, 2014, the District presented draft amendments to Rule 4901 and draft new Rule 3901. Each workshop was followed by a two-week public comment period. Comments received were evaluated and incorporated into the rules and staff report as appropriate. Refer to Appendix A (Comments and Responses) for a summary of significant comments and District responses. In addition to the workshops, the District provided regular updates on the development of Rule 4901 at public meetings of the District's Citizen's Advisory Committee and Environmental Justice Advisory Group.

Public Hearing for Rules 4901 and 3901

In accordance with CH&SC Section 40725, the proposed amendments to Rule 4901 and proposed new Rule 3901 and the Final Draft Staff Report were publicly noticed prior to the Governing Board public hearing to consider adoption of the proposed amendments and proposed new rule. The proposed amendments to Rule 4901, proposed new Rule 3901, the Final Draft Staff Report, and other supporting documents were made available for public comment on August 19, 2014. Summaries of comments received prior to 5:00 PM on September 2, 2014 with District responses are in Appendix A of the final draft staff report. The public is also invited to provide comments during the public hearing for proposed adoption of this rule.

Public Comments and Responses

The comments and questions received during workshops and associated written comment periods have been integral to development of this rule. The key issues raised during development of this rule are summarized below:

Comment: The District should focus on regulating businesses, the agricultural community, and mobile sources instead of Valley residents.

Response: Since 1992, the District has adopted over 500 rules, requiring the installation and operation of the most effective air pollution control technologies and processes. Valley businesses, including agricultural sources are currently subject to the most stringent air quality regulations in the nation and have already achieved significant emissions reductions (over 80%) that the Valley is at the point of diminishing returns from new regulatory controls on businesses, and new opportunities for more stringent regulatory controls continue to become increasingly scarce. Achieving additional emission reductions from businesses beyond those already achieved will require significant investments on the part of Valley businesses who have already spent billions of dollars in control technology. Despite significant progress in improving the Valley's air quality, more reductions in emissions are needed from all source categories to attain the ever toughening federal standards. Therefore, attaining the 2006 federal PM_{2.5} standard is impossible without significant further reductions in wood smoke emissions.

Further reducing residential wood smoke emissions is also a high priority under the District's Health Risk Reduction Strategy given the significant localized health impacts associated with residential wood smoke. Scientific studies show that prolonged inhalation of wood smoke contributes to lung disease, pulmonary arterial hypertension, and pulmonary heart disease, which can eventually lead to heart failure. The proposed rule is designed to improve public health by reducing toxic wood smoke emissions in Valley neighborhoods during the peak PM_{2.5} winter season (November through February).

Comment: Amending the curtailment threshold for all wood burning devices in the Valley from 30 to 65 µg/m³ is a relaxation of the rule and the draft curtailment threshold should be no higher than 30 µg/m³.

Response: On the contrary, the proposed amendments will make this rule the most stringent wood burning curtailment rule in the nation. The District is proposing to lower the curtailment threshold to 20 µg/m³ for older more polluting wood burning heaters and wood burning fireplaces, which comprise over 95% of wood burning emissions. In addition, the operation of non-registered clean devices will also be restricted at the 20 µg/m³ threshold. This proposed curtailment level is significantly lower than the current curtailment threshold of 30 µg/m³. Amending the rule to allow the cleanest wood burning heaters to be used between 20 and 65 µg/m³ would provide significant motivation to Valley residents for transitioning away from older higher polluting devices to the cleanest wood burning heaters. A registered wood burning heater pollutes at least twenty times less than a wood burning fireplace; therefore, encouraging this transition would reduce emissions beyond those that could be accomplished by only reducing the curtailment threshold to 20 µg/m³. The proposed amendments will achieve an estimated reduction of 5.1 tons per day of PM_{2.5} emissions.

Comment: The Duraflame Company provided a comment that the proposed revision of lowering the concentration threshold to 20 µg/m³ dramatically increases the number of No Burn days and tilts the burden of reducing PM_{2.5} emissions far beyond the contribution that occasional residential wood burning makes to PM_{2.5} emissions in the Valley. Additionally, they suggested that the high PM_{2.5} concentrations experienced in the winter of 2013-14 indicate the need for controlling other sources of air pollution that were allegedly responsible for such increases.

Response: Valley Businesses are already subject to toughest air regulations in the nation. The District's attainment plans call for significant reductions in emissions from mobile and stationary sources throughout the Valley. With regards to directly emitted PM_{2.5} emissions, residential wood burning is the largest source in the Valley during the winter months, as supported by Appendix B (Emissions Inventory) of the District's 2012 PM_{2.5} Plan.² During the 2013-14 winter season, the Valley experienced unprecedented stagnation and extreme weather conditions with century old drought records being broken in many of the cities in California. These unique conditions

² SJVUAPCD. 2012 PM_{2.5} Plan. Appendix B (Emissions Inventory). December 2012. Retrieved on 8/15/14 from http://www.valleyair.org/Air_Quality_Plans/PM25Plans2012.htm.

resulted in abnormally high PM2.5 concentrations during the 2013-14 winter season and the Valley's PM2.5 concentrations would have been even higher absent the wood burning restrictions. The District and the California Air Resources Board also conducted extensive grid based and photochemical modeling during the development of the 2012 PM2.5 Plan and determined that significant PM2.5 reductions were achieved through the implementation of the Districts PM2.5 control strategy which includes the wood burning heater and wood burning fireplace rule. Reducing directly emitted PM2.5 emissions will have a greater benefit on Valley air and public health than reducing precursor emissions to PM2.5 as supported by California Air Resources Board modeling summarized in Chapter 4 (Scientific Foundation and PM2.5 Modeling Results) of the 2012 PM2.5 Plan.³ Nonetheless, given the ever tightening federal health standards, the District is mandated to pursue all available measures to reduce direct and indirect sources of particulate emissions.

In addition, prolonged inhalation of wood smoke has adverse impacts on human health. Inhalation of wood smoke contributes to lung disease, pulmonary arterial hypertension, and pulmonary heart disease, which can eventually lead to heart failure. Wood smoke has also been linked to oxidative stress and blood coagulation and can ultimately lead to cancer. Children with the highest exposure to wood smoke show a significant decrease in lung function.

Health benefits from reducing emissions from residential wood burning are related to the high level of population exposure to urban residential wood burning emissions with relation to other stationary sources. A Central Valley Health Policy Institute Study found that wood burning curtailments on high pollution days reduced annual exposure by 13.6% in Fresno, and an estimated 12.9% in Bakersfield resulting in 30 to 70 avoided cases of annual premature deaths.

Comment: Duraflame suggested that their logs should be given the same preferential treatment as clean certified devices under the proposed rule, claiming that their manufactured logs emit 80% less air pollution.

Response: Duraflame claims a manufactured log "produces 80 percent fewer fine-particle emissions than a wood fire of a similar duration". This is correct, however, Duraflame's own information indicates that the heat generated by their product is only 25% of the heat generated from the same amount of Douglas Fir wood for a fire of the same duration. Therefore, for the same amount of heat generated, there will be no reductions in emissions.

The following table further demonstrates that the emissions are higher from a Duraflame log vs a Douglas Fir Cordwood log of the same weight:

³ SJVUAPCD. 2012 PM2.5 Plan. Chapter 4 (Scientific Foundation and PM2.5 Modeling Results), page 4-24. December 2012 Retrieved on 8/15/14 from <http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/04%20Chapter%204%20Sci%20Foundation%20and%20Modeling.pdf>.

Table 3 General Air Emission Factors⁴

Pollutant	Units	Duraflame Xtra Time Firelog	Douglas Fir Cordwood
Carbon Monoxide (CO)	g/kg fuel, db	66.5	61.7
Nitrogen Oxides (NO _x)*	g/kg fuel, db	1.5	0.83
Volatile Organic Compounds (VOC)**	g/kg fuel, db	28.0	10.1
Respirable Particles (PM _{2.5})	g/kg fuel, db	12.3	8.04
Total Particles (PM)	g/kg fuel, db	17.8	8.85
7-PAH***	mg/kg fuel, db	0.85	0.40
16-PAH	mg/kg fuel, db	56.8	20.9
Benzene	g/kg fuel, db	0.044	0.165
Formaldehyde	g/kg fuel, db	0.963	1.09

In addition, the comparison to certified wood stoves which produce even more useful heat than open hearth fireplaces is even more dramatic. Duraflame logs also contain other chemicals in the wax that lead to generation of other emissions including toxics.

Comment: Proposed rule is not as stringent as wood burning curtailment rules in other air districts.

Response: Proposed amendments to Rule 4901 as a whole are far more stringent than analogous rules in other air districts in California. No reductions in emissions will be achieved if the District adopted the curtailment thresholds in place in any of the other air districts in California. With the District being at the forefront of wood burning curtailment regulations since 2003, other air districts rules either copied the District's existing rule or are less stringent. The proposed amendments will result in 5.1 tons per day of reductions in PM_{2.5} emissions. Matching the curtailment threshold in other air districts' rules will not result in any reductions in emissions and in fact may result in an increase in emissions.

As discussed above, the District is going far above any of the other districts and is proposing to lower the No Burn curtailment to 20 µg/m³, which is 10 µg/m³ lower than any of the other districts and by itself will result in significant emission reductions since 95% of the PM_{2.5} emissions are associated with older high polluting devices. The following are the thresholds for other districts for comparison purposes:

- The South Coast Air Quality Management District (SCAQMD) Rule 445 (Wood-Burning Devices) was recently amended in 2013 and has a No Burn curtailment

⁴ Pitzman, L., Eagle, B. Smith, R., Houck, J. OMNI Environmental Services. *Dioxin/Furan Air Emissions, General Emissions, and Fuel Composition of Duraflame Firelogs, and Douglas Fir Cordwood*. Prepared for Jim Nolan Puget Sound Clean Air Agency. May 23, 2006.

threshold of 30 $\mu\text{g}/\text{m}^3$ – copies District's current rule, no emissions reductions if adopted in the Valley,

- The Bay Area Air Quality Management District (BAAQMD) Regulation 6 – Rule 3 (Particulate Matter and Visible Emissions – Wood-Burning Devices) has a No Burn curtailment threshold of 35 $\mu\text{g}/\text{m}^3$ – less stringent than the District's current rule and will result in an increase in emissions if adopted in the Valley,
- Sacramento Metro Air Quality Management District Rule 421 (Mandatory Episodic Curtailment of Wood and Other Solid Fuel Burning) implements a tiered curtailment program where the lowest No Burn curtailment threshold begins at 30 $\mu\text{g}/\text{m}^3$ while allowing certified devices to burn up to 35 $\mu\text{g}/\text{m}^3$ – less stringent than the District's current rule and will result in an increase in emissions if adopted in the Valley.

Supporting Regulatory Analyses

Economic Analysis

The District has prepared a cost effectiveness analysis to analyze the economic feasibility of the proposed rule amendments. No significant socioeconomic impacts are expected from this rule project. Refer to Appendix C of the final draft staff report for these analyses.

Rule Consistency Analysis

The District prepared a rule consistency analysis that compares the elements of the proposed amendments for Rule 4901 and proposed new Rule 3901 with the corresponding elements of other District rules and federal regulations and guidelines that apply to the same type of equipment or source category. The proposed amendments and proposed new rule will not conflict with other District rules, or federal rules, regulations, or policies covering analogous stationary sources. Refer to the final draft staff report for this analysis.

Environmental Impacts

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 impact on the environment (CEQA Guidelines §15061 (b)(3)). Pursuant to Section 15062 of the CEQA Guidelines, the District will file a Notice of Exemption upon Governing Board approval of amendments to Rule 4901.

FISCAL IMPACT:

In addition to the reductions in emissions from lowering of the No Burn threshold in the rule, we hope to achieve additional reductions through transition to cleaner burning certified devices. Towards that end, today's recommendations include added incentives

to encourage purchase and installation of cleaner devices. An allocation of \$2.1 million for the District's Burn Cleaner Program is included in the District's 2014-15 budget. Therefore, no budget amendments are needed at this time.

The increase in the number of No Burn days is expected to result in increased enforcement related workload. The proposed registration program is designed to facilitate effective enforcement without the need for intrusive inspection of residential wood burning devices. The added administrative costs associated with the registration process will be defrayed with the proposed registration fee of \$12.50 for every three years. No fees will be charged for registrations for the first wood burning season in 2014-15. The District expects to have adequate resources in 2014-15 to handle the additional enforcement related workload without any increase in staffing. If additional resources are needed as the fiscal impacts of the amendments become more defined, staff will present recommendations for additional appropriations to your Board either through annual budget requests or mid-year budget adjustments, as necessary.

Attachments:

Attachment A: Resolution for Proposed Amendments to Rule 4901 and Proposed New Rule 3901 (5 pages)

Attachment B: Proposed Amendments to Rule 4901 (14 pages)

Attachment C: Proposed New Rule 3901 (2 pages)

Attachment D: Final Draft Staff Report with Appendices for Proposed Amendments to Residential Wood Burning Program (200 pages)

Attachment E: Registration Forms (2 pages)

San Joaquin Valley Unified Air Pollution Control District
Meeting of the Governing Board
September 18, 2014

**ADOPT PROPOSED AMENDMENTS TO THE DISTRICT'S RESIDENTIAL WOOD
BURNING PROGRAM**

Attachment A:

**Resolution for Proposed Amendments to Rule 4901 and Proposed New Rule 3901
(5 PAGES)**

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**BEFORE THE GOVERNING BOARD OF THE
SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL DISTRICT**

IN THE MATTER OF: PROPOSED AMENDMENTS TO RULE 4901 (WOOD BURNING HEATERS AND WOOD BURNING FIREPLACES) AND PROPOSED NEW RULE 3901 (FEES FOR REGISTRATION OF WOOD BURNING HEATERS)) **RESOLUTION NO. _____**

WHEREAS, the San Joaquin Valley Unified Air Pollution Control District (District) is a duly constituted unified air pollution control district, as provided in California Health and Safety Code (CH&SC) Sections (§) 40150 et seq. and 40600 et seq.; and

WHEREAS, said District is authorized by CH&SC §40702 to make and enforce all necessary and proper orders, rules, and regulations to accomplish the purpose of Division 26 of the CH&SC; and

WHEREAS, pursuant to federal Clean Air Act (CAA) §107, the San Joaquin Valley Air Basin (Valley) has been classified as a nonattainment area for the national health-based air quality standards for particulate matter 2.5 microns and smaller (PM2.5); and

WHEREAS, pursuant to CH&SC §39608, the Valley has been classified as a nonattainment area for the state health-based air quality standards for PM2.5; and

WHEREAS, for each federal nonattainment pollutant, federal CAA §172 requires the District to adopt a plan that provides for the implementation of all reasonably available control measures as expeditiously as possible, and that provides for attainment of the applicable health-based air quality standard; and

WHEREAS, pursuant to the federal CAA and California CAA, the District's 2012 *PM2.5 Plan* commits the District to amend Rule 4901 to lower the episodic curtailment threshold to reduce directly emitted PM2.5 emissions from this source category; and

WHEREAS, proposed amendments to Rule 4901 would incorporate a tiered episodic wood burning curtailment program whereby a Level One Episodic Wood Burning

1 Curtailment would be declared in a given geographic area by the District when
2 pollutant levels are forecast to be equal to or exceed 20 µg/m³ but not to exceed 65
3 µg/m³ in that area and Level Two Episodic Wood Burning Curtailment would be
4 declared in said area by the District when pollutant levels are forecast to exceed 65
5 µg/m³ in said area; and

6 **WHEREAS**, a Level One Episodic Wood Burning Curtailment would prohibit the use
7 of non-registered wood burning heaters and wood burning fireplaces in a given
8 geographic area, while the cleanest wood burning heaters that are registered with the
9 District would be allowed to be used in said area; and

10 **WHEREAS**, a Level Two Episodic Wood Burning Curtailment would prohibit all wood
11 burning subject to Rule 4901 in a given geographic area; and

12 **WHEREAS**, a registration program would be created for the registration of wood
13 burning heaters that meet specific qualification requirements identified within rule
14 language; and

15 **WHEREAS**, a registration program would be created for the registration of qualified
16 Wood Burning Heater Professionals to verify said wood burning heaters qualify for
17 registration and are maintained per manufacturer specifications; and

18 **WHEREAS**, amendments to the Residential Wood Burning Program will result in a
19 reduction of directly emitted PM2.5 emissions when and where those reductions are
20 needed most, in urban residential areas during periods of atmospheric stagnation; and

21 **WHEREAS**, amendments to the Residential Wood Burning Program will result in a
22 reduction of 5.1 tons per day of directly emitted PM2.5 emissions during the wood
23 burning season of November through February; and

24 **WHEREAS**, clarifications would be added to the density requirements for the
25 installation of wood burning heaters; and

26 **WHEREAS**, an exemption would be added to Rule 4901 rule language to clarify that
27 open burning is subject to Rule 4103 rule requirements; and

1 **WHEREAS**, the District is proposing administrative amendments to Rule 4901 to
2 clarify rule requirements by adding definitions and removing outdated and redundant
3 language; and

4 **WHEREAS**, new Rule 3901 would complement Rule 4901 by establishing a \$12.50
5 fee associated with the voluntary registration and renewal of qualifying wood burning
6 heaters for use during Level One Episodic Wood Burning Curtailments; and

7 **WHEREAS**, new Rule 3901 would commit the District to notify individuals with
8 registered wood burning heaters of the upcoming expiration of said registration no
9 earlier than 60 days prior to the expiration date; and

10 **WHEREAS**, a public hearing for the adoption of proposed amendments to Rule 4901
11 and adoption of new Rule 3901 was duly noticed for September 18, 2014 in
12 accordance with CH&SC §40725.

13 **NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:**

14 1. The Governing Board hereby adopts the proposed amendments to Rule 4901
15 (Wood Burning Fireplaces and Wood Burning Heaters) and proposed new Rule 3901
16 (Fees for Registration of Wood Burning Heaters). Said rules shall become effective on
17 September 18, 2014.

18 2. The Governing Board hereby finds, based on the evidence and information
19 presented at the hearing upon which its decision is based, all notices required to be
20 given by law have been duly given in accordance with CH&SC §40725, and the
21 Governing Board has allowed public testimony in accordance with CH&SC §40726.

22 3. In connection with said rulemaking, the Governing Board makes the following
23 findings as required by CH&SC §40727:

24 a. **NECESSITY.** The Governing Board finds, based on the staff report, public
25 testimony, and the record for this rulemaking proceeding, that a need exists for said
26 rule amendments and said new rule. Adopting said rules is necessary to meet the
27 commitments of the SIP and requirements of the federal CAA and the California CAA.

1 Said rules satisfy the commitment in the District's 2012 PM2.5 Plan.

2 b. **AUTHORITY.** The Governing Board finds that it has the legal authority for
3 said rulemaking under CH&SC §40000 and 40001.

4 c. **CLARITY.** The Governing Board finds that said rules are written or
5 displayed so that the meaning can be easily understood by those persons or industries
6 directly affected by said rule.

7 d. **CONSISTENCY.** The Governing Board finds that said rules are in harmony
8 with, and not in conflict with or contradictory to, existing statutes, court decisions, or
9 state or federal regulations.

10 e. **NONDUPLICATION.** The Governing Board finds that said rules do not
11 impose the same requirements as any existing state or federal regulation.

12 f. **REFERENCE.** The Governing Board finds that said rulemaking implements
13 federal CAA §172(c)(1) and CH&SC §40920.

14 4. The Governing Board hereby finds that the requirements of CH&SC §40728.5
15 and 40920.6 have been satisfied to the greatest extent possible, and that the
16 Governing Board has actively considered and made a good faith effort to minimize
17 any adverse socioeconomic impacts associated with the proposed rulemaking.

18 5. The Governing Board finds that, because said rulemaking will have no possible
19 significant adverse effect on the environment, the proposed actions are exempt from
20 the provisions of the California Environmental Quality Act of 1970 (CEQA) under the
21 provisions of the State CEQA Guidelines §15061 (b)(3).

22 6. The Executive Director/Air Pollution Control Officer is directed to file a Notice of
23 Exemption with the County Clerks of each of the counties in the District.

24 7. The Executive Director/Air Pollution Control Officer is directed to file with all
25 appropriate agencies certified copies of this resolution and the rules adopted herein
26 and is directed to maintain a record of this rulemaking proceeding in accordance with
27 CH&SC §40728.

1 8. The Executive Director/Air Pollution Control Officer is directed to transmit said
2 rules to the California Air Resources Board for incorporation into the SIP.

3 9. The Governing Board authorizes the Executive Director/Air Pollution Control
4 Officer to include in the submittal or subsequent documentation any technical
5 corrections, clarifications, or additions that may be needed to secure EPA approval,
6 provided such changes do not alter the substantive requirements of the approved rule.

7 **THE FOREGOING** was passed and adopted by the following vote of the
8 Governing Board of the San Joaquin Valley Unified Air Pollution Control District this
9 18th day of September 2014, to wit:

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AYES:

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NOES:

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ABSENT:

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SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL DISTRICT

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By _____
Hub Walsh, Chair
Governing Board

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24

ATTEST:

Deputy Clerk of the Governing Board

25

26

By _____
Michelle Franco

27

San Joaquin Valley Unified Air Pollution Control District
Meeting of the Governing Board
September 18, 2014

**ADOPT PROPOSED AMENDMENTS TO THE DISTRICT'S RESIDENTIAL
WOOD BURNING PROGRAM**

Attachment B:

Proposed Amendments to Rule 4901
(14 PAGES)

RULE 4901 WOOD BURNING FIREPLACES AND WOOD BURNING HEATERS
(Adopted July 15, 1993; Amended July 17, 2003; Amended October 16, 2008;
Amended [rule adoption date])

1.0 Purpose

The purposes of this rule ~~is are~~ to limit emissions of carbon monoxide and particulate matter from wood burning fireplaces, wood burning heaters, and outdoor wood burning devices, ~~and to establish a public education program to reduce wood burning emissions.~~

2.0 Applicability

This rule applies to:

- 2.1 Any person who manufactures, sells, offers for sale, or operates a wood burning fireplace, ~~or wood burning heater, or outdoor wood burning device.~~
- 2.2 Any person who sells, offers for sale, or supplies wood intended for burning in a wood burning fireplace or wood burning heater.
- 2.3 Any person who transfers or receives a ~~wood burning stove or wood burning heater~~ as part of a real property sale or transfer.
- 2.4 Any person who installs a wood burning fireplace or wood burning heater in a new residential development.

3.0 Definitions

- 3.1 APCO: the Air Pollution Control Officer of the San Joaquin Valley Unified Air Pollution Control District.
- 3.2 ASTM: the American Society for Testing and Materials.
- 3.3 Consumer: any person other than a distributor or a retailer who buys a wood burning fireplace, wood burning heater, or outdoor wood burning device.
- 3.4 Distributor: any person other than a manufacturer or a retailer who sells, offers for sale, or supplies wood burning fireplaces, wood burning heaters, or outdoor wood burning devices to retailers or others for resale.
- 3.5 EPA: the United States Environmental Protection Agency.
- 3.6 EPA ~~Phase II~~ Certified: meets the performance and emissions standards set forth in the NSPS. ~~Code of Federal Regulations, Part 60, Title 40, Subpart AAA.~~

- 3.7 Garbage: any solid, semisolid, and liquid wastes generated from residential, commercial, and industrial sources, including trash, refuse, rubbish, industrial wastes, asphaltic products, manure, vegetable or animal solid or semisolid wastes, and other discarded solid or semisolid wastes.
- 3.8 Low Mass Fireplace: any fireplace and attached chimney, as identified in ASTM E 2558-7, "Determining Particulate Matter Emissions from Fires in Low Mass Wood-burning Fireplaces," that can be weighed (including the weight of the test fuel) on a platform scale.
- 3.9 Manufacturer: any person who constructs or imports a wood burning fireplace or wood burning heater.
- 3.10 Masonry Heater: any site-built or site-assembled, wood burning solid-fueled heating device constructed mainly of masonry materials in which the heat from intermittent fires burned rapidly in its firebox is stored in its structural mass for slow release to the site. Such wood burning solid-fueled heating devices must meet ~~the all federal requirements and be designed and constructed per construction~~ specifications set forth in ASTM E 1602-3, "Guide for Construction of Solid Fuel Burning Masonry Heaters."
- 3.11 New Residential Development: any single or multi-family housing unit, for which construction began on or after January 1, 2004. Construction began when the foundation for the structure was constructed.
- 3.12 New Wood Burning Heater: any wood burning heater that has not been sold, supplied, or exchanged for the first time by the manufacturer, the manufacturer's distributor or agency, or a retailer.
- 3.13 Normal Operating Conditions: the operation of a wood burning heater as defined in this rule, except when a fire is started in the wood burning heater, when fuel is added to the wood burning heater, and when the fire is being extinguished. Visible smoke produced during these three events shall not exceed fifteen minutes per event.
- 3.14 NSPS: New Source Performance Standard. For purposes of this rule the NSPS is the Code of Federal Regulations, Part 60, Title 40, Subpart AAA.
- 3.15 Outdoor Wood Burning Device: any wood burning fireplace, ~~wood-burning stove,~~ or other device designed to burn wood, and that is located outside of a building or structure. This includes, but is not limited to, burn bowls, fire rings/pits, ~~fire pits,~~ and chimineas. This does not include fire pits at state parks, national parks, or national forests.

- 3.164 Paints: any exterior and interior house and trim paints, enamels, varnishes, lacquers, stains, primers, sealers, undercoaters, roof coatings, wood preservatives, shellacs, and other paints or paint-like products.
- 3.175 Paint Solvents: any organic solvents sold or used to thin paints or clean up painting equipment.
- 3.186 Pellet-Fueled Wood Burning Heater: any wood burning heater manufactured for the purpose of heating a space and is intended to operate on pellet fuel. ~~which operates on pellet fuel and is either EPA certified or is exempted under EPA requirements set forth in the Code of Federal Regulations, Part 60, Title 40, Subpart AAA.~~
- 3.197 Pellet Fuel: includes, but is not limited to, compressed sawdust, compressed paper products, and compressed forest residue, wood chips and other waste biomass, ground nut-hulls and fruit pits, corn, and cotton seed.
- 3.2018 Permanently Inoperable: modified in such a way that a wood burning heater device can no longer operate as a wood burning heater.
- 3.2149 PM: particulate matter. PM2.5 has an aerodynamic diameter equal to or less than 2.5 microns. PM10 has an aerodynamic diameter equal to or less than 10 microns.
- 3.220 Real Property: the land itself and anything that is permanently affixed to the land, such as buildings, and structures. Examples of real property include heating and air conditioning systems, water lines, or electrical systems that primarily are used to control the environment for people and to benefit the land.
- 3.231 Retailer: any person engaged in the sale of wood burning fireplaces, wood burning heaters, or outdoor wood burning devices directly to the consumer.
- 3.242 Seasoned Wood: wood of any species that has been sufficiently dried so as to contain 20 percent or less moisture by weight.
- ~~3.23 Sole Source: the only source of heat in a residence.~~
- 3.254 Treated Wood: wood of any species that has been chemically impregnated, painted, or similarly modified to improve resistance to insects or weathering.
- 3.265 Used Wood Burning Heater: any wood burning heater that has been used at least once, except wood burning heaters that have been used by retailers for the purpose of demonstration.

- 3.276 Waste Petroleum Product: any petroleum product other than gaseous fuels that has been refined from crude oil, and has been used, and, as a result of use, has been contaminated with physical or chemical impurities.
- 3.287 Wood Burning Fireplace: any permanently installed masonry or factory built wood burning device designed to be used with an air-to-fuel ratio greater than or equal to 35-to-1.
- 3.298 Wood Burning Heater: an enclosed, wood burning appliance capable of and intended for space heating (i.e. wood stove, pellet-fueled wood burning heater, or wood burning fireplace insert).
- 3.30 Wood Burning Season: for purposes of this rule, the months of November, December, January, and February.

4.0 Exemptions

The following devices are exempt from the provisions of this rule:

- 4.1 Devices that are exclusively gaseous-fueled.
- 4.2 Cookstoves, as described in Code of Federal Regulations 60.531.
- 4.3 Any burning occurring on the ground is open burning and is subject to requirements of District Rule 4103.

5.0 Requirements

5.1 Sale or Transfer of Wood Burning Heaters

5.1.1 New wood burning heaters

No person shall advertise, sell, offer for sale, supply, install, or transfer a new wood burning heater unless it is either:

5.1.1.1 EPA ~~Phase II~~ certified with a Phase II Certification or a more stringent certification as currently enforced in the NSPS at the time of sale or transfer, or is a

5.1.1.2 A pellet-fueled wood burning heater that is exempt from EPA certification pursuant to requirements in the NSPS, until such time that amendments to the NSPS are finalized to remove exemptions for pellet-fueled wood burning heaters, then all new wood burning heaters must comply with Section 5.1.1.1.

5.1.2 Used wood burning heaters

No person shall advertise, sell, offer for sale, supply, install, or transfer a used wood burning heater unless it has been rendered permanently inoperable, satisfies requirements pursuant to Section 5.1.1, ~~or is EPA Phase II Certified, or is a pellet-fueled wood burning heater,~~ or is a low mass fireplace, masonry heater, or other wood-burning device of a make and model that meets all federal requirements ~~EPA emission targets~~ and has been approved in writing by the APCO.

5.1.3 Public Awareness Information

Retailers selling or offering for sale new wood burning heaters shall supply public awareness information with each sale of a wood burning heater in the form of pamphlets, brochures, or fact sheets on the following topics listed in Sections 5.1.3.1 through 5.1.3.6. ~~5.1.3.5.~~ Public awareness information shall be subject to the review and approval of the APCO.

5.1.3.1 Proper installation, operation, and maintenance of the wood burning heater,

5.1.3.2 Proper fuel selection and use,

5.1.3.3 Health effects from wood smoke,

5.1.3.4 Weatherization methods for the home, ~~and~~

5.1.3.5 Proper sizing of wood burning heaters, and

5.1.3.6 Episodic Wood Burning Curtailment levels as defined in Section 5.6.

5.1.4 Sections 5.1.1 and 5.1.2 do not apply to wood burning heaters subject to Section 5.2.

5.2 Sale or Transfer of Real Property

5.2.1 No person shall sell or transfer any real property which contains a wood burning heater without first assuring that each wood burning heater included in the real property is:

5.2.1.1 EPA Phase II Certified or has a more stringent certification under the NSPS at time of purchase or installation, or

- 5.2.1.2 Aa pellet-fueled wood burning heater that was exempt from EPA Certification pursuant to requirements in the NSPS at the time of purchase or installation, or
- 5.2.1.3 ~~permanently rendered~~ Rendered permanently inoperable. ~~or removed and rendered inoperable.~~
- 5.2.2 Upon the sale or transfer of real property, the seller shall provide to the recipient of the real property, and to the APCO, documentation of compliance with Section 5.2.1 ~~of this rule~~. Documentation shall be in the form of a statement signed by the seller describing the type(s) of wood burning heater(s) included in the real property transaction, and any action taken to comply with Section 5.2.1. The APCO shall make blank forms available to the public for the purpose of fulfilling this requirement.
- 5.2.3 Documents required by Section 5.2.2 shall be retained by the recipient of the real property and shall be made available to the APCO upon request.
- 5.3 Limitations on Wood Burning Fireplaces or Wood Burning Heaters in New Residential Developments
- 5.3.1 Effective until December 31, 2014
- 5.3.1.1 No person shall install a wood burning fireplace in a new residential development with a density greater than two (2) dwelling units per acre.
- 5.3.1.2 No person shall install more than two (2) EPA Phase II Certified wood burning heaters per acre in any new residential development with a density equal to or greater than three (3) dwelling units per acre.
- 5.3.1.3 No person shall install more than one (1) wood burning fireplace or wood burning heater per dwelling unit in any new residential development with a density equal to or less than two (2) dwelling units per acre.
- 5.3.2 Effective on and after January 1, 2015
- 5.3.2.1 No person shall install a wood burning fireplace in a residential development with a density greater than two (2) dwelling units per acre.

5.3.2.2 No person shall install more than two (2) EPA Phase II Certified or more stringent certification as currently enforced under the NSPS, wood burning heaters per acre in any residential development with a density greater than two (2) dwelling units per acre.

5.3.2.3 No person shall install more than one (1) wood burning fireplace or EPA Phase II Certified or more stringent certification, as currently enforced under the NSPS, per dwelling unit in any residential development with a density equal to or less than two (2) dwelling units per acre.

5.4 Advertising Requirements for Sale of Wood

5.4.1 No person shall sell, offer for sale, or supply any wood which is orally or in writing, advertised, described, or in any way represented to be “seasoned wood” unless the wood has a moisture content of 20 percent or less by weight.

5.4.2 The APCO may delegate to another person or agency the authority to test wood for moisture content and determine compliance with Section 5.4.1.

5.5 Prohibited Fuel Types

No person shall cause or allow any of the following materials to be burned in a wood burning fireplace, ~~or~~ wood burning heater, or outdoor wood burning device:

5.5.1 Garbage,

5.5.2 Treated wood,

5.5.3 Plastic products,

5.5.4 Rubber products,

5.5.5 Waste petroleum products,

5.5.6 Paints and paint solvents,

5.5.7 Coal, or

5.5.8 Any other material not intended by a manufacturer for use as fuel in a wood burning fireplace, wood burning heater, or outdoor wood burning device. ~~solid fuel burning device.~~

5.6 Episodic Wood Burning Curtailment

This section shall be in effect annually during the months of November through February.

5.6.1 Level One Episodic Wood Burning Curtailment

The APCO shall declare a Level One Episodic Wood Burning Curtailment for a geographic region whenever the potential for a PM2.5 concentration is forecast to equal or exceed 20 $\mu\text{g}/\text{m}^3$ but is not likely to exceed 65 $\mu\text{g}/\text{m}^3$ for the geographic region.

5.6.1.1 A wood burning fireplace, low mass fireplace, masonry heater, outdoor wood burning device, or nonregistered wood burning heater shall not be operated within the geographic region for which a Level One Episodic Wood Burning Curtailment is in effect.

5.6.1.2 A wood burning heater that has an approved and current registration with the District may be operated within the geographic region for which a Level One Episodic Wood Burning Curtailment is in effect provided the wood burning heater:

5.6.1.2.1 Is not fired on a prohibited fuel type pursuant to Section 5.5,

5.6.1.2.2 Is maintained according to manufacturer instructions,

5.6.1.2.3 Is operated according to manufacturer instructions, and

5.6.1.2.4 Has no visible smoke when operated under normal operating conditions.

5.6.2 Level Two Episodic Wood Burning Curtailment

The APCO shall declare a Level Two Episodic Wood Burning Curtailment for a geographic region whenever the potential for a PM2.5 concentration of greater than 65 $\mu\text{g}/\text{m}^3$ or for a PM10 concentration of 135 $\mu\text{g}/\text{m}^3$ or greater is predicted for the geographic region. No person within the geographic region for which a Level Two Episodic Wood Burning Curtailment has been declared shall

operate a wood burning fireplace, low mass fireplace, masonry heater, wood burning heater, or outdoor wood burning device when a Level Two Episodic Wood Burning Curtailment is in effect.

~~5.6.1 No person shall operate a wood burning fireplace, wood burning heater, or outdoor wood burning device whenever the APCO notifies the public that an Episodic Curtailment is in effect for the geographic region in which the wood burning fireplace or wood burning heater is located.~~

~~5.6.2 The APCO shall notify the public of an Episodic Curtailment for a geographic region; whenever the potential for a PM2.5 concentration of $30 \mu\text{g}/\text{m}^3$ or greater or for a PM10 concentration of $135 \mu\text{g}/\text{m}^3$ or greater is predicted for the geographic region.~~

5.6.3 The following wood burning fireplaces and wood burning heaters are not subject to the provisions of Section 5.6.1 and 5.6.2:

5.6.3.1 Those in locations where natural gas service is not available. For the purposes of this rule, propane and butane ~~is not~~ considered natural gas, or.

5.6.3.2 Those ~~that~~ for whom a wood burning fireplace or wood burning heater is ~~are~~ the sole available source of heat in a residence. This includes times of temporary service outages, as determined by the gas or electrical utility service.

5.6.4 Episodic Wood Burning Curtailment Notice

The APCO shall notify the public of each Episodic Wood Burning Curtailment by any of the following methods:

5.6.4.1 Provide notice to newspapers of general circulation within the San Joaquin Valley.

5.6.4.2 Broadcast of messages presented by radio or television stations operating in the San Joaquin Valley.

5.6.4.3 A recorded telephone message for which the telephone number is published, in the telephone directory or newspaper of general circulation within the San Joaquin Valley.

5.6.4.4 Messages posted on the District's website, www.valleyair.org.

5.6.4.5 Any other ~~such~~ method as the APCO determines is appropriate.

~~5.6.5 Contingency Provision~~

~~Notwithstanding Section 5.6.2, on and after sixty days following the effective date of EPA final rulemaking that the San Joaquin Valley Air Basin has failed to attain the 1997 PM_{2.5} National Ambient Air Quality Standards by the applicable deadline, the APCO shall notify the public of an Episodic Curtailment for a geographic region whenever a PM_{2.5} concentration of 20 $\mu\text{g}/\text{m}^3$ or greater or a PM₁₀ concentration of 135 $\mu\text{g}/\text{m}^3$ is predicted for the geographic region.~~

5.7 Registration of Wood Burning Heaters

5.7.1 Eligibility for Registration

A wood burning heater is eligible to be registered with the District provided it is either:

5.7.1.1 EPA certified with a Phase II Certification or has a more stringent certification as currently enforced under the NSPS at the time of purchase or installation, or

5.7.1.2 A pellet-fueled wood burning heater exempt from EPA certification requirements pursuant to requirements in the NSPS at the time of purchase or installation.

5.7.1.3 Wood burning heaters which do not meet the requirements of Section 5.7.1.1 or 5.7.1.2 are ineligible for registration.

5.7.1.4 Any registration of a wood burning heater which does not meet eligibility requirements is invalid.

5.7.2 Interim Registration of Wood Burning Heaters

5.7.2.1 For the wood burning season of 2014/2015 only, an Interim Registration program will be in place. A wood burning heater may participate in the Interim Registration program provided the wood burning heater:

5.7.2.1.1 Meets the eligibility requirements pursuant to Section 5.7.1,

5.7.2.1.2 Is registered in the Interim Registration program prior to use during Level One Episodic Wood Burning Curtailments, and

5.7.2.1.3 Is operated in compliance with Section 5.5 and Section 5.6.

5.7.2.2 Any interim registration of a wood burning heater which does not meet qualifications pursuant to Section 5.7.1 is invalid.

5.7.2.3 Any interim registration of a wood burning heater may be disqualified pursuant to Section 5.9.

5.7.3 Registration Process

Effective during and after the 2015/2016 wood burning season, persons applying to register a wood burning heater shall:

5.7.3.1 Submit a completed application and supplemental documentation demonstrating compliance with the eligibility requirements specified in Section 5.7.1 to the District. Supplemental documentation shall include the following:

5.7.3.1.1 Receipt or invoice from the installation or purchase that includes the manufacturer and model name of the wood burning heater, or

5.7.3.1.2 A certification from a District Registered Wood Burning Heater Professional verifying that the wood burning heater meets eligibility requirements pursuant to Section 5.7.1.

5.7.3.1.3 If the wood burning heater was purchased and/or installed more than one year prior to registration with the District, the person must show proof of inspection of the wood burning heater from a District Registered Wood Burning Heater Professional.

5.7.3.2 Pay a registration fee as required by Section 3.0 of Rule 3901 (Fees for Registration of Wood Burning Heaters).

5.7.3.3 Operate the wood burning heater in compliance with the requirements in Section 5.5 and Section 5.6.

5.8 Renewal of Registration

5.8.1 Registration shall be valid for a period of up to three wood burning seasons from the date of registration issuance, unless the holder of the certificate is disqualified pursuant to Section 5.9.

5.8.2 Registration may be renewed by complying with the following requirements:

5.8.2.1 Complete and submit to the District a Registration Renewal application with verification that the wood burning heater has been inspected by District Registered Wood Burning Heater Professional to verify that it is maintained pursuant to manufacturer specifications.

5.8.2.2 Payment of a registration renewal fee as required by Section 4.0 of Rule 3901.

5.8.3 Failure to comply with Sections 5.8.1 or 5.8.2 may result in disqualification of registration.

5.9 Disqualification of Registration

5.9.1 If the District finds a registered wood burning heater is operated in violation of the requirements of this rule, the registration may be disqualified, provided that notice and an opportunity for an office conference was afforded pursuant to Section 5.9.4.

5.9.2 A registration disqualified pursuant to Section 5.9.1 may be reinstated if subsequent to the disqualification the operator of the wood burning heater demonstrates compliance with the requirements of Section 5.5 and Section 5.6.

5.9.3 Persons with a disqualified registration pursuant to Section 5.9.1 may appeal the determination by petitioning to the APCO.

5.9.4 Notice of Preliminary Disqualification Determination

If the District makes a preliminary determination that a registered unit is in violation of Section 5.0, the following actions shall be taken:

5.9.4.1 Notify the person who registered the wood burning heater, in writing, that the District has made a preliminary disqualification determination and pursuant to Section 5.9.1

the District may cancel the registration 30 calendar days after the date on the notice. The notice shall include all of the relevant facts relating to the preliminary determination that are known to the District at the time of the notice.

5.9.4.2 Request as part of the notification required by Section 5.9.4.1 that the person who registered the wood burning heater confer with the District, in an office conference within 30 calendar days of the date on the notice to discuss the facts relating to the preliminary disqualification determination.

5.9.4.3 Conduct the office conference required by Section 5.9.4.2 provided that the person who registered the wood burning heater accepts the request for the office conference.

5.9.5 Setting Aside a Disqualification

A disqualification determination pursuant to Section 5.9.1 shall be set aside by the APCO if the petitioner demonstrates to the satisfaction of the APCO that the violations forming the basis for the disqualification were the result of circumstances beyond the reasonable control of the petitioner and could not have been prevented by the exercise of reasonable care.

5.10 Registration of Wood Burning Heater Professionals

5.10.1 To qualify to register as a Wood Burning Heater Professional with the District the applicant must meet one of the following criteria; this must be active, valid, and current:

5.10.1.1 Fireplace Investigation Research and Education (F.I.R.E.) Certified Inspector, or

5.10.1.2 Chimney Safety Institute of America (CSIA) certification, or

5.10.1.3 National Fireplace Institute (NFI) certification, or

5.10.1.4 A person determined to be qualified to perform inspections, maintenance, and cleaning activities on wood burning heaters by the APCO.

5.10.2 Persons applying to register as a Wood Burning Heater Professional with the District shall:

5.10.2.1 Submit a completed application for registration to the District.

5.10.2.2 Submit any necessary supplemental documents as determined by the APCO as necessary to verify statements and qualifications as presented in the application for registration.

5.10.2.3 If the applicant does not have a certification pursuant to Sections 5.10.1.1 through 5.10.1.3 the applicant may submit an application to the APCO with supplemental documentation verifying that the applicant meets the certification standards as required by certifications pursuant to Sections 5.10.1.1 through 5.10.1.3.

5.10.3 Registration as a Wood Burning Heater Professional with the District is valid for up to three years from the date of issuance.

5.10.4 The District shall maintain a list of registered Wood Burning Heater Professionals on the District web page.

5.11 Inspection of Registered Wood Burning Heaters

The District has the right of entry for the purpose of inspecting any wood burning heater registered with the District in order to enforce or administer this rule.

6.0 Administrative Requirements

6.1 Upon request of the APCO, the manufacturer shall demonstrate that each wood burning heater subject to the requirements of Sections 5.1 or 5.2 is compliant with said requirements. ~~meets EPA's Phase II certification standards as applicable.~~

6.2 The person who registers the wood burning heater shall retain a copy of the District issued registration and make it available upon request.

7.0 Test Methods

7.1 ~~6.2~~ Moisture content of wood shall be determined by the current version of ASTM Test Method D 4442-92.

7.2 Compliance with visible-smoke free operation of the wood burning heater pursuant to Section 5.6 shall be determined using EPA Method 22 (Visible Determination of Fugitive Emissions from Material Sources and Smoke Emissions from Flares).

San Joaquin Valley Unified Air Pollution Control District
Meeting of the Governing Board
September 18, 2014

**ADOPT PROPOSED AMENDMENTS TO THE DISTRICT'S RESIDENTIAL
WOOD BURNING PROGRAM**

Attachment C:

Proposed New Rule 3901
(2 PAGES)

**RULE 3901 FEES FOR REGISTRATION OF WOOD BURNING HEATERS (Adopted
[date of adoption])**

1.0 Purpose

The purpose of this rule is to establish the fee required for the registration of a wood burning heater (including pellet-fueled wood burning heaters) as defined in Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters).

2.0 Applicability

The requirements of this rule apply to any individual who chooses to register a wood burning heater pursuant to District Rule 4901.

3.0 Registration Fee

Applicants registering a wood burning heater shall pay a non-refundable registration fee of \$12.50 as a part of the application process.

4.0 Renewal Fee

Individuals choosing to renew their registration with the District shall pay a nonrefundable renewal fee of \$12.50 as a part of the application process.

No earlier than 60 days prior to the expiration date of the registration, the District shall provide the individual with an invoice for the renewal fee. If the individual chooses to renew the registration, then the renewal fee shall be due to the District within 60 days of the invoice date.

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San Joaquin Valley Unified Air Pollution Control District
Meeting of the Governing Board
September 18, 2014

**ADOPT PROPOSED AMENDMENTS TO THE DISTRICT'S RESIDENTIAL
WOOD BURNING PROGRAM**

Attachment D:

**Final Draft Staff Report with Appendices for Proposed Amendments to
Residential Wood Burning Program**
(200 PAGES)

Final Draft Staff Report for Amendments to the District's Residential Wood Burning Program



September 18, 2014

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

I. SUMMARY

The U.S. Environmental Protection Agency (EPA) periodically reviews and establishes health-based air quality standards 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 federal air quality standards for particulate matter that is 2.5 microns or less in diameter (PM_{2.5}), 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 PM_{2.5} emissions and PM_{2.5} 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 federal air quality standards for PM_{2.5} but are also toxic to human health and can even cause premature death. Modeling performed during the development of the District's *2012 PM_{2.5} Plan* demonstrates that reductions from this source are an essential component of attaining the federal air quality standards.

The District takes a multidimensional 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 Wood Stove Change-out Program (Burn Cleaner Program). The proposed amendments to the residential wood burning program will enable Valley residents to play a major role in reducing emissions at almost no cost, and, in many cases, with savings in heating-related energy costs. These amendments 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, by decreasing the number of allowable burn days for high polluting wood burning heaters and fireplaces while at the same time increasing the number of burn days allowed for registered clean wood burning heaters through a tiered episodic wood burning curtailment program. The proposed amendments to Rule 4901 will lower the No Burn threshold for high polluting wood burning heaters and fireplaces from the current limit of 30 µg/m³ to 20 µg/m³. The

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proposed amendments will significantly increase the number of permissible burn days for cleaner certified wood burning devices by raising the No Burn threshold to $65 \mu\text{g}/\text{m}^3$. If approved, the proposed amendments will double the number of No Burn days for high polluting units that are the source of over 95% of the wintertime residential wood smoke emissions. By contrast, under the proposed rule, clean certified units will be subject to minimal number of No Burn days ranging from zero to six days depending on the location in the Valley during the winter season. Updating the District's Burn Cleaner Program 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.

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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 PM_{2.5} federal health-based air quality standards. 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 operation of the most effective air pollution control technologies and processes. Valley businesses are currently subject to the most stringent air quality regulations in the nation. Despite significant progress in improving the Valley's air quality, more reductions in emissions are needed to attain the ever toughening federal standards. The District's attainment plans contain a comprehensive set of local and state measures to reduce air pollution from stationary and mobile sources throughout the Valley. However, attaining the 2006 federal PM_{2.5} standard is impossible without significant further reductions in wood smoke emissions.

A. PM_{2.5} ATTAINMENT

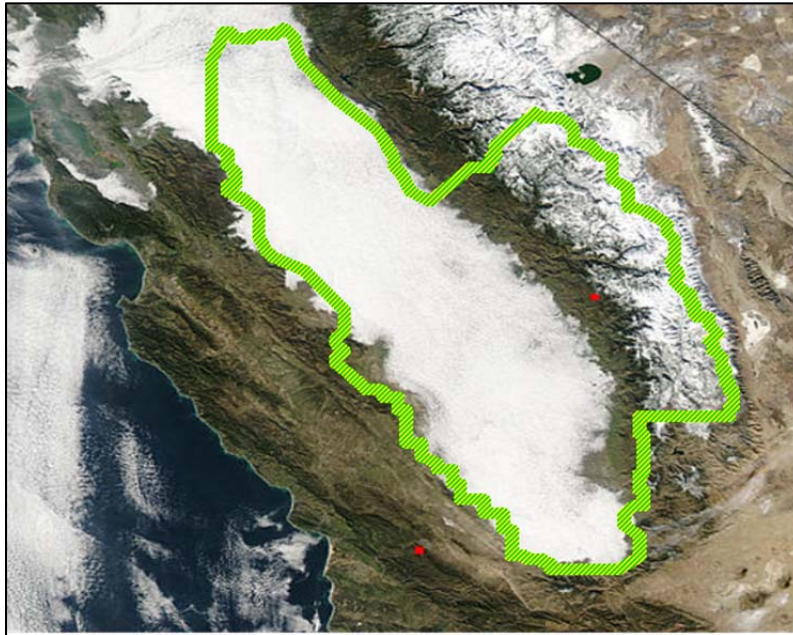
Photochemical modeling conducted for the development of the District's *2012 PM_{2.5} Plan* demonstrates that further reducing emissions from residential wood burning would contribute to improved PM_{2.5} air quality in the Valley, thus improving public health and expediting attainment of the PM_{2.5} federal air quality standards.

1. Valley's Unique Air Quality Challenges

The Valley's geography, topography, 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 PM_{2.5} air quality standards 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 federal air quality standards 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.

Figure 1 San Joaquin Valley Topography Traps Air Pollution



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 federal air quality standards 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

¹ Thatcher, T. & Kirchstetter, T. (2011). Assessing Near-Field Exposures from Distributed Residential Wood Smoke Combustion Sources. Report prepared for the California Air Resources Board. Retrieved from <http://www.arb.ca.gov/research/rsc/10-28-11/item2dfr07-308.pdf>

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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 (tpd) from Residential Wood Combustion

Pollutant	2014	2015	2016	2017	2018	2019
PM2.5	8.35	8.35	8.35	8.35	8.35	8.35
NOx	0.94	0.94	0.94	0.94	0.94	0.94
SOx	0.15	0.15	0.15	0.15	0.15	0.15

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 federal air quality standards. 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 given the significant localized health impacts associated with residential wood smoke.

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.

² SJVUAPCD (2012). *2012 PM2.5 Plan*. Appendix D (Stationary and Area Source Control Strategy Evaluation). Retrieved on 8/15/14 from <http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/14AppendixDStationaryandArea.pdf>

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In developing the District's *2012 PM_{2.5} 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 PM_{2.5} in the Valley. Using the extensive body of knowledge regarding formation of PM_{2.5} in the Valley, ARB performed extensive modeling to predict future PM_{2.5} 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 PM_{2.5} 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 PM_{2.5} concentrations at urban monitors making emission reductions from residential wood burning a key contributor to bringing the entire Valley into attainment of the PM_{2.5} federal air quality standards.

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 PM_{2.5} exposure levels in urban areas where the Valley population is concentrated, (3) the relative toxicity of chemicals found in PM_{2.5} that are generated by wood combustion, and (4) the overnight penetration of PM_{2.5} 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 PM_{2.5} Plan*. The Health-Risk Reduction Strategy goes beyond a simple focus on PM_{2.5} mass and incorporates additional health-related metrics (such as PM_{0.1} 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.³ 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

³ Kelly, F.J. (2006) Oxidative Stress: Its Role in Air Pollution and Adverse Health Effects. *Occupational Environmental Medicine* 60:612–616. Retrieved from <http://oem.bmj.com/content/60/8/612.full>

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Final Draft Staff Report: Residential Wood Burning Program

September 18, 2014

interstitial lung disease,⁴ pulmonary arterial hypertension,⁵ and pulmonary heart disease,⁶ which can eventually lead to heart failure in adults.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.^{8,9,10} Children with the highest exposure to wood smoke show a significant decrease in lung function.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 envelop 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 Bakersfield¹² 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.

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.

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.

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).

⁷ Sandoval, J.; Slas, 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) *Chest* 103:12-20.

⁸ Danielsen, P.H.; Bräuner, E.V.; Barregard, L.; Sällsten, G.; Wallin, M.; Olinski, R.; Rozalski, R.; Møller, P.; Loft, S. Oxidatively damaged DNA & its repair after experimental exposure to wood smoke in healthy humans. (2008) *Mutat Res.* 642(1-2):37-42.

⁹ Barregard, L.; Allsten, G.S.; Gustafson, P.; Johansson, L.; Johannesson, S.; Basu, S.; Stigendal, L. Experimental Exposure to Wood-Smoke Particles in Healthy Humans: Effects on Markers of Inflammation, Coagulation, and Lipid Peroxidation (2006) *Inhalation Toxicology* 18:845–853.

¹⁰ Sapkota, A.; Gajalakshmi, V.; Jetly, D.H.; Roychowdhury, S.; Dikshit, R.P.; Brennan, P.; Hashibe, M.; Boffetta, P. Indoor air pollution from solid fuels and risk of hypopharyngeal/laryngeal and lung cancers: a multicentric case-control study from India. (2008) *Int J Epidemiol.* 37(2):321-8.

¹¹ Heumann, M.; Foster, L.R.; Johnson, L.; Kelly, L. Woodsmoke Air Pollution and Changes in Pulmonary Function Among Elementary School Children (1991) Air & Waste Management Association 84th Annual Meeting & Exhibition, Vancouver, British Columbia.

¹² Lighthall, D., D. Nunes, and T. Tyner. Environmental Health Evaluation of Rule 4901: Domestic Wood Burning. Central Valley Health Policy Institute, California State University, Fresno. See www.cvhpi.org.

III. UNDERSTANDING INFLUENCE OF METEOROLOGICAL CONDITIONS ON ELEVATED PM_{2.5}

Weather plays a key role in atmospheric PM_{2.5} concentrations. Various meteorological conditions not only determine how fast PM_{2.5} particles are dispersed, it also controls how fast photochemistry converts precursor emissions into PM_{2.5} 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 PM_{2.5} 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 PM_{2.5} pollutants in the air. PM_{2.5} 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. PM_{2.5} concentrations increase during these poor dispersion periods. During low pressure events unstable conditions and stronger wind speeds occur. PM_{2.5} 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 PM_{2.5} concentrations. Winds mix pollutants and disperse them over a larger area, which generally improves air quality.

B. HUMIDITY AND SUNLIGHT CONTRIBUTE TO PM_{2.5} CONCENTRATIONS

Humidity and sunlight can lead to the creation of PM_{2.5} 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 NO_x and VOC as well as meteorological conditions such as temperature, relative humidity, and solar intensity.^{14, 15}

¹³ Wexler, A.S., Seinfeld, J.H. (1991). 2nd-Generation inorganic aerosol model. *Atmospheric Environment Part a-General Topics* 25 (12), 2731–2748.

¹⁴ Aw, J., Kleeman, M.J. (2003). Evaluating the First-Order Effect of Intra-Annual Temperature Variability on Urban Air Pollution. *Journal of Geophysical Research-Atmospheres* 108 (D12).

IV. CURRENT 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 District's 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 PM_{2.5} 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) plays a key role in the success of the transition from older more polluting wood burning heaters and fireplaces to cleaner wood burning heaters. Since 2006, the Burn Cleaner Program has been helping residents overcome some of the financial obstacles in purchasing cleaner 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.

¹⁵ Nguyen, K. & Dabdub, D. (2002). NO_x and VOC Control and Its Effects on the Formation of Aerosols. *Aerosol Science and Technology* 36 (5), 560–572.

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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.

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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.

Figure 4 District RAAN and iPhone App Images



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.

Figure 5 District Healthy Air Living Graphics



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,

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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.

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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 PM_{2.5} 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 PM_{2.5} 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 PM_{2.5} 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.

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Table 2 Average Number of Days Forecast Above Curtailment Thresholds*

County	Current Threshold ($\geq 30 \mu\text{g}/\text{m}^3$)	Proposed Threshold ($\geq 20 \mu\text{g}/\text{m}^3$)	Additional No Burn days
San Joaquin	24	53	29
Stanislaus	36	72	36
Merced	19	55	36
Madera	29	67	38
Fresno	49	85	36
Kings	39	70	31
Tulare	36	69	33
Kern	44	79	35

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

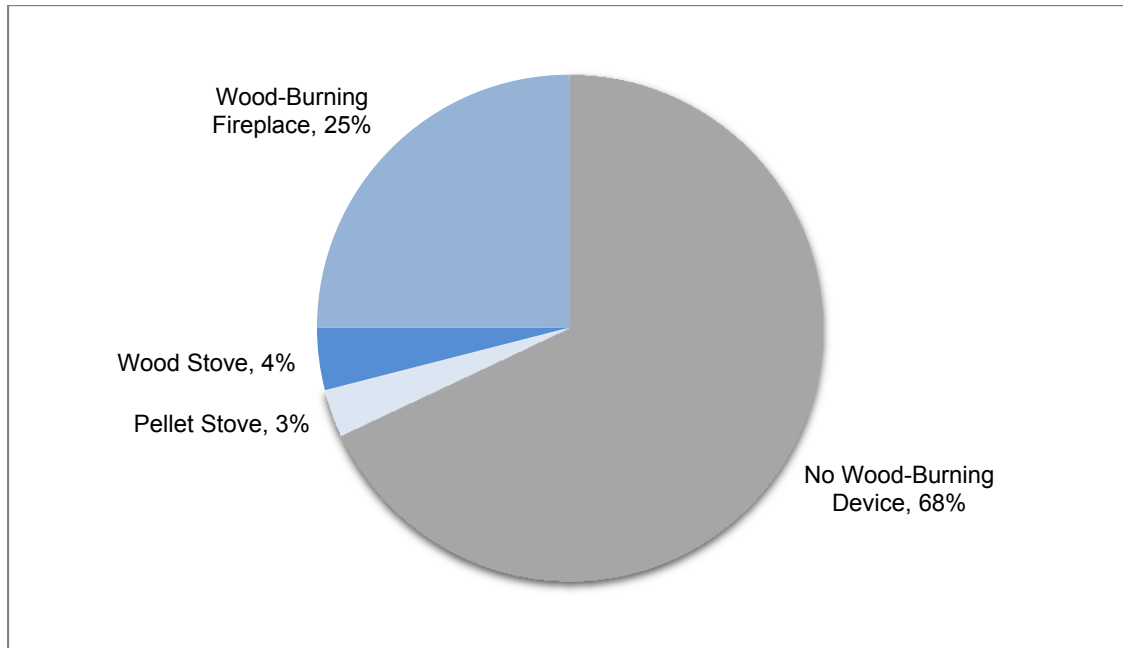
Although a No Burn day can potentially increase a resident's natural gas costs from using a central heating system in lieu of a wood burning heater, this potential cost is offset by the central heating system since a central heating system more efficiently heats the whole home, resulting in less money 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 $30 \mu\text{g}/\text{m}^3$ to $20 \mu\text{g}/\text{m}^3$.

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.

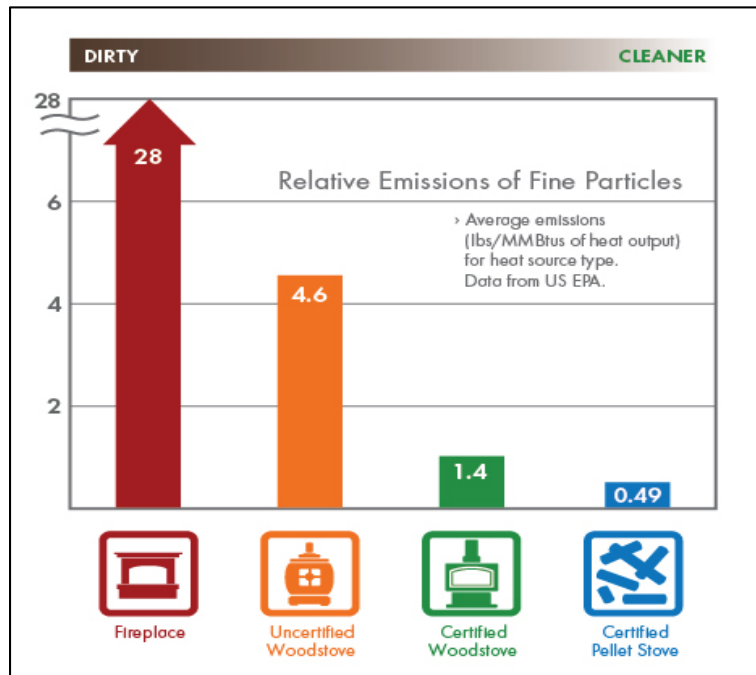
Figure 6 Proportion of Residents with a Wood-Burning Fireplace, Wood Stove or Pellet Stove



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 type¹⁶



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/m³ to 20 µg/m³ as discussed above, and the second tier would prohibit all residential wood burning when PM2.5 concentrations are forecast to exceed 65 µg/m³. Analysis indicates this tiered curtailment approach would result in greater emissions reductions than would occur from only reducing the curtailment threshold from 30 µg/m³ to 20 µg/m³ 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.

¹⁶Modified from: EPA. Consumers – Energy Efficiency and Wood-Burning Stoves and Fireplaces. (2012, November 14). Retrieved from <http://www.epa.gov/burnwise/energyefficiency.html>.

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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 PM_{2.5} ≥ 30µg/m³

County	Month	2008	2009	2010	2011	2012	2013	Average
Fresno	March	3	0	0	0	0	0	0.5
Kern	March	2	0	0	1	0	2	0.8
Kings	March	1	0	1	0	0	4	1
Madera	March	NA	NA	NA	0	0	0	0
Merced	March	0	0	0	0	0	0	0
San Joaquin	March	0	0	0	0	0	0	0
Stanislaus	March	0	0	0	0	0	0	0
Tulare	March	2	0	0	0	0	3	0.8
Fresno	October	6	2	2	7	1	1	3.2
Kern	October	6	6	3	3	2	NA	4
Kings	October	10	9	7	10	2	1	6.5
Madera	October	NA	NA	NA	3	0	0	1
Merced	October	3	0	2	0	0	0	0.8
San Joaquin	October	2	0	0	0	0	0	0.3
Stanislaus	October	5	1	2	5	0	0	2.2
Tulare	October	4	5	1	6	0	3	3.2

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.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)

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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 4 Proposed Standards for New Wood Stoves¹⁸ and Pellet Stoves¹⁹

2-Step, 5-Year Phase-In		
Step	Proposed PM limit	Compliance deadline
1	4.5 g/hr	60 days after final rule is published in Federal Register
2	1.3 g/hr	5 years after effective date of final rule
3-Step, 8-Year Phase-In		
Step	Proposed PM limit	Compliance deadline
1	4.5 g/hr	60 days after final rule is published in Federal Register
2	2.5 g/hr	3 years after effective date of final rule
3	1.3 g/hr	8 years after effective date of final rule

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.

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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

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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)

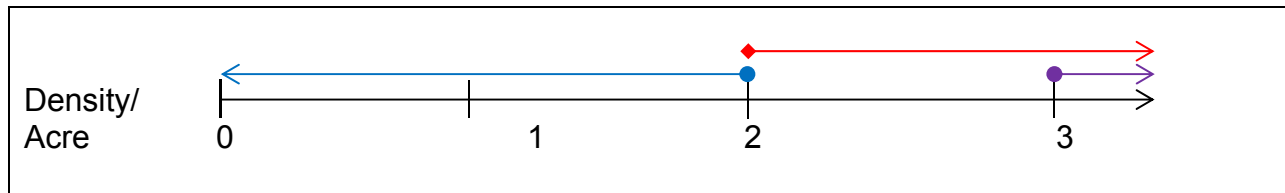
Section 5.3 sets limits for the quantity of wood burning fireplaces or wood burning heaters that can be installed in new residential developments. Current language is not completely clear as to the number of heaters allowed to be installed if that number falls between two whole numbers. The rule language 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

Figure 8 Illustration of Section 5.3.1 Requirements

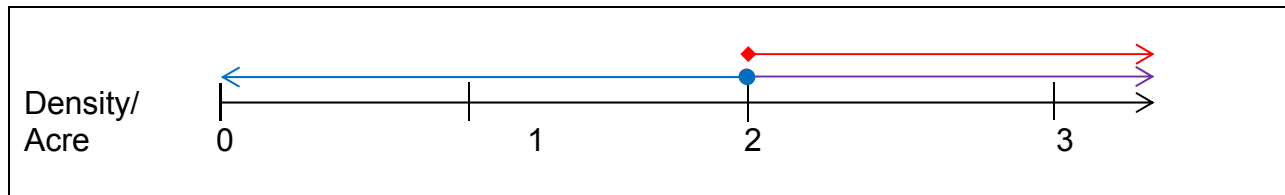


b) Section 5.3.2 (Effective on and after January 1, 2015)

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

Figure 9 Illustration of Section 5.3.2 Requirements



Section 5.3.2.1 prohibits the installation of a wood burning fireplace in a residential development with a density greater than two dwelling units per acre. While this could be misinterpreted as being less stringent than a similar requirement in South Coast Air Quality Management District (SCAQMD) Rule 445 (Wood Burning Devices), it is in reality more stringent because Rule 4901 does not afford the same flexibilities as SCAQMD rule does. While SCAQMD Rule 445 has language prohibiting the installation of a permanently installed wood burning device into any new development, this requirement is not applicable to new developments where there is no existing infrastructure for natural gas service within 150 feet of the property line or those 3,000 or more feet above mean sea level. District Rule 4901 is more stringent in that for the extremely limited cases where wood burning devices are allowed to be installed, the number of units allowed is limited to no more than two per acre. Additionally, Rule 4901 does not exempt any homes from any aspect of rule requirements based on elevation.

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.

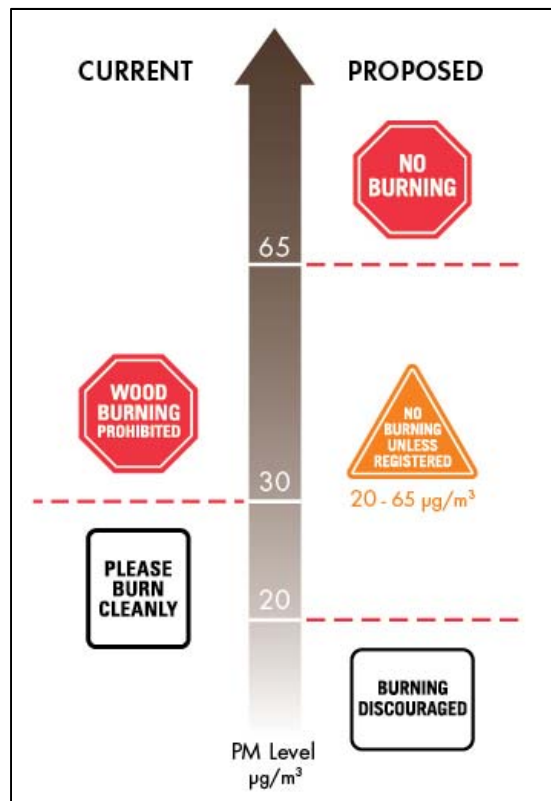
11. Section 5.6 (Episodic Wood Burning Curtailments)

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 $30 \mu\text{g}/\text{m}^3$ to a new more stringent limit of $20 \mu\text{g}/\text{m}^3$. 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 PM_{2.5} concentrations are forecast to be equal to or exceed $20 \mu\text{g}/\text{m}^3$ but not to exceed $65 \mu\text{g}/\text{m}^3$. The use of registered wood burning heaters would be allowed provided it is operated in compliance with rule requirements. When PM_{2.5} 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 PM_{2.5} 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 PM_{2.5} 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 a contingency measure. The Clean Air Act requires attainment plans to include contingency measures, which achieve “extra” emission reductions beyond what is needed for the plan’s modeled attainment demonstration or the Reasonable Further Progress (RFP) demonstration. Contingency measures must be fully adopted rules or control measures that are ready to be implemented quickly upon failure to meet RFP or failure to meet the standard by the attainment date.²⁰

The District’s 2008 amendment to Rule 4901 added Section 5.6.5, which provided contingency emissions reductions by lowering the curtailment level to 20 µg/m³ of PM_{2.5}, to be triggered with an EPA finding that the Valley failed to attain the 1997 PM_{2.5} standard. Section 5.6.5 was relied upon in the District’s recent contingency demonstration for the *2008 PM_{2.5} Plan*²¹, approved by EPA on May 22, 2014²².

However, with this 2014 amendment to the Rule 4901 curtailment level, the District will already be implementing a curtailment level of 20 µg/m³ of PM_{2.5} starting in the 2014-15 wood burning season, without an EPA finding of failure to attain. As documented in this rule staff report, this 2014 amendment to Rule 4901 will achieve an additional emissions reduction of 5.1 tpd of PM_{2.5} during the wood burning season, more than what would have been achieved through the contingency measure commitment for 2015 (see Table 5). Even if the District assumed a transition from older higher polluting devices to cleaner devices of only 2%, the emission reductions from the proposed

²⁰ Clean Air Act Section 172(c)9, 40 CFR 51.1012.

²¹ http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2013/June/items/11.pdf

²² <http://www.gpo.gov/fdsys/pkg/FR-2014-05-22/pdf/2014-11681.pdf>

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amendments would still exceed the commitment required under the contingency. However, as discussed earlier, results of the scientific survey indicate that a much larger percentage of people will be transitioning to cleaner devices and the emissions reductions achieved through the proposed amendments will be significantly higher.. Thus, the lowered curtailment level in the 2014 amendment to Rule 4901 can take the place of the previous Section 5.6.5 contingency measure, and Section 5.6.5 can be removed from the rule.

It is also important to note that the proposed amendments to the District’s residential wood burning program would reduce more emissions than would be accomplished by lowering the curtailment threshold through implementation of the contingency measure alone. Proposed amendments to the residential wood burning program will reduce an estimated 5.1 tons per day (tpd) of directly emitted PM2.5 emissions (see Appendix B Table B-10); whereas, implementation of 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

	A	B	C	D
Source/ Formula	Table B-2	Table B-5	A x B	C / 120
County	Residential Wood Burning PM2.5 Emission Inventory (tpd)	Additional No Burn Days	Determine emissions reduced through additional No Burn days (tons per season)	Convert emission reductions tons per season to tons per day (tpd)
Fresno	2.11	36	76.07	0.63
Kern	1.21	35	42.49	0.35
Kings	0.23	31	7.04	0.06
Madera	0.66	38	25.16	0.21
Merced	1.04	36	37.44	0.31
San Joaquin	2.48	29	72.04	0.60
Stanislaus	1.87	36	67.14	0.56
Tulare	2.45	33	80.98	0.67
TOTAL			408.35	3.40

12. Section 5.7 (Registration of Wood Burning Heaters)

The approach under the proposed rule that will allow clean units to burn on days when burning is prohibited for conventional units will be nearly impossible to enforce without a mechanism to readily identify and verify qualifying devices. To provide the District with an enforceable mechanism for allowing certified devices to burn during a level one curtailment (greater than 20 µg/m³ but less than 65 µg/m³), the District proposes a registration program for these cleaner burning devices. Without preregistering qualifying devices the District would be forced to resort to more intrusive enforcement techniques which would involve routine access to private property. The preregistration will also enhance enforcement capabilities by allowing the District to better focus

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resources. Registration will also ensure that the equipment is maintained in proper working condition and provides the expected reduction in emissions.

Registration would be voluntary and will only be necessary if the owner of a certified unit wishes to take advantage of the additional burn days provided under the proposed rule. Under the proposed approach, registrations would be valid for three wood burning seasons and registered devices would be required to operate with no visible smoke under normal operating conditions, be maintained properly, and refrain from burning prohibited materials.

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

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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 or 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.

This provision would be added to rule language to ensure that the District does not inadvertently exclude qualified individuals who have certifications from any other certifying agencies that the District may not yet be aware of. Although extensive outreach has been performed throughout the rule amendment process the District

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wants to ensure as many qualified individuals with professional certifications are registered as possible in order to provide the public with the necessary resources to comply with proposed rule requirements. The District intentionally limited its own ability to register qualified individuals by adding specific language to Section 5.10.2 that states “If the applicant does not have a certification pursuant to Sections 5.10.1.1 through 5.10.1.3 the applicant may submit an application to the APCO with supplemental documentation verifying that the applicant meets the certification standards as required by certifications pursuant to Sections 5.10.1.1 through 5.10.1.3.”

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.²³

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.²⁴

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 &

²³ Fireplace Investigation Research and Education. (2014). Obtained from <http://www.f-i-r-e-service.com/Landing-Certified-Inspector.php>

²⁴ Chimney Safety Institute of America. (2014). Obtained from <http://www.csia.org/>.

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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 \$289.²⁵

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. 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. 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. 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

²⁵ National Fireplace Institute. (2014). Obtained from 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 take proactive steps to enhance the Burn Cleaner Program. The District works with its program partners and 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 proposes the following changes to the current Burn Cleaner Program as a complementary strategy to the proposed regulatory amendments::

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.²⁶ 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

²⁶ Gomez Research. *Residential Wood Burning, Lawn Care, and Commuting Survey Final Report*. February 2014. Retrieved from http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2014/march/final/09.pdf.

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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 6 Summary of Proposed Increased Incentive Funding Amounts

New Heater	Current Funding	Proposed Funding
Gas Insert/Stove/Fireplace*	\$500	\$1,500
EPA Certified Pellet Insert/Stove	\$250	\$1,500
EPA Certified Wood Insert/Stove	\$100	\$1,500
Any Eligible Heaters for Low Income Qualified Applicants	\$1,500	\$2,500
Additional Incentive for the Installation of Gas Insert/Stove/Fireplace*	Not Available	\$500**

*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 Assistance for Low-Income Residents

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.

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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. Guided by its Health-Risk Reduction Strategy, the District develops and implements both attainment plans and regulations to attain the federal air quality standards 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 District's *2012 PM2.5 Plan* committed the District to reduce 1.5 tons

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per day of directly emitted PM_{2.5} upon full implementation of rule amendments; this commitment has been satisfied.

The total emission reductions achieved from the proposed amendments to Rule 4901 is calculated to be 5.1 tons per wood burning season day which includes:

- 3.33 tons of reductions from simply lowering the threshold from 30 µg/m³ to 20 µg/m³,
- 0.065 tons/day increase in emissions if all existing clean certified units registered and burned on days when PM_{2.5} concentrations are projected to be between 30 µg/m³ to 65 µg/m³,
- 0.22 tons/day increase in emissions if 24% of existing higher polluting devices transition to clean certified units and all registered and burned on days when PM_{2.5} concentrations are projected to be between 20 µg/m³ to 65 µg/m³, and
- 2.04 tons/day of reductions from the transition of older dirtier wood burning heaters and wood burning fireplaces to cleaner certified devices.

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

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statutes, 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 air quality standards 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

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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. SCIENTIFIC PUBLIC SURVEY

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 (Refer to Appendix E for Survey Result Reports):

- 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

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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 were be publicly noticed and made available prior to the September 18, 2014 Governing Board public hearing to consider adoption of the proposed rule amendments. The public is invited to provide comments to District Governing Board Members during the public hearing.

APPENDIX A

Summary of Significant Comments and Responses

Proposed Amendments to Residential Wood Burning Program

September 18, 2014

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SUMMARY OF SIGNIFICANT COMMENTS RULE 4901 (WOOD BURNING FIREPLACES AND WOOD BURNING HEATERS) Proposed Rule Package – August 19, 2014

The rule package for proposed amendments to Rule 4901 (Wood Burning Fireplaces and Wood Burning heaters) and proposed new Rule 3901 (Fees for Registration of Wood Burning Heaters) were made available for public review and comment by the San Joaquin Valley Unified Air Pollution Control District (District) on August 19, 2014. Summaries of significant comments received during the public comment period are summarized below.

EPA REGION IX COMMENTS:

A comment letter was not received from EPA.

ARB COMMENTS:

A comment letter was not received from ARB.

PUBLIC COMMENTS:

Comments were received from the following:

Mike Bond (MB)

Tom Frantz, Association of Irrigated Residents (AIR)

- 1. COMMENT:** There are a lot of factors that contribute to our high PM in the winter months. The amount of vehicles that travel in our Valley as well as the PM that enters from outside our Valley is hard to control, but they both play a significant role and must be considered in your evaluation of the proper steps to take to reduce the PM in our air. Also, if you decide to implement controls on the type of wood we burn, that could also have a positive impact on the emissions of particulate matter that is released into the atmosphere. Humans are capable of change, it's the big changes too fast that make us feel like we have no control or say so about our everyday lives. Then we start pointing fingers in the direction of who it is that is telling us we have to change. (MB)

RESPONSE: Due to the Valley's geography, topography, and meteorology, the challenges that we face in meeting the federal health-based ambient air quality standards are unmatched by any other region in the nation. In response to these federal mandates and to improve quality of life for Valley residents, the District has developed and implemented multiple generations of rules on various sources of air pollution. Despite significant progress in improving the Valley's air quality, more reductions in emissions are needed to attain the ever toughening federal standards. The District's attainment plans contain a comprehensive set of local and state

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measures to reduce air pollution from stationary and mobile sources throughout the Valley. However, attaining the 2006 federal PM_{2.5} standard is impossible without significant further reductions in wood smoke emissions. Although the District is not proposing to control the type of wood residents are allowed to burn, the District will encourage the transition to less polluting wood burning heaters by decreasing the number of allowable burn days for high polluting wood burning heaters and fireplaces while at the same time increasing the number of burn days allowed for registered clean wood burning heaters through a tiered episodic wood burning curtailment program.

2. COMMENT: The proposed amendments are flawed for the following reasons:

- Increasing the number of burn days allowed for EPA certified wood burners allows an unjustified increase in emissions of PM_{2.5} when levels are already high, which will have a negative health effect on the public greater than any benefit from the reductions obtained at the lower curtailment levels.
- Wood burning in fireplaces and dirty stoves should be totally banned in the Valley at forecasted levels higher than 12-15 µg/m³ as this is the new EPA health based standard.
- There should be no new fireplaces installed in the Valley in any home within a mile of 5 other homes existing at altitudes below 2,000 feet.
- Nearly all the PM_{2.5} reductions from incentives will come from fireplaces converting to gas burners. Therefore, there should only be an incentive to change from fireplaces to gas burner inserts but not to certified wood inserts.
- The reductions gained from the dirty wood stoves only burning on days below 20 µg/m³ is totally offset by the certified stoves burning between 20 and 65 µg/m³ because the certified stove emits 30% as many emissions as the dirty stove and will be allowed to burn 3 times as many days.
- A two tier system of 12 and 35 µg/m³ will be incentive enough for people to make the conversion from a dirty wood stove to a certified wood stove.
- There should be a cost effectiveness analysis for the proposed increase to economic incentives. \$1,000 to change a dirty wood stove to a certified wood stove then operating those stoves at the proposed tiered levels means that for every 1,000 such conversions one million dollars would be spent by the District and would result in virtually no emission reductions. (AIR)

RESPONSE: The proposed amendments will make this rule the most stringent wood burning curtailment rule in the nation. The District is proposing to lower the curtailment threshold to 20 µg/m³ for older more polluting wood burning heaters and wood burning fireplaces, which comprise over 95% of wood burning emissions. In addition, the operation of non-registered clean devices will also be restricted at the 20 µg/m³ threshold. This proposed curtailment level is significantly lower than the current curtailment threshold of 30 µg/m³. Amending the rule to allow the cleanest wood burning heaters to be used between 20 and 65 µg/m³ would provide significant

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motivation to Valley residents for transitioning away from older higher polluting devices to the cleanest wood burning heaters. Refer to the final draft staff report and to Appendix E (Public Survey Reports) for supporting information that Valley residents would be motivated to upgrade to a cleaner burning alternative if given more burn days than currently allowed. A registered wood burning heater pollutes at least twenty times less than a wood burning fireplace (refer to Figure 7 in the final draft staff report); therefore, encouraging this transition would reduce emissions beyond those that could be accomplished by only reducing the curtailment threshold to $20 \mu\text{g}/\text{m}^3$. The proposed amendments will achieve an estimated reduction of 5.1 tons per day of PM_{2.5} emissions (refer to Appendix B (Emission Reduction Analysis) for more details on this analysis).

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**SUMMARY OF SIGNIFICANT COMMENTS
RULE 4901 (WOOD BURNING FIREPLACES AND WOOD BURNING HEATERS)
Public Workshop – July 31, 2014**

The San Joaquin Valley Unified Air Pollution Control District (District) held a public workshop to present, discuss, and hear comments on draft amendments to Rule 4901 and Draft New Rule 3901. Summaries of significant comments received during the public workshop and the associated two-week commenting period following the workshop are summarized below.

EPA REGION IX COMMENTS:

No comments were received from EPA.

ARB COMMENTS:

No comments were received from ARB.

PUBLIC COMMENTS:

Comments were received from the following:

Central Valley Air Quality Coalition (CVAQ)¹
Duraflame, Inc., (DI)
Hearth, Patio, & Barbecue Association (HPBA)
Gail Burke (GB)
John Crouch (JC)
Kurt Kautz (KK)
Ryan Bros. Chimney Sweeping (RB)
Steve Combs (SC)
Steve Goldstein (SG)
Thomas Menz (TM)

- 1. COMMENT:** Fireplace burning should be prohibited in the City of Fresno and should only be allowed if a home has no other means of heating. (GB)

RESPONSE: Rule 4901 currently has a provision (Section 5.6.3.2) that allows for the use of a wood burning heater or wood burning fireplace on No Burn days if it is the sole source of heat for the home.

¹ Comment letter submitted by CVAQ on behalf of Earthjustice; Central California Environmental Justice Network; Catholic Charities, Stockton Diocese; College Community Congregational Church, UCC (Fresno); Coalition for Clean Air; and Sierra Club California Tehipite Chapter.

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- 2. COMMENT:** The District should not change Rule 4901. Tiered curtailment will confuse people, create additional record keeping and enforcement issues, and increase the number of District staff. The increase in no-burn days will destroy the wood business and jobs within the Valley. The wood business is no different than any other business in the Valley, and no other business has been required to shut down for 44% to 72% of its season. (KK)

RESPONSE: In recognition of potential confusion that the public may experience with a tiered curtailment program the District is preparing public outreach and educational materials that will build off of the already established outreach for residential wood burning. Public education and continuous messaging through multi-media as described in the staff report will enable the District to minimize potential confusion experienced by the public. Additionally, District staff is available to speak with members of the public and provide any requested clarifications about the tiered residential wood burning program.

The proposed tiered episodic wood burning curtailment program is anticipated to have two different impacts on the sale of wood in the Valley that would essentially nullify each other's impacts while effectively reducing directly emitted PM2.5 emissions at the same time. The older more polluting wood burning heaters and wood burning fireplaces are expected to experience an increase of an average of 34 additional No Burn days per wood burning season per county. This will result in reduced amounts of wood purchased for those 34 days. However, the clean burning registered wood burning heaters are expected to experience an average increase of 31 additional burn days per county; therefore the users of these units would be purchasing more wood to burn in their wood burning heater. As demonstrated in Figure 7 in the staff report, the use of registered wood burning heaters will produce fewer emissions than the use of older more polluting wood burning heaters or wood burning fireplaces, providing an overall benefit to the Valley.

- 3. COMMENT:** The incentives offered for residents to switch to cleaner burning wood burning heaters are great and the more incentives offered the better; however, allowing more burning on days that exceed the federal standard is a step backwards. The District should increase subsidies for new devices, but should not allow more burn days. (TM)

RESPONSE: The District employs a multifaceted approach in reducing winter PM2.5 emissions. The increase in incentive amounts combined with the tiered episodic wood burning curtailments will encourage the transition from the older more polluting wood burning heaters and wood burning fireplaces to achieve emission reductions beyond those that would be reduced through offering larger incentive amounts alone. Refer to the staff report for a complete discussion.

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4. COMMENT: There are not enough qualified individuals to perform all the inspections that will be required under the new program; however, all retailers have installers and technicians that are familiar with these devices. Suggestions for the certification and registration components of the new program include allowing retailers to sign off on installers and technicians (SG):

- Allow retailers to sign off on installers and technicians who are qualified to do inspections to verify that the unit qualifies and is being used properly. Retailers could create a list of needed criteria.
- Retailers can provide a list of chimney sweeps they think are qualified to perform inspections

RESPONSE: Proposed rule language allows a provision for qualified individuals who do not have one of the three identified certifications to become registered with the District as a Wood Burning Heater Professional, provided they prove to the District that they are qualified to do so. Please see Section 5.10.1.4 and Section 5.10.2.3 of the proposed rule.

5. COMMENT: Amending the curtailment threshold for all wood burning devices in the Valley from $30 \mu\text{g}/\text{m}^3$ to $65 \mu\text{g}/\text{m}^3$ is a relaxation of the rule. The draft curtailment threshold should be no higher than $30 \mu\text{g}/\text{m}^3$. (CVAQ)

RESPONSE: On the contrary, the proposed amendments will make this rule the most stringent wood burning curtailment rule in the nation. The District is proposing to lower the curtailment threshold to $20 \mu\text{g}/\text{m}^3$ for older more polluting wood burning heaters and wood burning fireplaces, which comprise over 95% of wood burning emissions. In addition, the operation of non-registered clean devices will also be restricted at the $20 \mu\text{g}/\text{m}^3$ threshold. This proposed curtailment level is significantly lower than the current curtailment threshold of $30 \mu\text{g}/\text{m}^3$. Amending the rule to allow the cleanest wood burning heaters to be used between 20 and $65 \mu\text{g}/\text{m}^3$ would provide significant motivation to Valley residents for transitioning away from older higher polluting devices to the cleanest wood burning heaters. A registered wood burning heater pollutes at least twenty times less than a wood burning fireplace; therefore, encouraging this transition would reduce emissions beyond those that could be accomplished by only reducing the curtailment threshold to $20 \mu\text{g}/\text{m}^3$. The proposed amendments will achieve an estimated reduction of 5.1 tons per day of PM_{2.5} emissions.

6. COMMENT: The draft rule continues to allow the installation of wood burning fireplaces and other wood burning devices in new residential developments. This is less stringent than South Coast AQMD (SCAQMD), which bans the installation of wood burning fireplaces and wood burning heaters in new developments. (CVAQ)

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RESPONSE: The statement that SCAQMD does not allow the installation of wood burning devices in new developments is incorrect. In fact, SCAQMD Rule 445 allows the installation of wood burning devices in new developments that have limited access to natural gas or are located above 3,000 feet. The District's Rule 4901 is actually more stringent in that for the extremely limited cases where wood burning devices are allowed to be installed, the number of units allowed are restricted to no more than 2 per acre.

7. **COMMENT:** We urge the District to remove the section of the rule that requires a NFI, CSIA, or FIRE service certification should be enforced for a wood burning heater professional to be able to certify and sign off on devices. (HPBA)

RESPONSE: Although Sections 5.10.1.1 through 5.10.1.3 identify specific certifications, Section 5.10.1.4 provides criteria by which an individual without these certifications can become registered with the District to perform the inspections and certifications. Adding Section 5.10 to the rule would require that the individuals signing off on the wood burning heaters for applicants are qualified to do so, thus ensuring the wood burning heater is operating as cleanly as designed by the manufacturer and as certified by EPA.

8. **COMMENT:** The rule should be clarified to state the wood burning heater should be operated with no "visible" smoke. (HPBA)

RESPONSE: This clarification has been added to rule language.

9. **COMMENT:** The proposed revision of lowering the concentration threshold to 20 $\mu\text{g}/\text{m}^3$ dramatically increases the number of No Burn days and tilts the burden of reducing PM_{2.5} emissions far beyond the contribution that occasional residential wood burning makes to PM_{2.5} emissions in the Valley. Additionally, even though general fireplace usage declined significantly, pollution levels were still high; indicating other sources of PM_{2.5} drove increased pollution levels on warm stagnant air days. Proposed amendments effectively double the number of projected No Burn days and prohibits burning for most residents for more than half of the 120-day wintertime period. The District does not provide substantial evidence that such an incentive program will promote reduction of PM_{2.5} emissions. (DI)

RESPONSE: Valley Businesses are already subject to toughest air regulations in the nation. The District's attainment plans call for significant reductions in emissions from mobile and stationary sources throughout the Valley. With regards to directly emitted PM_{2.5} emissions, residential wood burning is the largest source in the Valley during the winter months, as supported by Appendix B (Emissions Inventory)

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of the District's 2012 PM_{2.5} Plan.² During the 2013-14 winter season, the Valley experienced unprecedented stagnation and extreme weather conditions with century old drought records being broken in many of the cities in California. These unique conditions resulted in abnormally high PM_{2.5} concentrations during the 2013-14 winter season and the Valley's PM_{2.5} concentrations would have been even higher absent the wood burning restrictions. The District and the California Air Resources Board also conducted extensive grid based and photochemical modeling during the development of the 2012 PM_{2.5} Plan and determined that significant PM_{2.5} reductions were achieved through the implementation of the Districts PM_{2.5} control strategy which includes the wood burning heater and wood burning fireplace rule. Reducing directly emitted PM_{2.5} emissions will have a greater benefit on Valley air and public health than reducing precursor emissions to PM_{2.5} as supported by California Air Resources Board modeling summarized in Chapter 4 (Scientific Foundation and PM_{2.5} Modeling Results) of the 2012 PM_{2.5} Plan.³ Nonetheless, given the ever tightening federal health standards, the District is mandated to pursue all available measures to reduce direct and indirect sources of particulate emissions.

In addition, prolonged inhalation of wood smoke has adverse impacts on human health. Inhalation of wood smoke contributes to lung disease, pulmonary arterial hypertension, and pulmonary heart disease, which can eventually lead to heart failure. Wood smoke has also been linked to oxidative stress and blood coagulation and can ultimately lead to cancer. Children with the highest exposure to wood smoke show a significant decrease in lung function.

Health benefits from reducing emissions from residential wood burning are related to the high level of population exposure to urban residential wood burning emissions with relation to other stationary sources. A Central Valley Health Policy Institute Study found that wood burning curtailments on high pollution days reduced annual exposure by 13.6% in Fresno, and an estimated 12.9% in Bakersfield resulting in 30 to 70 avoided cases of annual premature deaths.

10.COMMENT: All pellet-fueled devices are either EPA certified or EPA exempt. Language should be added to the rule that allows the use of EPA-certified pellet heaters, not just EPA-exempt pellet heaters. Additionally, can people register pellet-fueled devices without inspection for the interim registration? People will already not use prohibited fuels because the devices will not work if prohibited fuels are used. Interim registrants could meet the requirements of 5.7.2 by submitting a picture of the device and a copy of the sale invoice. (SG)

² SJVUAPCD. 2012 PM_{2.5} Plan. Appendix B (Emissions Inventory). December 2012. Retrieved on 8/15/14 from http://www.valleyair.org/Air_Quality_Plans/PM25Plans2012.htm.

³ SJVUAPCD. 2012 PM_{2.5} Plan. Chapter 4 (Scientific Foundation and PM_{2.5} Modeling Results), page 4-24. December 2012 Retrieved on 8/15/14 from <http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/04%20Chapter%204%20Sci%20Foundation%20and%20Modeling.pdf>.

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RESPONSE: While it is true that all pellet-fueled wood burning heaters are currently either EPA certified or EPA exempt, this will change with the adoption of the proposed EPA amendments to the NSPS (see staff report). Each section of the rule that uses the terminology EPA certified wood burning heater is referring to both the wood-fueled and pellet-fueled wood burning heaters; this is clarified through the definition of wood burning heater (Section 3.29) which would be amended to specifically identify pellet-fueled wood burning heaters.

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**SUMMARY OF SIGNIFICANT COMMENTS
RULE 4901 (WOOD BURNING FIREPLACES AND WOOD BURNING HEATERS)
Public Scoping Meeting – March 27, 2014**

The San Joaquin Valley Unified Air Pollution Control District (District) held a public workshop to present, discuss, and hear comments on strategies under consideration for reducing emissions from sources subject to Rule 4901. Comments received during the public workshop and the associated two week commenting period following the workshop are summarized below.

Comments were received from the following:

Bob Haun (BH)	Larry Boone (LB)
Chuck Spears (CS)	Leon Thomas (LT)
Dennis Fox (DF)	Mark Anaforian (MA)
Hearth, Patio & Barbecue Assoc. (HPBA)	Maryann Beasley (MB)
James Hodges (JH)	Michael Gatley (MG)
Jon (Jo)	Peggy Christiansan (PC)
John Crouch, (JC)	Richard (Ri)
Kaity Van Amersfort (KVA)	Ron Bohagian (RB)
Kautz Farms (KF)	Roxanne Lemos (RL)
Keith Harrison (KH)	Thomas Menz (TM)
Lane Embry (LE)	

- 1. COMMENT:** Members of the public expressed differing opinions on the implementation of increased restrictions on residential wood burning through a lowered threshold level for episodic wood burning curtailments. Some members of the public support increasing restrictions on residential wood burning (JH, RB, PC, Jo, KH, KF). Some members of the public oppose more stringent restrictions (LT, KH, KF). Some members of the public are in favor of more stringent restrictions than $20 \mu\text{g}/\text{m}^3$ (TM).

RESPONSE: Directly emitted PM_{2.5} emissions from residential wood burning have adverse health impacts on the public. These emissions generally occur in densely populated areas such as neighborhoods. Reducing emissions from this source provide some of the most cost effective and health protective emission reductions in the Valley as discussed throughout the staff report. That said, the District recognizes that replacing older more polluting wood burning heaters and wood burning fireplaces with less polluting alternatives can be a significant investment for residents of the Valley and therefore supports such transitions through the District's Burn Cleaner incentive program whereby the District offers grant funding to assist Valley residents with the purchase of clean burning devices.

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2. **COMMENT:** Members of the public expressed opposing sentiments on the tiered episodic curtailment approach that the District is considering. Some commenters expressed support of a tiered approach to episodic wood burning curtailments (BH, KVA), while others expressed that they do not support a tiered approach to episodic wood burning curtailments. (TM)

RESPONSE: A tiered approach to calling episodic wood burning curtailments would encourage Valley residents who own older more polluting wood burning heaters and wood burning fireplaces to replace those units with less polluting alternatives such as EPA Phase II Certified wood burning heaters and gaseous-fueled heaters, as supported by survey results (See Appendix E). The emissions reduced from amendments to the District's Residential Wood Burning Program would result in greater reductions of directly emitted PM_{2.5} emissions than would be achieved by reducing the curtailment threshold alone. These increased emission reductions will result in health benefits and progress the Valley towards attainment of the federal PM_{2.5} standards.

3. **COMMENT:** The potential opportunity of reducing emissions by extending the wood burning season to include October and/or March was presented to the public at the workshop. Some members of the public did not support expanding the wood burning season because the benefits gained through a longer wood burning season would be minimal (KF), while others did support expanding the wood burning season. (TM)

RESPONSE: The District evaluated the potential benefits and feasibility of expanding the wood burning season to include one or two additional months and based on the results of the evaluation the District will not pursue expanding the wood burning season. See the staff report for more information.

4. **COMMENT:** Some members of the public called for increased public outreach efforts, including more advertising on No Burn days, to promote the philosophy that if one is going to burn, then that person should burn wisely and as cleanly as possible. (LB, HPBA)

RESPONSE: The District has a robust and proactive public outreach and education program in place to educate the public of the hazards of residential wood burning, as discussed in the staff report. The District plans to continue these on-going efforts and to continue to seek additional opportunities for increased public outreach and education.

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- 5. COMMENT:** Enforcement efforts need to be increased as well as consequences for burning on “No Burn” days. The public should be allowed to help enforce the rule by documenting infractions with time/date stamped photos of violators. A phone number should be provided to report violators. (LB, PC, TM)

RESPONSE: Enforcement efforts currently include several phone numbers to report violations of episodic curtailments including the following: 559-230-6000 in the Central Region, 209-557-6400 in the Northern Region, and 661-392-5500 in the Southern Region. Violators can also be reported on the District’s web page at: <http://www.valleyair.org/busind/comply/complaint.htm>, or <http://www.valleyair.org/r4901/>. Additionally, District Compliance staff performs surveillance and issue Notices of Violation (NOVs) to those Valley residents who are using wood burning heaters, wood burning fireplaces, or outdoor wood burning devices on No Burn days. In the 2013-14 wood burning season the District dedicated 2,750 Compliance staff hours to residential wood burning enforcement, of the 66 No Burn Days (Valley-wide) 564 NOVs were issued.

- 6. COMMENT:** The District should not have a registration program for qualifying wood burning heaters because it may discourage homeowners from buying these wood burning heaters, regardless of ultimately allowing them the right to burn. (HPBA)

RESPONSE: A registration program provides the District with an enforcement mechanism which allows for the use of registered wood burning heaters to be used during certain times when the use of non-registered wood burning heaters would be prohibited. A registration program helps the District to ensure that the person who registers a qualifying wood burning heater understands all provisions of Rule 4901 and operates the wood burning heater in compliance with those provisions. It can also be used to confirm that the wood burning heater is cleaned and maintained per the manufacturer guidelines to ensure that the wood burning heater is burning as cleanly as certified by EPA.

- 7. COMMENT:** If the District chooses the implementation of a registration program, registration fees should be waived because homeowners make significant investments for these clean burning devices and making them pay District fees could discourage them from participating. (BH, KVA, LT, MG, RL, HPBA) Additionally, registration should only happen one time and not require renewals. The District should work with hearth retailers to help Valley residents register their devices if the District chooses to pursue this option. (BH, KVA)

RESPONSE: The District incurs additional staffing and other costs to create and maintain a registration program and would therefore need to recover some of these costs. Registration of a qualifying wood burning heater is voluntary; owners of these wood burning heaters have the option to not register the wood burning heater and

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therefore not participate in the additional burn days provided through a tiered curtailment program. The District looks forward to continuing to work with hearth retailers to assist Valley residents to take full advantage of District incentive programs and compliance with regulatory requirements.

- 8. COMMENT:** The District should focus on regulating businesses, the agricultural community, and mobile sources instead of the Valley residents. (MB, KH, CS, LE, RL, MA, MG)

RESPONSE: To date the District has adopted over 500 rules and rule amendments almost all of which are applicable to businesses and not individual residents in the Valley. Many of the District's prohibitory rules on Valley businesses are fourth or fifth generation, meaning they have been revised several times and emissions limits have been lowered as new emission control technologies have become available and cost effective. Valley businesses have invested millions of dollars to reduce emissions. With regards to the agricultural community specifically, emissions are reduced through District rules including but not limited to Rule 4702 (Internal Combustion Engines), Rule 4103 (Open Burning), Rule 4204 (Cotton Gins), Rule 4303 (Orchard Heaters), Rule 4570 (Confined Animal Facilities), and the Regulation VII rules for fugitive dust.

In addition to the emissions reduced through regulatory actions, the District also provides incentive funding that is matched by the grantee to fund the purchase, replacement or retrofit of equipment. To date, the District has provided over \$500,000,000 in incentive funding and grant recipients have invested over \$400,000,000 in matching funds to purchase, replace, or retrofit thousands of pieces of mobile and agricultural source equipment, such as irrigation pump engines and agricultural tractor replacement.

- 9. COMMENT:** How does the District determine that the emissions are from residential wood burning? (MB)

RESPONSE: Since PM_{2.5} measurements are mass-based, the mass can be separated into its various species components through an analysis called speciation. Speciation of the Valley's PM_{2.5} emissions demonstrates that organic carbon is the major species contributing to wintertime PM_{2.5} levels. Wood burning emissions are proven to contribute to a large component of the organic carbon formed in the Valley. Residential wood burning emissions play a key role in the amount of organic carbon and overall PM_{2.5} mass being formed in the Valley.

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10. COMMENT: Will the exemption for homes where the only source of heat is a wood-burning fireplace be removed from the rule? (Ri)

RESPONSE: Draft amendments to Rule 4901 do not include the removal of this provision in the rule at this time.

11. COMMENT: Clean burning devices should be allowed to burn every single day regardless of air quality. (RL)

RESPONSE: The District has evaluated the potential benefits of allowing additional days for clean burning devices to be utilized in the Valley and has drafted the episodic tiered curtailment levels to reflect this evaluation. Registered wood burning heaters would be allowed to be used and older more polluting wood burning heaters and wood burning fireplaces would not be allowed to be used when the air quality is forecast to have PM_{2.5} concentrations between 20 µg/m³ and 65 µg/m³ because it is during this time that the fine particulates are building up in the Valleys air. Preventing the use of the more polluting wood burning heaters and wood burning fireplaces while at the same time allowing the use of registered wood burning heaters will slow down or even stop the accumulation of fine particulates in the air. However, when air quality becomes so bad as to have PM_{2.5} concentrations forecast to be above 65 µg/m³, the 1997 federal standard for PM_{2.5}, all wood burning in the Valley will be prohibited so as to expedite the lowering of fine particulate concentrations in the air.

12. COMMENT: The District is advertising too much against wood-burning and never mentions other things people burn. Shutting down family business that are based on firewood sales will hurt the local economy. (CS)

RESPONSE: District outreach efforts include educating the public as to which materials can and cannot be burned at any given time. Rule 4901 prohibits the burning of garbage, treated wood, plastic products, waste petroleum products, paints and paint solvents, coal, and any other material not intended by a manufacturer for use as a fuel in a wood burning heater or wood burning fireplace. District No Burn days currently prohibit the burning of wood and pellets alike.

13. COMMENT: Some members of the public support an increase in incentive funding for clean burning devices (RB, BH, KVA, HPBA), while others support only subsidy of natural gas devices in areas that have natural gas service. (TM)

RESPONSE: While natural gas devices may be the cleanest burning devices, there are some areas in the Valley that do not have natural gas service and therefore would not be able to use these devices. District incentive programs are aimed at

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assisting all Valley residents with older more polluting wood burning heaters to transition to less polluting alternatives.

14. COMMENT: Is it better to burn wood from dead tree crops in the fireplace or the field? (DF)

RESPONSE: It is better to burn wood from dead tree crops at biomass plants because these facilities have control technologies to capture and control the emissions from such burning and that burned matter is converted to energy.

15. COMMENT: Homes with natural gas service should never be allowed to remove their existing heating apparatus and be granted a permanent exemption from rule requirements. (DF)

RESPONSE: While District Rule 4901 does not have provisions addressing the removal of existing heating devices, Title 24 of the California Code of Regulations require all homes, apartments, rooms for rent, or other habitable spaces be provided with heating facilities capable of maintaining minimum room temperature requirements, with the exception of certain limited-density owner-built rural dwellings. Open-hearth fireplaces do not comply with this code requirement, since such fireplaces do not function as efficient whole-house heating devices; additional requirements apply to wood-burning or pellet stoves.⁴

⁴ California Building Standards Commission. California Code of Regulations, Title 24, Part 2.5. ISBN 978-1 58001-975-0. 2010

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APPENDIX B

Emission Reduction Analysis

Proposed Amendments to Residential Wood Burning Program

September 18, 2014

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EMISSION REDUCTION ANALYSIS FOR PROPOSED RULE 4901

I. SUMMARY

The District's residential wood burning program reduces directly emitted PM_{2.5} emissions from residential wood burning using the three pronged approach of a prohibitory rule, public outreach and education, and the District's Burn Cleaner incentive program (Burn Cleaner Program). Proposed amendments to the District's residential wood burning program would further reduce emissions by encouraging the transition from older more polluting wood burning heaters and wood burning fireplaces (commonly called open hearth fireplaces) to cleaner alternatives. Emissions reduced as a result of the proposed amendments to the residential wood burning program would achieve emission reductions beyond those reduced through lowering the curtailment threshold in Rule 4901 alone.

Proposed amendments to the program include amendments to District Rule 4901 (Wood Burning Fireplaces and Wood Burning heaters) to implement a tiered episodic wood burning curtailment program; proposed new Rule 3901 (Fees for Registration of Wood Burning Heaters) to establish a fee structure to support a robust registration program for certified clean devices; and enhancements to the District's Burn Cleaner Program that include significantly increased incentives.

This emission reductions analysis appendix consists of two distinct emission reductions analysis scenarios. The first analysis accounts for the emissions reduced as a direct result of implementing the proposed tiered curtailment program. The second analysis accounts for the overall emissions reduced from the amendments to the District's residential wood burning program and the associated transition to registered wood burning heaters.

The total emission reductions achieved from the proposed amendments to Rule 4901 is estimated at 5.1 tons per wood burning season day. Even if the expected reductions from turnover to clean wood burning devices are not accounted for, the proposed amendments to Rule 4901 would result in a reduction of at least 3.27 tons per day (tpd) of directly emitted PM_{2.5} emissions during the wood burning season.

In the *2012 PM_{2.5} Plan* the District committed to reduce 1.5 tpd of PM_{2.5} during the winter season (November through April) effective as of the 2016/17 winter season. Since the winter season is 180 days and the wood burning season is 120 days, the 3.27 tpd of wood burning season emission reductions equates to 2.18 tpd when averaged over the entire winter season, exceeding the 1.5 tpd commitment in the *2012 PM_{2.5} Plan*.

II. EMISSION REDUCTIONS FROM PROPOSED EPISODIC TIERED CURTAILMENT PROGRAM

For purposes of claiming emission reductions in the SIP for proposed rule amendments this emission reduction analysis will only account for those emissions reduced as a result of the proposed tiered episodic curtailment program. The current episodic wood burning curtailment threshold level of $30 \mu\text{g}/\text{m}^3$ would be lowered to $20 \mu\text{g}/\text{m}^3$ for wood burning fireplaces and non-registered wood burning heaters. Proposed amendments would create a second tier to allow the use of registered wood burning heaters when pollutant levels are forecast to exceed $20 \mu\text{g}/\text{m}^3$ but not to exceed $65 \mu\text{g}/\text{m}^3$. All residential wood burning would be prohibited if the pollutant levels are forecast to exceed $65 \mu\text{g}/\text{m}^3$.

The calculations within this analysis are made with the conservative assumption that all wood burning heaters and wood burning fireplaces in the Valley will remain unchanged and not be transitioned to cleaner alternatives. Even though the District anticipates that many un-certified EPA wood burning heaters and wood burning fireplaces in the Valley will be replaced with new cleaner technologies.

The emission reduction analysis was performed using the following steps:

- A. Identify the ARB emission inventory for residential wood burning devices
- B. Determine the wood-burning seasonal emissions from residential wood burning
- C. Divide the ARB Wood Stove category into its components of pellet-fueled wood burning heaters, clean wood burning heaters, and dirty wood burning heaters
- D. Distribute the ARB emission inventory for Wood Stoves between pellet-fueled wood burning heaters, clean wood burning heaters, and dirty wood burning heaters
- E. Distribute the emission inventory into the new categories of Clean Wood Burning Heaters and Dirty Wood Burning Heaters
- F. Determine the average number of estimated No Burn days for future years
- G. Determine the emission reductions
- H. Determine the number of average estimated increase in burn days for registered wood burning heaters for future years
- I. Determine the additional emissions from the additional number of burn days for registered wood burning heaters
- J. Determine the overall emission reductions from implementation of the episodic tiered curtailment program
- K. Determine the wood burning season total emission reductions for the Valley
- L. Determine the total winter season total emission reductions for the Valley

The following provides the methodology, assumptions, and calculations for the emission reductions analysis steps identified above.

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A. ARB emission inventory for residential wood burning devices

The ARB distributes the emission inventory for residential wood burning into two categories of devices: 1) Fireplaces and 2) Wood Stoves. However, the wood burning devices in the Valley consist of three categories: 1) Fireplaces, 2) Pellet-Fueled Wood Burning Heaters, and 3) Wood Burning Heaters. The ARB emission inventory for “Wood Stoves” includes emissions from both types of heaters (pellet-fueled wood burning heaters and wood burning heaters).

Table B-1 ARB 2015 PM2.5 Winter Season Residential Wood Burning Emission Inventory by County (tpd)¹

County	Wood Stoves	Fireplaces	Total
Fresno	0.541	0.867	1.408
Kern	0.240	0.569	0.809
Kings	0.036	0.115	0.151
Madera	0.224	0.217	0.441
Merced	0.405	0.288	0.693
San Joaquin	0.254	1.402	1.656
Stanislaus	0.497	0.746	1.243
Tulare	1.032	0.604	1.636
VALLEY TOTAL	3.229	4.808	8.037

B. Determine the wood-burning seasonal emissions from residential wood burning

1. Determine the daily burn season emissions from the daily winter emission inventory

- a. The existing emission inventory accounts for the winter season which includes the months of November through April (180 days). However, the wood-burning season consists of the months of November through February (120 days).
- b. Because there is little to no residential wood burning activities during the months of March and April, the District assumes all emissions are limited to the wood-burning season months of November through February.
- c. Convert the winter daily emission inventory into a daily burn-season inventory. By multiplying the inventory by 180 days (winter season) then dividing it by 120 days (wood-burning season).
 - i. Example:
 1. Fresno County Wood Stove emissions x number of winter season days
 2. 0.541 tpd x 180 days per winter season
 3. 97.38 tons per winter season

¹ CEPAM – NorCal v. 1.04 – Winter Average

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4. 97.38 tons per winter season / number of wood-burning season days
5. 97.38 tons per winter season / 120 days per wood burning season
6. 0.812 tons per wood-burning season day

Table B-2 2015 PM_{2.5} Wood-Burning Season Emission Inventory by County (tons per day)

County	Wood Stoves	Fireplaces
Fresno	0.812	1.301
Kern	0.360	0.854
Kings	0.054	0.173
Madera	0.336	0.326
Merced	0.608	0.432
San Joaquin	0.381	2.103
Stanislaus	0.746	1.119
Tulare	1.548	0.906
VALLEY TOTAL	4.844	7.212

C. Divide the ARB Wood Stove category into its components of pellet-fueled wood burning heaters, clean wood burning heaters, and dirty wood burning heaters

Amendments to Rule 4901 will implement a tiered episodic curtailment program in which episodic curtailments will be called at different thresholds for wood burning heaters that are registered with the District versus wood burning heaters that are not registered with the District. Refer to the staff report for more details on this tiered episodic curtailment program. For purposes of this emission reductions analysis the District assumes all wood burning heaters that qualify to register will do so. To calculate the emissions reduced based on the tiered episodic curtailments the emission inventory must first be divided into the two categories: 1) clean wood burning heaters that qualify for registration and 2) dirty wood burning heaters.

D. Distribute the ARB emission inventory for Wood Stoves between pellet fueled wood burning heaters, EPA certified wood burning heaters, and non-EPA certified wood burning heaters

1. Determine the percentage of emissions from Wood Stoves that are attributed to the three categories

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- a. Based on the EPA data² the emissions are accountable for in the following percentages
 - i. Dirty wood burning heaters: 75%
 - ii. Clean wood burning heaters: 20%
 - iii. Pellet-fueled wood burning heaters: 5%
 - b. Based on EPA emission data the fireplaces are 20 times dirtier than the certified wood burning heaters, and over 50 times dirtier than certified pellet stoves.³ Therefore the District assumes the inventory is as follows:
 - i. Dirty wood burning heaters: 95%
 - ii. Clean wood burning heaters: 4%
 - iii. Pellet fueled wood burning heaters: 1%
2. Distribute the Valley Total ARB emission inventory (Table B-2) between the wood burning heaters with the percentages above.
- a. EXAMPLE:
 - i. Dirty wood burning heaters
 - 1. Fresno County Wood Stove emission inventory x percentage of emissions from dirty wood burning stoves
 - 2. 0.812 tpd x 0.95
 - 3. 0.771 tpd from dirty wood burning heaters

Table B-3 2015 PM2.5 Emission Inventory for Wood Stoves (tons per wood-burning season day)

County	Dirty Wood Burning Heaters	Clean Wood Burning Heaters	Pellet-Fueled Wood Burning Heaters
Fresno	0.771	0.032	0.008
Kern	0.342	0.014	0.004
Kings	0.051	0.002	0.001
Madera	0.319	0.013	0.003
Merced	0.578	0.024	0.006
San Joaquin	0.362	0.015	0.004
Stanislaus	0.709	0.030	0.007
Tulare	1.471	0.062	0.015

² EPA. Consumers – Energy Efficiency and Wood-Burning Stoves and Fireplaces. (2012, November 14). Retrieved from <http://www.epa.gov/burnwise/energyefficiency.html>

³ EPA. Consumers – Energy Efficiency and Wood-Burning Stoves and Fireplaces. (2012, November 14). Retrieved from <http://www.epa.gov/burnwise/energyefficiency.html>.

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E. Distribute the inventory into new categories. The new categories are: 1) Clean wood burning heaters and 2) Dirty wood burning heaters

The determination of the emissions reduced relies on a tiered approach to episodic curtailments. Wood burning heaters that are categorized as “Clean” wood burning heaters consist of pellet-fueled wood burning heaters and wood burning heaters with an EPA Phase II or more stringent certification. These clean wood burning heaters would be allowed to be used up to the 65 µg/m³ threshold. Wood burning heaters categorized as “Dirty” wood burning heaters consist of wood burning heaters without EPA certification, EPA Phase I certified wood burning heaters, and wood burning fireplaces. Dirty wood burning heaters would only be allowed to be used up to the 20 µg/m³ threshold. Therefore, it is necessary at this point in the emission reduction process to distribute the emission inventory into the two categories, thus allowing for accurate emission reductions calculations later in this analysis.

1. Determine the ton per day emissions for clean wood burning heaters for each county by adding the pellet-fueled wood burning heater emission inventory (Table B-3) and the clean wood burning heater inventory (Table B-3).
 - a. Example:
 - i. Fresno County pellet-fueled wood burning heater inventory + Fresno County clean wood burning heater inventory
 - ii. 0.008 tpd + 0.032 tpd
 - iii. 0.041 tpd

2. Determine the ton per day emissions for Dirty wood burning heaters for each county by adding the dirty wood burning heater emission inventory (Table B-3) and the fireplace emission inventory (Table B-2)
 - a. Example:
 - i. Fresno County dirty wood burning heater inventory + fireplace inventory
 - ii. 0.771 + 1.301
 - iii. 2.072 tpd

Table B-4 2015 PM_{2.5} Emissions for Clean and Dirty wood burning heaters by County (tpd)

County	Clean Wood Burning Heaters	Dirty Wood Burning Heaters
Fresno	0.041	2.072
Kern	0.018	1.196
Kings	0.003	0.224
Madera	0.017	0.645
Merced	0.030	1.010
San Joaquin	0.019	2.465
Stanislaus	0.037	1.828
Tulare	0.077	2.377

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F. Determine the number of estimated No Burn days for future years

Dirty wood burning heaters (non-EPA certified wood burning heaters and fireplaces) will experience an increase in No Burn days as discussed in the staff report.

Table B-5 Average Number of Days Forecast Above Curtailment Thresholds*

County	Current Threshold (≥30 µg/m³)	Proposed Threshold (≥20 µg/m³)	Additional No Burn days
Fresno	49	85	36
Kern	44	79	35
Kings	39	70	31
Madera	29	67	38
Merced	19	55	36
San Joaquin	24	53	29
Stanislaus	36	72	36
Tulare	36	69	33
		Average:	34

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

G. Determine the emission reductions

1. Determine the emission reductions for each county by multiplying the number of additional No Burn days (Table B-5) for each county by the daily emission inventory for Dirty wood burning heaters that county (Table B-4).
 - a. Example:
 - i. Fresno County additional no burn days x Fresno County Dirty wood burning heater inventory
 - ii. 36 additional days per season x 2.072 tons per day
 - iii. 74.61 tons per season reduced

Table B-6 Total Emissions Reduced by County (tons per season)

County	Emissions Reduced
Fresno	74.61
Kern	41.86
Kings	6.95
Madera	24.52
Merced	36.35
San Joaquin	71.48
Stanislaus	65.80
Tulare	78.43
TOTAL	399.99

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H. Determine the number of estimated increase in burn days for registered wood burning heaters for future years

Wood burning heaters that register with the District will experience an increase in days they are allowed to burn during the wood burning season, as discussed in the staff report.

Table B-7 Average Number of Days Forecast Above 65 $\mu\text{g}/\text{m}^3$

County	Current Threshold ($\geq 30 \mu\text{g}/\text{m}^3$)	Days over $\geq 65 \mu\text{g}/\text{m}^3$	Additional Burn days
Fresno	49	6	43
Kern	44	6	38
Kings	39	6	33
Madera	29	1	28
Merced	19	0	19
San Joaquin	24	0	24
Stanislaus	36	2	34
Tulare	36	4	32
		Average:	31

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

I. Determine the additional emissions from the additional number of burn days for the registered wood burning heaters

1. Determine the emissions for each county by multiplying the number of additional burn days (Table B-7) for each county by the daily emission inventory for clean wood burning heaters that county (Table B-4).
 - a. Example:
 - i. Fresno County additional burn days x Fresno County clean wood burning heater inventory
 - ii. 43 additional days per season x 0.041 tons per day
 - iii. 1.75 tons per season

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Table B-8 Emissions from Additional Burn Days from Registered Wood Burning Heaters (tons per season)

County	Emissions Increase
Fresno	1.75
Kern	0.68
Kings	0.09
Madera	0.47
Merced	0.58
San Joaquin	0.46
Stanislaus	1.27
Tulare	2.48
TOTAL	7.77

J. Determine the overall emission reductions from implementation of the tiered curtailment program

1. Determine the total emission reductions for the Valley by subtracting the emissions increase from registered wood burning heaters (Table B-8) from the emissions reduced (Table B-6).
 - a. Example:
 - i. Fresno County emission reductions – Fresno County emissions increase
 - ii. 74.61 tons per season – 1.75 tons per season
 - iii. 72.86 tons of PM2.5 emissions reduced per season

Table B-9 Overall Emissions Reductions (tons per season)

County	Emissions Reduced	Emissions Increased	Overall
Fresno	74.61	1.75	72.86
Kern	41.86	0.68	41.18
Kings	6.95	0.09	6.86
Madera	24.52	0.47	24.05
Merced	36.35	0.58	35.77
San Joaquin	71.48	0.46	71.03
Stanislaus	65.80	1.27	64.53
Tulare	78.43	2.48	75.95
TOTAL	399.99	7.77	392.22

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K. Determine the total burn season emission reductions for the Valley

Determine the total burn season emission reductions for the Valley in tons per day by dividing the overall total emissions reduced (Table B-9) by the number of wood burning season days.

- a. Overall total emissions reduced per season/number of wood burning season days
- b. 392.22 tons per season / 120 wood burning season days
- c. 3.27 tons per day

L. Determine the total winter season emission reductions for the Valley

Determine the total winter season emission reductions for the Valley in tons per day by dividing the overall total emissions reduced (Table B-10) by the number of winter season days.

- a. Overall total emissions reduced per season/number of wood burning season days
- b. 392.22 tons per season / 180 wood burning season days
- c. 2.18 tons per day

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III. EMISSION REDUCTIONS FROM PROPOSED AMENDMENTS TO RESIDENTIAL WOOD BURNING PROGRAM

A. Contributing factors to emission reductions from proposed amendments to the District's residential wood burning program

The directly emitted PM_{2.5} emissions reduced through the implementation of the amendments to the District's residential wood burning program would be the result of the following:

- 1) The replacement of older more polluting wood burning heaters and wood burning fireplaces to cleaner alternatives as a result of the combination of the episodic curtailment levels and the increased incentive amounts as discussed in detail in the staff report; and
- 2) The implementation of the lowered curtailment threshold from 30 to 20 µg/m³.

The following is a summary of this analysis.

Survey Results

The results from a third party survey of Valley residents (see Appendix E) identify the two main motivators for the transition to clean wood burning heaters. 24% of Valley residents with non-EPA certified wood burning heaters and wood burning fireplaces would transition to cleaner burning wood burning heaters if they were provided a discount of up to 50% off the cost of the new wood burning heater. 29% of Valley residents would be willing to replace their current wood burning fireplace or wood burning heater with a cleaner, less-polluting wood burning heater if they could use it more often than currently allowed. Taking this information into account, the District is recommending increasing incentive amounts and increasing the number of burn days allowed for qualified registered wood burning heaters through a tiered curtailment program.

Conservative Analysis

To perform a conservative emission reduction analysis for the transition of non-EPA certified wood burning heaters and wood burning fireplaces to cleaner wood burning heaters the District assumes 24% of the older more polluting wood burning heaters and wood burning fireplaces would be transitioned to clean wood burning heaters. This is a conservative estimate because based on survey results it's more likely that 29% of the more polluting wood burning heaters and wood burning fireplaces would be replaced. Additionally, based on data in the Burn Cleaner Program database, the majority of wood burning heaters and wood burning fireplaces that are replaced are actually replaced with gas-fired units (which are cleaner than wood burning heaters) instead of wood burning heaters.

B. Emission reduction calculation methodology

Total emissions reduced as a result of amendments to the District's residential wood burning program would be equal to the emission reductions resulting from 24% of the older more polluting wood burning heaters and wood burning fireplaces being replaced with clean wood burning heaters plus the emissions that would be reduced from the remaining dirty wood burning heater emission inventory due to the implementation of the tiered curtailment program, discussed above, minus the additional emissions that would be generated from the now clean registered wood burning heaters being operated on days when the pollutant levels would be forecast to be 20-65 $\mu\text{g}/\text{m}^3$.

Table B-10 below summarizes the calculations performed to determine the emission reductions from the proposed amendments to the residential wood burning program.

In summary:

$3.33 \text{ tpd} - 0.065 \text{ tpd} + 2.04 \text{ tpd} - 0.22 \text{ tpd} = 5.1 \text{ tpd}$ of directly emitted PM_{2.5} emissions reduced.

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Table B-10 Emission Reductions Resulting from Conversion of Dirty Heaters to Clean Heaters

	A	B	C	D	E	F	G	H	I	J
Source / Formula	Table B-6	A / 120	Table B-8	C / 120	Table B-4 (total) - B	F x 0.24	G x 20%	Table B-5 + Table B-7	G x H	I / 120
	Emissions reduced from dirty devices resulting from lowering the curtailment from 30 to 20 µg/m ³ (tons/season)	Emissions reduced from dirty devices resulting from lowering the curtailment from 30 to 20 µg/m ³ (tpd)	Emissions from registered wood burning heaters on additional burn days (when forecast is between 30 and 65 µg/m ³) (tons/season)	Emissions from registered wood burning heaters on additional burn days (when forecast is between 30 and 65 µg/m ³) (tpd)	Remaining emissions from dirty devices after lowering the curtailment threshold (tpd)	Emissions reduced from 24% of dirty devices transitioning to clean devices (tpd)	20% increase in emissions from newly registered devices (when forecast is between 20 and 65 µg/m ³) (tpd)	Number of additional burn days for registered devices (when forecast is between 20 and 65 µg/m ³) (tpd)	Emissions from newly registered devices on additional burn days (when forecast is between 20 and 65 µg/m ³) (tons/season)	Emissions from newly registered devices on additional burn days (when forecast is between 20 and 65 µg/m ³) (tpd)
Fresno	74.606	0.62	1.75	0.015	1.450	0.348	0.070	79	5.50	0.05
Kern	41.860	0.35	0.68	0.006	0.847	0.203	0.041	73	2.97	0.02
Kings	6.953	0.06	0.09	0.001	0.166	0.040	0.008	64	0.51	0.00
Madera	24.518	0.20	0.47	0.004	0.441	0.106	0.021	66	1.40	0.01
Merced	36.346	0.30	0.58	0.005	0.707	0.170	0.034	55	1.87	0.02
San Joaquin	71.484	0.60	0.46	0.004	1.869	0.449	0.090	53	4.76	0.04
Stanislaus	65.797	0.55	1.27	0.011	1.280	0.307	0.061	70	4.30	0.04
Tulare	78.428	0.65	2.48	0.021	1.723	0.414	0.083	65	5.38	0.04
TOTAL		3.33		0.065		2.04				0.22

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APPENDIX C

Economic Analysis

Proposed Amendments to Residential Wood Burning Program

September 18, 2014

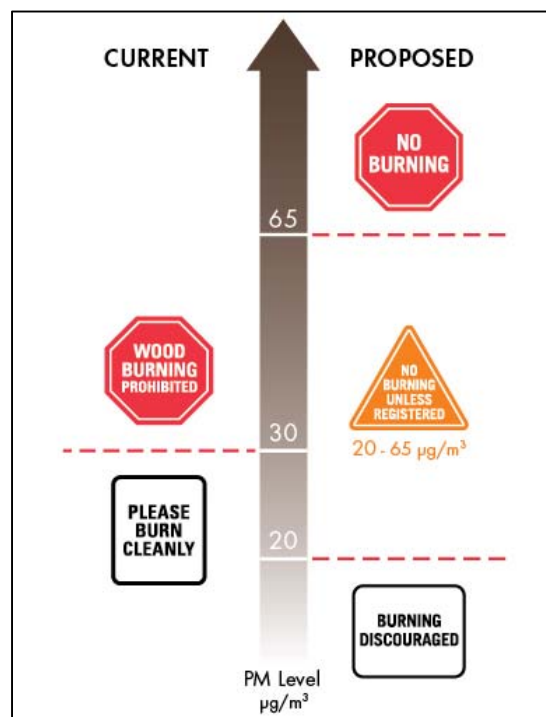
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**ECONOMIC ANALYSIS
Amendments to Rule 4901**

Pursuant to California Health and Safety Code (CH&SC) requirements, the District has performed a cost effectiveness analysis and socioeconomic analysis to assess the economic impacts of amendments to Rule 4901 in the Valley. The registration of residential wood burning heaters is an optional program; no Valley resident is required to replace an existing wood burning heater or to register their wood burning heater. Therefore, there are no required costs or economic impacts associated with the new registration program. However, potential economic impacts could result from the revised Episodic Wood Burning Curtailments.

Rule amendments would reduce emissions from residential wood burning activities by implementing a tiered approach to episodically curtailing wood burning based on air quality each day during the wood burning season. In summary, Level One Episodic Curtailments would be declared when the PM_{2.5} concentrations are forecast to exceed 20 µg/m³ but not to exceed 65 µg/m³; the use of registered clean wood burning heaters would be allowed. Level Two Episodic Curtailments would be declared when the PM_{2.5} concentrations are forecast to exceed 65 µg/m³; the use of all residential wood burning heaters would be prohibited. Refer to the staff report for a more detailed discussion of the Episodic Wood Burning Curtailments; see Figure C-1 for a visual representation of these curtailments.

Figure C-1 Visual Representation of Episodic Tiered Curtailment Thresholds



I. Cost Effectiveness Analysis

Per CH&SC Section (§) 40920.6(a), the District conducts absolute and incremental cost effectiveness analyses of available emission control options to evaluate the economic reasonableness of a rule or rule amendment prior to adoption. As the following write-up will explain, these rule amendments result in an annual emission reduction of 392.22 tons of directly emitted PM2.5 (refer to Appendix B), with no significant additional cost to Valley residents.

Absolute cost effectiveness of a control option is the additional annual compliance cost (in dollars per year) of the control technology or technique divided by the emission reduction achieved in tons of pollutant reduced per year (tons/year).

Incremental cost effectiveness is the difference in cost between two successively more effective controls, divided by the additional emission reduction achieved. An incremental cost effectiveness analysis was not performed because it is not applicable to this project as there is only one control option

As discussed in the body of the staff report, lowering of the threshold for Episodic Wood Burning Curtailments from 30 µg/m³ to 20 µg/m³ would result in an estimated Valley-wide average increase of 34 No Burn days per wood burning season per county. The costs resulting from this analysis are not significant.

Additionally, the registration of clean burning residential wood burning devices is an entirely optional program; no Valley resident is required to replace an existing device or register their device. As these requirements are not mandatory, there are no required costs associated with them.

Table 1 Additional No Burn Days Projected for Each Wood Burning Season by County

County	Additional No Burn days
San Joaquin	29
Stanislaus	36
Merced	36
Madera	38
Fresno	36
Kings	31
Tulare	33
Kern	35

Costs incurred by Valley residents would be the cost of turning on the home's heating system instead of burning an approved fuel such as seasoned wood or pellets in the

home's wood burning heater. Because these costs only occur for an additional 34 days per year and because the cost of the electricity is offset by the cost of the approved fuel, amendments to this rule are considered no cost amendments. The District is aware that some residents burn free wood; however this is considered an anomaly due to its rarity and will therefore not be accounted for in this analysis.

II. Socioeconomic Analysis

A. INTRODUCTION

Pursuant to CH&SC §40728.5 as well as the District's *2011 Economic Analysis Process Recommendations*,¹ the District conducted a socioeconomic analysis of the proposed rule amendments. This socioeconomic analysis, guided by the CH&SC, examines how rule amendments may impact the San Joaquin Valley's (Valley's) industries and businesses, employment rates, and economy.

B. SOCIOECONOMIC ANALYSIS

The CH&SC consists of six specific requirements. The discussion of the necessity of adopting, amending, or repealing Rule 4901 to attain state and federal ambient air quality standards is in the body of the staff report. The emission reductions potential of amendments to the rule are discussed in Appendix B (Emission Reduction Analysis). The other four CH&SC requirements for a socioeconomic analysis are satisfied through this appendix.

1. Type of industries or businesses, including small businesses, affected by amendments to the rule

A socioeconomic impact is any effect to the Valley's employment or economy due to a regulatory action. The following groups that could potentially be affected by these rule amendments are manufacturers of the devices, retailers who sell the devices and associated fuels, retailers who sell the seasoned wood for fireplaces, and Valley residents who live in homes with fireplaces or wood burning heaters that do not qualify to be registered with the District.

There are no manufacturers of wood burning heaters in the Valley. Retailers who sell residential wood burning devices and associated fuels are in a position to increase profits due to the estimated increase in Valley residents who will upgrade their existing fireplaces and older more polluting devices for EPA certified devices. Retailers who sell the seasoned wood for fireplaces would experience some decrease in profits due to the additional No Burn days, however they would still be able to sell smaller amounts of wood to those homes with registered wood burning devices who will see an increase in

¹ San Joaquin Valley Air Pollution Control District [SJVAPCD]. (2011, October 20). *Enhancements to District Economic Analysis of Regulations*. Fresno, CA. Retrieved from http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2011/October/GB_Agenda_Item_13_Oct_20_2011.pdf

the use of their wood burning heaters. The combination of relatively few increased No Burn days with the continued use of wood in EPA certified devices, and the ability of the retailer to pass on profit losses to the consumer will minimize economic impacts on these retailers. No significant socioeconomic impacts are expected to result from rule amendments.

2. Availability and cost effectiveness of alternatives to the rule amendments

There are no alternatives to lowering the episodic wood burning curtailment threshold; therefore, there would be no increased cost.

3. Impact of amendments on employment and the economy of the region

Because this is a no cost rule and the socioeconomic impacts on Valley businesses and industries is not significant, no impact is anticipated on employment or the economy of the region.

C. ADDITIONAL SOCIOECONOMIC ANALYSES

Per the *2011 Economic Analysis Process Recommendations* document, District staff is advised to include additional analyses as a part of each socioeconomic analysis for new or amended rules. As such, the District also evaluated the costs and socioeconomic impacts from previous versions of a rule and Impacts to small businesses, municipalities, and at-risk communities.

1. Costs and Socioeconomic Impacts from Previous Versions of the Rule

Rule 4901 was adopted on July 15, 1993 and subsequently amended in July 2003 and again in October 2008. For purposes of this analysis, the District did a ten year historical review which included the October 2008 amendments. The analyses for the 2008 amendments resulted in the conclusion that impacts stemming from the proposed amendments are less than significant across the board, particularly from the vantage point of the retailers that sell logs and small businesses are not disproportionately impacted by the rule.

2. Impacts to Small Businesses, Municipalities, and At-Risk Communities

As discussed in the analyses above, the impact to small businesses and at-risk communities is less than significant and municipalities would not be affected by rule amendments.

APPENDIX D

Health Benefit Analysis

Proposed Amendments to Residential Wood Burning Program

September 18, 2014

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HEALTH BENEFIT ANALYSIS**I. Health Benefits from Reducing Wood Smoke Exposure**

Based on a large body of interrelated scientific research conducted in the San Joaquin Valley (Valley) and elsewhere, episodic curtailments of residential wood combustion (RWC) under Rule 4901 have resulted in substantial health benefits for the Valley population since these controls were adopted in 2003 and strengthened in 2008. Furthermore, the rule is the most cost-effective rule adopted by the San Joaquin Valley Air Pollution Control District (District), conferring the greatest absolute health benefit of any rule ever adopted by the District at the lowest per unit cost. As discussed further below, the large value of these benefits is related to (1) the high level of cumulative population exposure to urban RWC emissions compared to other sources, (2) the relative effectiveness of burning curtailments in reducing per capita PM_{2.5} exposure levels in urban areas where the Valley population is concentrated, (3) the relative toxicity of chemicals found in the fine (PM_{2.5}) and ultrafine (PM_{0.1}) particles that are generated by wood combustion, and (4) the overnight penetration of ultrafine particles from RWC into neighboring homes. As a result of these factors, Rule 4901 is a key component of the District's Health Risk Reduction Strategy (HRRS) that was put forward in the *2012 PM_{2.5} Plan*. The HRRS goes beyond a simple focus on PM_{2.5} mass and incorporates additional health-related metrics (such as PM_{0.1} exposure) for prioritizing control strategies for individual emission sources.

Wood smoke contains a combination of aerosols (particles) that are less than 2.5 microns in diameter (PM_{2.5}) with an additional large number of ultrafine particles less than 0.1 microns (PM_{0.1}). It is also a rich source of gasses including carbon monoxide, formaldehyde, sulfur dioxide, and other irritant gases such as polycyclic aromatic hydrocarbons (PAH). PAH 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.¹ 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,² pulmonary arterial hypertension,³ and pulmonary heart disease,⁴ which can eventually lead to heart failure in adults.⁵ Wood smoke has also

¹ Kelly, F.J. (2006) Oxidative Stress: Its Role in Air Pollution and Adverse Health Effects. *Occupational Environmental Medicine* 60:612–616. Retrieved from <http://oem.bmj.com/content/60/8/612.full>

² Defined as a group of lung diseases affecting the interstitium (the tissue and space around the air sacs of the lungs), 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.

³ Pulmonary arterial hypertension begins when tiny arteries in the lungs, called pulmonary arteries, and capillaries become narrowed, blocked, or destroyed. This makes it harder for blood to flow through to the lungs, and raises pressure within lung arteries.

⁴ 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).

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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.^{6, 7, 8} Children with the highest exposure to wood smoke show a significant decrease in lung function.⁹

On a regional level, the enclosed geophysical environment of the Valley acts to magnify the health impacts of wintertime RWC relative to other California air basins such as the Bay Area and South Coast that are well-exposed to fresh marine air currents and not surrounded by mountains that trap the pollutants. 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 PM_{2.5} levels, sometimes well beyond the federal daily standard of 35 µg/m³. 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 envelop urban neighborhoods. Because of the concentration effect of winter nighttime inversions, urban RWC has a disproportionate impact on daily and yearly PM_{2.5} concentrations at urban monitors.

People are exposed to wood smoke when they use their wood burning devices, particularly when starting or reloading wood stoves or fireplaces. Additionally, because windows and doors cannot prevent ultrafine particles (PM_{0.1}) in wood smoke from penetrating homes, neighboring households that are downwind of wood-burning neighbors during inversion events are exposed to PM_{0.1} found in wood smoke. A recent ARB-funded study of residential wood smoke impacts on indoor air quality was conducted in Cambria, California and published in 2011.¹⁰ Using aethalometers designed to monitor carbon black found in wood smoke, the study found nighttime outdoor concentrations in Cambria neighborhoods were 2 to 10 times higher than the cleanest part of the city. Most significantly, over the course of the winter season, indoor

⁵ Sandoval, J.; Slas, 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) *Chest* 103:12-20.

⁶ Danielsen, P.H.; Bräuner, E.V.; Barregard, L.; Sällsten, G.; Wallin, M.; Olinski, R.; Rozalski, R.; Møller, P.; Loft, S. Oxidatively damaged DNA and its repair after experimental exposure to wood smoke in healthy humans. (2008) *Mutat Res.* 642(1-2):37-42.

⁷ Barregard, L.; Allsten, G.S.; Gustafson, P.; Johansson, L.; Johannesson, S.; Basu, S.; Stigendal, L. Experimental Exposure to Wood-Smoke Particles in Healthy Humans: Effects on Markers of Inflammation, Coagulation, and Lipid Peroxidation (2006) *Inhalation Toxicology* 18:845–853.

⁸ Sapkota, A.; Gajalakshmi, V.; Jetly, D.H.; Roychowdhury, S.; Dikshit, R.P.; Brennan, P.; Hashibe, M.; Boffetta, P. Indoor air pollution from solid fuels and risk of hypopharyngeal/laryngeal and lung cancers: a multicentric case-control study from India. (2008) *Int J Epidemiol.* 37(2):321-8.

⁹ Heumann, M.; Foster, L.R.; Johnson, L.; Kelly, L. Woodsmoke Air Pollution and Changes in Pulmonary Function Among Elementary School Children (1991) Air & Waste Management Association 84th Annual Meeting & Exhibition, Vancouver, British Columbia.

¹⁰ Thatcher, T. & Kirchstetter, T. (2011). *Assessing Near-Field Exposures from Distributed Residential Wood Smoke Combustion Sources*. Report prepared for the California Air Resources Board. Retrieved from <http://www.arb.ca.gov/research/rsc/10-28-11/item2dfr07-308.pdf>

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concentrations of carbon black in neighboring 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 a source's total emissions that actually end up being inhaled) for neighborhood wood combustion when compared to other sources of PM that are less proximate to urban neighborhoods or do not generate large numbers of PM_{0.1}. Taking into consideration the length of PM_{0.1} inhalation during sleeping hours, the relatively high concentration of PM_{0.1} found in RWC plumes, and the number affected of individuals in an urban neighborhood, the intake fraction resulting from the source of the wood smoke is relatively high. Assuming that this nightly exposure occurred over the course of a season, the cumulative health risk to the neighborhood from PM_{0.1} exposure is likely to exceed the risk indicated by daily concentrations of PM_{2.5} measured by urban monitors.

Any evaluation of the relative health benefits of Rule 4901 must take in consideration a number of risk factors that amplify the health effects of wood smoke emissions relative to other sources addressed in the *2012 PM_{2.5} Plan*. First, it is recognized that the organic carbon compounds such as PAH that compose wood smoke are known to trigger negative pulmonary and cardiovascular, especially for sensitive populations. A recent epidemiological study conducted in Modesto, Fresno, and Bakersfield found a clear positive statistical correlation between daily organic carbon concentrations and emergency room admission rates for asthmatics.¹¹ That same study found no evidence of a positive correlation between elevated emergency room admissions and daily concentrations of ammonium nitrate, a species that composes approximately 50% of daily PM_{2.5} mass during winter months. Second, as noted above, the intake fraction of wood smoke emissions is an estimated order of magnitude higher in densely populated urban areas when compared to rural emissions that are diluted via transport in low-population density environments.

Based on the cumulative evidence, it is clear that because of the relative toxicity of wood smoke related to its high levels of OC, the high level of PM_{0.1} particles found in wood smoke, and the high intake fraction of RWC emissions, health impacts from PM_{2.5} have been shown by Valley epidemiological research to be concentrated in winter months when RWC emissions are highest. To conclude, on a per unit basis each ton of RWC emissions makes a disproportionate contribution to negative health effects from PM_{2.5} in the Valley.

¹¹ http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2014/June/presentations/11-A.pdf

II. Using EPA's BenMAP Model to Estimate Health Benefits of Rule 4901

Reflecting the scientific factors described above regarding the disproportionate health benefits from reducing exposure to wood smoke, prior research sponsored by the District has shown that Rule 4901 and subsequent amendments (2003, 2008, 2014) confer substantial health benefits for residents of the Valley. This is particularly apparent when taking into consideration that the health benefits have continued to accumulate via each successive amendment of Rule 4901.

Baseline scientific evidence in support of this contention was generated prior to the adoption of the 2008 Amendments and focused on the health benefits of the episodic RWC curtailments established by the 2003 Amendments. This was made possible through the combined use of meteorological modeling developed by District staff and the EPA's Environmental Benefits Mapping and Analysis Program (BenMAP). BenMAP is an EPA-developed computer model designed to quantify reductions in morbidity (disease) and mortality (pre-mature death) based on an estimated reduction in annual daily exposure to a given population. Once the reduction in annual daily exposure has been estimated based, the model then calculates (1) the number of reduced cases of disease-related events and pre-mature death for a given reduction in annual PM_{2.5} exposure and (2) the economic value of those avoided health impacts.¹² A more detailed explanation of how the BenMAP model works is found in Appendix E of the District's *2012 PM_{2.5} Plan*.¹³

According to the results of the study conducted by the Central Valley Health Policy Institute and UCSF-Fresno, the significant winter season PM_{2.5} mass reductions attributable to daily RWC curtailments under Rule 4901 were equivalent to a 13.6% annual (year-round) reduction in daily PM 2.5 exposure for Fresno, and an estimated 12.9% annual reduction for Bakersfield.

The significant increase in the number of curtailment days resulting from the lower 24 hour threshold adopted in the 2008 Rule 4901 amendments from 65 $\mu\text{g}/\text{m}^3$ to 30 $\mu\text{g}/\text{m}^3$ has resulted in a proportional increase in the health benefits of the rule above and beyond that of the 2003 Amendments. Further significant health benefits can be expected from the proposed reduction in the 24 hour curtailment threshold for Rule 4901 to 20 $\mu\text{g}/\text{m}^3$.

Our point of emphasis here is that the health benefits resulting from each Rule 4901 amendment are cumulative, with each revision resulting in an additional set of health benefits. In particular, the 2003 and 2008 amendments have contributed very large health benefits that clearly exceed the health benefits of any previous District rule for PM_{2.5} or ozone. In addition Rule 4901 has made a disproportionate contribution to declines in daily tons per day of directly emitted PM_{2.5} over the past decade.

¹² BenMAP can also estimate the health benefits of ozone reduction. See <http://www.epa.gov/air/benmap/> for more information on BenMAP, downloading the program, and for technical documents.

¹³ See http://www.valleyair.org/Air_Quality_Plans/PM25Plans2012.htm

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According to ARB's PM_{2.5} inventory, RWC emissions composed 25.1% of total winter direct PM_{2.5} emissions in 2003 and have been reduced through the Rule amendments to 12.7% in 2014. The comparable figures for reductions in annual daily tpd from RWC is 12.2% in 2003, declining to 5.7% in 2014. Put differently, 2014 wintertime RWC emissions have declined by 64.7% since 2003, whereas total emissions of PM_{2.5} from all sources have only declined by 30% in the same time period.

Further insights can be gained from examining the cumulative contribution to health risk reduction from Rule 4901 in the context of the District's use of the BenMAP model to estimate the annual health benefits from all new control measures in the *2012 PM_{2.5} Plan*. Keeping in mind the disproportionate contribution of Rule 4901 both to overall health benefits and daily tonnage of direct PM_{2.5} discussed above, Table D-1 summarizes the substantial health benefits based on the BenMAP analysis of the *2012 PM_{2.5} Plan*. The health benefits in Table D-1 do not capture the already considerable health benefits of the 2003 and 2008 amendments. And while it is difficult to quantify the health benefits of an individual rule due to the statistical limitations of the BenMAP model, a review of all control measures in the *2012 PM_{2.5} Plan* make it clear that the 2014 Rule 4901 amendment continues to make the largest health benefit contribution of any single control measure in the *2012 PM_{2.5} Plan*. As emphasized above, these health benefits are incremental additions to the already substantial benefits that have already resulted from the 2003 and 2008 amendments.

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Appendix D: Health Benefit Analysis

September 18, 2014

Table D-1: BenMAP Estimates of 2019 Average Annual Reduction in Morbidity and Mortality under the 2012 PM2.5 Plan

Health Endpoint	Totals	Fresno	Kern	San Joaquin	Stanislaus	Tulare	Merced	Kings	Madera
Acute Myocardial Infarction	93	29	25	9	7	11	3	4	4
HA, Asthma 0-19	131	56	28	9	11	13	4	4	6
HA, Cardiovascular	175	47	51	16	14	26	6	10	5
HA, Asthma 20-99	246	64	77	30	16	35	11	7	6
ER Visits, Asthma 20-99	407	123	94	48	28	53	22	23	16
Chronic Bronchitis	595	168	164	57	49	80	25	29	23
ER Visits, Asthma 0-19	699	252	160	47	44	90	36	35	37
Acute Bronchitis	1,498	404	406	149	127	222	72	64	54
Upper Respiratory Symptoms	15,523	4,206	4,294	1,482	1,260	2,334	728	667	552
Lower Respiratory Symptoms	19,011	5,093	5,207	1,887	1,595	2,829	912	807	681
Asthma Exacerbation	114,376	31,144	31,124	11,269	9,469	17,037	5,445	4,867	4,021
Work Loss Days	125,138	34,816	35,300	11,752	10,077	16,882	5,367	6,303	4,641
Pre-Mature Mortality	671	172	207	72	61	86	26	23	24

Note: Shaded health endpoints are based on concentration response functions (CRF) derived from the 2010 Valley Epidemiological Study conducted by CSU Fresno and UCSF-Fresno.

APPENDIX E

Public Survey Reports

Proposed Amendments To Residential Wood Burning Program

September 18, 2014

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Residential Wood Burning, Lawn
Care, and Commuting Survey

Final Report

February 2014

Submitted to:

San Joaquin Valley Air
Pollution Control District



Submitted by:

Gomez Research
Pasadena, California

Public Opinion Survey 2014

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EXECUTIVE SUMMARY

As part of its mission to bring the San Joaquin Valley into compliance with federal and state clean air standards, the San Joaquin Valley Air Pollution Control District contracted with Gomez Research, an independent research and consulting firm, to conduct a survey of residents to help evaluate residential wood burning, lawn care, and commuting patterns. The purpose of the study was to gauge residents' activity levels as well as to document public awareness and understanding of the District's programs. The study was designed to measure: (1) residential wood-burning frequency; (2) the use of gas-powered lawn equipment and professional lawn care services; (3) personal commuting behavior and student transportation; and (4) perceptions of the District, its programs, and the local air quality. Findings will be used to gauge the effectiveness of the District's outreach programs, inform future outreach strategies, and provide data for estimating the emissions produced from these three sources.

A total of 1,000 telephone surveys were conducted with owners and renters of single-family homes¹ in San Joaquin, Stanislaus, Merced, Kings, Fresno, Madera, Tulare Counties and the Valley portion of Kern County, yielding an overall margin of error of +/-3 percent. The survey was conducted in English and Spanish and 40 percent of all telephone interviews were conducted on cell phones, ensuring that residents without landlines would be included in the study. Gomez Research used random-digit dialing (RDD) techniques whereby telephone prefixes were matched to zip codes for the San Joaquin Valley geographical area, and the remaining four digits were randomly generated. The surveys were conducted between January 3 and January 19, 2014. The average length of the survey was 9 minutes in English and 12 in Spanish. Results were weighted to ensure that the sample reflected U.S. Census data. All statements presented here refer to the region as a whole, unless otherwise indicated. In addition, all differences between demographic groups presented here are statistically significant at the 95 percent confidence level, unless otherwise noted. Key findings are presented by topic area for respondents overall, followed by any differences among sub-groups.

Key Findings

Residential Wood Burning

- a. **Nearly one-third (32 percent) of all residents surveyed reported have a wood-burning device in their home.** Among those residents with wood-burning devices, 13 percent were identified as exempt from mandatory no-burn restrictions.
- b. **Nearly one-quarter of residents who use their devices (23 percent) reported lighting their fireplace or stove once a week or more.** Once started, fires burn for six hours on average.
- c. **Respondents who reported using their devices weekly reported burning fires for longer periods of time.** Residents who used their devices once a week or more reported burning their fires for 8.3 hours on average compared to 3.5 hours among those who used their devices less frequently.

¹ The sample is limited to single-family units to ensure that the greatest number of respondents would be able to answer questions regarding wood combustion and lawn care. Based on U.S. Census data, we estimate that more than 80 percent of housing units in the San Joaquin Valley service are single-family units. In some communities, such as Madera, nearly 90 percent of the units are single family.

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- d. **Just under three-fourths of residents surveyed (71 percent) burn seasoned firewood, followed by a third (32 percent) who use manufactured logs, such as Duraflame, and 13 percent who use pellets.** A total of 11 percent of residents surveyed reported that they burn trash, magazines, newspapers and/or other household materials as fuel.
- e. **The study found significant differences by region in the proportion of residents with wood-burning devices in their homes.** Residents in the Northern Region, including San Joaquin, Stanislaus, and Merced Counties, were more likely to own wood-burning devices compared to other residents. A total of 37 percent of residents from the Northern region reported having a wood-burning fireplace or stove in their homes, compared to 28 percent among residents in the Central region (Fresno, King, and Madera Counties) and the Southern region (Kern and Tulare Counties), a statistically significant difference.
- f. English-speakers (defined as those who chose to conduct the survey in English) were more likely to report that they had a wood-burning fireplace or stove compared to Spanish-speakers. Specifically, 37 percent of all English-speakers reported having a wood burning device at their residence compared to 15 percent among Spanish-speakers.
- g. Residents above median income were also more likely to report that they had wood burning devices compared to those below-median income (41 percent compared to 26 percent, respectively). In addition, homeowners were more likely to report having a wood-burning device compared to renters.
- h. **Residents who are exempt from mandatory wood-burning regulations were more likely to own a wood-burning device compared to other residents (45 percent of exempt residents compared to 29 percent of non-exempt residents).**
- i. **The Check Before you Burn Program continues to be widely recognized by Valley residents.** There were no statistical changes in the proportion of residents who reported hearing of the program (80 percent in 2014 compared to 83 percent in 2010, statistically equivalent).
- j. In addition, more than three-fourths (78 percent) of residents with wood burning devices who had heard of the Check Before You Burn Program reported that they had reduced their wood burning as a result.
- k. **Less than a quarter of all residents surveyed (17) were familiar with the Burn Cleaner Program.**
- l. Just under one-third (29 percent) of residents surveyed reported that they would be willing to replace their traditional wood-burning fireplace or stove if they could use it on some No-Burn days.
- m. **A total of 12 percent of all residents with traditional wood burning devices reported that they would be willing to make the purchase if given a 15 percent discount.**

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- n. **Findings suggest that approximately 24 percent of residents with wood-burning devices would participate in the program if the rebate were increased to 50 percent** (combined totals for residents who would participate at 15, 25, and 50 percent levels.)
- o. **More than half of all residents surveyed (55 percent) reported that they believe wood smoke is a significant source of air pollution in their neighborhoods.** Residents living in the Central Region (Fresno, Madera, and Kings County) were more likely to report that wood smoke was a problem (63 percent) compared to residents from the Northern and Southern regions (49 percent and 53 percent, respectively).

Residential Lawn Care

- a. **The majority of San Joaquin Valley residents (61 percent) tend to their own lawns rather than hire a service.** One quarter of residents use a lawn service to handle all of their yard work and another 3 percent use a lawn service for a portion of the work.
- b. **Nearly three-fourths of residents (73 percent) who care for their own lawns and gardens use gas-powered equipment,** most frequently walk-behind lawn mowers (84 percent), lawn edgers (39 percent), string trimmers (38 percent), and leaf blowers (35 percent).
- c. **Most residents (54 percent) use a service four times a month during the summer followed 22 percent who use a service every other week.** Fewer than 10 percent of residents use a service more than once a week. The average number of times a lawn service was used in the summer was four times. Approximately half (46 percent) of residents who use a lawn service reported that their lawn service comes as frequently during the winter months.
- d. **A total of 84 percent of all residents surveyed reported that they were not aware of the Clean Green Yard Machine Rebate Program.** Spanish-speakers were much less likely than English-speakers to report that they had heard of the Rebate Program (5 percent of Spanish-speakers compared to 18 of English-speakers). In addition, results suggest that Spanish-speaking residents are more likely to care for their own lawns. More than two-thirds of Spanish-speakers (69 percent) reported that they or others in their household do all the yard work, compared to 58 percent among English speakers, a statistically significant difference.

Commuting Patterns

- a. **Half of the residents surveyed reported that they drive alone to work, followed by 30 percent who do not work outside of the home.** A total of 12 percent reported that they drive in a carpool or vanpool. Only 2 percent of respondents reported that they take public transportation.
- b. **Approximately half of commuters surveyed reported that they would consider carpooling if their employer provided a more flexible work schedule, financial incentives, assistance with coordinating carpool partners, or free parking.**

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- c. **Among residents with school age children (42 percent of all residents surveyed) nearly half reported that they drive their children to school.** Approximately one-quarter of residents reported that their children take the school bus or walk/bike to school. Less than 3 percent of all residents reported that their children take public transportation or carpool with other students.
- d. The most frequently cited reasons for not allowing children to walk or bike to school were distance and concerns about safety.
- e. More than two-thirds (69 percent) of residents with school-age children agreed that idling cars are a significant source of air pollution.

General Beliefs and Awareness

- a. **Findings indicate that the majority of residents believe the air quality in the San Joaquin Valley has improved or stayed the same compared to three years ago (similar to results from the 2010 survey).** There was, however, a 5 percentage-point decrease this year in the proportion of residents who believe the air quality has gotten “somewhat worse” over time.
- b. **Awareness of the District remains high among residents.** A total of 57 percent of residents this year reported that they had heard of the District, unchanged from 2010.
- c. **More than two-thirds (68 percent) of all residents familiar with the District reported that they had a “very favorable” or “somewhat favorable” view of the District.**

Conclusions

Overall, study findings suggest that past outreach efforts have helped raise public awareness about the District and its programs, but further outreach is still needed. The Check Before You Burn Program continues to be recognized by eight-out-of-ten residents, and those residents aware of the Program report that they have reduced their wood-burning in response to the outreach. In contrast, awareness of the Burn Cleaner and Clean Green Yard Machine Rebate Programs could be improved. Less than 20 percent of residents are aware of either the Burn Cleaner or Clean Green Yard Machine Rebate Programs. Spanish-speakers, who are more likely to care for their own lawns compared to other residents, had particularly low awareness levels. In addition, findings suggest that more residents would consider carpooling to work if their employers offered a flexible schedule, financial incentives, free parking or other programs. These findings suggest that efforts to build more employer programs and outreach to increase awareness of the District’s rebate programs may be helpful in promoting changes in personal behavior and improving air quality.

INTRODUCTION

The San Joaquin Valley Air Basin, which spans 250 miles and is home to three million residents, is unusually susceptible to air pollution. The Valley's surrounding mountain topography, hot summers, foggy winters and frequent temperature inversions help form and retain a variety of air pollutants. While air quality in the Valley has improved significantly over the past 15 years, the Valley continues to be one of the more polluted regions in the nation.

As part of its mission to bring the San Joaquin Valley into compliance with federal and state clean air standards, the San Joaquin Valley Air Pollution Control District contracted with Gomez Research to conduct a survey of residents to help evaluate residential wood burning, lawn care, and commuting patterns. The purpose of the study was to gauge residents' activity levels as well as to document public awareness and understanding of the District's programs. The study was designed to measure: (1) residential wood-burning frequency; (2) the use of gas-powered lawn equipment and professional lawn care services; (3) personal commuting behavior and student transportation; and (4) perceptions of the District, its programs, and the local air quality. Findings will be used to gauge the effectiveness of the District's outreach programs, inform future outreach strategies, and provide data for estimating the emissions produced from these three sources.

The remainder of this report presents the survey methodology and findings that emerged from the data analyses and is organized as follows:

- The **Methodology** section, which describes data collection and statistical methods;
- The **Findings** section, documenting awareness and behaviors;
- **Conclusions**; and,
- The **Appendices**, which include the survey instrument, frequencies for each question, and a demographic profile of residents surveyed compared to known population estimates.

METHODOLOGY

Overview

A total of 1,000 telephone surveys were conducted with owners and renters of single-family homes² in San Joaquin, Stanislaus, Merced, Kings, Fresno, Madera, and Tulare Counties and the Valley portion of Kern County, yielding an overall margin of error of +/-3 percent. The survey was conducted in English and Spanish and 40 percent of all telephone interviews were conducted on cell phones, ensuring that residents without landlines would be included in the study. Gomez Research used random-digit dialing (RDD) techniques whereby telephone prefixes were matched to zip codes for the San Joaquin Valley geographical area, and the remaining four digits were randomly generated. All respondents were 18 years or older. (For a copy of the survey, including frequencies overall see **Appendix A.**) The surveys were conducted between January 3 and January 19, 2014 using a computer-assisted telephone interview (CATI) system in which interviewers read questions from a computer screen and typed respondents' answers directly into a database. The average length of the survey was 9 minutes in English and 12 in Spanish.

² The sample is limited to single-family units to ensure that the greatest number of respondents would be able to answer questions regarding wood combustion and lawn care. Based on U.S. Census data, we estimate that more than 80 percent of housing units in the San Joaquin Valley service are single-family units. In some communities, such as Madera, nearly 90 percent of the units are single family.

Caveats

It should be noted that the residential survey, like all surveys, has self-reporting bias and should be used in conjunction with results from air pollution reports to determine the extent to which residents are participating in activities that reduce air pollution. Survey research depends on respondents providing truthful and accurate reports of their activities. In addition, caution should be taken in comparing data from 2014 with responses from the 2010 survey. The 2010 survey included all residents, whereas the 2014 survey focused on residents living in single-family homes and duplexes to ensure a sufficient sample of residents with wood-burning devices and private lawns.

Weighting

The sample was weighted to reflect the population based on the following dimensions: age, race/ethnicity, gender, telephone use, and county of residence. Data were not weighted on income due to non-response bias. Weighting target values were based on the average (population-adjusted) characteristics of the eight-county area. Characteristics were derived from the U.S. Census. Telephone use data were obtained from the U.S. Center for Disease Control. Weighting was conducted through iterative proportional fitting, also known as raking.

Statistical Comparisons

Statistical tests were conducted for all comparative analyses to identify whether observed differences among demographic groups or categories were statistically significant.³ All reported differences were statistically significant at the 95 percent confidence level unless otherwise noted.

Report Organization

This report has been organized around the following topical areas:

- Residential Wood Burning;
- Residential Lawn Care;
- Commuting Patterns; and,
- General Beliefs and Awareness.

The next section of this report presents study findings.

³ A statistically significant difference means that the difference between years or among groups is not by chance, and that a real difference exists.

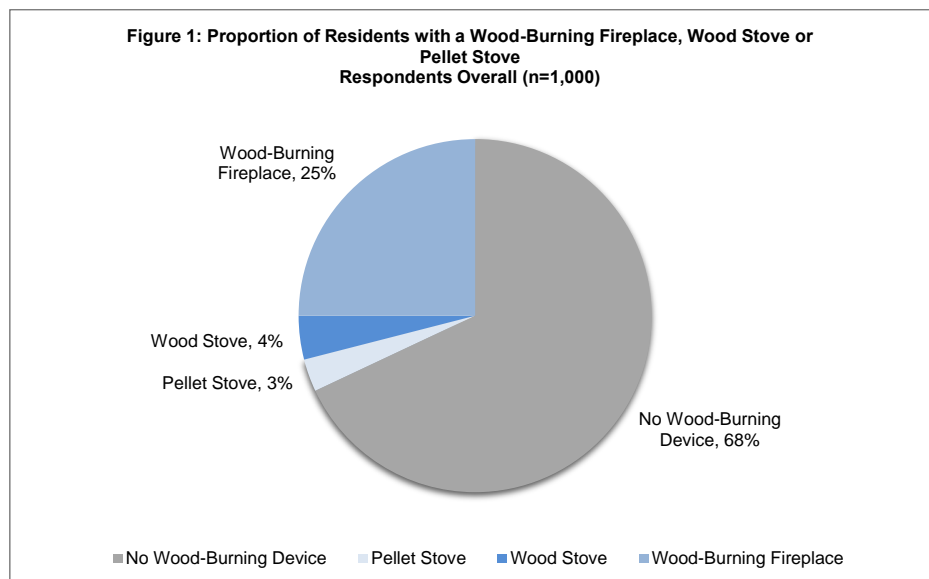
FINDINGS

Residential Wood Burning

A key objective of the research was to gauge the use of wood-burning devices in the San Joaquin Valley and to measure public awareness of outreach campaigns designed to reduce wood-smoke pollution. Results are presented for residents overall, followed by demographic and regional differences.

Presence of Wood Burning Devices

Respondents were first asked if they had a wood-burning fireplace, wood stove, or pellet stove in their home. **As seen in Figure 1, nearly one-third (32 percent) of all residents surveyed reported having a wood-burning device in their home.** Among those residents with wood-burning devices, 13 percent were identified as exempt from mandatory no-burn restrictions.⁴



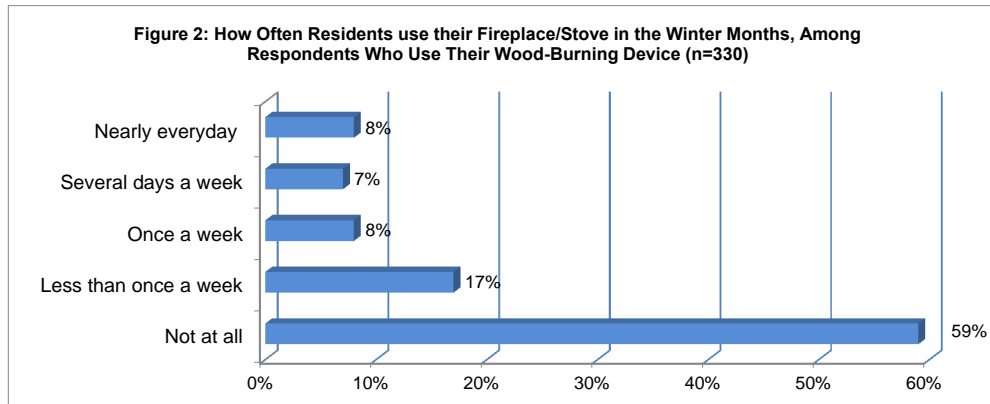
*Figure based on Q2: I'd like to ask you about the heating devices you may have in your home. Do you have a wood-burning fireplace, wood stove, or pellet stove in your home?

Use of Wood-Burning Devices

Respondents who reported having a wood-burning device were asked how often they use their fireplace or stove during the winter months. Results are presented in **Figure 2. In 2014, more than half of all residents with a wood-burning fireplace or stove reported that they do not use their**

⁴ Exempt residents were defined as those living in areas where no natural gas connections are available or in cases where the wood-burning device is the sole source of heat at a residence.

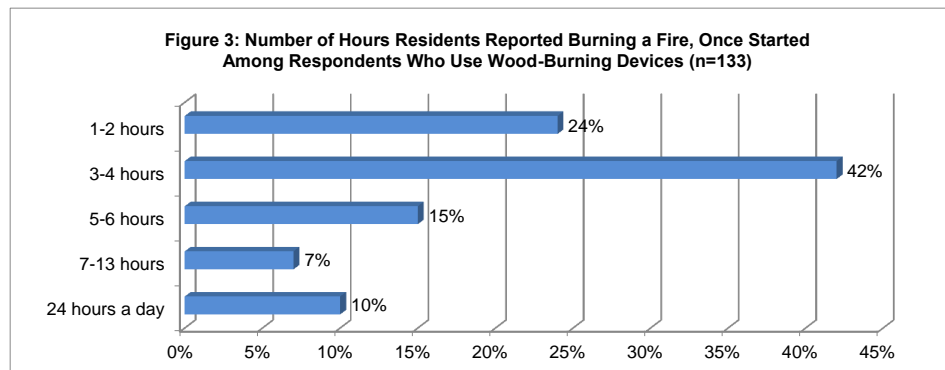
devices (59 percent), up from 49 percent in 2010. Despite an apparent drop in the use of wood-burning devices overall, nearly one-quarter of residents who use their devices (23 percent) reported lighting their fireplace or stove once a week or more. A total of 8 percent of residents reported using their fireplace or stove nearly every day.



*Figure based on Q5: How often do you use your fireplace/stove in the winter? Nearly every day, several days a week, once a week, less than once a week, or not at all?

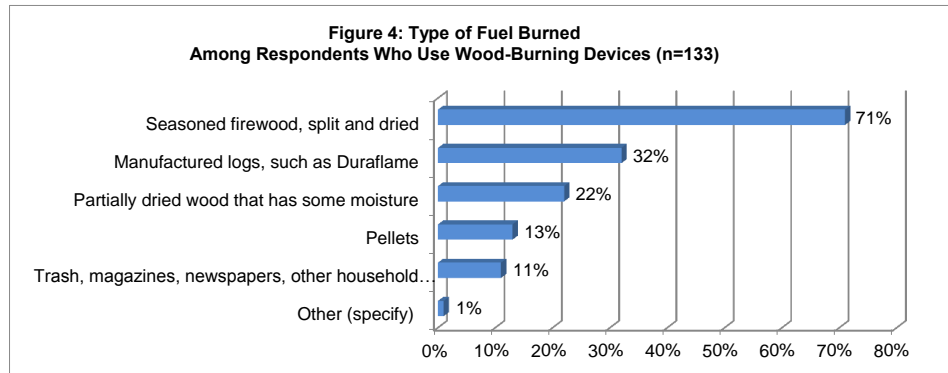
To help estimate the volume of wood-smoke produced during the winter season, residents who reported using their fireplaces or stoves were asked how many hours they typically burn a fire once started. **As seen in Figure 3, nearly two-thirds of residents (65 percent) burn their devices for four hours or less.** Once started, fires were burned for six hours on average (the median was four hours).

Respondents who reported using their devices weekly reported burning fires longer each time. Residents who used their devices once a week or more reported burning their fires for 8.3 hours on average compared to 3.5 hours among those who used their devices less frequently (no chart).



*Figure based on Q6: "Once started, how many hours does your fire usually burn?"

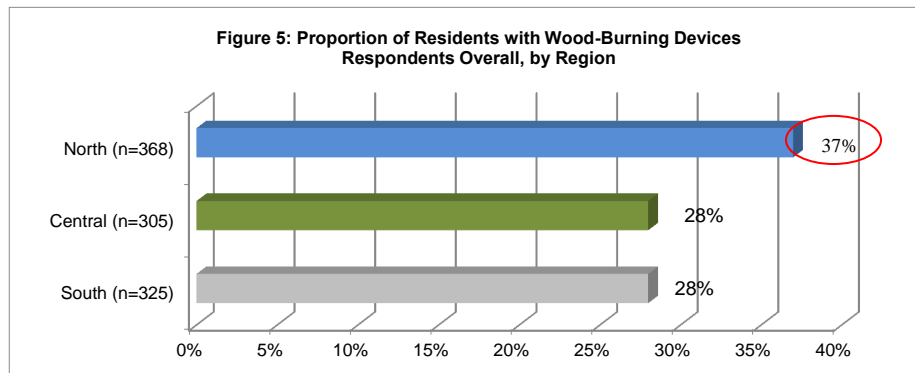
Next, respondents who use their wood-burning devices were asked what type of fuel they typically burn. **As seen in Figure 4, nearly three-fourths of residents surveyed (71 percent) burn seasoned firewood, followed by a third (32 percent) who use manufactured logs, such as Duraflame and 13 percent who use pellets.** A total of 11 percent of residents surveyed reported that they burn trash, magazines, newspapers and/or other household materials.



*Figure based on Q7: "Which of the following types of fuel do you typically burn?"

Regional/Demographic Difference in Use of Wood Burning Devices

The study found significant differences by region in the proportion of residents with wood-burning devices in their homes. **As seen in Figure 5, residents in the Northern Region, including San Joaquin, Stanislaus, and Merced Counties, were more likely to own wood-burning devices compared to other residents.** A total of 37 percent of residents from the Northern region reported having a wood-burning fireplace or stove in their homes, compared to 28 percent among residents in the Central region (Fresno, King, and Madera Counties) and the Southern region (Kern and Tulare Counties), a statistically significant difference.



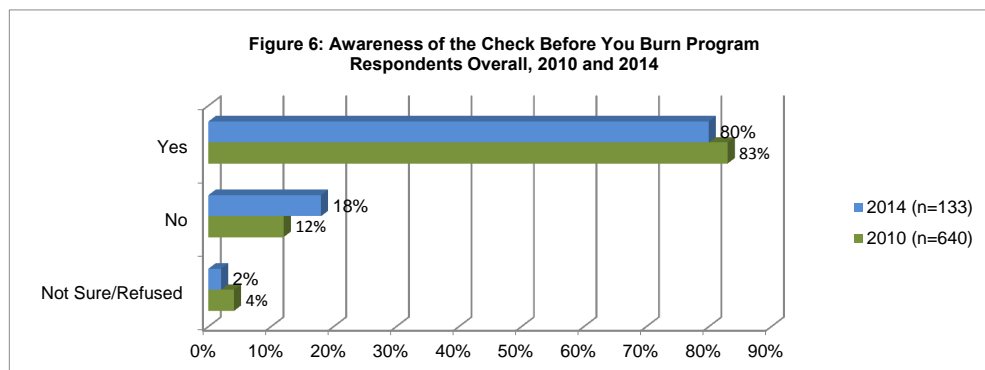
*Figure based on Q2: I'd like to ask you about the heating devices you may have in your home. Do you have a wood-burning fireplace, wood stove, or pellet stove in your home? Statistically significant differences at the 95 percent confidence level are circled.

Additional differences were found by language spoken, income, and other demographics. Results are presented below.

- English-dominant speakers (defined as those who chose to conduct the survey in English) were more likely to report that they had a wood-burning fireplace or stove compared to Spanish-speakers. Specifically, 37 percent of all English-speakers reported having a wood burning device at their residence compared to 15 percent among Spanish-speakers.
- Residents above median income were also more likely to report that they had wood burning devices compared to those below-median income (41 percent compared to 26 percent, respectively). Homeowners were also more likely to report having a wood-burning device compared to renters.
- **Residents who are exempt from mandatory wood-burning regulations were more likely to own a wood-burning device compared to other residents (45 percent of exempt residents compared to 29 percent of non-exempt residents).**

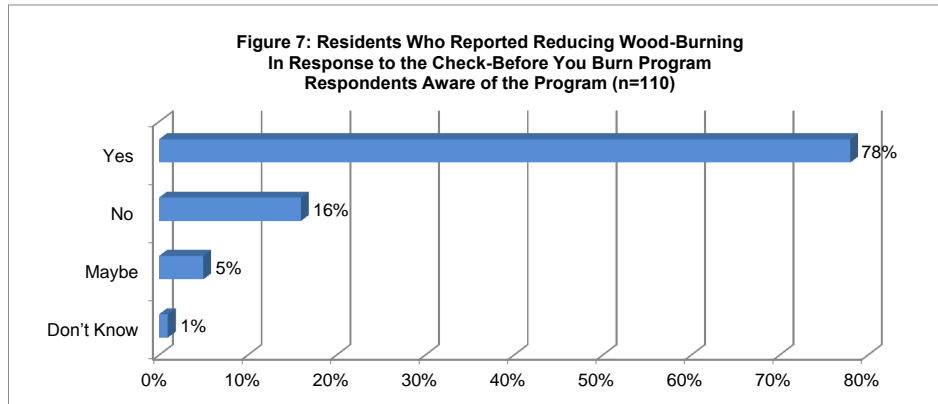
Awareness and Impact of the Check Before you Burn Program

This year, awareness questions regarding the Check Before You Burn Program were specifically asked of residents with wood-burning devices who are not exempt from mandatory no-burn restrictions to provide a more accurate picture of the potential impact of program awareness on air quality. (In previous years, all residents were asked the question, regardless of whether they had a wood-burning device or were exempt from regulations). As seen in **Figure 6**, the Check Before You Burn Program continues to be widely recognized by residents. There were no statistical changes in the proportion of residents who reported hearing of the program, even though a more specific segment of the population was surveyed (80 percent in 2014 compared to 83 percent in 2010, statistically equivalent).



*Figure based on Q8: Check Before You Burn runs from November through February each year, and prohibits wood burning in fireplaces, wood or pellet stoves, and outdoor fire pits during certain days when it is determined that air quality levels will be most impacted. Have you ever heard of the Check Before You Burn program? In 2014, only respondents who reported having a wood-burning stove and were not exempt from mandatory no-burn regulations were asked the question. In 2010, all respondents were asked.

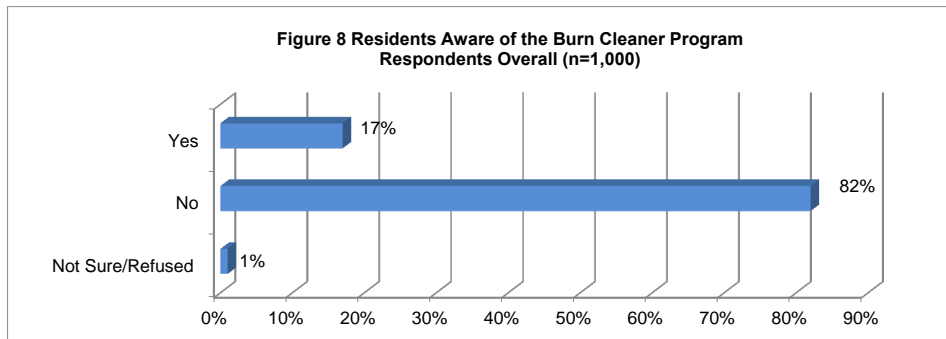
Next, respondents who reported that they had heard of the Check Before You Burn Program were asked if they had reduced the amount of wood they burn in response to the outreach. Results are presented in **Figure 7. More than three-fourths (78 percent) of residents with wood burning devices who had heard of the Check Before You Burn Program reported that they had reduced their wood burning as a result.**



*Figure based on Q9: Have you reduced the amount of wood burning you do in response to the Check Before You Burn Program? Base includes those respondents who have wood-burning devices, are not exempt from no-burn regulations, and have heard of the Check Before you Burn Program.

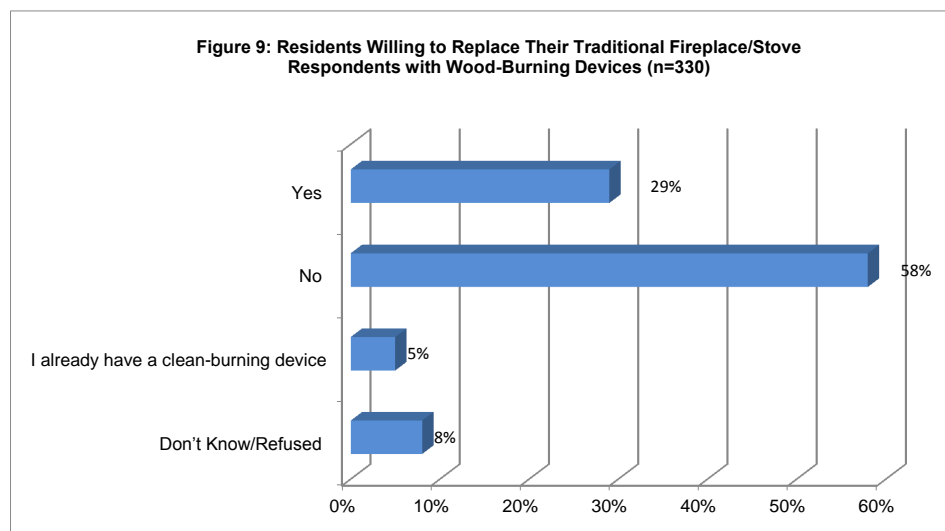
Awareness and Interest of the Burn Cleaner Rebate Program

In addition to measuring awareness of the Check Before You Burn Program, the study asked all respondents if they were aware of the Burn Cleaner Rebate Program which offers rebates to residents who replace their traditional fireplace or stove with a cleaner-burning device. Results are presented in **Figure 8. Less than a quarter of all residents surveyed (17 percent) reported that they had heard of the Burn Cleaner Program, suggesting that more outreach is needed.**



*Figure based on Q10: "To encourage cleaner burning in the Valley, there is a grant program that offers rebates to residents who replace their traditional fireplace or stove with a cleaner-burning device such as a certified wood stove or a gas fireplace. Are you aware of this grant program, it is called *Burn Cleaner*?"

Respondents who reported that they owned a wood-burning device were asked if they would be willing to replace their current wood-burning fireplace or stove with a cleaner device if they could use it on some No-Burn days. **As seen in Figure 9, just under one-third (29 percent) reported that they would be willing to switch devices if they could use it on some No-Burn days.**



*Figure based on Q11: "Would you be willing to replace your current wood-burning fireplace or stove with a cleaner, less-polluting wood-burning device if you could use it on some No-Burn days?"

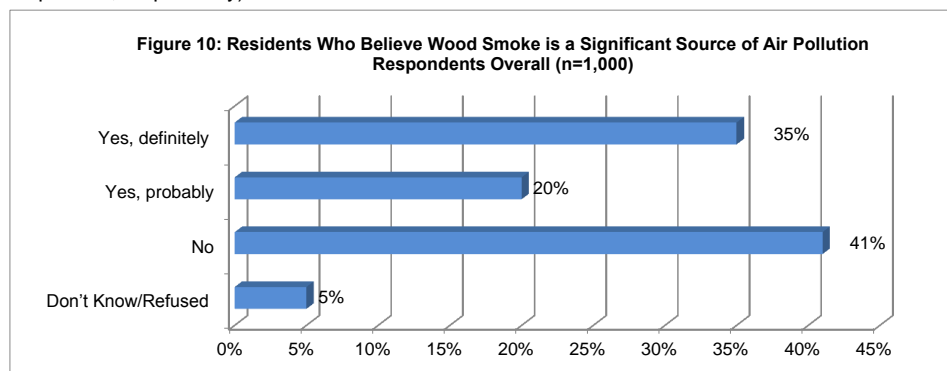
To gauge the level of discount needed to drive residents to purchase a clean burning device, respondents were presented with varying percentage discounts of 15, 25, and 50 percent off the total estimated cost of \$3,000 to purchase a new device. (All respondents who reported owning a wood-burning device or stove were asked the question, even if they reported in the previous question that they were not interested in replacing their device.) **A total of 12 percent of all residents with traditional wood burning devices reported that they would be willing to make the purchase if given a 15 percent discount.**

Those respondents who reported that they would *not* be willing to purchase a cleaner device even if offered a 15 percent discount were asked if they would make the purchase if the discount were increased to 25 percent. Fewer than 5 percent of respondents who refused a 15 percent discount said they would be swayed by a discount of 25 percent. Respondents who were not interested in a 15 or 25 percent discount were asked if they would replace their current device for a 50 percent rebate. An additional 16 percent said they would.

Findings suggest that approximately 24 percent of residents with wood-burning devices would participate in the program if the rebate were increased to 50 percent (combined totals for residents who would participate at 15, 25, and 50 percent levels.)

Beliefs about Wood Smoke

The last question regarding residential wood burning addressed beliefs about wood smoke. As seen in **Figure 10**, more than half of all residents surveyed (55 percent) reported that they believe wood smoke is a significant source of air pollution in their neighborhoods. Residents living in the Central Region (Fresno, Madera, and Kings County) were more likely to report that wood smoke was a problem (63 percent) compared to residents from the Northern and Southern regions (49 percent and 53 percent, respectively).



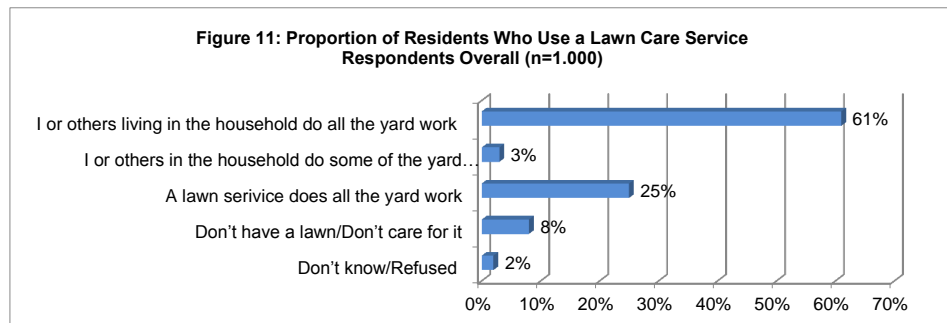
*Figure based on Q13: "Do you believe wood smoke is a significant source of air pollution in your neighborhood?"

Residential Lawn Care

Another objective of the study was to gauge the impact of gas-powered lawn equipment on air pollution and to measure awareness of programs designed to reduce pollution from these sources. Findings are presented below.

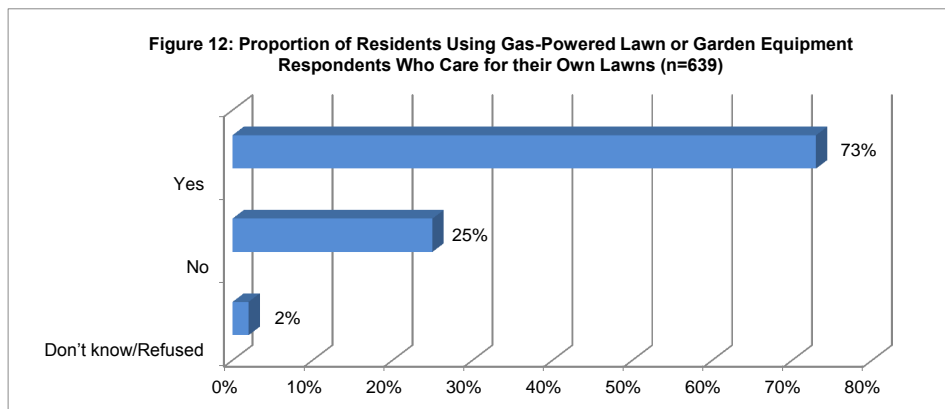
Use of Gas-Powered Lawn and Garden Equipment by Residents

Respondents were first asked who usually maintains their lawns and garden areas. **As seen in Figure 11, the majority of San Joaquin Valley residents (61 percent) tend to their own lawns rather than hire a service.** One quarter of residents use a lawn service to handle all of their yard work and another 3 percent use a lawn service for some of the yard work.

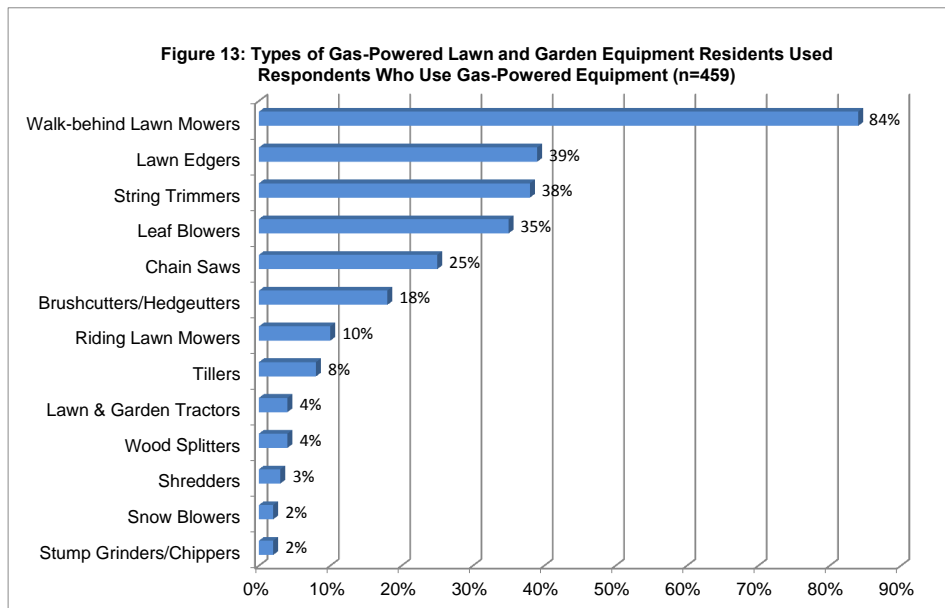


*Figure based on Q20: "Who usually maintains your lawn, shrubs, trees or garden areas?"

Residents who reported caring for their own lawns and gardens were asked if they use gas-powered equipment and, if so, to name the type of equipment. Results are presented in **Figures 12 and 13**. **Nearly three-fourths of residents (73 percent) who care for their own lawns and gardens use gas-powered equipment, most frequently walk-behind lawn mowers (84 percent), lawn edgers (39 percent), string trimmers (38 percent), and leaf blowers (35 percent).**



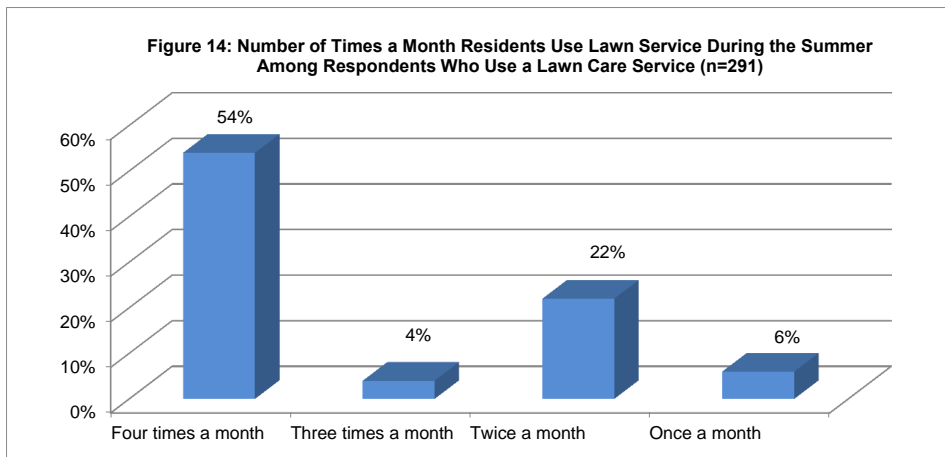
*Figure based on Q21: "Do you use any gas-powered lawn or garden equipment at your residence?"



*Figure based on Q22: "Considering only gas-powered lawn and garden equipment, which of the following do you use?"

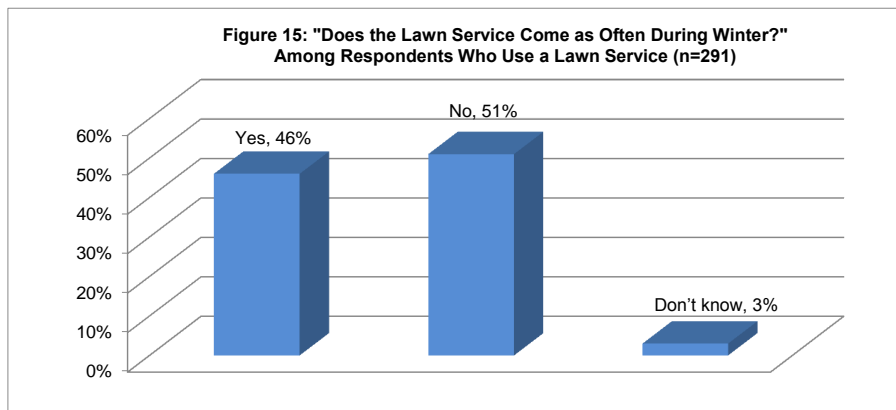
Use and Frequency of Professional Lawn Service

Residents who reported that they use a lawn service were asked how many times of month they use the service and whether that frequency varied by season. As seen in **Figure 14**, most residents (54 percent) use a service four times a month during the summer, followed by 22 percent who use a service every other week. Less than 10 percent of residents use a service more than once a week. The average number of times a lawn service was used in the summer was four times.



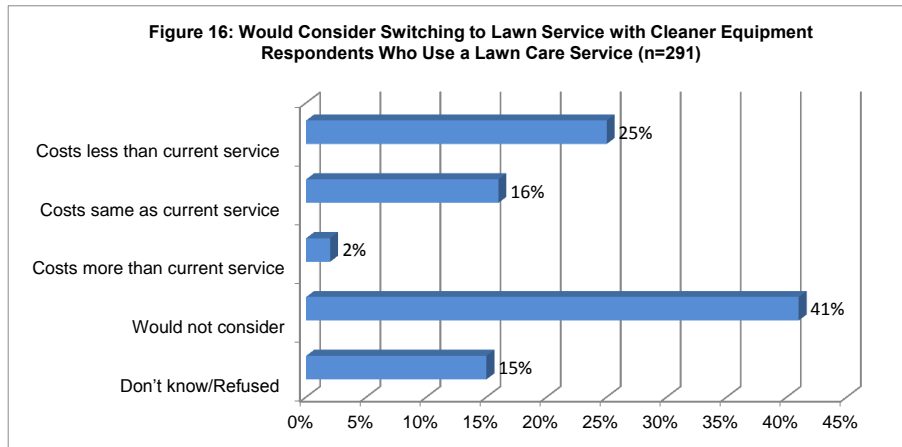
*Figure based on Q23: "During the summer, how many times a month does the lawn service come?"

Next, residents who use a lawn service were asked if the lawn service comes as often during winter. Approximately half (46 percent) of residents who use a lawn service reported that their lawn service comes as frequently during the winter months. See **Figure 15**.



*Figure based on Q24: "Does the lawn service come as often during the winter?"

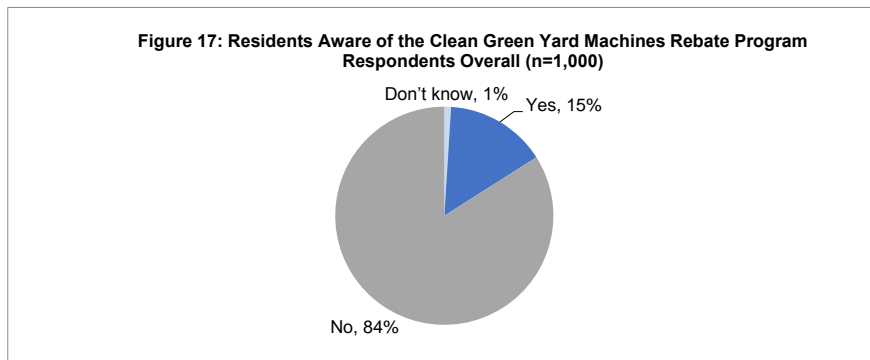
Residents were then asked if they would consider switching to a lawn care service that used cleaner equipment if that service cost less than their current service, the same as their current service, or more than their current service. Results are presented in **Figure 16**. A total of 41 percent of respondents reported that they would not consider switching.



*Figure based on Q25: "Would you consider switching to a lawn care service that used cleaner equipment if it cost: less, the same, or more than your current service?"

Awareness and Interest in the Clean Green Yard Machines Rebate Program

As seen in **Figure 17**, 84 percent of all residents surveyed reported that they were not aware of the **Clean Green Yard Machine Rebate Program**. Spanish-speakers were much less likely than English-speakers to report that they had heard of the Rebate Program (5 percent of Spanish-speakers compared to 18 of English-speakers). In addition, results suggest that Spanish-speaking residents are more likely to care for their own lawns. More than two-thirds of Spanish-speakers (69 percent) reported that they or others in their household do all the yard work, compared to 58 percent among English speakers, a statistically significant difference.



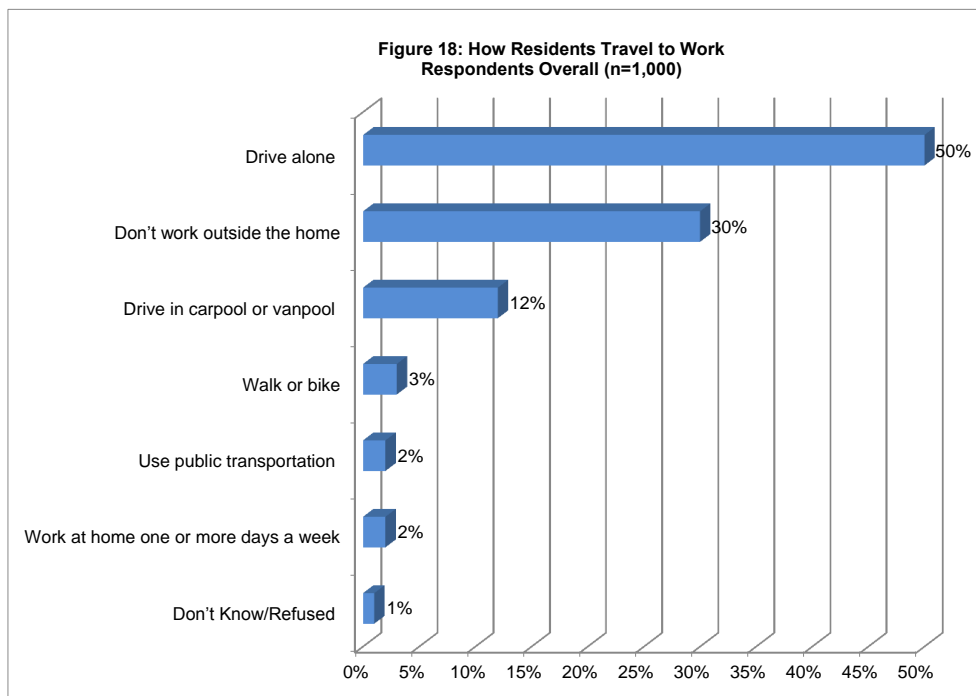
*Figure based on Q26: "Are you aware of a grant program which offers a rebate incentive for electric lawn mowers? The program is called the *Clean Green Yard Machines Rebate Program*?"

Commuting Patterns

In addition to measuring sources of air pollution from wood-smoke and gas-powered lawn equipment, the study was designed to track commuting patterns and the circumstances under which residents would consider carpooling over driving alone. The study also measured how school-age children travel to and from school. Results are presented below.

Current Commuting Patterns

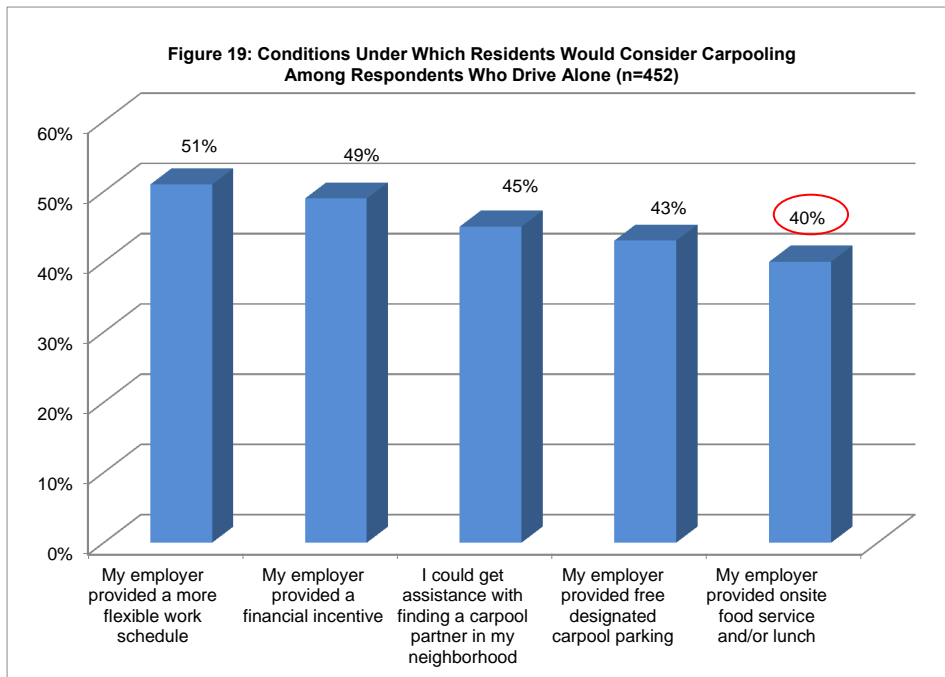
Respondents were first asked how they usually get to work. Results are presented in **Figure 18. Half of the residents surveyed reported that they drive alone to work, followed by 30 percent who do not work outside of the home.** A total of 12 percent reported that they drive in a carpool or vanpool. Only 2 percent reported that they take public transportation.



*Figure based on Q14: "How do you usually get to work?"

Future Behavior

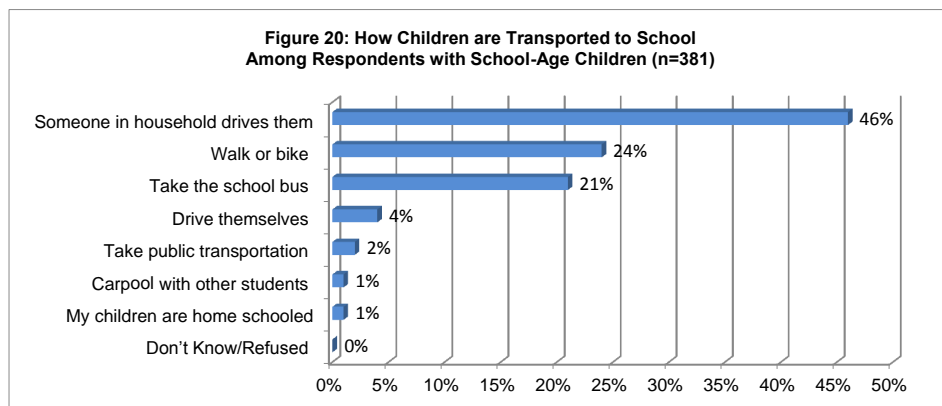
To help identify strategies for increasing the proportion of Valley residents who carpool to work, residents were read a list of employer programs and asked if they would consider carpooling instead of driving alone if the incentive were offered. Results are presented in **Figure 19. Approximately half of commuters surveyed reported that they would consider carpooling if their employer provided a more flexible work schedule, financial incentives, assistance with coordinating carpool partners, or free parking.** While support for most of the programs was statistically comparable, on-site food service was less popular than a flexible work schedule or financial incentives.



*Figure based on Q15: "Please answer yes, no, or maybe to each of the following questions: I would carpool if ...?" Significant differences at the 95% confidence level are circled. On-site food service was less popular than a flexible work schedule and financial incentives.

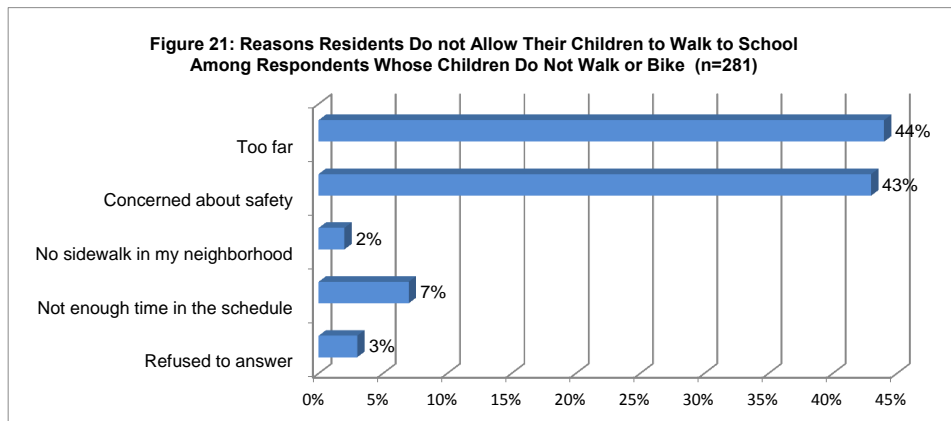
Student Pick Up and /Drop Off

In addition to assessing the problem of commuter traffic, the study examined travel to and from school. Among residents with school-age children (42 percent of all residents surveyed) nearly half reported that they drive their children to school. One-quarter of all students walk or bike to school and 21 percent take the school bus. Less than 3 percent of all residents reported that their children take public transportation or carpool with other students. See **Figure 20**.



*Figure based on Q16a: "How do your children usually get to school?"

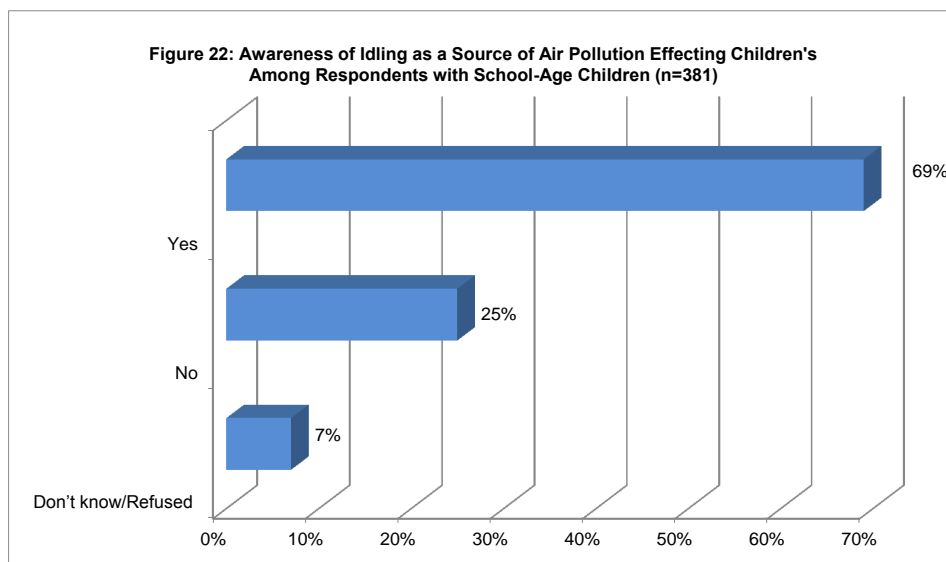
Next, residents were asked why their children do not walk or bike to school. **As seen in Figure 21, the primary reasons for not allowing children to walk or bike to school were distance and concerns about safety.**



*Figure based on Q17: "What is the main reason you would not let your child walk to school either alone or with an adult?"

Beliefs about Car Idling at Schools as a Source of Air Pollution

Finally, residents with school-age children were asked if they consider idling cars at school drop-off and pick-up lines to be a source of air pollution that affect children’s health. **More than two-thirds (69 percent) of residents with school-age children agreed that idling cars are a significant source of air pollution, as seen in Figure 22.**



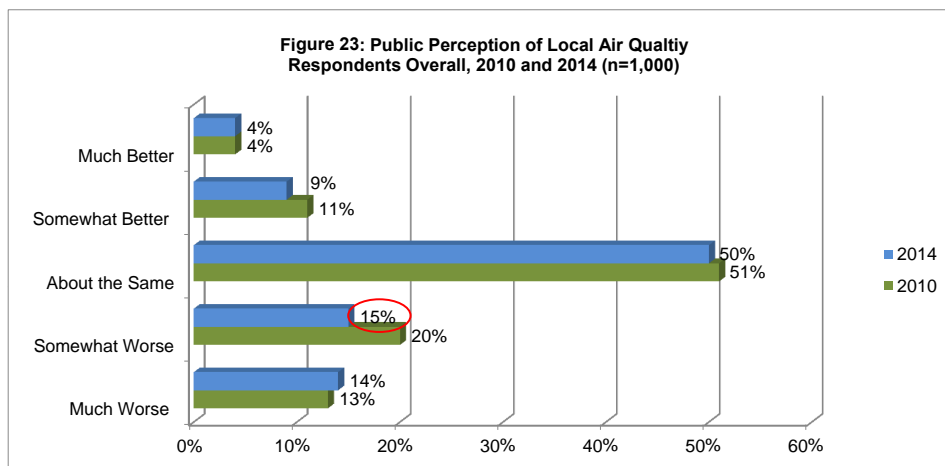
*Figure based on Q19: "Do you consider idling cars at school drop-off and pick-up lines to be a significant source of air pollution that can affect children's health?"

General Beliefs and Awareness

Finally, the study addressed public perceptions of local air quality and perceptions of the Air Pollution Control District. Results are presented below.

Perceptions of Local Air Quality

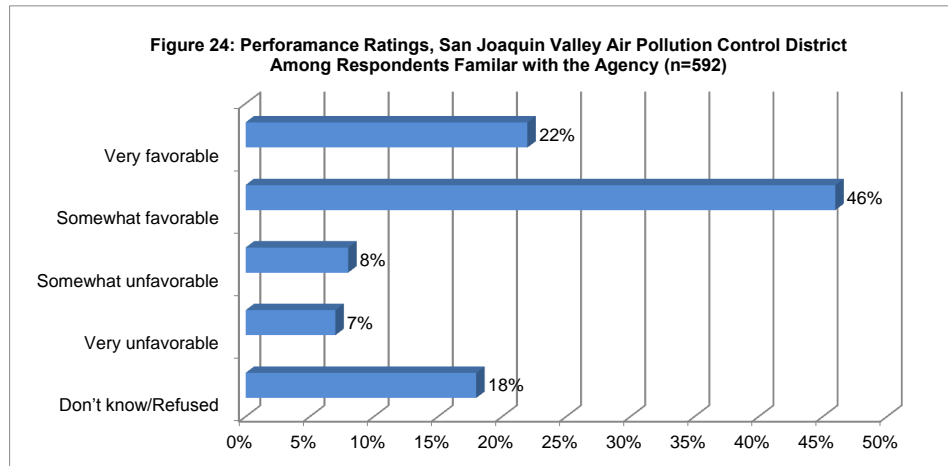
In 2010 and 2014, residents were asked if they thought the air quality in their areas had gotten better, worse, or stayed the same. **As seen in Figure 23, most residents believe the air quality in the San Joaquin Valley has improved or stayed the same compared to three years ago (similar to results from 2010).** There was, however, a 5 percentage-point decrease this year in the proportion of residents who believe the air quality has gotten “somewhat worse” over time.



*Figure based on Q27: “Compared to three years ago, would you say the air quality in your area has gotten better, gotten worse, or stayed the same? (If better/worse: Is that much better/worse or somewhat better/worse?)” Statistically significant changes at the 95 % confidence level are circled.

Awareness and Perceptions of the Air Pollution Control District

In 2010 and 2014, respondents were asked whether they had heard of the San Joaquin Valley Air Pollution Control District. A total of 57 percent of residents this year reported that they had heard of the District, unchanged from 2010. (Awareness of the agency was highest among English-speakers and those with above median incomes.) Those residents familiar with the District were asked if they had a “very favorable,” “somewhat favorable,” “somewhat unfavorable,” or “very unfavorable” view of the agency’s performance. **More than two-thirds (68 percent) of all residents familiar with the agency reported that they had a “very favorable” or “somewhat favorable” view of the District, as seen in Figure 24.**



*Figure based on Q29: “The San Joaquin Valley Air Pollution Control District is responsible for monitoring the outdoor air quality and implementing programs to reduce air pollution in your area. Would you say you have a very favorable, somewhat favorable, somewhat unfavorable, or very unfavorable view of the job they are doing?”

Conclusions

Study findings suggest that past outreach efforts have helped raise public awareness about the District and its programs, but further outreach is still needed. The Check Before You Burn Program continues to be recognized by eight-out-of-ten residents, and those residents aware of the Program report that they have reduced their wood-burning in response to the outreach. In contrast, awareness of the Burn Cleaner and Clean Green Yard Machine Rebate Programs could be improved. Less than 20 percent of residents are aware of either the Burn Cleaner or Yard Machine Rebate Programs. Spanish-speakers, who are more likely to care for their own lawns compared to other residents, had particularly low awareness levels. In addition, findings suggest that more residents would consider carpooling to work if their employers offered a flexible schedule, financial incentives, free parking or other programs. These findings suggest that efforts to build more employer programs and outreach to increase awareness of the District's rebate programs may be helpful in promoting changes in personal behavior and improving air quality.

**APPENDIX A:
SURVEY INSTRUMENT WITH WEIGHTED OVERALL FREQUENCIES**

Valley Air District Residential Wood Burning, Lawn Care, and Commuting Survey 2014
Overall Frequencies (n=1,000)

INTRODUCTION

My name is _____. We are conducting a survey with people in the area about issues affecting your community, and I want to include your opinions. We are not trying to sell you anything.

- 01 willing to continue
- 02 refusal
- 03 call back <at specific time>
- 04 call back <no specific time>
- 05 no answer
- 06 busy
- 07 answering machine
- 08 disconnected number
- 09 language barrier (not Spanish or English)
- 10 business number
- 11 fax machine

SCREENER QUESTIONSLandline

1. May I speak with the [youngest/oldest] adult at home who is 18 years or older?
- 1 Yes, I am that person (continue interview)
 - 2 Yes, transferring to the person (restart intro)
 - 3 Not available now (If person who answered is an adult, continue interview. If person who answered is under 18 arrange a call-back)
 - 9 Refused (terminate)

Cell Phone

- 1a. Since you are on a cell phone, I can call you back if you are driving or doing anything else that requires your full attention. Can you talk safely and privately now, or not?
- 1 Yes
 - 2 Not right now (try and arrange a time to call-back)
 - 9 Refused (terminate)
- 1b. Are you 18 years or older? (n=1,000)
- 1 Yes 100%
 - 2 No (terminate)

All Respondents

- 1c. What county do you live in? (Don't Read) (n=1,000)
- 01 Fresno 23%
 - 02 Kern 21%
 - 03 Kings 4%
 - 04 Madera 4%
 - 05 Merced 6%
 - 06 San Joaquin 18%
 - 07 Stanislaus 13%
 - 08 Tulare 11%
 - 09 Other, outside of San Joaquin Valley area (terminate)
 - 99 Don't know/refused (terminate)
- 1d. What is your zip code? [Record 5 digit zip code. Zip code list to be provided. Refused = terminate]

1e. Which of the following best describes the property where you live? (Read) (n=1,000)

- 1 House or duplex 100%
- 2 Apartment (terminate)
- 3 Condominium (terminate)
- 4 Townhouse (terminate)
- 5 Other (terminate)
- 9 Don't know/Refused (terminate)

1f. Do you own or rent your home? (n=1,000)

- 1 Own 59%
- 2 Rent 39%
- 9 Refused 2%

WOOD COMBUSTION: BEHAVIOR AND AWARENESS

2. I'd like to ask you about the heating devices you may have in your home. Do you have a wood-burning fireplace, wood stove, or pellet stove in your home?⁵ (check all that apply) (n=1,000)

- 1 Yes, wood-burning fireplace 25%
- 2 Yes, wood stove 4%
- 3 Yes, pellet stove 3%
- 4 No (skip to Q4) 68%
- 9 Don't know/Refused (skip to Q4) 0%

3. Is your sole source of heat from a wood-burning device? (n=330)

- 1 Yes 19%
- 2 No 81%
- 9 Refused

4. (Only ask if Q2 = 4 or 9) Does your public utility provide a natural gas connection to your home? (Skip to Q10) (n=670)

- 1 Yes 85%
- 2 No 10%
- 9 Don't know/refused 4%

5. How often do you use your fireplace/stove in the winter? Nearly every day, several days a week, once a week, less than once a week, or not at all?⁶ (n=330)

- 1 Nearly everyday 8%
- 2 Several days a week 7%
- 3 Once a week 8%
- 4 Less than once a week 17%
- 5 Not at all (skip to Q10) 59%
- 9 Don't Know/Refused (Do not read) (Skip to Q10)

6. Once started, how many hours does your fire usually burn? [record number, 2 digits; 99 don't know/refused]

(n=133)

Mean= 6, Median= 4 hours. Excludes respondents who reported burning zero times.

- 1-2 hours = 24%
- 3-4 hours = 42 %
- 5-6 hours = 15%
- 7-13 hours = 7 %
- 24 hours a day = 10%

⁵ Identical to QH on 2010 survey.

⁶ Similar to QI on 2010 survey.

-
7. Which of the following types of fuel do you typically burn? (Read. Check all that apply. Rotate. Yes/No punch. 9= Don't know/refused) (n=133)
- 1 Seasoned firewood that has been split and dried for a year or more 71%
 - 2 Partially dried wood that has some moisture 22%
 - 3 Pellets 13%
 - 4 Manufactured logs, such as *Duraflame* 32%
 - 5 Trash, magazines, newspapers or other household materials 11%
 - 6 Other (specify) 1%
8. *Check Before You Burn* runs from November through February each year, and prohibits wood burning in fireplaces, wood or pellet stoves, and outdoor fire pits during certain days when it is determined that air quality levels will be most impacted. Have you ever heard of the *Check Before You Burn* program? (n=133)
- 1 Yes 80%
 - 2 No 18%
 - 3 Maybe 2%
 - 9 Don't know 1%
9. (Only ask if Q8 was 1 & 3) Have you reduced the amount of wood burning you do in response to the *Check Before You Burn* Program? (n=110)
- 1 Yes 78%
 - 2 No 16%
 - 3 Maybe 5%
 - 4 Don't Know 1%
10. To encourage cleaner burning in the Valley, there is a grant program that offers rebates to residents who replace their traditional fireplace or stove with a cleaner-burning device such as a certified wood stove or a gas fireplace. Are you aware of this grant program, it is called *Burn Cleaner*? (n=1,000)
- 1 Yes 17%
 - 2 No 82%
 - 9 Not Sure/Refused 1%
11. (ASK only if Q2= 1, 2, 3 otherwise skip to Q13) Would you be willing to replace your current wood-burning fireplace or stove with a cleaner, less-polluting wood-burning device if you could use it on some No-Burn days? (n=330)
- 1 Yes 29%
 - 2 No 58%
 - 3 I already have a clean-burning device (don't read) (skip to Q13) 5%
 - 9 Don't know/Refused (don't read) 8%
12. Assuming a clean wood-burning device costs about \$3,000, would you upgrade from your current fireplace or stove if you could get a 15% rebate on your purchase? (n=314)
- 1 Yes (Skip to Q13) 12%
 - 2 No 67%
 - 3 I would purchase it without a rebate/incentive (do not read) (Skip to Q13) 1%
 - 4 Not interested/no discount would be enough (do not read) (Skip to Q13) 14%
 - 9 Don't know 6%

-
- 12a. How about a 25% rebate? (n=276)
- 1 Yes (**Skip to Q13**) 3%
 - 2 No 73%
 - 3 I would purchase it without a rebate/incentive (do not read) (**Skip to Q13**) <1%
 - 4 Not interested/no discount would be enough (do not read) (**Skip to Q13**) 2%
 - 9 Don't know 6%
- 12b. How about a 50% rebate? (n=222)
- 1 Yes 16%
 - 2 No 71%
 - 3 I would purchase it without a rebate/incentive (do not read) 0%
 - 4 Not interested/no discount would be enough (do not read) 2%
 - 9 Don't know 9%
13. Do you believe wood smoke is a significant source of air pollution in your neighborhood? (n=1,000)
- 1 Yes, definitely 35%
 - 2 Yes, probably 20%
 - 3 No 41%
 - 9 Don't know/Refused 5%

COMMUTING BEHAVIOR AND AWARENESS

14. How do you usually get to work? (Do not read.) (n=1,000)
- 1 Drive alone 50%
 - 2 Drive in carpool or vanpool 12%
 - 3 Use public transportation 2%
 - 4 Walk or bike 3%
 - 5 Work at home one or more days a week 2%
 - 6 Don't work outside the home 30%
 - 9 Don't know/refused 1%
15. (Ask only if Q14=1) Please answer yes, no, or maybe to each of the following questions: I would carpool if ... (9=don't know) (n=452)
- 1 My employer provided a financial incentive. 49%
 - 2 I could get assistance with finding a carpool partner in my neighborhood. 45%
 - 3 My employer provided onsite food service and/or lunch. 40%
 - 4 My employer provided a more flexible work schedule. 51%
 - 5 My employee provided free designated carpool parking. 43%
16. Do you have school-age children who live with you? (n=1,000)
- 1 Yes 42%
 - 2 No (Skip to Q20) 58%
 - 9 Don't know/Refused (Skip to Q20) 0%
- 16a. How do your children usually get to school? (**Do Not Read**) (n=381)
- 1 Do they take the school bus? 21%
 - 2 Do you or someone else in your household drive them? 46%
 - 3 Do they drive themselves? 4%
 - 4 Do they take public transportation? 2%
 - 5 Do they walk or bike? 24%
 - 6 Do they carpool with other students? 1%
 - 7 My children are home schooled (Do not read) 1%
 - 9 Don't Know/Refused (Do not read) 0%

-
17. (Ask only if Q16a = 1, 2, 3, 4, 6. Others skip to Q19) What is the main reason you would not let your child walk to school either alone or with an adult? (n=281)
- 1 Too far 44%
 - 2 Concerned about safety 43%
 - 3 No sidewalk in my neighborhood 2%
 - 4 Not enough time in the schedule 7%
 - 9 Refused to answer 3%
18. (Ask only if Q16a = 6. Others skip to Q19) Which of the following best describes the main reason you decided to use a carpool to get your children to school? (Check one. Rotate first three stems.) (n=6) Due to the extremely small sample of respondents who responded to this question, results could not be analyzed statistically.
- 1 It is convenient or it worked with our schedule mentioned
 - 2 To save money on gas mentioned
 - 3 To help reduce air pollution mentioned
 - 4 Other specify (Do not read) 0%
 - 9 Don't know/Refused (Do not read) 0%
19. Do you consider idling cars at school drop-off and pick-up lines to be a significant source of air pollution that can affect children's health? (n=381)
- 1 Yes 69%
 - 2 No 25%
 - 9 Don't know/Refused 7%

LAWN CARE: BEHAVIOR AND AWARENESS

20. Who usually maintains your lawn, shrubs, trees or garden areas?⁷ (Do not read) (n=1,000)
- 1 I or others living in the household do all the yard work 61%
 - 2 I or others in the household do some of the yard work and a lawn service does the rest 3%
 - 3 A lawn service does all the yard work (skip to Q23) 25%
 - 4 Don't have a lawn/ Don't care for it (skip to Q26) 8%
 - 9 Don't know/Refused (skip to Q26) 2%
21. Do you use any gas-powered lawn or garden equipment at your residence?⁸ (n=639)
- 1 Yes 73%
 - 2 No (skip to prompt above Q26) 25%
 - 9 Don't Know/Refused (skip to prompt above Q26) 2%
22. Considering only gas-powered lawn and garden equipment, which of the following do you use?⁹ (yes/no punch. 99 = don't know) (n=459)
- 01 Walk-behind Lawn Mowers 84%
 - 02 String Trimmers 38%
 - 03 Chain Saws 25%
 - 04 Leaf Blowers 35%
 - 05 Lawn Edgers 39%
 - 06 Brushcutters/Hedgecutters 18%
 - 07 Riding Lawn Mowers 10%
 - 08 Tillers 8%
 - 09 Lawn & Garden Tractors 4%
 - 10 Wood Splitters 4%
 - 11 Shredders 3%

⁷ Identical wording to Q70 from the ARB survey.

⁸ Similar wording to Q80 from the ARB survey.

⁹ Identical list to Q89 from the ARB survey.

-
- 12 Snow Blowers 2%
 - 13 Stump Grinders/Chippers 2%

(Only ask Q23 through Q26 if Q20 = 2 or 3. Otherwise skip to Q26)

23. During the summer, how many times a month does the lawn service come? [record number 2 digits] [99= Don't know/Refused] (n=291) Mean 4, Median 4
- Once a month 6%
 - Twice a month 22%
 - Three times a month 4%
 - Four times a month 54%
 - More than once a week 9%
 - Don't know 5%
24. Does the lawn service come as often during the winter? [record number 3 digits] [99= Don't know/Refused] (n=291)
- 1 Yes 46%
 - 2 No 51%
 - 9 Don't know/Refused 3%
25. Would you consider switching to lawn care service that used cleaner equipment if it cost: (n=291)
- 1 Less than your current service 25%
 - 2 The same as your current service 16%
 - 3 More than your current service 2%
 - 4 Would not consider (do not read) 41%
 - 9 Don't know/refused 15%
26. Are you aware of a grant program which offers a rebate incentive for electric lawn mowers? The program is called the *Clean Green Yard Machines Rebate Program*? (n=1,000)
- 1 Yes 15%
 - 2 No 84%
 - 9 Don't know/Refused 1%

GENERAL BELIEFS AND AWARENESS

27. Compared to three years ago, would you say the air quality in your area has gotten better, gotten worse, or stayed the same? ¹⁰ (If better/worse: Is that much better/worse or somewhat better/worse?) (n=1,000)
- 1 Much Better 4%
 - 2 Somewhat Better 9%
 - 3 About the Same 50%
 - 4 Somewhat Worse 15%
 - 5 Much Worse 14%
 - 6 I haven't lived here long enough to say (Don't read) 3%
 - 9 Don't know/Refused (Don't read) 4%
28. Have you heard of the San Joaquin Valley Air Pollution Control District? ¹¹ (n=1,000)
- 1 Yes 57%
 - 2 No (**skip to Q30**) 40%
 - 9 Not sure/Refused (**skip to Q30**) 2%

¹⁰ Similar wording to Q5 from 2010 survey. The time interval has been changed from 5 to 3 years.

¹¹ Similar wording to Q11 from 2010 survey. "Maybe" has been excluded from the options.

29. The San Joaquin Valley Air Pollution Control District is responsible for monitoring the outdoor air quality and implementing programs to reduce air pollution in your area. Would you say you have a very favorable, somewhat favorable, somewhat unfavorable, or very unfavorable view of the job they are doing? (n=592)

- 1 Very favorable 22%
- 2 Somewhat favorable 46%
- 3 Somewhat unfavorable 8%
- 4 Very unfavorable 7%
- 9 Don't know/refused 18%

DEMOGRAPHICS

Finally, I'd like to ask you a few general questions for research purposes. Your answers are confidential.

30. What year were you born? _____ (n=1,000)

- 18-29 16%
- 30-49 36%
- 50-64 29%
- 65+ 14%

31. Would you please tell me what ethnic group you identify with? Are you Hispanic/Latino, Black/African American, Asian, Caucasian, or of some other ethnic or racial background? (n=1,000)

- 1 Hispanic/Latino 49%
- 2 Black/African American 5%
- 3 Asian-American 8%
- 4 White/Caucasian 35%
- 5 Other (specify) 1%
- 9 Refused (Don't Read) 2%

32. How many people live in your household? _____ (

33. [Asked of cell phones only] Do you have a landline telephone? (n=400)

- 1 Yes 45%
- 2 No 51%
- 9 Refused 5%

33. [Asked of landline phones only] Do you have a cell phone? (n=600)

- 1 Yes 77%
- 2 No 19%
- 9 Refused 4%

34. [Asked of everyone] Does your household primarily use cell phones or land line phones? (n=1,000)

- 1 Cell 60%
- 2 Landline 32%
- 9 Refused 8%

35. I am going to read some categories of household income. Please stop me when I reach the category of your total 2013 annual household income, before taxes: (n=1,000)

- 1 Less than \$15,000 12%
- 2 \$15,000 to less than \$35,000 20%
- 3 \$35,000 to less than \$50,000 12%
- 4 \$50,000 to less than \$75,000 9%
- 5 \$75,000 to less than \$100,000 5%
- 6 \$100,000 to less than \$150,000 6%
- 7 \$150,000 to less than \$200,000 2%
- 8 More than \$200,000 1%
- 9 Refused (DON'T READ) 34%

36. (GENDER BY OBSERVATION-- DON'T READ) (n=1,000)

- 1 Male 50%
- 2 Female 50%

37. Note Language (n=1,000) (English 73% or Spanish 27%)

That concludes our survey. Thank you very much for your time.



**APPENDIX B:
DEMOGRAPHIC PROFILE OF RESIDENTS SURVEYED COMPARED TO
POPULATION ESTIMATES**

**Table 1: Demographic Profile of Residents Surveyed
Compared to Population Estimates**

Population Characteristic	U.S. Census Population (Across 8 County-Region)	Unweighted Sample	Weighted Sample
Fresno	23.4%	23.8%	23.1%
Kern	21.2%	18.7%	21.2%
Kings	3.7%	3.7%	3.8%
Madera	3.8%	4.2%	3.7%
Merced	6.5%	7.9%	6.5%
San Joaquin	17.4%	17.7%	17.8%
Stanislaus	12.9%	9.6%	12.6%
Tulare	11.2%	14.4%	11.5%
Cell only	32.6%	37.0%	31.6%
Male	50.4%	44.8%	50.0%
Female	49.6%	55.2%	50.0%
White	35.6%	40.4%	34.6%
Black	5.5%	3.4%	5.3%
Hispanic	49.6%	42.7%	49.2%
Asian	8.1%	4.7%	7.8%
Age <65	85.3%	78.1%	85.3%
Age 65+	14.7%	21.9%	14.7%

Community Stakeholder Interviews

Final Report

February 2014

Submitted to:

San Joaquin Valley Air
Pollution Control District



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

Submitted by:

Gomez Research
Pasadena, California

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Appendix A: Interview Guide

EXECUTIVE SUMMARY

The San Joaquin Valley Air Pollution Control District contracted with Gomez Research to conduct a series of one-on-one telephone interviews with community stakeholders in the San Joaquin Valley. The research was designed to complement a public opinion survey conducted with 1,000 San Joaquin Valley residents addressing similar questions regarding local air quality, programs implemented by the District, and perceptions of the District and air quality policies. A total of 40 interviews were conducted by telephone between December 9, 2013 and February 7, 2014. Participants were recruited randomly from a list provided by the District including Citizen Advisory Committee members, members of the District's Environmental Justice Advisory Group (EJAG), Commercial Lawn and Garden representatives, Drive Clean Program representatives, the San Joaquin Valley Air Pollution Control District Governing Board members, and other District Stakeholders. Study results were qualitative in nature and do not represent a statistical sample.

Key findings from the study are presented below.

- a. **Using a 5-point scale where five is "excellent" and one is "poor," respondents gave local air quality an average rating of 3, suggesting that stakeholders believe the air quality is fair but could be improved.** When asked if the air quality had improved over the last five years, 28 out of the 40 individuals interviewed reported that they believe the air quality has "gotten better," followed by eight who believe the air quality has stayed the same and three who believe the air quality has worsened (one individual declined to answer the question). Several respondents cited the particularly poor air experienced this year due, in part, to severe drought conditions.
- b. **When asked how poor air quality and/or air regulations have impacted their constituents and communities, the majority of stakeholders more frequently cited economic impacts rather than health concerns.** In addition, when discussing the health impacts of air pollution, respondents tended to focus on daily, short-term problems such as asthma and curtailed outdoor exercise, rather than more severe conditions such as cancer.
- c. **When discussing how to reduce emissions, stakeholders most frequently cited the need to reduce diesel truck emissions, followed by suggestions for encouraging carpooling, biking, public transportation and other alternatives to single-occupant vehicles.**
- d. **The majority of stakeholders were familiar with the Healthy Air Living Program (31 out of 40), although a minority of respondents were unclear about the details of the program.**
- e. **When asked if they had a favorable or unfavorable view of the Healthy Air Living Program, nearly all respondents reported that they had a "very favorable" or "somewhat favorable" view of the Program.** When asked why they gave a favorable rating, respondents most frequently reported that they believe the Program has been helpful in educating the public about air pollution and providing specific, cumulative actions that residents can take to improve the air quality. The most frequently cited reason for lower ratings was the belief that the program does not tackle the biggest causes of air pollution, notably diesel truck emissions.
- f. **All stakeholders who participated in the study, with the exception of one individual, had heard of the Check Before You Burn Program.**

- g. The most frequently cited suggestions for increasing participation in the Burn Cleaner Program were increasing incentives to make the Program more affordable, followed by additional outreach to ensure that residents are aware of the program.** Some respondents suggested that the District continue to work closely with businesses that sell hearth and heating equipment.
- h. Overall, findings suggest that the majority of respondents believe the District is doing a good job balancing public health and economic interests even though some stakeholders believe more or less regulation is needed.** Although many respondents expressed concern that the District does not do enough to protect business interests, the majority of stakeholders described the District's policies as reasonable given California requirements and local economic considerations. Commercial stakeholders were more concerned about compliance requirements imposed on businesses than were citizen advisory committee members and other District stakeholders.
- i. The most frequently cited areas for additional District action were school-site idling and drive-through services followed by gas-powered lawn care equipment.**
- j. When asked what type of policies they would recommend to address these areas, respondents most often suggested incentive-based programs over regulatory and volunteer approaches.**
- k. When asked if they had any other suggestions, many stakeholders recommend that the District increase its interaction with constituents, including face-to-face opportunities to explain programs, gather feedback, and increase visibility.** Other suggests included multi-lingual materials and an increased budget for public outreach.

INTRODUCTION

In 2014, as part of a larger effort to continue to improve local air quality, the San Joaquin Valley Air Pollution Control District contracted with Gomez Research to conduct a series of one-on-one telephone interviews with community stakeholders in the San Joaquin Valley. The research was designed to complement a public opinion survey conducted with 1,000 San Joaquin Valley residents addressing similar questions regarding local air quality, programs implemented by the District, and perceptions of the District and air quality policies.

METHODOLOGY

A total of 40 interviews were conducted by telephone between December 9, 2013 and February 12, 2014. Each interview lasted approximately 15 to 20 minutes. Participants were recruited randomly from a list provided by the District including Citizen Advisory Committee members, members of the District's Environmental Justice Advisory Group (EJAG), Commercial Lawn and Garden representatives, Drive Clean Program representatives, and San Joaquin Valley Air Pollution Control District Governing Board members, and other District Stakeholders.

Of the 40 stakeholders interviewed:

- 16 were Citizen Advisory Committee and/or EJAG members
- 9 were District Board members
- 7 were commercial lawn and garden representatives
- 6 were other District stakeholders
- 2 were from the Drive Clean Program

Caveats

Due in part the small sample size, the study was qualitative in nature and cannot be analyzed statistically. Results reflect the opinions of the individuals included in the study and cannot be extrapolated to the population as a whole.

FINDINGS

Perception of Air Quality

Rating of Current Air Quality

One objective of the research was to gauge stakeholders' perception of the air quality in the San Joaquin Valley basin compared to five years ago. Using a 5-point scale, where five is "excellent" and one is "poor," stakeholders were asked how they would rate air quality in the San Joaquin Valley overall. **Respondents gave the local air quality an average rating of 3, suggesting that they believe the air quality is fair but could be improved.** When asked if the air quality had improved over the last five years, 28 out of the 40 individuals interviewed reported that they believe the air quality has "gotten better," followed by eight who believe the air quality has stayed the same and three who believe the air quality has worsened. (One individual declined to answer the question.) Several respondents cited the particularly poor air experienced this year due to drought conditions.

Impact of Air Quality and Air Quality Regulations

Respondents were asked to describe how the air quality and the air quality regulations in the area have impacted their customers, employees, constituents, or family members. When asked how they have been impacted by poor air quality and air regulations, respondents most frequently mentioned health-related problems such as asthma and cost-related impacts on businesses trying to purchase cleaner equipment. **Stakeholders generally expressed more concern regarding the economic impacts of poor air quality and air regulations than on the health impacts of air pollution.** Moreover, when discussing the health impacts of air pollution, respondents tended to focus on daily, short-term problems such as asthma and curtailed outdoor exercise, rather than more serious, long-term conditions such as cancer.

Results from the open-ended responses are presented below, grouped by comments regarding health impacts of air pollution followed by comments regarding policy and regulations.

Q: Could you describe how the air quality and/or air quality regulations in this area have impacted your [customers, employees, constituents, members, family], if at all?

Comments Regarding Health Impacts:

- *Well, it impacts different people differently. Obviously, if you are in a sensitive group, the air quality is going to be a part of your everyday life. Your daily life is dictated by what you can or cannot do.*
- *I think the regulations that we are trying to develop to clean our air have actually improved the quality of life of people that I know.*
- *My customers are students so they are affected by not being able to go outside and play or participate in sports.*
- *I don't know anybody with health issues related to the air quality. We haven't had any employees with asthma, miss work or anything like that, that I'm aware of.*
- *In terms of air quality itself, I have known people who have physically moved from the area due to their children's health issues, like asthma.*
- *There is a lot more asthma, really serious cases that are made worse by the pollution.*
- *Mostly, I hear about health-related issues, things like asthma and allergies that are being contributed to by air pollution, but I don't know anyone who has gotten cancer or lung disease because of air pollution.*
- *I think the air quality has gotten better in the last few years. Obviously relating air quality to health impacts is important...there is a direct correlation between the air and the health of my constituents. The only thing I hear is that we under-regulate air pollution sources.*
- *I think the poor air quality prohibits old people from going out because they can't breathe when they are out there. I think the awareness about the Valley air quality is so much greater than it has ever been.*
- *It's a drain on our economy because we pay for all the hospital visits for asthma. Kids are missing days of school because of asthma and other health-related issues. It's really a drain on our society and economy.*
- *I think the biggest problem is allergies. I have it myself.*

Comments Regarding Business Impacts:

- *The air quality doesn't seem to be a big issue, but the regulations have been detrimental to employees... it's more expensive to do business here.*
- *The air quality problem has not been addressed. Our employees do not want to move families to this region. People are not moving into the District.*
- *Air quality has had little impact on me personally and the people I know. I know people who have trucking operations and they are going to be severely impacted by the new laws if they can't get financing for new vehicles.*
- *[The regulations] have been very detrimental businesswise. Unfortunately the [Air District] only has the authority to try to reduce emissions from stationary sources. They don't have the ability to go after automobiles, which I'm pretty sure is one of the biggest problems. Going after the stationary sources has been very detrimental to businesses throughout the Central Valley and I also think it has been unfair. It chases business away. If I could take my business and move it to another state, I would do it in a heartbeat. I can't because I grow trees here and they won't grow in another state.*
- *Rule 4570 [Confined Animal Facilities] was by far the most expensive rule that has been put on ...and it absolutely affects our community. We are the only state in the world that I know of that is under such expensive regulatory requirements.*
- *We have been really fortunate at the School District. We've been able to replace five of our older units and have been able to update five other ones. A lot of smaller organizations and businesses have not been able to make it because of financial costs...That's what I hear from people, especially in the trucking industry and construction, that the laws that are coming are hitting them pretty hard economically.*
- *It's harmed the business side enormously and has kept businesses away from the San Joaquin Valley. It has increased the cost and it's basically created a barrier of entry.*
- *The EPA put a 29 million dollar fine on us. It was outrageous. Financially it cost every driver in the valley.*
- *Regulations have affected [air quality]. I don't think it has direct connections to my own family or friends that I can think of. But I can say in general the way regulations have affected people is that in some cases it has meant loss of employment. I know of businesses that have closed their doors. I can't say it's the price of regulatory compliance, but it would certainly be a contributing factor.*
- *Given that I work for a manufacturer, the air regulations impact us dramatically, both in terms of cost and operational complexity. Cost has gone up dramatically since 2007, a few hundred thousand in additional fees.*
- *A lot of requirements have been imposed on industry, which makes life difficult on businesses. Residents in the Valley have to abide by regulations that more fortunate areas do not have to abide by. It's not the fault of the Air District, it's where we live in that traps ozone and pollution.*
- *Obviously, the agriculture industry has been tremendously affected through this and AG has been a willing partner towards cleaning up the air. Trying to help reach those standards has been costly for agriculture.*
- *Regulatory impacts have put a financial burden on stationary sources.*
- *Air quality has not been an issue with the people I work with or my family. Other than comments from time to time, we are definitely a winner with the lack of rain and where we live. I wish the air was a little cleaner. You can see the smog just hanging down. There has not been a lot of conversation.*

- *There have been times when the rules did not make sense and the people administering those rules were not even following their own rule book. That has given very poor feelings or thoughts about the [California] Air Quality Resources Board. They truly believe they are autonomous and are not held accountable.*
- *The thing that most people complain about is that it has cost too much to clean the air. Smog and diesel trucks have to be replaced, all we can do is suggest it, set a rule and enforce what we can. It's like a cop, you can't have a cop out there in the street for every person to stop the violating.*
- *Air regulations have cost me a lot of money. I'm in the oil business and of course it has impacted our business. These regulations, you don't put them on for free.*
- *I'm up in the mountains. It [poor air quality] doesn't impact us as much. They've reduced the cost of controlled burns, and that helps. The controlled burns have helped prevent catastrophic fires.*
- *[The air quality and regulations] have impacted everyone in the community. When we fall out of compliance with EPA regulations, the EPA requires a penalty to be assessed over the citizens of the air District and the last time around what basically happened was the penalty came around to approximately 41 million dollars, of which 29 million went directly against tax payers, the citizens, the population of the area and that was done through an additional fee. And it hurts the environmental justice areas, people who cannot afford an additional fee.*
- *Well, I think that it's probably definitely hampered business and some expansion plans, but a lot of it has probably been necessary. I would say much of it has been necessary and the reason for any improvement we have seen, it's definitely had a negative impact on the economy even though we have had a fairly decent economy in the valley.*
- *[The District] really has the most stringent boiler rules. When that was passed 5 or 7 years ago... they said it was going to cost \$25 million dollars. They really have strict source rules, even more stringent than South Coast in some instances. Stationary sources have put in a lot of money. The state is putting millions of dollars into passenger vehicles, which is good, but that doesn't impact emissions in the San Joaquin Valley.*
- *The company I work for sells outdoor power equipment and one of those is chain saws. People that I know cut wood to burn for heat. One impact [of regulations] is that people are not burning as much wood as they did years ago.*

Strategies for Improving Air Quality/Reducing Emissions

Respondents were asked what could be done to improve the local air quality and reduce emissions. Open-ended responses are presented below. **When discussing how to reduce emissions, stakeholders most frequently cited the need to reduce diesel truck emissions, followed by suggestions for encouraging carpooling, biking, public transportation and other alternatives to single-occupant vehicles.**

Q: Looking forward, what can be done in the Valley to reduce emissions further?

Comments Regarding Diesel Trucks:

- *Trucks come to our valley from outside and, except for state and federal regulations, we have no say over their emissions and they are the biggest polluters.*
- *All the companies are doing their part. Mobile trucks seem to be the biggest problem.*
- *They need to tackle the heavy duty trucks. The stationary sources is what [the District] is able to regulate, so they have squeezed them very hard but [the District] doesn't*

necessarily have the authority to regulate mobile sources like trucks. Vehicles are now 80 percent of the emissions inventory, particularly heavy-duty, diesel trucks. The state sets the standards for engines and the most recent one was in 2010 but there are engines that are much cleaner than those standards. They aren't diesel, they are natural gas or maybe natural gas hybrids. There is a lot of technology out there, but [the trucking industry] need to be incentivized to get the cleaner engines. We have local money as well as state money to provide that. People have replaced older diesel trucks with cleaner diesel trucks but it's still not enough.

- *Dealing with diesel needs to be corrected and we need to reorient the community away from automobiles, engage in activities like mass transit, walking, and biking.*
- *Do something with the traffic on the I-5 and 99*
- *The biggest problem we have are all the trucks on the road.*
- *I think it has to do with mobile source, I do have some first-hand information about what causes pollution and I have been involved with air issues for a long time. Mobile sources have to be controlled and tamed. The exhaust system for bigger trucks has to get better.*
- *Well, some of it will be technology driven, but some of it is just a turnover of automobiles, but the big thing is the turnover of truck fleets.*
- *We obviously need to deal with mobile sources, reducing the vehicle miles traveled, we need to stop diesel trucks, especially the origin and destination in here. We have lots of truck traffic, diesel that is just travelling through the Valley. It's almost criminal when you think of the asthma rates. We definitely need to manage interstate and intrastate transportation.*
- *There has to be a focus and an emphasis on mobile sources of pollution, such as diesel trucks.*
- *Right now 85% of our emissions would be from diesel trucks. We have 15,000 diesel trucks that are owned by small, either single unit operators or small companies. They were not included originally in any of the incentive programs until October 21st of last year, and literally there was only a month to let them know to get in line in for incentive funds. I would say the number one thing to clean up the air in the Valley would be put high-speed rail on hold and take those funds and take them from providing more surface water storage and use it to replace the semi-trucks on the road with new trucks that are much more energy efficient.*

Comments Regarding Local Vehicle Traffic and Alternative Modes of Transportation:

- *Our whole land use in the Valley is pretty much sprawl, and in Fresno they are trying to adopt a plan that is more walking, biking and transit. Compact development is smarter and more sustainable. That would help air quality.*
- *I think a lot of things can be done. The biggest concern is automobile and truck traffic. The NOx emissions should be reduced when the new law is implemented in January, but internal combustion engines will still be a concern. The trend toward electric and hybrid vehicles will reduce emissions in the long run, but we will need more charging stations.*
- *Well we need the public to participate even more than they are and they need to realize that their contribution makes a difference. Really it's through education. We need more education, more money dedicated to the different groups... we really don't spend enough money to get the message out to as many groups as we can on a big scale.*
- *Get people to park their cars and ride mass transit. I think the cars are the problem; we need to limit automobile travel.*

- *We cannot continue to put the burden of living in the Central Valley on the backs of business. We all need to be smarter on how we travel.*
- *I think somehow we need to get more ways to move people from point A to point B without using automobiles. And we need to get the older automobiles off the road and incentivize people to buy new, cleaner vehicles. I think with the tune-up program that we have, we are taking a lot of those vehicles off the road by getting repaired, but we need to somehow get some kind of transportation going in the Central Valley, like ridesharing off the 99 corridor, like commuting from Fresno to Madera, Madera to Fresno, and Madera to Merced that there is more ride sharing. We can find funding to do that.*
- *I think a lot of it has to do with mobile sources, a.k.a. cars. I think a lot of it is getting older cars off the road. Just when you look at the emission factors, these new late models versus cars from more than 10 years ago, the differences are tremendous.*
- *[The District] really has to sit down and have meetings with people to really brainstorm ideas.*
- *More rapid transit or public transportation. More incentives for electric vehicles or low emission vehicles.*
- *Automobile and truck traffic seem to be contributing major sources of pollution in the Valley that the District has little control over. I would hate to mandate the elimination of vehicle travel, but you could say it's the law that everyone would have to walk or ride a bike, but that wouldn't do enough for the regional economy, so I think the District is kind of in a hard spot.*
- *The citizens out there have to do the cleaning up. It seems that everyone wants to blame the Air Board, they don't want to blame themselves for it and they are the ones creating the pollution.*
- *Automobiles are 90-95% [of the problem]. I think the biggest culprit is automobiles and what can you say about that, that's the state of California. We can only focus here on mobile sources.*

Comments Regarding Agriculture:

- *I think having more programs to help replace older equipment has helped make a difference, such as programs to help purchase [low-emissions] trucks and tractors.*
- *Probably working with agriculture on the almond harvest and almond harvesting techniques. Almond harvest has increased over the years and the Air District is not addressing the almond harvest at all. The technology is there, it just has not been deployed by the agriculture industry and so the Air District should be working with them and as opposed to regulating them they should be using their war chest to invest in their technology held during the almond harvest.*
- *Improve the rules and regulations on everything that includes agriculture and berry industries. In addition to incentive programs for limiting development that increases vehicle trips.*

Additional Comments (No Burn Days/Gas-Powered Lawn Equipment):

- *Order rain more often [joke]. I don't think there is much more they can do. The only area that I think has room to grow is consumer gas products like lawn mowers and blowers. I would say it is in the consumer market that needs room for improvement.*
- *I believe we should ban leaf blowers. And ban fireplaces. Just flat ban them.*
- *[To further reduce emissions] we should look toward tightening the rules on burning-- including in the foothill areas—which have been exempt in the past.*

- *Fix the Bay Area. They are not held to the same standards. They are lax in their required emissions. It's all directed at the Valley where we import their air. Their air is invading us.*
- *Do more of the same. Encourage people not to use their wood-burning stoves for those key time periods.*

Awareness and Perceptions of District Programs

Healthy Air Living Program

In addition to gathering feedback on general issues related to air quality and air regulation policies, the study asked respondents about their awareness and perceptions of the Healthy Air Living Program, designed to improve air quality on a daily basis. **The majority of respondents participating in the study were familiar with the Healthy Air Living Program (31 out of 40), although a minority of respondents were unclear about the details of the program.**

Next, respondents were asked if they had a favorable or unfavorable opinion of the program. Nearly all stakeholders surveyed (35 out of 40) had a “very favorable” or “somewhat favorable” view of the program. Results are presented in **Table 1**, below.

Table 1: Perceptions of the Healthy Air Living Program.

Scale	Score
Very Favorable	23 respondents
Somewhat Favorable	12 respondents
Somewhat Unfavorable	No respondents
Very Unfavorable	2 respondents
Not Sure/Refused	3 respondents

Respondents were asked to explain the reasons behind their ratings. Open-ended responses, organized by positive and negative comments, are presented below. **When asked why they had a favorable view of the Program, respondents most frequently reported that they believe the Program has been helpful in educating the public about air pollution and providing specific, cumulative actions that residents can take to improve the air quality.** The most frequently cited reason for lower ratings was the belief that the program does not tackle the biggest causes of air pollution, notably diesel truck emissions. A minority of respondents reported that the District should increase its efforts to educate the public.

Q: Why did you give that rating of the program?

Reasons for High Rating of the Healthy Air Living Program:

- *I think they are doing a lot of things that will really have an impact [on air quality]. They've gotten kids involved in the lower grades [through Health Air Living]. They are making sure the younger generation is acutely aware of what's going on.*
- *Anything that could help educate consumers on how they can reduce their sources of pollution is a good idea.*
- *[The Program] gives people specific things that they can do to improve. First of all it helps them understand why air quality is bad, and once you understand why it is bad then you know what you can do, you're in a role to improve it. It gives very specific tools and techniques and tells people exactly what they can do to help.*

- *Well I think that everybody should do their part, and getting the word out through your program is going to help. A lot of people do not know about those things.*
- *Good to know what's going on. It's a reminder that the air quality is not as good as it possibly could be. There have been days where I walk instead of driving my car or ride my bike.*
- *People are now realizing we have to do something and its being talked about on radio, television and newspapers. People are taking an interest.*
- *The District is trying to encourage education and reasonable action without hardcore regulations.*
- *It's helping us do what we are supposed to be doing. Making the rules and trying to get the air clean and trying to get the people to work with us.*
- *I think it is going in the right direction, but they can do more. Like, instead of asking people to make one change they should ask people to make huge changes.*
- *Well because of the mass advertising and commercials that they do. Promoting during the different seasons during the year—"make one change," "thank you for not burning your wood stove," I think the mass communication and advertising that they have on the radio, TV, and on the billboards—I believe it has had an impact on people wanting to make that one change and do what is good for the environment. It has brought more awareness to the District.*
- *I think education is very important and it [puts] the burden on the Valley residents to take charge and make change first hand and to do something about air quality. I think that would be the ultimate solution when everyone gets involved with the Valley.*
- *It empowers people to make their own decision based on the information given by the District.*
- *I think it's a very effective tool for the District to communicate to the right stakeholder. It's the right mechanism to get the information out there for people to take aggressive actions when necessary.*
- *I think it's important to educate the public and encourage them to do things that impact air quality as individuals. I think it's OK to share the burden of air quality with the community. I think [the program] has done a lot to bring air quality to the ground level.*
- *Because anything that gets public participation and awareness, and helps to get people aware of what's going on, on a day-to-day basis, with air quality will help to really lessen the effects of bad days, because people know, for example people should know when to stay indoors when the air is bad. We want people to be aware of our air situation which is only going to get worse when population increases.*
- *Because no matter how bad the situation is, turning a blind eye to it and saying there is nothing we can do doesn't help. We still have to do something every day so that it makes it better.*
- *Because they are getting the word out to people to do something about their fireplaces, take fewer trips and they are getting the word out for people to respond to it.*

Reasons for Lower Ratings of the Healthy Air Living Program:

- *The message of the current campaign is "Do One Thing." The normal people who live in the San Joaquin Valley don't know much about air pollution and there are other things that we can all do to reduce it. That's absolutely important but it's going to have to go beyond "one thing." You have to start somewhere but they need to move beyond that initial message. They try and get business partners and maybe they could do more to get those partners. You can always use more outreach to businesses. For example, a*

packing plant...they have hundreds of workers and they can set up carpool programs. Maybe they should have some brainstorming sessions or focus groups and invite people to discuss additional strategies.

- *Not many businesses are promoting the program.*
- *Well I think it's a good program to try to encourage residents to do what they can, but [there are] limitations for what residents can do. So many programs are outside of their control. [There are] very few exceptions, like burning wood fires and how they use air blowers, how long they idle their cars. There are a few things like that [that] each of us can do to help, even if we all did everything we could as individuals. The problems go way beyond that. There are no silver bullets to solve that problem, but if you only had one silver bullet, use it on diesel trucks.*
- *I think they are trying to do good things, their programs and communications are good. I would like to see more policing, for example, on the "No Light Tonight Program." I have a neighbor that religiously burns on no-burn days, but he waits till after dark so there is no way he is going to get caught. I don't agree with that, I think it's terrible. So things I would want to see in conjunction with that is more enforcing.*
- *[The Healthy Air Living Program] is a good start. But we are agriculturally based and travel is almost necessary for jobs. By penalizing people [for emissions] you are really penalizing the poor, working class [residents] because they have to live in cheap areas and their jobs may be in areas where they can get work. So, you have to look at the broader picture.*
- *More education, more and better outreach.*
- *It's useless, voluntary measures get no scores—boycott is ineffective and requires incentives.*
- *I think that it's politically motivated. I think its fluff and not addressing the real issues.*

Check Before You Burn/Burn Cleaner Program

In addition to gauging awareness and perceptions of the Healthy Air Living Program, respondents were asked if they had heard of the Air District's Check Before You Burn Program. **All stakeholders who participated in the study, with the exception of one individual, had heard of Check Before You Burn.** Next, respondents were asked how the District might encourage more people to take advantage of its incentive and rebate programs to purchase cleaner devices. Open-ended results are presented below. **The most frequently cited suggestions for increasing participation in the Burn Cleaner Program were increasing incentives to make the program more affordable, followed by additional outreach to ensure that residents are aware of the program.** Some respondents also suggested that the District continue to work closely with businesses that sell hearth and heating equipment.

Q: How can the District encourage more people to take advantage of its incentive and rebate programs to purchase cleaner wood-burning devices (Burn Cleaner Program)?

- *Make [the incentive] available to vendors as well. For those in homes with wood-burning devices there needs to be an increased incentive amount. For lower income the incentive is not high enough.*
- *They can do better with advertising, giving financial incentive so people can have an economic benefit to make the switch.*

- *They need to get a good outreach program and make sure people are aware of the incentives. I think there are a lot of people who don't know [what is available]. They need get the word out on local media, through advertising, and on television.*
- *I think we have to continue to get the word out. Right now most people get their information through tablets, laptops, mobile devices and television. I think you have to do more to get the message out from those media devices. I would think that the easier way is to offer a financial incentive, whether it be free or a much reduced price to get people to switch over.*
- *Well, you know they can make the program available to more people by offering it to more people, I think the way it works now is that it is only available certain times a year, very limited on how much they can do. Encouraging to people who actually sell these products, to help make it more widespread. Make it more affordable and have merchandisers to advertise it as well.*
- *Just more advertising of the availability of those incentives. I personally see those incentives and I think they do a good job. Advertise that in the newspapers. Ordinary people who have fireplaces in their homes need to see those opportunities. So they need to get it out and in front of people more and I think newspaper is the way to do it. I know they do it on the radio and I don't listen to any kind of radio that has advertising on it. The other idea I have is they should advertise more with the vendors that sell those cleaner burning fireplace apparatus because they will push the heck out of it because they got a stake in it to sell me and replace my fireplace.*
- *I would say continue doing outreach, I think one of the largest things that I see in the "EJ" community that I live in is a lot of the Hispanic communities do a lot of outdoor burnings, especially on the weekends when they are having gatherings, and it's open pits and they are barbecuing turkeys and having big bonfires. I think that would be a good area to educate folks on.*
- *It is very difficult now because of the recession. Let's say a device cost \$1000 bucks and they only give you \$200; they only cover 80% and people just don't have the money.*
- *Advertise more. A lot of people don't know of the programs that are available.*
- *Issue vouchers to residents that want to turn them in so people know there is X amount of dollars available, if they choose to retrofit their house.*
- *I think they are doing the maximum they can at this point. They are doing everything they can through newspapers, television and specific areas with advertising. I don't think they can do more.*
- *I think closer partnerships with retailers. It would provide retailers or give retailers more incentives for more advertising on cleaner burning equipment and they would advertise more if those rebates were available to them or their customers.*
- *I think just getting the word out to the different communities, whether that be through television or radio. Somehow we just need to get the word out on websites. We just need to get the word out, maybe attending fairs or maybe attending farmers markets, just making people aware that there are funds out there to change their wood-burning stoves.*
- *[The District] does quite a bit of outreach and advertising. I guess I would say I like the incentive approach to the extent that we can provide more funding to make contributions to help offset the cost of people putting in EPA approved wood burning devices and stoves to replace open-hearth burning. I like that approach versus the regulatory approach.*
- *I don't know if there's public information [going] out to folks about grant opportunities. Frankly there are more incentives for folks to move to cleaner wood burning devices. I think it's just more information that needs to be [given] to the community because I know that people are more sensitive to the check before you burn and folks burning fireplaces*

or wood burning stoves than they used to be, so part of that is air quality issues and also the message that has been provided to the community. So I think more information.

- *Ban wood burning; honestly, if you ban it and this is the only alternative, people, I think, would look toward it. If it was ever to go out of place, wood burning, I think it is still important to have the incentive in place. Not to take the incentives away now that it is mandatory.*
- *Well, I'm not familiar with the incentives for that program, so I can't say whether they should be increased, but I do know, for example, on the clean lawn mower situation when the District was supplementing the cost, so we traded in my gas mower for an electric mower. They paid about \$200 of the \$300 in the cost. I paid about \$150. That was very enticing for me to get that benefit.*
- *I know several people that I have recommended that they convert and they have. The problem is that they have a lot of folks that do not have the financial ability to do so.*
- *Get the message out during the season when people are buying those items.*
- *There are already restrictions and building codes requiring new homes to be built with cleaner burning fireplaces. I figured it was already taken care of with those existing regulations. If you're talking about trying to get people to replace [their existing devices], that's tougher. I don't know how you would do that. Do you think people are aware of the incentives? I would think so.*
- *Well I believe that many wood burners burn wood because of their economic status, they are trying to get low-cost heating for their space. They are not likely to spend \$3,000 or more for the installation of a clean fuel device because they do not have those kinds of funds. So, I think the incentive the District offers for \$500 is insufficient to attract those individuals to change their dirty burning devices to a clean burning device. Bottom line is they are going to have to increase their incentives if they want more participation.*
- *Well, I think they had a program where they had at one time a program: trade in your old fireplace or upgraded and you would get an incentive. I've heard now new houses are being built without fireplaces in the home.*
- *More education. People don't know about it [the incentive programs]. A lot of people don't read the papers. We are a very poor county so a lot of them don't have TVs and many don't speak English.*
- *One of the things that I have tried to be involved in and I really think is important and as a result, what we are looking at doing is make the program available for property owners, for example landlords can actually participate in the programs, they need to be able to participate in programs. That can be done through an educational process, through local entities like real estate boards and things like that. If we want to get people to stop burning wood we need to get the landlords newer and cleaner devices and we need to incentivize that.*
- *I think that they should do what PG&E does when they wanted to move people towards using less electricity—they gave rebates. That's effective when people are looking to spend less money, and when you hit that you will get a better response.*
- *Outreach through community benefit groups, organizations and non-profits.*
- *Right now it's only when a house switches hands that they have to upgrade. Also, people who are exempt maybe shouldn't be exempt.*

Perceptions of the District and Air Quality Policies

Balance Between Public Health and Economic Prosperity

Respondents were asked how well they think the District balances public health with economic interests. **Overall, the majority of respondents reported that District was doing a good job balancing public health and economic interests even though some stakeholders believe more or less regulation is needed.** Although many respondents expressed concern that the District does not do enough to protect business interests, the majority of stakeholders described the District's policies as reasonable given California requirements and local economic concerns. Commercial stakeholders were more concerned about compliance requirements imposed on business than were citizen advisory committee members and other District stakeholders.

Q: How well do you think the District balances protecting public health through regulation and helping to ensure the Valley's economic prosperity?

- *I believe the District does a really good job. I think they do a balancing act. I have been very impressed with the outreach they have done. Everybody thinks the Air District is heavy handed. People don't understand that we are trying to meet federal regulations in order to be able to put more money into our grants programs to help people to change out their wood stoves or purchase cleaner burning lawn mowers, or help tune up their cars so there isn't any bad stuff going into the air.*
- *It's a tough balance we are always keeping our economy in mind and the economy in the Valley is always a bigger challenge when the new regulations are being imposed. I would say we have done a good job to keep balance and we have always thought out new incentive programs and grants that we can get for the federal governments.*
- *The Valley Air District has done a tremendous service for our valley and our community; it's a model for the nation, other people are looking at we do. All we have to do is look at people in China who are walking around with masks--that's what zero regulation is. And so once more people realize what they are doing makes a difference, people can make a small sacrifice to improve air quality.*
- *I just think the Air District is doing a great job. I think that we, as Valley residents, live in a fish bowl and unless we can do something about the cartography of the mountains surrounding us, the District is doing all that they can with the air.*
- *I think the District does an excellent job at that [balance protecting public health]. That's the hallmark of the District, achieving measurable and significant air quality, while working closely with stakeholders who are impacted by regulatory decisions to attempt to work in better ways so they are able to stay in business.*
- *I think they are doing well in a very difficult circumstance.*
- *I think the board is very much in tune with their constituents on what they can and can't do. What they do very well is they have the industry help write these rules. If I am in industry I am more apt to follow a rule that I helped write than dictated to. I think the board does an excellent job on how they are regulating the rules right now. Everyone has to give and compromise.*
- *It can improve. I recall during conversations and meetings with the District the focus is on not hurting business and jobs, but the focus and improvement should be on other [economic prosperity]. It should not be one or the other.*
- *[The District is] heavily weighted on money and not enough on air quality. Define short term horizon, how is it going to [encourage] businesses and people to live and move to the area in the next 10-15 years. The economic viewpoint has to be long term, not short term.*

- *I'm not sure what regulations the District has in place, but there has to be a fine line [between public health and regulation] so that the economy doesn't tank. The Valley's economy is agriculturally based and that produces a lot of pollution.*
- *I give them a failing grade at this point. I think they are abusive and hard on the Valley businesses. I think they would like to do better by the businesses, but I think they are being sued by the environmental groups. I think they are caught in the middle. I think the businesses have the least amount of dollars to sue back so the environmental group is winning at this game. I think it's more than a game, it's very serious, but I feel sorry for the air board because I know they are caught in between environmental activist and the EPA. And I don't know where the air board goes next quite frankly, their goals are unattainable. I know their goals are unattainable because the air board told me the goals the EPA and environmental groups are unattainable.*
- *I think they have our health at the forefront.*
- *I think there is a very thin line the District has to balance. I think first and foremost the District is a public health agency and their job is to protect public health. I sometimes wonder whether trying to protect the most sensitive groups is sometimes fruitless at the same time a token... I think they do an outstanding job to protect the overall majority. In the end it's obvious in my opinion, I mean I come up on top of the overpass every day and can have a clear view of the Sierras and the Coastal Range and that is proof in the pudding that the rules that the District has has really good effects.*
- *I would say 3.5, favorable, [but] not doing enough. That's my personal opinion.*
- *I don't think they are too strict. I think they do a good job.*
- *I think there is a total disconnect. I think it's a terrible relationship. I think the District is catering to CARB and EPA and I think that it has totally forgotten their constituents of the Valley. I think they are harming the people of the Valley.*
- *I think they are doing a very good job.*
- *I think they do a reasonably good job. I think there is more room to improve that. I think it's in the way for incentives and grants for small businesses to comply.*
- *I think the District works hard to try to maintain that balance. Because the District is public health focused organization and is also trying to do so in geographic constraints that we operate under, as well as the economic circumstances the Valley faces. The District and board tries to make that balance every time we face those decisions.*
- *They have done a very decent job. The administration and staff at the District, in my opinion, have done a good job outreaching towards those individuals that will be affected to try and come up with economic incentives or different ways of obtaining goals that are more realistic. They try to work with the stakeholders to reach the goal while taking into account the business community.*
- *Wow, that's a complicated balance. I think they try really hard so I would say they are doing a good job.*
- *Well, as far as I know, it has been fairly balanced. I would be more aggressive on supporting local government and adopting and maintaining a simple growth plan that would reduce all vehicles travelled.*
- *I think the District does as much as they possibility can as far as information is concerned and the California Air Board and they dictate what we can and cannot do. The District has some flexibility, but most regulations come out of Sacramento and Washington DC from the EPA. I believe that most people in this area, the San Joaquin Valley, are very aware what we are trying to do and what other people need to do to clean the air.*

- *Not well. It's not working because of greater problems [are at] the State level. The regulations have just become so exhaustive that businesses just can't afford to be here. Those that are left, pass on the cost to consumers.*
- *You have to tag the problems to individual [segments] in the industry, not across the board. The fuel industry and the farm industry, they all deal with different components of the ag-industry. A tree farm is not going to be the same as a cow farm, a cow farm is not going to be the same as a cotton farm. So when you are looking at the ag-industries you have to break them down and do a needs assessment as opposed to applying a blanket policy. The industry does not fit into one box.*
- *San Joaquin Valley Air Pollution Control District is exceptional at that [balance]. They do a really good job and that is partly why they are so successful. They understand that there are limits to what they can mandate and still have people stay in business...The problems come from the State and Feds in their ivory towers. [The State and Fed] don't really care what the effect is on the individual.*
- *I think at this state of this game, or at least until old timers get older and die off, the District is always going to be blamed for the loss of jobs. They have done some strict pollution regulations that have been imposed on industry and stationary sources that have added a lot on the perception that regulatory climate in Southern California is not business friendly. I believe the District needs to try and maintain a balance, but the early regulations may have crippled businesses that may be gone now.*
- *Well, the economic prosperity is we help the programs help and people don't want to take advantage of it and then again that goes back to the people.*
- *Well, the standards are set to public health and that's their goal, continuously their goal is to meet the...the standard is set through the EPA and CARB to protect health. That's a kicker, they are trying, the board itself takes into consideration the economics and to have a healthy business climate that is constantly on their mind, so that's always what we start when we are making the rule making process.*
- *It's a delicate balance. It's very, very important that the public understands that this [the regulations] are for their health. A lot of people don't realize the connection between what they do and air pollution. They don't get it.*
- *It's a tough thing but I think the District does as well as it can. [The District] has to be mindful of the decisions that it makes and how they will impact businesses. I think they do a really good job of balancing that.*
- *I think they are doing a really good job, the District has a really good program through industry and agricultural through the different associations and entities that represent different segments of those entities. Working with them has been very cognitive, give and take, accomplishing the goals the District needs to take to get the air cleaned up. I would say they have done a fantastic job.*
- *I think they are trying, but I don't think they are doing a good job.*
- *They do a fair job... but I think they need to do more.*
- *I think they do as well as they can. They try very hard.*

Regulatory, Voluntary, and Incentive-Based Policies

Finally, respondents were asked if there were any unregulated consumer activities that they thought were appropriate for additional District action and, if so, whether they would recommend regulatory, voluntary or incentive-based policies. **The most frequently cited areas for additional action were school-site idling and drive-through services followed by gas-powered lawn care equipment. When asked what type of policies they would recommend, respondents most often recommended incentive programs.** Stakeholders were evenly split

in their support of regulatory and voluntary measures. Many respondents recommended all three approaches. As one respondent explained, “It’s not one or the other. You have to use those [regulatory, voluntary, and incentive-based policies] all in concert. Some things have to be regulated and there has to be some incentives. Obviously we need to get people to voluntarily do some things. They don’t work in isolation of each other.” Selected comments regarding regulatory, voluntary, and incentive-based programs are presented in **Table 2**, followed by comments regarding the activities that the District should consider addressing.

**Table 2: Selected Comments
Regulatory, Voluntary, and Incentive-Based Policies**
(Multi-Response Question, Respondents Could Recommend More Than One Approach)

Regulatory (13 Respondents)	<p><i>Leaf blowers should be regulated, you can't depend on volunteer measures.</i></p> <p><i>You have to make some things mandatory to get people's attention. When we hold town-hall meetings, if it's about regulations we have 200 people, if it's about education we get 60 people. Those regulations are controversial but you have to make it matter to people.</i></p>
Voluntary (13 Respondents)	<p><i>We should start with voluntary measures and see how that works.</i></p> <p><i>You can get a lot done with volunteer efforts.</i></p> <p><i>School idling must be voluntary, but regulator or incentive programs are important to address other questions.</i></p>
Incentives (18 Respondents)	<p><i>I think incentives and education are more effective. I really hate to see rules and regulations come down to the kind of detail there is now... There is a point where you are not going to get the bang for the buck for the kind of disturbance you are causing in people's lives.</i></p> <p><i>Incentives work best for lawn equipment and carpooling.</i></p> <p><i>I think [incentives] work. There are a lot of options, including financial incentives.</i></p> <p><i>They should be incentive based.</i></p> <p><i>Regulations are hard to enforce and would place a burden on one class of people, but if you can incentivize that would be better than a mandate.</i></p>

Q: Are there any unregulated consumer activities (e.g. lawn care, drive-through services, or school-site idling) that are appropriate for additional District action? Please explain.

- *Leaf blowers, especially since the District covers a big landscaping industry. Especially summer and fall. Idling at school, it is so hard to enforce this behavior, but it should be regulated. Also, the carpool lane should create more outreach and be more enticing. We should give incentives based on tracking how many miles you drive in the car pool lane.*
- *Lawn care needs to be incentive based. Politically, lawn service people are poor. And for idling, it needs to be much easier to walk or bike to school, it's a federal-state problem, encourage walking and biking. There is always an excuse for parents to pick up their children but in the long term they are hurting the lungs of their kids. Society is very short term focused.*
- *There has been a lot of discussion of cars idling in fast food lines and at schools. I'm not sure how much needs to be done in terms of regulation. I think the issue is awareness. People don't know [the impact of idling.]*
- *I don't know, I think a lot of those things would be hard to regulate first of all, so like drive-through idling, how do you regulate that? Lawn care, it has to be balanced between what you can do to reduce emission, but at the same time making it so that the people who are performing those services are not impacted financially. I think it's a balancing act.*
- *Well, you know it gets back to what business can and cannot do again. The whole debate about drive-through and whether those are harmful have been debated. Just look at the number one fast food in the country, Subway, and they don't offer drive through services. Fast food companies say it's for their business, so it can't be just that. Educating the parents and schools, I think more can be done there. Once parents realize that they are sitting there idling is way more harmful. Getting more people to walk to school or riding their bikes. A lot more can be done with educating people.*
- *I get really frustrated when you drive through town and there are numerous lawn folks who have their leaf blowers and they are blowing leaves, dust and dirt onto the street and the vehicles are blowing it right back on the sidewalk. I tend to wonder what they are accomplishing... it seems to be a continual cycle never getting anywhere.*
- *Those are all for just attention, they don't address the true issue. The true issue is that 80% of the pollution in the valley is from mobile sources.*
- *We need to approach the school district and somehow make people more aware of how idling effects the bad air we have. I think we can do more education through the District. [It] is the only thing that I can see.*
- *I think school idling is a big issue. We have told parents to turn off their engine when waiting...in hot weather they like to keep it on. I think regulation may be a good idea.*
- *A lot of folks are opposed to drive-throughs, but the analysis shows that unless you are going to be sitting in a drive-through for an extended period of time, you actually may have more emissions from turning off your car than turning it back [on]. We have to avoid reacting to people's intuition and rely on sound science.*
- *Lawn care, may be one area of focus, but it's relatively small compared to mobile source emissions*
- *Just make people aware, don't regulate. If you start with education and reasoning, most people are going to comply. That's how recycling first got started in Fresno in the 1970s—through education and voluntary actions. People are regulated to death.*
- *Some cities have [placed] bans on drive-throughs, which I think is a big source of idling cars. I know they have changed the procedures at schools so you're not encouraged to sit there and have your car running.*

- *Well nobody wants their activity to be regulated, so by encouraging innovation and technology is to improve quality of equipment or reduction of emissions from that type of equipment, to increase education, and to try and continue to teach principles to community members of their importance or their work or their actions contributing to their reduction of air pollution. Their services to be best provided.*
- *All we can do is suggest that they kill the engines when they are waiting for the kids. And we've done that, we had the flag program where they can wait to pick up their children near the flags, and they don't realize what the flag is all about. We advertised the flag program and now we have spots on TV where all board members get on there and suggest something. What else can we do?*
- *There needs to be more regulations on drive-throughs and trucks.*
- *We have to be careful not to cross that line between regulations and infringements on civil rights. So, to tell someone for example that they can try to shut down drive-throughs at restaurants, but I don't think legally we can do that and the impact on businesses would end up costing thousands of dollars.*
- *I think the dairy and AG industries are an even more important target.*
- *School-site idling is huge. Our son rides his bike to school and it's less than a mile and a half. I understand that people are nervous about kids on the street, but we really need to get back to the culture when kids walked. Get parents to chaperone neighborhood kids. It's promotes a healthy lifestyle.*

Suggestions for Additional District Action

Lastly, respondents were asked if they had any other suggestions for the District. Open-ended responses are presented below. **Many stakeholders recommended that the District increase its interaction with its constituents, including face-to-face opportunities to explain programs, gather feedback, and increase visibility.** Other suggestions included multi-lingual materials and an increased budget for public outreach.

If you could you could give the Air Pollution Control District one suggestion, what would it be?

- *They should have more materials in different languages. There should be more robust campaigns for multi-languages, other than English and Spanish.*
- *Be more aggressive, and don't have a political agenda.*
- *Make sure you know the word is being disseminated to everyone. Not only is it necessary to conduct outreach, but also follow-up to see if the outreach is working and how it could be improved.*
- *Continue on with the zero emission program where it is incentive based where consumers and homeowners in general have the opportunity to purchase things that are cleaner. Give consumers an incentive to switch over to cleaner or zero based emission.*
- *They need to increase their outreach budget. Because right now the way they take those dollars and split them... It just needs to be out there more than it is. It's a function of cost, they only have so many dollars.*
- *I think they need to pause, they have done really good. They need to let us all get a breath of air and we will strive for something cleaner burning in our next phase. We need a little breathing room.*
- *I've had the pleasure with working with them now for a decade, and I've said this in many public meetings, if other [regulatory(s)] would follow the paradigm of San Joaquin Valley, my job as environmental director would be so much easier.*

- *[The Air Pollution Control District should] make it easier for people to take advantage of their programs. Make it friendlier. Send more people out in person to explain the benefits to individuals, organizations and businesses. Let people know, "Hey, here we are and this is what we are trying to do." Some of these people don't have access to the Internet and computers. Start implementing pilot programs and show results. That will encourage more people to make changes. Give people a chance to use a vehicle or equipment for a year. Test it and see what it does. I think that would work.*
- *Stop catering to CARB and EPA; remember who they work for.*
- *I think they are doing an excellent job so I don't have any objections.*
- *To continue to be user friendly and market [their programs]. Do more marketing so that they aren't perceived as a regulatory agency and more as an agency for the people.*
- *Continue doing the great things that they are doing.*
- *Be more visible in the community.*
- *Probably working as aggressive as possible with California [Air] Resource Board on trying to reduce mobile sources.*
- *I think they are doing a really good job given the difficult circumstances, unfortunately if God had wanted to create the perfect location he would have done better than the San Joaquin Valley. We're plagued by the fact that we are the east/west [corridor] for transporting goods. We have so many kinds of diesel trucks that make no contributions to the Valley. They are just passing through and leaving the pollution to be cleaned up.*
- *I would just say, continue the efforts in terms of public information and education because I think the more informed our Valley constituents are about air role and impact of air quality and the challenged regarding air quality the better they are making decisions about that.*
- *I'm an environmental manager for a plant so I deal with them regularly and they have been very supportive, flexible and have done what they can to help me. And other times they are not very flexible, I guess the only comment I can make there is within the guidelines be a little more flexible. I'm not complaining like I said, they have helped me lots of times.*
- *Probably investing in demonstration projects that would increase walking, biking and transit throughout the Valley so helping to finance the infill development and transit-oriented development in cities like Fresno and other cities that are trying to offer some alternatives to low density sprawl.*
- *[I recommend] having a summit with people with life experience and enthusiasm and combine that with those with education to better understand the situation. All of that needs to be part of the component. You are dealing with people's lives and their livelihood.*
- *They seem to do things in a coherent way, thoughtfully. I have no suggestions.*
- *Well I think the rules they have established are pretty complex, it's really hard for individuals who do not have significant training in those areas to try and even to be able to decipher and determine what the requirements are, so they often find themselves on the end enforcement action by the Air District, which makes people to cooperate less.*
- *Continue working the way we are working. Try to get the people to work with us because if they don't want to work with us there is nothing else we can do.*
- *I would probably want to make sure that all decisions are scientific, are good science. No regulations are not based on good science.*
- *I think that we should ask what people think about how to regulate traffic and drive-throughs. Those are the big problems we're facing.*

- *Continue to take a proactive stance in not only keeping the air clean, but proactive politically and to not be afraid to actually litigate against the EPA or the ARB as necessary, don't be afraid to go after them.*
- *To be more bold in their rule creation and rule enforcement.*
- *I would say to keep doing what they are doing with one respect, I think they are maintaining a balance on health and on the impacts on their recommendations or decisions on the economy. Maintain that balance.*
- *I really think they need to more about the particulate. We've had horrible episodes in the last year. For planning purposes, they [the District] don't have to count these really bad episodes. It's allowed by the EPA as an "exceptional event." The air quality will get marginally better after one of these events and then they [the District] will lift the no-burn restrictions, which doesn't make sense.*
- *Look back at the Remove Program, might be other worthwhile programs. Look at the highest dollars vs. reduction of air pollution. Do not limit based on budget because there can be great programs that can help eliminate air pollution, but can't make the cut.*
- *I just think the board and the Air District need to take a serious review of their allegiance to CARB and the EPA versus the economic damage that has been [done] to the Valley.*
- *It seems like to me they are trying to find ways around this thing instead of going towards and through the people.*

**APPENDIX A:
INTERVIEW GUIDE**

**Valley Air District Residential Wood Burning, Lawn Care, and Commuting Study 2014
Community Stakeholder Interview Guide**

INTRODUCTION

Hello, my name is _____ and I'm calling on behalf of the San Joaquin Valley Air Pollution Control District. Is this _____ [confirm name of individual being interviewed]. I have you scheduled for a brief interview. Is this still a good time? [Reschedule if necessary]

We are speaking with various community stakeholders about their perceptions of the air quality in the San Joaquin Valley and the various programs that have been implemented to reduce air pollution.

I. Perception of Air Quality

1. Using a 5-point scale, where 5 is Excellent and 1 is poor, how would you rate air quality in the San Joaquin Valley overall?

5 4 3 2 1 Not sure/Refused

2. Thinking back over the last 5 years, would you say the air quality in this area has gotten better, gotten worse, or stayed about the same?

Gotten Better
Gotten Worse
Stayed the Same
Not sure/Refused

3. Looking forward, what can be done in the Valley to reduce emissions further?
4. Could you describe how the air quality and/or air quality regulations in this area have impacted your [customers, employees, constituents, members, family], if at all?

II. Awareness and Perceptions of Healthy Air Living /Check Before Your Burn Programs

5. Have you ever heard of the Valley Air District's *Healthy Air Living* program?
Yes (go to modified Q7)
No (go to Q6 & Q7)
Not Sure/Refused
6. *Healthy Air Living* is a program designed to improve air quality on a daily basis. This includes reducing the number of miles driven each day; reducing pollution created by equipment such as leaf blowers and lawnmowers; and encouraging development of cleaner energy sources. The program provides specific information and incentives so San Joaquin Valley residents can voluntarily reduce air pollution.

7. Now that you have some/more information about *Healthy Air Living*, [do you have a favorable or unfavorable opinion about the program? (Is that very or somewhat?)] (Ask only second part if response to Q5 is Yes)
 - Very Favorable
 - Somewhat Favorable
 - Somewhat Unfavorable
 - Very Unfavorable
 - Not Sure/Refused
8. Why is that? [rating of *Healthy Air Living* program]
9. Have you ever heard of the Valley Air District's *Check Before You Burn* program? (Explain if needed)
10. How can the District encourage more people to take advantage of its incentive and rebate programs to purchase cleaner wood-burning devices (*Burn Cleaner Program*)?

III. Perceptions of the District and Air Quality Policies

11. How well do you think the District balances protecting public health through regulation and helping to ensure the Valley's economic prosperity?
12. Are there any unregulated consumer activities (e.g. lawn care, drive-through services, or school-site idling) that are appropriate for additional District action? Please explain.
13. If you recommend action on Q12, should that action be regulatory, voluntary, incentive-based, or other.
 - Regulatory
 - Voluntary
 - Incentive-based
 - Other (explain)
14. If you could you could give the Air Pollution Control District one suggestion, what would it be?

"They seem to do things in a coherent way, thoughtfully. I have no suggestions."
15. Those are all the questions I have. Is there anything you would like to add?

Thank you for your time

APPENDIX F

**EPA list of Certified and Exempt Wood Burning Heaters
Proposed Amendments to Residential Wood Burning Program**

September 18, 2014



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EPA Certified and Exempt Devices

Pursuant to rule language devices purchased and/or installed on or before March 31, 2015 that qualify to be registered with the District to be used during Level 1 Episodic Curtailments must be EPA Phase II certified or exempt pursuant to requirements in the Code of Federal Regulations, Part 60, Title 40, Subpart AAA at the time of purchase and/or installation. The following two lists are maintained by EPA on their website at: <http://www.epa.gov/Compliance/resources/publications/monitoring/caa/woodstoves/certifiedwood.pdf> and at <http://www.epa.gov/compliance/resources/publications/monitoring/caa/woodstoves/exemptwood.pdf>.

The list of exempt devices is not an all-inclusive list. Many pellet stoves were exempt pursuant to subpart AAA language and are not included in this list. Therefore, with regards to pellet stoves, the list of exempt devices is for reference only, with the understanding that additional pellet stoves installed/purchased on or before March 31, 2015 may be exempt.

Additionally, rule language requires that wood burning heaters purchased and/or installed on or before March 31, 2015 be Phase II Certified; therefore, devices that are wood burning heaters that are included in the list of exempt devices are not considered clean burning devices and would not qualify to be registered with the District.



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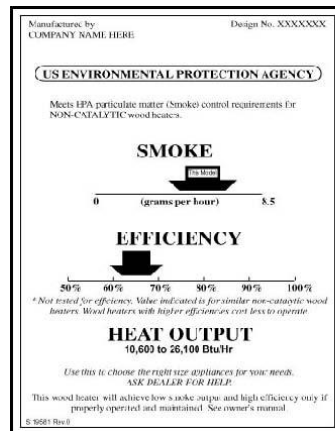
List of EPA Certified Wood Stoves December 2013



EPA Wood Heater Program

Enclosed is the list of wood stoves certified by the United States Environmental Protection Agency (EPA). The EPA Certified Wood Stoves list contains information about wood stoves or wood heating appliances that have been certified by the EPA along with its manufacturer name, model name, emission rate (g/hr), heat output (btu/hr), efficiency (actual measured and estimated), and type of appliance. It also indicates whether the appliance is still being manufactured. An EPA certified wood stove or wood heating appliance has been independently tested by an accredited laboratory to determine whether it meets the particulate emissions limit of 7.5* grams per hour for non-catalytic wood stoves and 4.1* grams per hour for catalytic wood stoves. All wood heating appliances that are offered or advertised for sale in the United States are subject to the New Source Performance Standard (NSPS) for New Residential Wood Heaters under the Clean Air Act and are required to meet these emission limits.

An EPA certified wood heater can be identified by a temporary paper label attached to the front of the wood stove and a permanent metal label affixed to the back or side of the wood stove (see examples below). If you have questions regarding a particular model line or manufacturer, please contact Rafael Sanchez at 202-564-7028 or via e-mail at Sanchez.rafael@epa.gov.



* Temporary Wood Stove Label Permanent Wood Stove Label

Wood stoves offered for sale in the state of Washington must meet a particulate emissions limit of 4.5 grams per hour for non catalytic wood stoves and 2.5 grams per hour for catalytic wood stoves.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	A. J. Wells and Sons LTD	Cove 2 SR	4.4	9256 - 32,557		63	Non Catalytic
x	Alladin Hearth Products	Sunburst II Model 2208	4.4	11500- 36300		63	Non Catalytic
x	American Road Equipment Company	Erik SW II Catalytic Environmentalist SSW-1000	1.2	9800-46900		72	Catalytic
	Amesti LTDA	N380	5.16	10671 - 27842		63	Non Catalytic
	Amesti LTDA	Rondo 450	4	11,842-24,288		63	Non Catalytic
	Appalachian Stove & Fabricators, Inc.	Model 32-BW	2.5	10400-24500		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	Model 360-CR	2.8	10600-29100		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	Model 36 BW	3.3	10600-30200		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	Trailmaster Model 4N1-XL II	3.4	10100-26900		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	Model 30-CD	3.7	8500-21400		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	36-BW-1988	3.9	9500-19300		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	32-BW-XL-88, Gemini-XLB 1989	4	8400-19800		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	Model 52 WXL 1988	4.2	10500-15400		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	Heritage Classic A, T16, Cast heat & Catskill	4.4	10,300-31,200		63	Non Catalytic
	Appalachian Stove & Fabricators, Inc.	28 CD	4.5	9500-16300		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	Trailmaster 4N1-XL	4.7	9600-19600		72	Catalytic
	Appalachian Stove & Fabricators, Inc.	Heritage Classic; Model Numbers T16 & VT16	6.81	11057-31327		63	Non Catalytic
	Archgard Industries, Ltd.	Optima PS1	0.87	10,196-29,581		63	Non Catalytic
	Archgard Industries, Ltd.	Chalet 1600 and Chalet 1600 Insert	2.88	10,611-29,181		63	Non Catalytic
	Archgard Industries, Ltd.	Chalet 1800	3.62	10,700-35,500		63	Non Catalytic
	Austroflamm Industries Inc.	Integra C1121, II	2.7	9300-31100		78	Pellet
	Austroflamm Industries Inc.	Esprit Wood 119.1	6.3	11400-43600		63	Non Catalytic
	Austroflamm Industries Inc.	Irony M	6.6	11800-46800		78	Pellet
	Avalon by Travis Industries, Inc.	Spokane 1250	4.4	11600-38500		63	Non Catalytic
x	Avalon by Travis Industries, Inc	Perfect-Fit insert	4.1	11,300-33,400		63	Non Catalytic
	Avalon by Travis Industries, Inc.	Avalon Spokane 1750	1.94	9300-42200		63	Non Catalytic
	Avalon by Travis Industries, Inc.	Rainier, Rainier insert	2	11200-40000		63	Non Catalytic
	Avalon by Travis Industries, Inc.	Arbor	2.4	10,700-33,900		63	Non Catalytic
	Avalon by Travis Industries, Inc.	Olympic, Olympic insert	2.6	12000-45100		63	Non Catalytic
	Avalon by Travis Industries, Inc.	Pendleton, Pendleton insert	3	8700-44400		63	Non Catalytic
	Barbeques Galore/Pricotech	Rosewood	2.7	11600-36200		63	Non Catalytic
	Blaze King Industries, Inc.	Chinook / Sirocco/Ashford 30	0.97	11,200- 27,280	75	72	Catalytic
	Blaze King Industries, Inc.	Blaze King KEJ 1107	1.76	9100-39800	82	72	Catalytic
	Blaze King Industries, Inc.	Blaze King, King Catalytic KEJ-1101	1.9	9000-35300		72	Catalytic
	Blaze King Industries, Inc.	Princess Insert Model PI 1010A	2	7,200-29,500	80	72	Catalytic
	Blaze King Industries, Inc.	Chinook / Sirocco/Ashford 20	1.3	11,400 - 22,700	77	72	Catalytic
	Blaze King Industries, Inc.	Heat Pro C210	2.1	10700-43300		72	Catalytic
	Blaze King Industries, Inc.	Blaze King, King Catalytic Insert KEI-1300	2.2	10100-34500		72	Catalytic
	Blaze King Industries, Inc.	Princess PEJ 1006	2.4	12000-35600	81	72	Catalytic
	Blaze King Industries, Inc.	Blaze King, Auto Light PAL-4000	2.5	12200-33700		78	Pellet
	Blaze King Industries, Inc.	Blaze King, Royal Heir RHT-2200, 2250	2.5	7700-31100		72	Catalytic
	Blaze King Industries, Inc.	Blaze King Princess Insert Model PI 1010	2.8	9,300-31,200	80	72	Catalytic
	Blaze King Industries, Inc.	Heat Pro C110	2.8	9600-32400		72	Catalytic
	Blaze King Industries, Inc.	Blaze King, Royal Heir RHT-2100	3	6800-57100		72	Catalytic
	Blaze King Industries, Inc.	Blaze King PEJ 1003	2.4	10300-41600		72	Catalytic
	Blaze King Industries, Inc.	Briarwood II/90	3.5	10600-36000	71.4	63	Non Catalytic
	Blaze King Industries, Inc.	Blaze King, Princess Catalytic PEJ-1002	3.7	8400-35400		72	Catalytic
	Blaze King Industries, Inc.	Blaze King KEJ-1102	3.9	7900-42600		72	Catalytic
	Blaze King Industries, Inc.	Eagle/Pioneer E90, PZ-90, Briarwood XE-90, XEI-90	5.2	13500-38000		63	Non Catalytic
	Blaze King of Montana	Blaze King Royal Guardian, RGT-3001	5.8	9400-39800	71.1	63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Boru Stove Company	Carraig Mor BCMUS	3.9	12,878 - 28,846	73.2	63	Non Catalytic
	Bosca Chile S.A. (Ingeniera De Combustion)	Spirit 500, Classic 500	1.2	8,700-21,700		78	Pellet
	Bosca Chile S.A. (Ingeniera De Combustion)	Soul Pellet Stove Insert, Soul 700 free standing, Soul 700 Insert	2.2	6,100-30,000		78	Pellet
	Bosca Chile S.A. (Ingeniera De Combustion)	Spirit 550, Limit 450 and Classic 450, Spirit 500	3.6	11,359-26,100		63	Non Catalytic
	Bosca Chile S.A. (Ingeniera De Combustion)	Gold 400	4.4	11,800-26,800		63	Non Catalytic
	Bosca Chile S.A. (Ingeniera De Combustion)	Miner 33	4.3	11,756 - 35,388		63	Non Catalytic
	Ceramiche Savio di Elio & C. s.n.c.	Catellante di Castellante and Real Castillo di Ague Model CS1	5.1	11200-40800		63	Non Catalytic
	Ceramiche Savio di Elio & C. s.n.c.	Real Castello di Moncaueri/Castllo Della Venaria	5.6	10100-24200		63	Non Catalytic
	CFM Corporation	DutchWest Large 2479	1.31	11,300-26,500		63	Non Catalytic
	CFM Corporation	DutchWest Small Model	1.41	7,800-25,100		63	Non Catalytic
	CFM Corporation	DutchWest Medium 2478	1.5	10,600-25,300		63	Non Catalytic
	CFM Corporation	Model EWF 36A	2.4	11,300-75,500		72	Catalytic
	CFM Corporation	Vermont Castings Defiant 1610	2.9	10,000-30,000		63	Non Catalytic
	CFM Corporation	EWF 30	3.5	11,100-40,500		63	Non Catalytic
	CFM Corporation	Aspen 1920 & Plymouth HWS10	4.3	9100-18000		63	Non Catalytic
	CFM Corporation	CW2500X00, CW2500X02, JW2500X00, CJW2500X02, DW2500 and JW2500X10	4.7	9500-57800		63	Non Catalytic
	CFM Corporation	FW247001 to FE247004 and JW1000PF1	5	11500-18900		63	Non Catalytic
	CFM Corporation (Jacuzzi Leisure Products, Inc)	Campbell/Jacuzzi CJW2000L02, JW2000L10, DW2000XXX and JW2000P10	4.4	12000-55100		63	Non Catalytic
	CFM Corporation (Jacuzzi Leisure Products, Inc)	Campbell/Jacuzzi FW300005-FW300009 & FW300019-Campbell/Jacuzzi FW300027,	4.4	12000-55100		63	Non Catalytic
	CFM Corporation (Jacuzzi Leisure Products, Inc)	JW1500P10, FW1500, DW1500, JW1500L10	4.4	10300-29200		63	Non Catalytic
	CFM Corporation (Jacuzzi Leisure Products, Inc)	S27X/S28X & FW27 Series, CJW1500L02	4.4	10300-29200		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Defiant Encore	0.6	6200-32900		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Encore 1450 N/C	0.7	10,600-24050		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Defiant 1910 & 1945	0.8	10600-44400		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	2370	1	5700-18300		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Century/Dutchmaster FW and CDW	1	11,800-32,300		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Dutchwest Small Convection Heater #2460	1.1	6600-27300		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Dutchwest Extra Large Convection 2462	1.3	8300-28000		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	FA455	1.3	10400-26500		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Dutchwest Large Convection Heater (Model 2461)	1.41	10700-29500		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	C.D. Lg. Fed. Convection Heater FA264CCL, FA264CCR	1.6	6600-26700		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Defiant Encore 2550 (Formerly 2190)	1.6	8700-41700		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Defiant Encore 2140	1.8	9000-41300		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Intrepid II Model 1990	2.1	8300-26700		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Model 2170	2.1	9400-22800		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	WinterWarm Fireplace Insert Model 1280	2.1	10300-30000		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	WinterWarm Small Insert Model 2080	2.1	8700-31100		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	FA264	2.2	9500-31700		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Intrepid II Model 2070	2.4	9200-19300		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	C.D. Extra-Lg. Federal Convection Heater FA288CCL	2.6	8400-38700		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	EWF36	2.7	11,800-68,600		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	C.D. Small Federal Convection Heater FA224CCL	2.8	7000-30600		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	C.D. Rocky Mountain Heater FA211CL	2.9	6800-27800		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Montpelier	2.9	10,094-27,550		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	2370	3	10,094-27,550		72	Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	CFM Corporation (Vermont Castings, Inc.)	FA224	3.1	9100-34800		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	FA288	3.1	7800-29300		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Intrepid II 1308	3.1	10200-22500		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Intrepid Model 1640	3.3	8200-19500		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Madison Model 1655	3.3	11,300-39,700		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Resolute Acclaim (Model Number 2490) & TLWS1	3.4	9500-33900		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	C.D. Federal "A Plus" FA224ACL	3.5	7200-30000		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	C.D. Sequoia FA455	3.6	8700-60300		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	C.D. Adirondack Wood Heater FA267CL	3.7	8400-40000		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	WinterWarm Small Insert (model 2370)	4	9250-21500		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	C.D. Large Federal Box Heater FA209CL	4.3	9000-25600		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	C.D. Small Federal Box Heater FA207CL	4.3	6200-28000		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Seville 1635 and 1600 Insert	4.5	9,900-30,800		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Resolute Acclaim 0041	5.1	8700-30900		72	Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Madison 1650	5.5	11400-31000		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Seville Insert	5.5	10200-27400		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Aspen Model 1920	6.3	10100-26400		63	Non Catalytic
	CFM Corporation (Vermont Castings, Inc.)	Seville 1630	6.3	12000-27300		63	Non Catalytic
	Consuming Fire, Inc.	Perfect Hearth	3.4	11,700-38,100		63	Non Catalytic
x	Country Flame Technologies, Inc.	R/90	1.5	10600-46800		72	Catalytic
x	Country Flame Technologies, Inc.	E-1/90	1.7	9600-37800		72	Catalytic
x	Country Flame Technologies, Inc.	B/A	2	10400-55500		72	Catalytic
x	Country Flame Technologies, Inc.	O-2	2.5	8000-30000		72	Catalytic
x	Country Flame Technologies, Inc.	OV-3000	2.9	11800-34000		63	Non Catalytic
x	Country Flame Technologies, Inc.	BBF	3	10500-51400		72	Catalytic
x	Country Flame Technologies, Inc.	BBF-6, BBF-I	3	9500-48600		72	Catalytic
x	Country Flame Technologies, Inc.	O-2/90	3	10800-34100		72	Catalytic
x	Country Flame Technologies, Inc.	E-2	3.3	13000-34400		72	Catalytic
x	Country Flame Technologies, Inc.	R-6	3.3	13800-50700		72	Catalytic
x	Country Flame Technologies, Inc.	OV-2600	3.5	11500-33600		63	Non Catalytic
x	Country Flame Technologies, Inc.	SBF/A	3.6	8700-33600		72	Catalytic
x	Country Flame Technologies, Inc.	E1-6, E1-I	3.7	12400-55300		72	Catalytic
x	Country Flame Technologies, Inc.	OV-26BF-I	3.7	11400-41300		63	Non Catalytic
x	Country Flame Technologies, Inc.	OV-2100	4.1	11700-32700		63	Non Catalytic
x	Country Flame Technologies, Inc.	OV-21	4.2	11700-42200		63	Non Catalytic
x	Country Flame Technologies, Inc.	Inglenook INGW-02	4.4	11,600-38,000		63	Non Catalytic
x	Country Flame Technologies, Inc.	B-6, B-I	4.6	9600-48200		72	Catalytic
x	Country Flame Technologies, Inc.	NC-6D	4.7	11700-54900		63	Non Catalytic
x	Country Flame Technologies, Inc.	S-6, S-I	6.5	13100-48900		72	Catalytic
x	Country Flame Technologies, Inc.	Patriot	6.9	11300-34000		63	Non Catalytic
x	Country Flame Technologies, Inc.	Combo Air OC	7	9300-46400		63	Non Catalytic
	Country Stoves, Inc.	Winslow PS40 and PI40	1.14	7,476-21,343		78	Pellet
	Country Stoves, Inc.	Striker S160 and C160	1.6	12500-41200		63	Non Catalytic
	Country Stoves, Inc.	Canyon S310	3.2	11400-34900		63	Non Catalytic
	Country Stoves, Inc.	Canyon ST310, C310, E310	3.5	11600-38800		63	Non Catalytic
	Country Stoves, Inc.	Alpine	3.53	11,455-42,445		63	Non Catalytic
	Country Stoves, Inc.	Converter C-30, C-35	4	8000-49200		72	Catalytic
	Country Stoves, Inc.	Legacy S260, C260, and E260	4.11	11800-48000		63	Non Catalytic
	Country Stoves, Inc.	Performer S210, SS210, ST210, C210 & E210	4.2	9500-36100		63	Non Catalytic
	Country Stoves, Inc.	T-TOP S 240	4.9	11300-42700		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Country Stoves, Inc.	C-240 and E-240	5.1	11500-36700		63	Non Catalytic
	Country Stoves, Inc.	STRIKER S130, C-50L, C130, CA-50, CA-50L, CA-55	5.6	9300-43600		63	Non Catalytic
	Country Stoves, Inc.	T-Top C-40, C-45, C-46	5.7	10700-40900		63	Non Catalytic
	Country Stoves, Inc.	Performer S180, C180, E180	6.6	11400-38700		63	Non Catalytic
	Country Stoves, Inc.	Starlite C-20, C-21	9.6	7700-43500		63	Non Catalytic
	Country Stoves, Inc.	Starlite C-20, C-21	9.6	7700-43500		63	Non Catalytic
x	CRD Precision Fabricators Inc. (Chippewa)	Energy King Legacy 2150	2.9	11800-34000		63	Non Catalytic
x	CRD Precision Fabricators Inc. (Chippewa)	Energy King Legacy 2100	3.2	11000-31100		63	Non Catalytic
x	CRD Precision Fabricators Inc. (Chippewa)	Energy King Legacy 1650	3.7	11400-41300		63	Non Catalytic
x	CRD Precision Fabricators Inc. (Chippewa)	Energy King Legacy 950	4.2	11700-42200		63	Non Catalytic
x	CRD Precision Fabricators Inc. (Chippewa)	Energy King Legacy 900	6.5	10200-30800		63	Non Catalytic
x	CRD Precision Fabricators Inc. (Chippewa)	Energy King Legacy 1600	7	11700-23100		63	Non Catalytic
x	Dansons Incorporated	Model HR-2	0.9	10500-33400		78	Pellet
x	Dansons, Incorporated	Eclipse	1	7800-33100		78	Pellet
x	Dell Point Technologies	DC 2000, Europa	0.6	10400-24100		78	Pellet
x	Derco, Inc./Grizzly Stoves	Super Achiever FPI-2-LEX	2.4	9800-34200		72	Catalytic
x	Derco, Inc./Grizzly Stoves	Little Blazer FP-20	4.7	7200-28400		72	Catalytic
x	Derco, Inc./Grizzly Stoves	Little Blazer FP-20	4.7	7200-28400		72	Catalytic
x	Deville	Deville 7794 - Comfort	6.9	11,300-35,100		63	Non Catalytic
x	Dovre, Inc.	Horizon 500 CC	2.9	10300-33800		72	Catalytic
x	Dovre, Inc.	Horizon 500 CC	3.6	8300-28000		72	Catalytic
x	Dovre, Inc.	Heirloom 300 HC	4.5	11600-45100		72	Catalytic
x	Dovre, Incorporated	Heirloom 390	2.8	9100-31800		72	Catalytic
	England's Stove Works, Inc.	25-EP, 55-TRPEP, 55SHPEP	1.43	10,700-25,100		78	Pellet
	England's Stove Works, Inc.	10-CPM, 49-TRCPM, 49-SHCPM	1.6	10,455-24,566		78	Pellet
	England's Stove Works, Inc.	30-NC, 50-TNC30L, 50-TNC30G	1.63	11,950-28,337		63	Non Catalytic
	England's Stove Works, Inc.	Model 18M-H	2	7800-26900		72	Catalytic
	England's Stove Works, Inc.	17-VL	4.3	11,875 - 19238		63	Non Catalytic
	England's Stove Works, Inc.	Summers Heat Model 50-SHW20 Englander Model 24JC	2.1	7200-28600		72	Catalytic
	England's Stove Works, Inc.	Model 18 PC	2.2	8700-26400		72	Catalytic
	England's Stove Works, Inc.	13-NCMH, 50-SNC13,	2.35	11,579-32,017		63	Non Catalytic
	England's Stove Works, Inc.	Englander Freestanding Radiant 24FC	2.4	7200-35600		72	Catalytic
	England's Stove Works, Inc.	Summers Heat Model 50-SHW25 Englander Model 24ICD	2.4	5400-17400		72	Catalytic
	England's Stove Works, Inc.	Englander Front Loading Fireplace 28IC	2.5	8200-24400		72	Catalytic
	England's Stove Works, Inc.	50-TNC Timber Ridge 13-NCI/50-TNC131 (Insert)	2.6	10,000-29,200		63	Non Catalytic
	England's Stove Works, Inc.	Englander 13-NC Summers Heat,50-snc Golden Eagle	2.6	10,000-29,200		63	Non Catalytic
	England's Stove Works, Inc.	Englander 25-PDV, Summers Heat 55SHP22, and Timber Ridge					
	England's Stove Works, Inc.	55TRP22 Pellet	2.6	10,700-24,500		78	Pellet
	England's Stove Works, Inc.	Model 24IC	2.6	10200-27100		72	Catalytic
	England's Stove Works, Inc.	24 ACD	2.7	9000-20100		72	Catalytic
	England's Stove Works, Inc.	Englander Front Loading Space Saver 28CC	2.7	7900-25500		72	Catalytic
	England's Stove Works, Inc.	Pellet Fuel Burning Room Heater Model 25-PDCV/55-SHP10/55-TRP10	3.1	8200-22400		78	Pellet
	England's Stove Works, Inc.	Englander Econo Radiant 18PC	3.6	8500-31000		72	Catalytic
	England's Stove Works, Inc.	Summers Heat Model 50-SHW22 Englander Model 24-AC/FC	3.8	9100-25400		72	Catalytic
	England's Stove Works, Inc.	17-VL	4.3	12,791- 43,520		63	Non Catalytic
	England's Stove Works, Inc.	Englander Fireplace Insert 28JC	4.4	8400-29100		72	Catalytic
	England's Stove Works, Inc.	22 PIC	5.1	9000-30200		72	Catalytic
x	Eureka Heating PTY Limited	Emerald	4.4	11000-35500		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
x	Evergreen Marketing, Inc.	Mohawk 60A	3.8	4700-14300		72	Catalytic
x	Evergreen Metal Products Inc.	Schrader Pelletmiser 905-P	1	11000-32700		78	Pellet
x	F. Huemer Ges. M.B.H.	Austroflam Wega II	1.3	8500-42000		78	Pellet
	Fireplace Products International Limited	F1100S, I1100S I1200S , HI200, CS1200, CI1200, CI1250 Small Wood Stove & Insert	3	10600-34700		63	Non Catalytic
	Fireplace Products International Limited	F2400M, I2400M, S2400, HI300, CC75, CS2400 Medium Wood Stove & Insert	3.44	12000- 36800		63	Non Catalytic
	Fireplace Products International Limited	H2100M Hearth Heater	3.5	10800-46900		63	Non Catalytic
	Fireplace Products International Limited	FP90, EX90, R90 Wood Fireplace	3.78	11,700-42,300		63	Non Catalytic
	Fireplace Products International Limited	F1100S, I1100S, F1100S-1 Small Wood Stove & Insert	3.8	09400-38700		63	Non Catalytic
	Fireplace Products International Limited	F2100M, I2100M Medium Wood Stove & insert	3.8	11700-38700		63	Non Catalytic
	Fireplace Products International Limited	F2100MI	3.9	11,300-38,800		63	Non Catalytic
	Fireplace Products International Limited	H200 Cast Wood Stove	3.9	10,900 - 19,400		63	Non Catalytic
	Fireplace Products International Limited	R6,RA6,RA8 Wood Stoves	3.9	11500-59000		63	Non Catalytic
	Fireplace Products International Limited	F3100L, I3100L, S3100L, Large Wood Stove & Insert	4.19	11900-42900		63	Non Catalytic
	Fireplace Products International Limited	H300 Cast Wood Stove	4.2	10,600-28,500		63	Non Catalytic
	Fireplace Products International Limited	R3, RA3, R9 Wood Stove	4.2	11200-35500		63	Non Catalytic
	Fireplace Products International Limited	I2000M14 Wood Insert	4.5	11200-42700		63	Non Catalytic
	Fireplace Products International Limited	R14-2	5	11500-37500		63	Non Catalytic
	Fireplace Products International Limited	Z2500L Wood Fireplace	5.2	10600-39700		63	Non Catalytic
	Fireplace Products International Limited	R-16 Wood Insert	6.6	11100-32900		63	Non Catalytic
	Fireplace Products International Limited	F2000M Medium Wood Stove	7.1	11800-34200		63	Non Catalytic
	Fireplace Products International Limited	R7, RA7, R5 Small Wood Stove	8.3	5900-33500		63	Non Catalytic
	Fireplace Products International Limited	F5100	1.46	11,738 - 41,982	79.08	72	Catalytic
	Fireplace Products International Limited	GF55, GF155 Regency Greenfire Pellet Stove & Insert	1.96	6,500-40,000		78	Pellet
	Fireplace Products International Limited	GC60, GCI60 Hampton Cast Pellet Stove & Insert	2	9,363 - 45,478		78	Pellet
	Fireplace Xtrodinair (FPX) by Travis Industries, 36 Elite		2.3	11900-47100		72	Catalytic
	Fireplace Xtrodinair (FPX) by Travis Industries, 44 Elite		2.5	11000-45300		72	Catalytic
	Fireplace Xtrodinair (FPX) by Travis Industries, 33 Elite		4.1	11,300-33,400		63	Non Catalytic
	Foundries du Lion S.A.	Efel Symphony 390.74	1.8	10700-33000		72	Catalytic
	Foundries du Lion S.A.	Harmony IIIB	2.7	11,200-57,300		63	Non Catalytic
	Foundries du Lion S.A.	Model S-33,S-83,H33,R33,X33	3.3	8,600-37,300		63	Non Catalytic
	Foundries du Lion S.A.	Efel Harmony 386.75	3.8	7100-51000		72	Catalytic
	Foundries du Lion S.A.	Harmony I	4.4	11800-55000		63	Non Catalytic
	Foundries du Lion S.A.	Efel Symphony 387.74	5.1	10600-49700		72	Catalytic
	Foyers Supreme Incorporated	Supreme Plus	7	9,600-16,300		63	Non Catalytic
	Foyers Supreme Incorporated	Volcano Plus	4.3	11,310-25,189		63	Non Catalytic
	Foyers Supreme Incorporated	Galaxy	3.5	12,833 - 27,093		63	Non Catalytic
	Foyers Supreme Incorporated	Superme 2 Face Plus, Opus	5	10,213-30,163		63	Non Catalytic
x	Frantech, Inc.	Seefire 2100 S	3.2	11000-31100		63	Non Catalytic
x	Frantech, Inc.	Seefire 900 S	6.5	10200-30800		63	Non Catalytic
x	Frantech, Inc.	Seefire 1600 S	7	11700-23100		63	Non Catalytic
	GHP Group	Pleasant Hearth HWS-224172MH-B; Pleasant Hearth HWS-224172MH-BCA	5.1	11,638 - 22,444		63	Non Catalytic
	GHP Group	Pleasant Hearth LWS-127201-B; Pleasant Hearth LWS-127201-BCA	4.3	9,238 - 16,744		63	Non Catalytic
	GHP Group	Pleasant Hearth LWS-130291-B; Pleasant Hearth LWS-130291-BCA	3.6	12,084 - 37580		63	Non Catalytic
x	Gibraltar Stoves, Inc.	LCC, MCC, SCC, CFS, CFI & DDI	2.75	8400-28700		72	Catalytic
x	GLG Australia	Pearl Bay	3.8	11,300-35,300		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Glo King/Pierce Engineered Products Inc.	GK 100 HT	3.2	10600-61400		63	Non Catalytic
	Glo King/Pierce Engineered Products Inc.	GK-500HT	6.4	10000-22400		63	Non Catalytic
	Glo King/Pierce Engineered Products Inc.	400HT	7	10000-40200		63	Non Catalytic
	Glo King/Pierce Engineered Products Inc.	GK-300HT	7	11000-31000		63	Non Catalytic
	Glow Boy	Model HR-2	0.9	10500-33400		78	Pellet
	Godin Imports, Inc.	Nouvelle Epoque 3137	3.9	10500-20700		72	Catalytic
	Gruppo Piazzetta S.P.A.	P960, P961, P962	1.98	10,000 - 38,500		78	Pellet
	Gruppo Piazzetta S.P.A.	P955, P956, and P957	2.28	9,000 - 29,700		78	Pellet
	Gruppo Piazzetta S.P.A.	Model 905	6.8	11600-30300		63	Non Catalytic
	Gruppo Piazzetta S.P.A.	Sabrina, Sveva, Samanta, Siria	2.305	9,912 - 37,169		78	Pellet
	Gruppo Piazzetta S.P.A.	Monia, Marcella, Marcella, Mia, Maira	2.15	9,912 - 37,169		78	Pellet
	Gruppo Piazzetta S.P.A.	904	7.5	6700-28300		63	Non Catalytic
	H.M.F. Forlong and Maisey Ltd.	Merlin "3", M 3000	6.1	12300-37000		63	Non Catalytic
	Hajduk	Prima MR-51	3.8	11,636-35,246		63	Non Catalytic
	Harman Stove Company	TL 2.0	2.6	9,619 - 31,825		63	
	Harman Stove Company	TL 2.6	3.7	11,281 - 32,657		63	Non Catalytic
	Harman Stove Company	TL 300	1.1	11,238-34921		63	Non Catalytic
	Harman Stove Company	Invincible RS	1.53	6200-32800		78	Pellet
	Harman Stove Company	Oakwood	2.3	10,900-30,500		63	Non Catalytic
	Harman Stove Company	Treemont TAC-340C	2.8	7400-33800		72	Catalytic
	Harman Stove Company	CW30	3.6	10000-34000		63	Non Catalytic
	Harman Stove Company	Treemont TAC-260C, TAC-260CF	3.9	8400-40700		72	Catalytic
	Harman Stove Company	Model Exception TL200	4.4	11000-42400		63	Non Catalytic
	Harman Stove Company	Treemont TAC-520C	5.2	12000-37300		72	Catalytic
	Hase Kaminofenbau	Lima 8150	3.57	11,805-31,653		63	Non Catalytic
	Hase Kaminofenbau	Bari, Lima	3.57	11,805-31,653		63	Non Catalytic
x	Hawke Manufacturing Company, Inc.	HMI 28II	2.6	6100-39600		72	Catalytic
	Hearth and Home Technologies	5100I ACC	4.2	10,491 - 27,854		63	Non Catalytic
	Hearth and Home Technologies	4100I ACC	4.3	11696 - 25,925		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 3100 ACC	1.1	11900-43200		63	Non Catalytic
	Hearth and Home Technologies	Quadra Fire 4300 ACT	1.2	11900-58500		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 3100 ACT & 3100I ACT	1.3	11400-46900		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 5100 I ACT B	2	11,900-50,600		63	Non Catalytic
	Hearth and Home Technologies	2100 ACC	2.1	12000-28000		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 3100F, 3100 I	2.1	11900-43200		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 4300	2.1	11900-39900		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 1900	2.2	11500-32200		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire Cape Cod	2.2	11500-43000		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 5100-I Fireplace Insert	2.7	11800-49900		63	Non Catalytic
	Hearth and Home Technologies	Yosemite	2.7	10900-28600		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire Isle Royale	2.9	10400-46800		63	Non Catalytic
	Hearth and Home Technologies	Arrow 55	3	9900-37500		72	Catalytic
	Hearth and Home Technologies	Quadra-Fire 7100	3.1	13,800-67,300		63	Non Catalytic
	Hearth and Home Technologies	Heat N Glo Number FT-300	3.3	10,000-41,000		63	Non Catalytic
	Hearth and Home Technologies	Northstar/Constitution	3.3	11,300-51,200		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire Cumberland Gap	3.4	11,200-44,300		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 2100, 2100 I	3.6	9300-39300		63	Non Catalytic
	Hearth and Home Technologies	Arrow S12 (Stove) & I12 (Insert)	3.7	9900-32100		63	Non Catalytic
	Hearth and Home Technologies	Heat-N-Glo FT-210	3.9	9,800-36,600		63	Non Catalytic
	Hearth and Home Technologies	Arrow 14, 20	4	14000-36100		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Hearth and Home Technologies	Quadra-Fire 4100	4	11700-50500		63	Non Catalytic
	Hearth and Home Technologies	S-22 & S-22I	4	12000-36900		63	Non Catalytic
	Hearth and Home Technologies	5700 ACT/ Step Top	4.2	11800-45900		63	Non Catalytic
	Hearth and Home Technologies	Model 2700I	4.2	11200-35900		63	Non Catalytic
	Hearth and Home Technologies	Arrow S32 & I32	4.24	10800-47500		63	Non Catalytic
	Hearth and Home Technologies	Arrow Fireplace Insert 25	4.7	11300-55000		72	Catalytic
	Hearth and Home Technologies	Heatilator 11, 12	5.1	12400-36100		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 1800	5.1	10600-31300		63	Non Catalytic
	Hearth and Home Technologies	S10 and I10	5.9	11200-40600		63	Non Catalytic
	Hearth and Home Technologies	Heatilator 1190/Arrow 1490(S20) Heatilator 1290/Arrow 2090(I20)	6.1	10500-44500		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 2000, 2000-I	6.1	7400-43700		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 3000F, 3000 I	6.5	9000-44700		63	Non Catalytic
	Hearth and Home Technologies	Arrow 18	7.2	14500-34400		63	Non Catalytic
	Hearth and Home Technologies	4300ACC	1.1	11,842-38,305		63	Non Catalytic
	Hearth and Home Technologies	Heatilator ECO ADV WS22	2.7	11,733 - 26,957		63	Non Catalytic
	Hearth and Home Technologies	Quadra Fire 5700 ACC	2.3	11,17 - 40,359		63	Non Catalytic
	Hearth and Home Technologies	Voyageur	4.12	11,163 - 23,513		63	Non Catalytic
	Hearth and Home Technologies	Quadra Fire 2100 Millennium & 2100 ACT	2	10900- 37200		63	Non Catalytic
	Hearth and Home Technologies	Summit Insert	3.15	10,732 - 25,578		63	Non Catalytic
	Hearth and Home Technologies	Model 400	2.9	8700-2200		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire Model 4100I and Bodega Bay	3.1	9,000-41,800		63	Non Catalytic
	Hearth and Home Technologies	Model 2590	3.8	9900-34300		72	Catalytic
	Hearth and Home Technologies	Aurora Model 700	4.3	11800-30900		63	Non Catalytic
	Hearth and Home Technologies	Quadra-Fire 1800 I	4.9	10000-33200		63	Non Catalytic
	Hearth and Home Technologies	PH35PS	0.28	9,555 - 25,081		78	Pellet
	Hearth and Home Technologies	PH50PS	0.74	9,256 - 32,396		78	Pellet
	Hearth and Home Technologies	Heatilator ECO ADV WS18	2.6	10,925 -22,563		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Homestead 8570	1.9	10500-33600		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Shelburne 1 Model 8371	2.1	11,800-32,400		63	Non Catalytic
x	Hearthstone Quality Home Heating Products Inc	Shelburne Model 8370	2.1	11,800-32,400		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Heritage 8090, Manchester 8330	1.3	15,320 - 31,200		78	Pellet
	Hearthstone Quality Home Heating Products Inc	Heritage	2.3	10700-29400		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Phoenix 8612	2.4	10500-41500		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Tula	2.55	11,455 - 29,301		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Heritage I, Model 8021	2.7	11,700-32,800		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Tribute Model 8040	3	10,600-28,300		63	Non Catalytic
x	Hearthstone Quality Home Heating Products Inc	Craftsbury 8390	3.08	10,973-25,563		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Craftsbury 1 8391	3.08	10,973-25,563		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Clydesdale Model 8490, 8491	3.1	11,900-33,100		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Equinox 8000	3.1	12,000-37,900		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Bennington	3.6	11900-32600		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Starlet	3.6	9200-25400		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Mansfield 2 8012	2.9	11,370 -28, 940		63	Non Catalytic
x	Hearthstone Quality Home Heating Products Inc	Mansfield	2.9	11,370 -28, 940		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Morgan model 8470	4.3	10500-29300		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Castleton	2.71	11,395 - 24,569		63	Non Catalytic
	Hearthstone Quality Home Heating Products Inc	Manchester 8360	3.01	11,335 - 47,509		63	Non Catalytic
x	Heat Tech Industries	No. 26 GM	4	11300-35800		63	Non Catalytic
x	Heatilator, Inc.	Heatilator LE	4.46	11500-44400		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

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List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
x	Heatilator, Inc.	1890(S30)	5.7	11200-42700		78	Pellet
x	Heating Energy Systems, Inc.	Trailblazer Genesis 1600/1800	3	11400-36400		63	Non Catalytic
x	Heating Energy Systems, Inc.	Trailblazer Genesis 2000-C	3.1	10600-37500		72	Catalytic
x	Heating Energy Systems, Inc.	Trailblazer Classic 1300/1306	3.2	11300-32400		72	Catalytic
x	Heating Energy Systems, Inc.	Trailblazer 1700/1706	4.6	11000-32400		63	Non Catalytic
x	Heating Energy Systems, Inc.	Trailblazer Classic 1500/1700	4.9	9500-36600		63	Non Catalytic
x	Heating Energy Systems, Inc.	Trailblazer Genesis 1600, Classic 1500	8.2	12100-28100		63	Non Catalytic
x	Heat-N-Glo Fireplace Products, Inc.	CBS-41	3.9	10000-30300		63	Non Catalytic
x	HeatWorx LLC	Independence	3.6	11,370 - 34,260		63	Non Catalytic
	Henan Hi-Flame	Horse Flame 737	4.9	11,200 - 37,500		63	Non Catalytic
	Henan Hi-Flame	Hi-Flame	4.9	10,500 - 30,501		63	Non Catalytic
x	Heritage Stoves Inc.	Bostonian 2500 C (Insert)	3.8	10600-22300		72	Catalytic
x	Heritage Stoves Inc.	American 2000C	5.5	13600-33800		72	Catalytic
x	Heritage Stoves Inc.	Bostonian 2500C	6.8	9600-37300		72	Catalytic
	Hestia Heating Products	Model HHP 1	2.89	7,900-30,200		78	Pellet
	Hestia Heating Products	Model HHP 2	4.1	12,084-25,496		78	Pellet
	High Energy Manufacturing, Limited	J1000 Pellet Stove	2.1	13,000 - 21,800		78	Pellet
	High Sierra Stoves, Ltd.	Evolution 8000TE	2.2	7900-40500		72	Catalytic
	High Sierra Stoves, Ltd.	Ambassador 4700TE	2.5	10100-37600		72	Catalytic
	High Sierra Stoves, Ltd.	Sweet Home Catalytic Fir AK-18	3.1	8800-29500		72	Catalytic
	High Sierra Stoves, Ltd.	Cricketer MHCR 5200	3.5	6800-27600		72	Catalytic
	High Sierra Stoves, Ltd.	Evolution 7000TE,7000C	4	11200-43000		72	Catalytic
	High Sierra Stoves, Ltd.	Sweet Home Solitaire PFA 2000	4	9700-28200		78	Pellet
	High Sierra Stoves, Ltd.	Diplomat 4300 TE	5.1	10400-53400		72	Catalytic
	High Sierra Stoves, Ltd.	Sierra Classic 1500B	6.9	8600-34700		63	Non Catalytic
	High Sierra Stoves, Ltd.	Sweet Home NFX-HT	7.8	14500-33200		63	Non Catalytic
x	High Valley Construction & Maintenance Corp.	Model 1600	2.7	11800-40400		63	Non Catalytic
x	High Valley Construction & Maintenance Corp.	High Valley Bay 2500	3.1	7700-40900		72	Catalytic
x	High Valley Construction & Maintenance Corp.	High Valley Model 1500	3.4	9400-34200		72	Catalytic
x	High Valley Construction & Maintenance Corp.	High Valley 2000, Craft Stove 2000	3.3	10800-43100		72	Catalytic
	Hijos de Bartolome Fajardo S.L.	Ronda	6.6	10,978 - 29,301		63	Non Catalytic
	Hijos de Bartolome Fajardo S.L.	Antartida	5.5	11938 - 34,245		63	Non Catalytic
	Hi-Teck Stoves	Hi Teck H 2000C	3.6	12600-41400		72	Catalytic
	Hitzer, Inc.	Glo King 500SD	6.4	10000-22400		63	Non Catalytic
	Hitzer, Inc.	Glo King 300HT	7	11000-31000		63	Non Catalytic
	Hitzer, Inc.	Glo King 400HT	7	10000-40200		63	Non Catalytic
x	Horizon Research Inc.	Model HR-2	0.9	10500-33400		78	Pellet
x	Horizon Research Inc.	Eclipse	1	7800-33100		78	Pellet
x	Horizon Research Inc.	Eclipse	1	7800-33100		78	Pellet
	Horse Flame Metal USA, Inc.	517 HF	3.6	8,585-24,358		63	Non Catalytic
	Horse Flame Metal USA, Inc.	717 HF	6.6	11,400-28,857		63	Non Catalytic
	Horse Flame Metal USA, Inc.	HF577DU	6.8	10,754-43,138		63	Non Catalytic
	Horse Flame Metal USA, Inc.	917HF, HF917UA	7.2	11842-30330		63	Non Catalytic
	Hudson River Stove Works	HR1-M, Hudson River Medium	7	11,900-19,700		63	Non Catalytic
	Hussong Manufacturin Company, Inc.(Kozy Hex	Olivia, Model Number OVL-PC	2.5	8,100-21,400		63	Non Catalytic
	Hussong Manufacturing Company, Inc.	Kozy Heat Z 42	3.3	11500-35100		63	Non Catalytic
x	Hutch Manufacturing Company	DWI-42C-2 (EPA)	1.5	10700-52800		72	Catalytic
x	Hutch Manufacturing Company	DWI-42C	1.6	9800-54600		72	Catalytic
x	Hutch Manufacturing Company	HRD-27C Catalytic Freestanding	2.5	10300-56200		72	Catalytic
x	Hutch Manufacturing Company	HRS-18C Small Freestanding	2.9	10300-38400		72	Catalytic

Actual Measured Efficiency - Per CSA B415.1

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
x	Hutch Manufacturing Company	HRD-18C	4.5	9300-39100		72	Catalytic
	HWAM Heat Design A/S	Monet	3.4	10,996-26,221		63	Non Catalytic
	HWAM Heat Design A/S	3055	4.09	10,996-26,221		63	Non Catalytic
	J. A. Roby	Mystere	6	12,900-24,200		63	Non Catalytic
	J. A. Roby	Vulcain	6.09	9,501-29180		63	Non Catalytic
	J. A. Roby	Atmosphere	6.9	9,043 - 28,675		63	Non Catalytic
	J. A. Roby	Evolution	6.9	9,043 - 28,675		63	Non Catalytic
	J. A. Roby	Ultimate	7.1	9,501-29180		63	Non Catalytic
x	Jacuzzi Leisure Products, Inc.	Gordon Elite S18XE	3	11300-31200		63	Non Catalytic
x	Jacuzzi Leisure Products, Inc.	Fraser Elite I, S407E, S408E, S409E	3.4	10000-37900		63	Non Catalytic
x	Jacuzzi Leisure Products, Inc.	Cabot Elite S17XE	4.5	11300-34400		63	Non Catalytic
x	Jacuzzi Leisure Products, Inc.	Campbell Elite S14XE	5.1	11000-31100		63	Non Catalytic
x	Jacuzzi Leisure Products, Inc.	JW1000L10, JW1000P10, DW1000, FW2400, S24	5.3	10600-26100		63	Non Catalytic
x	Jacuzzi Leisure Products, Inc.	Model Campbell II Elite S-24X & FW24 Series, CJW1000L02,	5.3	10600-26100		63	Non Catalytic
x	Jacuzzi Leisure Products, Inc.	Douglas Elite S131E, S132E; Mini Elite S111E,S112E	7.1	10400-22200		63	Non Catalytic
x	Jayline Heating Ltd.	Amzed Jayline Ukai U-12	2.9	9900-28200		63	Non Catalytic
x	Jayline Heating Ltd.	AMZED JAYLINE 1B AND FS	5.4	9500-40400		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	F602 CB	3.4	11,998 - 47,713	70.7	63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Firelight 12	2.4	10500-32100		72	Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	F370	2.58	10,978-29,048		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	F100 Nordic QT	3	7,700 - 27,400		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Jotul Oslo F-500	3	10900-35000		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Alpha 350132	3.1	10100-33000		72	Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Model Series 8	3.1	12600-33000		72	Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	F500	3.2	12000-34700		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	F118 CB	3.5	12,000-23,500		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Model 3 TDIC-2	3.6	10900-30600		72	Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Castine F400	3.8	11300-27800		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	F3CBII	3.8	11400-43500		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Model 8 TDIC	3.8	10900-35100		72	Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	American Fireplace Stove 3TDC	4	8800-31700		72	Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Model C350	4	11,500-34,200		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Jotul F600	4.1	11,600-32,500		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Firelight 12CB	4.4	13500-45900		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	C450, Tamarack	4.42	11,900-36,100		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	C550 CB	4.47	11,696-35933		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Jotul Petite	4.52	10500-39900		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Jotul Model 602 CB Classic	5.2	9700-42100		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	Model 3 CB	5.8	11900-58300		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	C550	7.14	12,034-36,669		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	F55	3.5	11,576 - 30,399		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	F45	2.31	11,576 -26,528		63	Non Catalytic
	Jotul North America (Jotul U.S.A., Inc.)	50TL	2.84	11,696 - 32,919		63	Non Catalytic
	JR Home Heating Products	WPS 30	4.5	12,791 - 43,520		78	Pellet
	Trendline, Soft Line, Fine Line, Zeus, Athene, Troja, Hera,						
	Jydepejsan A/S	Avanti	3.9	11300- 28100		63	Non Catalytic
	Jydepejsan A/S	H530	6.8	11,100-28,800		63	Non Catalytic
	Kalvin International and Company (HK)	KWS1-M	7	11,900-19,700		63	Non Catalytic
x	Kent Heating Limited	Rose Bay KTXRB	3.6	10300 - 37500		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
x	Kent Heating Limited	Catalytic Tile Fire	2	5900-24500		72	Catalytic
x	Kent Heating Limited	Ultima 2000S	4.5	11000-23000		63	Non Catalytic
x	Kent Heating Limited	Log Fire LPE	5.9	8900-28200		63	Non Catalytic
x	Kent Heating Limited	Tile Fire L.E.M. TLE-1	5.9	8500-38600		63	Non Catalytic
x	Kent Heating Limited	Tile Fire 2000, Ultima 2000	6.3	12500-21700		63	Non Catalytic
x	Kent Heating Limited	Sherwood L.E.M. XLE-1	6.5	9600-33400		63	Non Catalytic
x	Kent Heating Limited	Log Fire 2000	7	11200-23700		63	Non Catalytic
x	Kent Heating Limited	Sherwood 2000	8.1	13000-26600		63	Non Catalytic
	Krog Iversen & Co. A/S	DSA 4	1.1	10,500-27,900		63	Non Catalytic
	Krog Iversen & Co. A/S	Basic 1 & 3	2.17	10032-17906		63	Non Catalytic
	Krog Iversen & Co. A/S	Basic 4	2.2	10000-22100		63	Non Catalytic
	Krog Iversen & Co. A/S	Andersen 8	2.9	11900-30100		63	Non Catalytic
	Krog Iversen & Co. A/S	Scan 24	2.9	11300-22500		63	Non Catalytic
	Krog Iversen & Co. A/S	Scan 47.2	3.1	10400 - 30900		63	Non Catalytic
	Krog Iversen & Co. A/S	Scan 4.5	3.3	9,500-31,000		63	Non Catalytic
	Krog Iversen & Co. A/S	Andersen 8.2	3.5	7,600-28,800		63	Non Catalytic
	Krog Iversen & Co. A/S	Scan 60	3.97	8,700-27,430		63	Non Catalytic
	Krog Iversen & Co. A/S	Scan 5.2	4.2	11800-26500		63	Non Catalytic
	Krog Iversen & Co. A/S	Scan 10-A	4.4	11,600-37,700		63	Non Catalytic
	Krog Iversen & Co. A/S	Model Scan 61	4.5	10,600-29,300		63	Non Catalytic
	Krog Iversen & Co. A/S	Scan 20	5.1	9900-19000		63	Non Catalytic
	Kuma Stove And Iron Works	Aspen	4.1	11,689 - 24206		63	Non Catalytic
	Kuma Stove And Iron Works	Model Kuma 100/300/400	2.2	10100-52100		72	Catalytic
	Kuma Stove And Iron Works	Kuma K-300/K-400, K-100B	2.8	12100-65200		72	Catalytic
	Kuma Stove and Iron Works	Kuma Wood Classic Model HT-2	3.2	11300-48000		63	Non Catalytic
	Kuma Stove and Iron Works	Ashwood	3.3	11300-48000		63	Non Catalytic
	Kuma Stove And Iron Works	Tamarack	3.3	11300 -48000	73.5	63	Non Catalytic
	Kuma Stove And Iron Works	KTAM	4.42	11708 -24418		63	Non Catalytic
	Kuma Stove And Iron Works	Kuma Scott HT-1	3.5	11700-29800		63	Non Catalytic
	Lennox Hearth Products	Whitfield Fireplace/Hearth Stove	1	11000-35700		78	Pellet
	Lennox Hearth Products	Whitfield WP-1, III T, II-T, II-TC, Advantage Series	1	9100-37800		78	Pellet
	Lennox Hearth Products	WP-2 III T, II-TC, Advantage Series	1	9100-37800		78	Pellet
	Lennox Hearth Products	BELLA	1.01	11,202-25,925		78	Pellet
	Lennox Hearth Products	WINSLOW PS40 and P140	1.14	7,476-21,343		78	Pellet
	Lennox Hearth Products	Whitfield Advantage WP-2	1.3	10900-35100		78	Pellet
	Lennox Hearth Products	STRIKER S160 and C160	1.6	12500-41200		63	Non Catalytic
	Lennox Hearth Products	Bayview II, 2000C, BV4000C, BV4000C-2	1.9	6600-40900		72	Catalytic
	Lennox Hearth Products	Traditions T300HT & T3000HT The Earth Stove 1600HT, 1900HT-M	2.6	10700-37400		63	Non Catalytic
	Lennox Hearth Products	Bayview BV450C/BV400C-2	3	11000-48100		72	Catalytic
	Lennox Hearth Products	Bayview II BV4000	3.1	9200-42300		72	Catalytic
	Lennox Hearth Products	Model T200C	3.2	8500-34900		72	Catalytic
	Lennox Hearth Products	CANYON ST310, C310	3.5	11600-38800		63	Non Catalytic
	Lennox Hearth Products	1003-C	3.7	11700-36800		72	Catalytic
	Lennox Hearth Products	Traditions T-100	3.8	8300-43800		72	Catalytic
	Lennox Hearth Products	MONTAGE	4.03	6,270-29,784		78	Pellet
	Lennox Hearth Products	Traditions T150C, T100SC	4.1	6500-35300		72	Catalytic
	Lennox Hearth Products	LEGACY S260, C260, and E260	4.11	11800-48000		63	Non Catalytic
	Lennox Hearth Products	PERFORMER SS210, ST210 and C210	4.2	9500-36100		63	Non Catalytic
	Lennox Hearth Products	2800HT	4.5	11500-46700		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Lennox Hearth Products	Brass Flame KS-805	5.3	9300-49800		63	Non Catalytic
	Lennox Hearth Products	Bayview BV400, BV450	5.5	11000-53700		72	Catalytic
	Lennox Hearth Products	Brass Flame KS-1005, KS-2000I	6	11800-44000		63	Non Catalytic
	Lennox Hearth Products	Brass Flame KS-805	6	9300-49800		63	Non Catalytic
	Lennox Hearth Products	KS-1005, SV-14; KS-2000, FI-15	6	9500-41100		63	Non Catalytic
	Lennox Hearth Products	Grandview 300	3.1	10,249-29,181		63	Non Catalytic
	Lennox Hearth Products	Grand View 230, Montake 230	3.6	11,214 - 28,216		63	Non Catalytic
	Lennox Hearth Products	Earth Stove c-1002, and Ranger 1500HT, 1400HT	6.6	11700-37000		63	Non Catalytic
	Lennox Hearth Products	1000HT, 1100HT, 2000HT, 2200HT	8.3	6600-32200		63	Non Catalytic
	Lennox Hearth Products	ES2100	3.05	10,491 -30,387		63	Non Catalytic
x	Lexington Forge	SSI 30	3.47	11,000-30,600		63	Non Catalytic
x	Lexington Forge	SSW 30FTPB, SSW30FTAL, SSW30FTAPB	3.5	11,000-30,600		63	Non Catalytic
x	Lexington Forge	SSW30STAL, SSW30STAPB Savannah	3.5	11,000-30,600		63	Non Catalytic
x	Lexington Forge	Savannah SSW 20 and Windsor WCS20	3.76	11,000-45000		63	Non Catalytic
x	Lexington Forge	SSW40	4.3	11,963-35767		63	Non Catalytic
x	Long Agribusiness	Silent Flame Model 2058A	2.3	9600-30600		72	Catalytic
x	Long Agribusiness	Silent Flame Model 2062	2.4	9900-32600		72	Catalytic
x	Long Agribusiness	2062 Catalytic freestanding/insert	3.3	10600-20700		72	Catalytic
x	Long Agribusiness	Silent Flame 2058	5.3	9000-27100		72	Catalytic
	LOPI by Travis Industries, Inc	Declaration, Walden insert	4.1	11,300-33,400		63	Non Catalytic
	LOPI by Travis Industries, Inc.	Republic 1750, Endeavor and Revere Insert	1.94	9300-42200		63	Non Catalytic
	LOPI by Travis Industries, Inc.	Leyden	2.4	10,700-33,900		63	Non Catalytic
	LOPI by Travis Industries, Inc.	Liberty, Freedom Bay insert	2.6	12000-45100		63	Non Catalytic
	LOPI by Travis Industries, Inc.	Freedom	3.6	11800-47500		63	Non Catalytic
	LOPI by Travis Industries, Inc.	ANSWER, ANSER insert, Republic1250 and Avalon Spokane	4.4	11600-38500		63	Non Catalytic
x	Luap Associates, Inc.	Eagle 2001	2.6	8400-55200		78	Pellet
	Lucky Distributing	Integra	3.6	10,024-31,268		78	Pellet
	Lucky Distributing	Esprit, Viva and Taurus	4.4	11,817-32,263		63	Non Catalytic
	M. Teixeira International, Incorporated	Bef 520 H	6.4	11,721-25,859		63	Non Catalytic
x	Martin Industries, Inc.	C-92	2.4	7200-29500		72	Catalytic
x	Martin Industries, Inc.	Ashley APC2,APC2C; King KC2,KC2B; Atlanta AC2,AC2B	3	9700-27900		72	Catalytic
x	Martin Industries, Inc.	C-92	3	13900-35700		72	Catalytic
x	Martin Industries, Inc.	Ashley	3.8	5700-35300		72	Catalytic
x	Martin Industries, Inc.	Ashley APS5,APS5B; King KC5,KC5B; Atlanta AC5,AC5B	3.8	9400-35400		72	Catalytic
x	Martin Industries, Inc.	Ashley CAHF,CAHFB; King MCF,MCFB; Atlanta ACF,ACFB	4.8	9900-30000		72	Catalytic
x	Martin Industries, Inc.	C-92	5.3	5200-33200		72	Catalytic
	Max Blank GmbH	Florenz K0 2, Volterra, Padua, Atlanta BF	3.1	11,842-34,680		63	Non Catalytic
	Max Blank GmbH	Atlanta K02, Siena, Monza, Davos, Ravenna, Heidelberg	4.5	11,479-36,009		63	Non Catalytic
	Max Blank GmbH	Solero, Toulouse, Zitro, Rio, Memphis, Niagara, Fisco	4.5	11,479-36,009		63	Non Catalytic
	Max Blank GmbH	Mega K 03	5.14	10,500-33,000		63	Non Catalytic
	Max Blank GmbH	Bordeaux	5.6	10,129-34,342		63	Non Catalytic
	MCZ S.p.a.	Cubic, Cosmo	1.3	7,428 - 27,053		78	
	MCZ S.p.a.	Trendline, Soft Line, Fine Line, Zeus, Athene, Troja, Hera, Avanti	1.3	7,428 - 27,053		78	
	MCZ S.p.a.	Musa Air, Suite Air, Club Air, Sagar Air	1.3	7,428 - 27,053		78	Pellet
	MCZ S.p.a.	Star Air, Ego, Air, Toba Air, Sagar Air	1.4	8,233-24,533		78	Pellet
	MCZ S.p.a.	Nima Comfort Air, Club Comfort	1.8	9,704 - 31,758		78	
	MCZ S.p.a.	Musa Comfort Air, Suite Comfrot Air	1.8	9,704 - 31,758		78	Pellet
	Metal M.D.R. Inc.	Model HE-1400, XE-1400, & XTD-1.5	4.3	10,800-34,000		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Metal M.D.R. Inc.	XVR-III, XLT-III	7.5	11,900-35,000		63	Non Catalytic
	Monessan Hearth Systems	Century/Dutchmaster FW and CDW	1	11,800-32,300		63	Non Catalytic
	Monessan Hearth Systems	Merrimack, Essex	3.6	10,554 - 31,780		63	Non Catalytic
	Monessan Hearth Systems	CJW2500X02, DW2500 and JW2500X10	4.7	9500-57800		63	Non Catalytic
	Monessan Hearth Systems	CW2500X00, CW2500X02, JW2500X00,	4.7	9500-57800		63	Non Catalytic
	Monessan Hearth Systems	Defiant 1975	2.3	9,600 - 26,600		63	Non Catalytic
	Monessan Hearth Systems	FW247001 to FE247004 and JW1000PF1	5	11500-18900		63	Non Catalytic
	Monessan Hearth Systems	JW1000L10 and JW1000P10, DW1000, FW2400, S24	5.3	10600-26100		63	Non Catalytic
	Monessan Hearth Systems	Model Campbell II Elite S-24X & FW24 Series, CJW1000L02,	5.3	10600-26100		63	Non Catalytic
	Morso Jernstoberi A/S	2B Classic	3.9	10900 -23600		63	Non Catalytic
	Morso Jernstoberi A/S	3112 and 3142	3.1	9,300-28,500		63	Non Catalytic
	Morso Jernstoberi A/S	Model 4600	3.2	11,100-25,600		63	Non Catalytic
	Morso Jernstoberi A/S	Squirrel 1410 ,1420,1440	3.3	9600-22000		63	Non Catalytic
	Morso Jernstoberi A/S	Owl 3410/3440 & 3450	3.5	8400-23600		63	Non Catalytic
	Morso Jernstoberi A/S	7600 Series	3.6	10,000 - 21,300		63	Non Catalytic
	Morso Jernstoberi A/S	Model 4650 (Soapstone)	3.7	10,900-25,700		63	Non Catalytic
	Morso Jernstoberi A/S	Model 2040	3.8	11,100-40,100		63	Non Catalytic
	Morso Jernstoberi A/S	Model 7110	3.8	10,700-27,900		63	Non Catalytic
	Morso Jernstoberi A/S	6100	4.1	11,117-22,000		63	Non Catalytic
	Morso Jernstoberi A/S	Model 2B	4.1	9,300-30,700		63	Non Catalytic
	Morso Jernstoberi A/S	Model 5660,	4.3	8,998- 50,078		63	Non Catalytic
	Morso Jernstoberi A/S	Panther Model 2110B	4.3	8,600-42,100		63	Non Catalytic
	Morso Jernstoberi A/S	Morso 1710	4.4	12,000-39,800		63	Non Catalytic
	Morso Jernstoberi A/S	8140, 8142, 8147, 8151 and 8150	4.5	10,864-25,370		63	Non Catalytic
	Morso Jernstoberi A/S	Panther 2110	4.7	10300-60500		63	Non Catalytic
	Morso Jernstoberi A/S	Morso 7900 (7940, 7943, 7948, 7970, 7990)	4	11,600-26,705		63	Non Catalytic
	Morso Jernstoberi A/S	8180	5.1	9,300-28,500		63	Non Catalytic
	Morso Jernstoberi A/S	3600 Series	5.2	11,400-49,500		63	Non Catalytic
x	National Steelcrafters of Oregon	Breckwell W3000FS/W3000I	2.3	11600-33700		63	Non Catalytic
x	National Steelcrafters of Oregon	Craft Stove CB-4830	3.1	11600-41100		72	Catalytic
x	National Steelcrafters of Oregon	Craft Stove CB-4830, CB-300	3.1	11600-41100		72	Catalytic
x	National Steelcrafters of Oregon	Craft CB-4830 Insert	3.4	9100-22400		72	Catalytic
x	National Steelcrafters of Oregon	Craft Stove CB-4426	3.9	12100-35600		72	Catalytic
x	National Steelcrafters of Oregon	Craft Stove CB-4426, CB-26, CAT 44-1	3.9	12100-35600		72	Catalytic
x	National Steelcrafters of Oregon	Chateau NC24	5.4	14500-51000		63	Non Catalytic
x	Navigator Stove Works, Inc.	NSW-1 Sardine	3.5	11,400-19,400		63	Non Catalytic
	Navigator Stove Works, Inc.	Navigator NSW2	3.6	10500-28200		63	Non Catalytic
	New Buck Corporation (Buck Stove Corp.)	Buck Bay Model 91	1.2	8,800-51,200		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	New Buck/Carolina Model 17	1.2	8100-27900		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	94NC	3.81	11,390 - 42,200		63	Non Catalytic
	New Buck Corporation (Buck Stove Corp.)	Buck Master	2.1	10,800-49,800		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	50PCV, 50PBAY, 50CV, 50CBay, 50CD, 50BCV, 50BBay	2.5	10100-38000		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	41BCV, BBay, CD, CS, CV, CBAY, PCV, PCBAY	2.6	6900-27800		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	MODEL XL-80	2.7	9200-40500		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	Model 261	2.92	10271-32263		63	Non Catalytic
	New Buck Corporation (Buck Stove Corp.)	Model 18	3.1	10000-22400		63	Non Catalytic
	New Buck Corporation (Buck Stove Corp.)	Model 20, catalytic	3.2	10800-37500		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	Bay Model 91	3.5	10400-50400		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	Buck/Tharrington 74/T-74	3.6	11,600-41,400		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	New Buck Corporation (Buck Stove Corp.)	Model 71 Freestanding/Insert Catalytic	3.6	13100-40200		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	Regular Buck 27000-C	3.8	14700-25100		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	Little Buck 26000-C	4	6800-38700		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	Model 81/85	4.3	11900-45400		63	Non Catalytic
	New Buck Corporation (Buck Stove Corp.)	Model 21	4.4	12,000-444,000		63	Non Catalytic
	New Buck Corporation (Buck Stove Corp.)	Big Buck 28000-C	4.7	8500-39100		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	Regular Buck 27000-CR	4.8	14700-30800		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	Model 70	5	9800-31300		72	Catalytic
	New Buck Corporation (Buck Stove Corp.)	Model 26	5.4	11900-42600		63	Non Catalytic
	New Buck Corporation (Buck Stove Corp.)	Townsend III	6.2	11400-41200		63	Non Catalytic
	New Buck Corporation (Buck Stove Corp.)	Buck Carolina/Tharington 51/T-51	6.7	11800-40900		63	Non Catalytic
	Newmac Manufacturing Incorporated	Classic II Model NCM 120	3.04	10,700-27,000		63	Non Catalytic
	Newmac Manufacturing Incorporated	Classic 1 EPA NC 100 E	4	10,632-26,986		63	Non Catalytic
	Newmac Manufacturing Incorporated	WFA 70	2.72	11852 - 15922		63	Non Catalytic
	Newmac Manufacturing Incorporated	Status EPA Model NS220 E	4.97	11,600-27,400		63	Non Catalytic
x	NHC Inc.	Model 3-C	2	7900-15000		72	Catalytic
x	NHC Inc.	Harvest A-HII catalytic	2.5	10500-36400		72	Catalytic
x	NHC Inc.	Mansfield I	2.9	13600-45300		63	Non Catalytic
x	NHC Inc.	Mansfield	3.2	10200-27900		63	Non Catalytic
x	NHC Inc.	Phoenix (Version 2)	3.4	10400-35200		63	Non Catalytic
x	NHC Inc.	Harvest Hill	3.8	8800-28900		72	Catalytic
x	NHC Inc.	Phoenix	4.94	10300-43000		63	Non Catalytic
	Nordpeis A/S	Saturn A	6	10,100-25,000		63	Non Catalytic
	NU-TEC/Upland Distributors, Inc.	Brenden BR-60	1.43	11000-29400		72	Catalytic
	NU-TEC/Upland Distributors, Inc.	Upland Amity AM-40	2.6	10600-23600		72	Catalytic
	NU-TEC/Upland Distributors, Inc.	Townsend Woodstove TN-25	2.7	10200-27500		72	Catalytic
	NYSERDA	XEOOS	2.4	11,519 - 27,432		63	Non Catalytic
x	OK Doke, Ltd.	Sweethearth Presidential 800/800XL	3.6	9900-20000		72	Catalytic
x	Olsberg Hermann Everken, Gmbh	Bristol OH-L	2.1	11,800-32,200		63	Non Catalytic
x	Olsberg Hermann Everken, Gmbh	Bristol OH-M	2.7	11,000-33,200		63	Non Catalytic
x	Oregon Woodstoves, Inc.	Model OS/1	1.4	7800-40000		72	Catalytic
x	Oregon Woodstoves, Inc.	#1, Design 01	2.7	9600-49700		72	Catalytic
x	Orley's Manufacturing Company, Inc.	Cougar G-225	2.7	9100-36200		72	Catalytic
x	Orley's Manufacturing Company, Inc.	Leopard U245,U246,UO245,UO246; Panther F245,F246	3.5	9100-39000		72	Catalytic
x	Orville Products, Inc.	COUNTRY COMFORT CC160	2.9	11900-47800		63	Non Catalytic
x	Orville Products, Inc.	CC250	3.5	13200-29800		72	Catalytic
x	Orville Products, Inc.	Country Comfort CC325	3.5	18600-60600		72	Catalytic
x	Orville Products, Inc.	CC 350	3.8	13700-68900		72	Catalytic
x	Orville Products, Inc.	CC-185I and 165I	3.8	11500-48600		63	Non Catalytic
x	Orville Products, Inc.	CC180	3.9	10700-57600		63	Non Catalytic
x	Orville Products, Inc.	Country Comfort CC350	4.3	11200-29100		72	Catalytic
x	Orville Products, Inc.	CC175 and CC155	4.4	10900-39200		63	Non Catalytic
x	Orville Products, Inc.	Country Comfort CC160	5.25	11600-36500		63	Non Catalytic
x	Orville Products, Inc.	CC185 and CC165	5.3	11300-46100		63	Non Catalytic
x	Orville Products, Inc.	Country Comfort CC150, CC1000, CC150H	7.5	7200-23900		63	Non Catalytic
x	Orville Products, Inc.	Country Comfort CC100	8.5	8700-33400		63	Non Catalytic
x	Orville Products, Inc.	Country Comfort CC125	9.5	12300-27600		63	Non Catalytic
	Osburn Manufacturing, Inc.	Imperial 2000	4.6	9000-33000		63	Non Catalytic
	Osburn Manufacturing, Inc.	2200	5.7	10400-41500		63	Non Catalytic
	Osburn Manufacturing, Inc.	1050	6.9	10600-42900		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Osburn Manufacturing, Inc.	Imperial MKII, MKII Insert, Goldenaire	7	10700-51600		63	Non Catalytic
	Pacific Energy Fireplace Products Limited	Neo 1.6	3.9	9161-34810	75	63	Non Catalytic
	Pacific Energy Fireplace Products Limited	Vista Series C, Vista Classic, Vista Artisan, Vista Insert, and Alderlea T4	2.92	12400-26300		63	Non Catalytic
	Pacific Energy Fireplace Products Limited	Alderlea T5, Super 27 Design D, Spectrum, Step D1 Standard, Pacific Ins, Spectrum Classic and Fusion, ALT5INS, Super Insert	3.4	11000-34600		63	Non Catalytic
	Pacific Energy Fireplace Products Limited	Summit Series A, Summit Insert, Summit Classic and Alderlea T6	3.6	10300-37500		63	Non Catalytic
	Pacific Energy Fireplace Products Limited	S-27, Spectrum, Standard, Pacific	6.4	10600-36400		63	Non Catalytic
	Pacific Energy Fireplace Products Limited	True North TN19	4.1	10,652 - 32923		63	Non Catalytic
	Pacific Energy Fireplace Products Limited	FP30	2.68	11829-38556		63	Non Catalytic
	Panda Wood Stoves	UMF-400	5	7600-38300		72	Catalytic
	Pellefier Inc.	Venturi PVI-87	0.5	9000-31800		78	Pellet
x	Polar Fireplaces	Woodchief 300 E	4.8	11600-43700		63	Non Catalytic
x	Polar Fireplaces	Woodchief 400 E	5.1	11500-59000		63	Non Catalytic
x	Precision Gas Technologies	WS-250	4	11700-50500		63	Non Catalytic
	PSG Distribution Inc.	Caddy (duct furnace)	6.6	12000-52900		63	Non Catalytic
	Quality Craft	QCPS - 28000	2.37	13,119 - 14,759		78	Pellet
	Rais A/S	Gabo Pina Vola	2.1	12,000-26,700		63	Non Catalytic
	Rais A/S	Malta, Bando and Bora	4.3	11400-32900		63	Non Catalytic
	RAIS A/S	Rondo, Mino II Steel and Mino II SST	4.3	11,431-22,561		63	Non Catalytic
	RAIS A/S	OPUS	5.7	11,479-21,630		63	Non Catalytic
	Rais A/S	Rais 60-A Insert	7.2	11600-51300		63	Non Catalytic
	Ravelli /EcoTeck	Laura / Veronica	3.87	8,500 - 44,000		78	Pellet
	Ravelli /EcoTeck	Sofia / Silvia	1.65	8,500 - 50,000		78	Pellet
	Ravelli /EcoTeck	Monica / Francesca	1.45	8,500 - 35,000		78	Pellet
	Ravelli /EcoTeck	Ilaria / Serena	4.4	8,500 - 44,000		78	Pellet
x	Renfyre Stove Co./ Maco Enterprises, Inc.	Fireview 2300	7	11700-27500		63	Non Catalytic
x	Renfyre Stove Co./Maco Enterprises Inc.	5000 Combination Range Design #50001	5.5	13600-21600		63	Non Catalytic
x	Renfyre Stove Co./Maco Enterprises, Inc	2800	3.4	11900-23700		63	Non Catalytic
x	Renfyre Stove Co./Maco Enterprises, Inc	Fireview Insert 2700	3.8	9400-27500		63	Non Catalytic
x	Reverso Manufacturing, Ltd.	Challenger MMX	2.6	11200-33800		63	Non Catalytic
x	Riteway-Dominion Manufacturing Company, Inc	Dominion 005	4.5	7000-29100		72	Catalytic
x	RJM Manufacturing, Inc	Achiever FPI-1-LEX	2	7900-26700		72	Catalytic
x	RJM Manufacturing, Inc.	FPI-2-LEX/90	1.6	10300-36500		72	Catalytic
x	RJM Manufacturing, Inc.	Energy King Bay 2000C	2.5	11400-34600		72	Catalytic
x	RJM Manufacturing, Inc.	Energy King 2500C	3	16100-39800		72	Catalytic
x	RJM Manufacturing, Inc.	Model Silhouette 2850C	3.2	8100-34700		72	Catalytic
	RSF / Industrial Chimney Company, Incorporate	Opel 2000C, OPEL AP	3.7	10600-49700		72	Catalytic
	RSF / Industrial Chimney Company, Incorporate	TOPAZ/CHAMELEON (Without Fan), TOPAZ, Chameleon	4	11100-25700		63	Non Catalytic
	RSF / Industrial Chimney Company, Incorporate	HT (Onyx), ONYX AP	4.5	11800-35600		63	Non Catalytic
	RSF / Industrial Chimney Company, Incorporate	TOPAZ/CHAEMELON (With Fan)	5.5	9500-25800		63	Non Catalytic
	RSF / Industrial Chimney Company, Incorporate	Ardent HF 40	9.9	6400-30600		63	Non Catalytic
	Russo Products, Inc.	W-25C	2.4	8400-31300		72	Catalytic
	Russo Products, Inc.	GV-30S	2.5	9500-38700		72	Catalytic
	Russo Products, Inc.	Russo Glassview GV-21	2.9	10200-29600		72	Catalytic
	Russo Products, Inc.	GV-30C	3.1	10300-39400		72	Catalytic
	Russo Products, Inc.	W-18C	6.2	7900-40900		72	Catalytic
	Salvo Machinery, Inc.	Model Citation	2.4	9600-33500		72	Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
x	Salvo Machinery, Inc.	Citation Classic W45NC/WI45NC	7.1	11800-32200		63	Non Catalytic
x	Sarratt Agencies Limited	Merlin 3 FS-15, IS-15	6.1	9800-21100		63	Non Catalytic
x	Saxon Wood Heaters Pty, Ltd.	Rosewood	2.7	11600-36200		63	Non Catalytic
	Security Chimneys International Ltd.	BIS Ultima, Brentwood, BIS Tradition CE, and Montecito	3.692	10,442-27,746		63	Non Catalytic
	Security Chimneys International Ltd.	BIS Panorama, Villa Vista	4.1	10900-35,600		72	Catalytic
	Security Chimneys International Ltd.	BIS Nova, Ladera	4.8	8,700-25,700		63	Non Catalytic
	Security Chimneys International Ltd.	BIS Ultra	5.1	11033-46700		63	Non Catalytic
	Security Chimneys International Ltd.	BIS II	5.3	11300-41500		63	Non Catalytic
	Security Chimneys International Ltd.	BIS Design No. 1.2	5.5	14200-55800		63	Non Catalytic
	Security Chimneys International Ltd.	BIS Tradition and Montecito Estate	7.3	11,500-39-300		63	Non Catalytic
x	Selkirk Canada Corporation	Model: HE36	0.97	6,668-15,290		63	Non Catalytic
x	Selkirk Canada Corporation	Model HE40	5.7	11,383-45,459		63	Non Catalytic
	Seraph Industries	Genesis 106	2.1	11,100 - 45,100	83.2	78	Pellet
	Seraph Industries	Genesis 108	2.1	11,100 - 45,100	83.2	78	Pellet
	Sherwood Industries, Ltd.	CH-77, CH-84	3.1	8000-33800		72	Catalytic
	Sherwood Industries, Ltd.	Envirofire EF2, EF2i, FS and FPI, Hudson River Davenport FS/FPI	1.25	6,500-34,000		78	Pellet
	Sherwood Industries, Ltd.	Boston 1700	4.5	8000- 65000		63	
	Sherwood Industries, Ltd.	Boston 1200	3.3	6500- 74000		63	
	Sherwood Industries, Ltd.	Mini	1.6	22,585-30,113		78	Pellet
	Sherwood Industries, Ltd.	Empress FS	1.86	27,827-35,675		78	Pellet
	Sherwood Industries, Ltd.	EMPRESS FPI, Milan FPI	1.88	25,709-30,058		78	Pellet
	Sherwood Industries, Ltd.	Envirofire - EF3 FS, FPI, EF3Bi FS, Vista Flame VF100 FS	1.96	6,500-40,000		78	Pellet
	Sherwood Industries, Ltd.	Envirofire - Meridian FS & FPI	1.96	6,500-40,000		78	Pellet
	Sherwood Industries, Ltd.	Greenfire GF55, GF155	1.96	6,500-40,000		78	Pellet
	Sherwood Industries, Ltd.	EF 3, Meridian and VF 100	2	6,500-40,000		78	Pellet
	Sherwood Industries, Ltd.	M55, M55C, V55	2	9,263-45,478		78	Pellet
	Sherwood Industries, Ltd.	Meridian	2.24	32,566-42,963		78	Pellet
	Sherwood Industries, Ltd.	Vista Flame 2100 FS, Envirofire 2100 FS	2.9	11800-34000		63	Non Catalytic
	Sherwood Industries, Ltd.	osburn	3.18	52,453-60,992		78	Pellet
	Sherwood Industries, Ltd.	Vista Flame Envirofire 2000	3.2	11000-31100		63	Non Catalytic
	Sherwood Industries, Ltd.	Enviro 1200, 1200i, Vista Flame 1200, 1200i, 1200 Venice	3.3	11,500-34,200		63	Non Catalytic
	Sherwood Industries, Ltd.	Vista Flame 1600 FS, 1600 FPI, Envirofire 1600 FS, 1600 FPI	3.5	11500-33600		63	Non Catalytic
	Sherwood Industries, Ltd.	Enviro Fire 1000FS and Vista Flame 1000FS, 1000	4.1	11700-32700		63	Non Catalytic
	Sherwood Industries, Ltd.	Enviro Model 1700i, 1700 & Vista Flame 1700i, 1700, 1700 Venice	4.5	9,400-31,800		63	Non Catalytic
	Sherwood Industries, Ltd.	Mini	1.6	8,378 - 23,488		63	Non Catalytic
	Sherwood Industries, Ltd.	Vista Flame Envirofire 1000	6.5	10200-30800		63	Non Catalytic
	Sherwood Industries, Ltd.	Vista Flame Envirofire 1500	7	11700-23100		63	Non Catalytic
x	Sierra Products, Inc.	Sierra Evolution 8000 TEC	2.5	9700-35900		72	Catalytic
x	Sierra Products, Inc.	Evolution Model 7000C	2.8	7700-29400		72	Catalytic
x	Sierra Products, Inc.	Sierra Ambassador 4700 TEC	3.2	10800-42600		72	Catalytic
x	Sierra Products, Inc.	EF-2100	5.7	11,000-42,900		63	Non Catalytic
x	Sierra Products, Inc.	Sweet Home AFX-HT, AFI-HT	6.4	11300-28200		63	Non Catalytic
x	Sierra Products, Inc.	Cricket 5300	6.6	11000-36400		63	Non Catalytic
x	Sierra Products, Inc.	Sierra Classic 1500T	7.5	6900-34600		63	Non Catalytic
	Stove Builder International Inc.	BIO-45MF, Eco-45, FP-45, Hybrid-45MF	1.2	8,569-29,784		78	Pellet
x	Stove Builder International Inc.	Emerald 2000	1.7	7500-24500		78	Pellet

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Stove Builder International Inc.	BIO-35MF, Eco-35, FP-35, Hybrid-35MF	1.77	6,668-15,290		78	Pellet
	Stove Builder International Inc.	Osburn 1100, Osburn 1100-I	2.9	11,000- 35,000		63	Non Catalytic
	Stove Builder International Inc.	Caddy, Alterna	4.2	10,142 - 71,014		78	Pellet
	Stove Builder International Inc.	FW3000	3.5	11,800-32,400		63	Non Catalytic
	Stove Builder International Inc.	HT 1600-Standard/HT 1600 Deluxe, HT-1600 Siberian, Ashley 1600	3.5	11200-26400		63	Non Catalytic
	Stove Builder International Inc.	Osburn 2400 B	3.5	11900-40900		63	Non Catalytic
	Stove Builder International Inc.	Osburn 2400-I, Osburn 2400 FS	3.5	11,900-40,900		63	Non Catalytic
	Stove Builder International Inc.	Euromax, Eco-65	2.58	6,873-34,727		78	Pellet
	Stove Builder International Inc.	HT-2000 Standard/HT-2000 Deluxe/HT-2000	3.9	11600-60300		63	Non Catalytic
	Stove Builder International Inc.	HT2000, Solution 3.4, Ashley 2000	3.9	11,600-38,700		63	Non Catalytic
	Stove Builder International Inc.	1600	4.4	11800-42400		63	Non Catalytic
x	Stove Builder International Inc.	Monaco 2008	4.4	11479-30,450		63	Non Catalytic
	Stove Builder International Inc.	Monaco, Stratford, Solution 2.5, Lafayette	4.4	11,479-30,450		63	Non Catalytic
	Stove Builder International Inc.	Osburn 1600, Osburn 1600-I, Ashley 4600, Forrester 4700	4.4	11,800-42,400		63	Non Catalytic
x	Stove Builder International Inc.	1600 B-I/Ashley 4600/Forester 4700	4.8	11900-35500		63	Non Catalytic
	Stove Builder International Inc.	S244, Pyropak, Osburn 900	5.3	10,600-26,100		63	Non Catalytic
	Stove Builder International Inc.	Gemini 1500 (With Blower), Adirondack, Savannah, Eldorado, Jurassien, Celtic, Osburn 1500	6.2	11500-43900		63	Non Catalytic
	Stove Builder International Inc.	HE-1800,Escape 1800, Solution 2.3, Solution 2.3-I, XTD1.9, XTD1.9-I, Osburn 2000, Osburn 2000-I, Dundee 1.9	6.3	11,600-38,700		63	Non Catalytic
	Stove Builder International Inc.	HT-1200 and Ashley 1200	6.5	8300-36000		63	Non Catalytic
	Stove Builder International Inc.	HT1200, Ashley 1200	6.5	8,300-36,000		63	Non Catalytic
	Stove Builder International Inc.	Gemini 1500 (Without Blower), Adirondack, Savannah, Eldorado, Jurassien, Celtic, Osburn 1500	7.5	11100-37300		63	Non Catalytic
	Stove Builder International Inc.	XTD1.5, XTD1.5-I, Solution 1.8, Solution 1.8-I, Escape 1400-I, Blackcomb, Columbia	4.3	10,800-34,000		63	Non Catalytic
	Stove Builder International Inc.	1.6 Series	4.02	0,852 - 23,272/33		63	Non Catalytic
	Stove Builder International Inc.	1.3 Series	3.99	9,887 - 21,825		63	Non Catalytic
	Stove Builder International, Inc.	Osburn 1800, Osburn 1800-I	2.7	9700-36300		63	Non Catalytic
	Stove Builder International, Inc.	Osburn 2200, Osburn 2200-I	2.7	11700-30400		63	Non Catalytic
	Stove Builder International, Inc.	Apollo, Apollo II	3.6	10600-24700		63	Non Catalytic
	Stove Builder International, Inc.	Le Chancellor, NXT-1 and Solution 2.9, Glencoe 2.1	4.4	11900-29400		63	Non Catalytic
x	Stove Builder International, Inc.	LeBachelier	4.9	11800-24500		63	Non Catalytic
	Stove Builder International, Inc.	New Generation NG 1800/Magnolia 2015	5.7	11,500-30,800		63	Non Catalytic
	Stove Builder International, Inc.	Osburn 1100	5.7	11000-35000		63	Non Catalytic
	Stove Builder International, Inc.	XVR-II, XT-1400 adn XLT-II, Eastwood 1500, Jasper, Clyde 1.6	5.9	11800-27300		63	Non Catalytic
	Stove Builder International, Inc.	XVR-I, XLT-1, Classic, Eastwood 1800	6.9	11,400-27,500		63	Non Catalytic
	Stove Builder International, Inc.	XVR-III, XLT-III, Eastwood, 1900, Millenia	7.4	11,900-34,700		63	Non Catalytic
	Stove Builder International, Inc.	Sahara, Kyle 2.0	7.5	11,000-25,700		63	Non Catalytic
	StoveBuilder International, Inc.	FP-8, Saguenay	4	10,900 -36,900		63	Non Catalytic
	StoveBuilder International, Inc.	FP-9i	4.2	11,600-38,700		63	Non Catalytic
	StoveBuilder International, Inc.	FW2700, Deco, Optima	4.4	11,000-69,500		63	Non Catalytic
	StoveBuilder International, Inc.	CW2500, Solution 2.0-I	4.7	9,600-57,800		63	Non Catalytic
	StoveBuilder International, Inc.	FW2470	5	12,000- 28,500		63	Non Catalytic
	StoveBuilder International, Inc.	Legend, Baltic, Austral, Myriad, Azimuth, Osburn 2300, Magnolia 2015	5.7	11,500-30,800		63	Non Catalytic
	StoveBuilder International, Inc.	Model HE-1800, XE-1800 & XTD-1.9	5.9	11600-38700		63	Non Catalytic
	StoveBuilder International, Inc.	Mini-Caddy	6	10,900-36,900		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

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SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	StoveBuilder International, Inc.	Eurostar, Osburn 5000	2.18	10,301 - 30,456		78	Pellet
	StoveBuilder International, Inc.	XTD1.1, XE-1000, Solution 1.6	6	9900-47300		63	Non Catalytic
	StoveBuilder International, Inc.	2.3 Series	3.89	11,600 - 32,200		63	Non Catalytic
	StoveBuilder International, Inc.	Caddy, Caddy-on, Tundra, Heatmax	6.6	12,000-52,100		63	Non Catalytic
	Stove Builder International Inc.	Olympia	4.6	9,659-26,407		72	Catalytic
	Stove Builder International Inc.	Evolution	3.5	8588 - 37,513		63	Non Catalytic
	Stove Builder International Inc.	Malibu 1700/2200	4.97	11,700-29,700		63	Non Catalytic
	Stove Builder International Inc.	Rustic 2100 and Tradition 2100	4.97	11,700-29,700		63	Non Catalytic
	Stove Builder International Inc.	Diamant, Diamante Insert	7.5	11,100-26,100		63	Non Catalytic
	Stove Builder International Inc.	Rustic/Tradition 1600	3.5	8588 - 37,513		63	Non Catalytic
	Stove Builder International Inc.	EverestEtna/Equinox/Malibu 2000	5.6	12,588 - 37,513		63	Non Catalytic
	Stove Builder International Inc.	EverestEtna/Equinox/Malibu 2500	5.9	12,588 - 37,513		63	Non Catalytic
	Stuv S.A.	30 Compact	2.79	12,129 - 16,640		63	Non Catalytic
x	Suburban Manufacturing Company	Woodchief W6-88C, Woodmaster W6-88WC	3.4	9500-42500		72	Catalytic
	TEC Enterprises	2000 pellet stove	4.7	11600-22500		78	Pellet
	Theilin Company Inc.	Little Gnome Pellet Stove	3.28	3100-8400		78	Pellet
	Theilin Company Inc.	Theilin T-4000	3.6	9,900-38400		63	Non Catalytic
	Theilin Company Inc.	Providence, Providence Signature	1.2	12,839 - 35,680		78	Pellet
x	Thermic Distribution Europe	Efel Symphony 390.74	1.8	10700-33000		72	Catalytic
x	Thermic Distribution Europe	Harmony IIIB	2.7	11,200-57,300		63	Non Catalytic
x	Thermic Distribution Europe	Model S-33,H33,R33,33	3.3	8,600-37,300		63	Non Catalytic
x	Thermic Distribution Europe	Efel Harmony 386.75	3.8	7100-51000		72	Catalytic
x	Thermic Distribution Europe	Harmony I	4.4	11800-55000		63	Non Catalytic
	Thermic Distribution Europe	S43, H43, SP43, C43	4.17	12,500-39,275		63	Non Catalytic
x	Thermic Distribution Europe	Efel Symphony 387.74	5.1	10600-49700		72	Catalytic
x	Thermic, Inc.	Crossfire FS-1	0.5	6900-39900		78	Pellet
x	Tianjin Berkeley Furniture Corporation	TR 001	4.18	9200-28300		63	Non Catalytic
	Travis Industries, Inc.	Small Flush Wood Hybrid Fyre	0.89	9,784-31,428	76.51	72	Catalytic
x	Travis Industries, Inc.	Avalon Cottage/Mission	2.9	11600-36500		63	Non Catalytic
x	Travis Industries, Inc.	Lopi Sheffield	3.9	10,300-34,400		63	Non Catalytic
x	Travis Industries, Inc.	Flush Wood A Fireplace Insert	4.1	11,300-33,400		63	Non Catalytic
x	Travis Industries, Inc.	Lopi Flawless Performance 380, 440	7	6900-48700		63	Non Catalytic
	Travis Industries, Inc.	Avalon Spokane 1750 380-NT & X-NT	1.94	9300-42200		63	Non Catalytic
x	Travis Industries, Inc.	Flush Wood	2.45	12,084 - 29,605		63	Non Catalytic
	Travis Industries, Inc.	Lopi Endeavor, Lopi Revere, Lopi Republic 1750,	1.94	9300-42200		63	Non Catalytic
	Travis Industries, Inc.	Avalon Rainier 90/Rainier 45	2	11200-40000		63	Non Catalytic
	Travis Industries, Inc.	Fireplace Xtrordinaire Elite 36 Z.C. & B.I.	2.3	11900-47100		72	Catalytic
x	Travis Industries, Inc.	Model 44-A BI and Z.C.	2.3	10700-75700		72	Catalytic
	Travis Industries, Inc.	Leyden and Avalon Arbor	2.4	10,700-33,900		63	Non Catalytic
	Travis Industries, Inc.	Fireplace Xtrordinaire 44 Elite	2.5	11000-45300		72	Catalytic
	Travis Industries, Inc.	Avalon Olympic,Liberty, Freedom Bay	2.6	12000-45100		63	Non Catalytic
x	Travis Industries, Inc.	Lopi Flex FS, FL, LX	2.9	10900-31000		72	Catalytic
	Travis Industries, Inc.	Avalon Pendelton 90/Pendelton 45	3	8700-44400		63	Non Catalytic
x	Travis Industries, Inc.	LOPI Answer/Patriot (Formerly Answer-NT)	3.3	12000-41000		63	Non Catalytic
x	Travis Industries, Inc.	Avalon 1000C2	3.5	7300-47100		72	Catalytic
x	Travis Industries, Inc.	Model 36 F	4	11900-55000		72	Catalytic
x	Travis Industries, Inc.	Fireplace Xtrordinaire Model 36A	4.1	10300-54700		72	Catalytic
x	Travis Industries, Inc.	Flex-95 FL, LX, and FS	4.1	10900-55300		72	Catalytic
x	Travis Industries, Inc.	Lopi Elan E1, E2	4.3	11700-26300		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
		ANSWER/LOPI PATRIOT/LOPI PARLOR, Republic1250 and					
	Travis Industries, Inc.	Avalon Spokane, Avalon Camano	4.4	11600-38500		63	Non Catalytic
x	Travis Industries, Inc.	Avalon 901	5.2	7500-45500		63	Non Catalytic
x	Travis Industries, Inc.	LOPI 380-96	5.2	9400-52800		63	Non Catalytic
x	Travis Industries, Inc.	Avalon 996	5.5	9500-45600		63	Non Catalytic
x	Travis Industries, Inc.	Avalon 700	5.9	9200-39100		63	Non Catalytic
x	Travis Industries, Inc.	Lopi X Fireplace Insert	6	13600-29100		63	Non Catalytic
x	Travis Industries, Inc.	Lopi The Answer	6.7	10500-63100		63	Non Catalytic
x	Travis Industries, Inc.	Lopi Premiere Answer Series PA1, PA2, PA3, PA4,PA5	7	8000-31500		63	Non Catalytic
x	Travis Industries, Inc.	Lopi X/96	7.2	11600-53900		63	Non Catalytic
x	Travis Industries, Inc.	Avalon 1196, Lopi 520/96, Flush Bay-96	7.4	11300-43600		63	Non Catalytic
x	Travis Industries, Inc.	Lopi Elan-96	7.4	12000-51400		63	Non Catalytic
	Travis Industries, Inc.	LG Flushwood Insert Hybrid - Fyre	0.58	8544-35278	80.3	72	Catalytic
	Travis Industries, Inc.	Cape Cod	0.45	10,749 - 39,413	80.1	72	Catalytic
	Travis Industries, Inc.	Flushwood Plus	4.4	12000 - 29600		72	Non Catalytic
x	Tri-Fab, Inc.	SunRise P-54 & SunRise PIL-8	5	10600-26500		63	Non Catalytic
x	Tri-Fab, Inc.	SunRise P-48-H, P-48-L	5.5	11700-25800		63	Non Catalytic
x	Tri-Fab, Inc.	SunRise P56	6.2	10700-39700		63	Non Catalytic
	Tulikivi Oyj	Tulikivi Maxi XV 2	4.22	12,058-38,224		63	Non Catalytic
	Tulikivi Oyj	Tulikivi MINI XV 1	4.51	12,100-38,200		63	Non Catalytic
	United States Stove Company	Ashley CAHF-2, Atlanta ACF-2, King MCF-2	1.6	12,800 - 38,900		72	Catalytic
	United States Stove Company	Ashley AHS2, AHS2B; King KHS2	1.9	13700-34300		72	Catalytic
	United States Stove Company	2500 ST	3.1	11,576 - 36,295		63	Non Catalytic
	United States Stove Company	Country Hearth 2200I	5.4	27,136 - 69,000		63	Non Catalytic
	United States Stove Company	Ashley AFS24, King K3, cat., freestanding/insert	2.6	10300-34600		72	Catalytic
	United States Stove Company	Forester Model 5824	4.6	7,775 - 15,974		63	Non Catalytic
	United States Stove Company	Clayton Mfg Clay 60B, 70	2.7	12100-54300		72	Catalytic
	United States Stove Company	Ashley C-92	3	11000-36900		72	Catalytic
	United States Stove Company	Wonder Wood (Glass Front) 2921, Sears 143.8417	3.3	12500-54600		72	Catalytic
	United States Stove Company	Bay Insert 4500	3.7	9600-30700		72	Catalytic
	United States Stove Company	Wonder Wood 6000, 2821, Sears 143.8404	3.7	9100-18700		72	Catalytic
	United States Stove Company	ASHLEY NCA-1/KING KPS	7.16	6500-23200		63	Non Catalytic
	United States Stove Company	6039, 6039 T, 6039 HF, 6039 TP, 6041	1.5	8,528-29,921		78	Pellet
	United States Stove Company	5500M, 5500XL, 5500XLT	1.6	9,126-27,677		78	Pellet
	United States Stove Company	Model 2500, SW3100	3.06	10,100-25,000		63	Non Catalytic
	United States Stove Company	APS 1100B	5.9	10,100-25,000		63	Non Catalytic
	United States Stove Company	2000, SW2100	3.69	11,817 - 31,713		63	Non Catalytic
	United States Stove Company	2400	1.13	7,315 - 14,033		72	Non Catalytic
	United States Stove Company	3000 (AFS7500), SW4100	1.9	11,624 - 38,140		63	Non Catalytic
	United States Stove Company	3000 FT	1.9	11,624 - 38,140		63	Non Catalytic
	United States Stove Company	Breckwell W3000FS/W3000I	2.3	11,600 - 33,700		63	Non Catalytic
	United States Stove Company	Vogelzang, Ashley, King (5770, VG5770)	3.17	10,898-24,335		78	Pellet
	United States Stove Company	Breckwell (SW740)	2.47	11,057-36,681		63	Non Catalytic
	Vermont Castings	Encore 2040	1.6	9,975 - 33,963		63	Non Catalytic
	Vermont Castings	Defiant Encore	0.6	6200-32900		72	Catalytic
	Vermont Castings	Encore 1450 N/C	0.7	10,600-24050		63	Non Catalytic
	Vermont Castings	Defiant 1910 & 1945	0.8	10600-44400		72	Catalytic
	Vermont Castings	2370	1	5700-18300		72	Catalytic
	Vermont Castings	Century/Dutchmaster FW and CDW	1	11,800-32,300		63	Non Catalytic
	Vermont Castings	Dutchwest Small Convection Heater #2460	1.1	6600-27300		72	Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Vermont Castings	Dutchwest Extra Large Convection 2462	1.3	8300-28000		72	Catalytic
	Vermont Castings	FA455	1.3	10400-26500		72	Catalytic
	Vermont Castings	DutchWest Large 2479	1.31	11,300-26,500		63	Non Catalytic
	Vermont Castings	Dutchwest Large Convection Heater (Model 2461)	1.41	10700-29500		72	Catalytic
	Vermont Castings	DutchWest Small Model 2460	1.41	7,800-25,100		63	Non Catalytic
	Vermont Castings	DutchWest Medium 2478	1.5	10,600-25,300		63	Non Catalytic
	Vermont Castings	C.D. Lg. Fed. Convection Heater FA264CCL, FA264CCR	1.6	6600-26700		72	Catalytic
	Vermont Castings	Defiant Encore 2550 (Formerly 2190)	1.6	8700-41700		72	Catalytic
	Vermont Castings	Defiant Encore 2140	1.8	9000-41300		72	Catalytic
	Vermont Castings	Intrepid II Model 1990	2.1	8300-26700		72	Catalytic
	Vermont Castings	Model 2170	2.1	9400-22800		72	Catalytic
	Vermont Castings	WinterWarm Fireplace Insert Model 1280	2.1	10300-30000		72	Catalytic
	Vermont Castings	WinterWarm Small Insert Model 2080	2.1	8700-31100		72	Catalytic
	Vermont Castings	FA264	2.2	9500-31700		72	Catalytic
	Vermont Castings	Intrepid II Model 2070	2.4	9200-19300		72	Catalytic
	Vermont Castings	Model EWF 36A	2.4	11,300-75,500		72	Catalytic
	Vermont Castings	C.D. Extra-Lg. Federal Convection Heater FA288CCL	2.6	8400-38700		72	Catalytic
	Vermont Castings	EWF36	2.7	11,800-68,600		72	Catalytic
	Vermont Castings	C.D. Small Federal Convection Heater FA224CCL	2.8	7000-30600		72	Catalytic
	Vermont Castings	C.D. Rocky Mountain Heater FA211CL	2.9	6800-27800		72	Catalytic
	Vermont Castings	Montpelier	2.9	10,094-27,550		63	Non Catalytic
	Vermont Castings	Montpelier/Stratton	2.9	10094-2727550		63	Non Catalytic
	Vermont Castings	Vermont Castings Defiant 1610	2.9	10,000-30,000		63	Non Catalytic
	Vermont Castings	2370	3	10,094-27,550		72	Catalytic
	Vermont Castings	FA224	3.1	9100-34800		72	Catalytic
	Vermont Castings	FA288	3.1	7800-29300		72	Catalytic
	Vermont Castings	Intrepid II 1308	3.1	10200-22500		72	Catalytic
	Vermont Castings	Intrepid Model 1640	3.3	8200-19500		63	Non Catalytic
	Vermont Castings	Madison Model 1655	3.3	11,300-39,700		63	Non Catalytic
	Vermont Castings	Resolute Acclaim (Model Number 2490) & TLWS1	3.4	9500-33900		63	Non Catalytic
	Vermont Castings	C.D. Federal "A Plus" FA224ACL	3.5	7200-30000		72	Catalytic
	Vermont Castings	EWF 30	3.5	11,100-40,500		63	Non Catalytic
	Vermont Castings	C.D. Sequoia FA455	3.6	8700-60300		72	Catalytic
	Vermont Castings	C.D. Adirondack Wood Heater FA267CL	3.7	8400-40000		72	Catalytic
	Vermont Castings	WinterWarm Small Insert (model 2370)	4	9250-21500		72	Catalytic
	Vermont Castings	Aspen 1920 & Plymouth HWS10	4.3	9100-18000		63	Non Catalytic
	Vermont Castings	C.D. Large Federal Box Heater FA209CL	4.3	9000-25600		72	Catalytic
	Vermont Castings	C.D. Small Federal Box Heater FA207CL	4.3	6200-28000		72	Catalytic
	Vermont Castings	Campbell/Jacuzzi FW300005-FW300008 & FW300019-FW300027	4.4	12000-55100		63	Non Catalytic
	Vermont Castings	CJW2000L02, JW2000L10, DW2000XXX and JW2000P10	4.4	12000-55100		63	Non Catalytic
	Vermont Castings	JW1500L10 and JW1500P10, FW1500, DW1500	4.4	10300-29200		63	Non Catalytic
	Vermont Castings	S27X/S28X & FW27 Series, CJW1500L02, S27X/S28X & FW27 Series, CJW1500L02, JW1500L10 and JW1500P10, FW1500, DW1500	4.4	10300-29200		63	Non Catalytic
	Vermont Castings	Seville 1635 and 1600 Insert	4.5	9,900-30,800		63	Non Catalytic
	Vermont Castings	CW2500X00, CW2500X02, JW2500X00, CJW2500X02, DW2500 and JW2500X10	4.7	9500-57800		63	Non Catalytic
	Vermont Castings	FW247001 to FE247004 and JW1000PF1	5	11500-18900		63	Non Catalytic
	Vermont Castings	Resolute Acclaim 0041	5.1	8700-30900		72	Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
	Vermont Castings	Madison 1650	5.5	11400-31000		63	Non Catalytic
	Vermont Castings	Seville Insert	5.5	10200-27400		63	Non Catalytic
	Vermont Castings	Aspen Model 1920	6.3	10100-26400		63	Non Catalytic
	Vermont Castings	Dutchwest 2477	1.4	7800-25100		63	Non Catalytic
	Vermont Castings	Defiant 1975	1.1	11400-34065		72	Catalytic
	Vermont Castings	Savannah SSW30FTAL	2.5	11600-30601		63	Non Catalytic
	Vermont Castings	Savannah SSW30FTAPB	2.5	11600-30602		63	Non Catalytic
	Vermont Castings	Savannah SSW30STAPB	2.5	11600-30604		63	Non Catalytic
	Vermont Castings	Savannah SSW30STAL	2.5	11600-30-603		63	Non Catalytic
	Vermont Castings	Savannah SSW30FTPB	2.5	11600-30600		63	Catalytic
	Vermont Castings	Savannah SSI30	3.47	11000-30600		63	Non Catalytic
	Vermont Castings	Savannah SSW40	4.3	11953-35767		63	Non Catalytic
	Vermont Castings	Dutchwest DW270007	4.4	10300-29201		63	Non Catalytic
	Vermont Castings	Dutchwest DW2500X02	4.7	9500-57801		63	Non Catalytic
	Vermont Castings	Dutchwest DW2000L02	2.7	11800-32301		63	Non Catalytic
	Vermont Castings	Dutchwest DW1500L02	4.4	10300-29201		63	Non Catalytic
	Vermont Castings	Dutchwest DW244	5.3	10600-26101		63	Non Catalytic
	Vermont Castings	Dutchwest DW 247001	5	11500-18901		63	Non Catalytic
	Vermont Castings	Dutchwest DW1000L02	5.3	10600-26101		63	Non Catalytic
	Vermont Castings	Dutchwest DW300007	2.7	11800-32300		63	Non Catalytic
	Vermont Castings	Merrimack	3.6	10574-31780		63	Non Catalytic
	Vermont Castings	Savannah SSW20	3.8	11000-45000		63	Non Catalytic
	Vermont Castings	Windsor WR244	5.3	10600-26100		63	Non Catalytic
	Vermont Castings	Seville 1630, Stratton	6.3	12000-27300		63	Non Catalytic
x	Vestal Manufacturing	Vestal Fireplace Insert V-200-I, V-200-P, V-200-L	2	11700-26500		72	Catalytic
x	Vestal Manufacturing	Vestal Radiant Heater V-100	2.2	9400-27700		72	Catalytic
	Vogelzang International Corporation	TR-009B Performer	3.73	11,299-36,089		63	Non Catalytic
	Vogelzang International Corporation	TR-009 Performer	3.89	11,299-36,089		63	Non Catalytic
	Vogelzang International Corporation	TR-004 Colonial	4.02	11,299-36,089		63	Non Catalytic
	Vogelzang International Corporation	Durango TR001 and Model TR002	3.6	11,299-36,089		63	Non Catalytic
	Vogelzang International Corporation	Highlander, Shiloh Insert, Model TR003	3.8	9000-26300		63	Non Catalytic
	Vogelzang International Corporation	TR007 Norwood, TR011 Norwood	3.2	11,913-34,108		63	Non Catalytic
	Vogelzang International Incorporated	Defender	4.18	9200-28300		63	Non Catalytic
	Wamsler Herd und Ofen GmbH	HOK 10	4.6	9200-16900		63	Non Catalytic
	Waterford Stanley Limited	104 MK II 31	2.9	8800-25900		63	Non Catalytic
	Waterford Stanley Limited	100B 90 32 TV	3.1	10800-32400		63	Non Catalytic
	Waterford Stanley Limited	100B 90 32 RV	3.9	10600-26500		63	Non Catalytic
	Waterford Stanley Limited	Trinity OA	3.97	11500-43800		63	Non Catalytic
	Waterford Stanley Limited	Ashling	4.1	12000-29800		63	Non Catalytic
	Waterford Stanley Limited	Erin OA	4.1	10400-30300		63	Non Catalytic
	Waterford Stanley Limited	Erin/90 TV	4.2	10500-40900		63	Non Catalytic
	Waterford Stanley Limited	Model 100B, 100B O.S.A., Leprechaun	4.3	9000-26700		63	Non Catalytic
	Waterford Stanley Limited	Erin/90 TV	5.7	10200-39900		63	Non Catalytic
	Waterford Stanley Limited	Trinity 35	7	11800-39300		63	Non Catalytic
	Waterford Stanley Limited	100B Design 29, Fionn	7.5	7200-27500		63	Non Catalytic
	Waterford Stanley Limited	Erin	7.6	11800-41500		63	Non Catalytic
x	Webco Industries	Marquis 800, 800 XL	3.6	9900-20000		72	Catalytic
x	Weitz & Co., Inc.	Briarwood XE 88	6.4	12800-34200		63	Non Catalytic
x	Weitz & Co., Inc.	Briarwood BB, BBI and BBZC	4.8	10600-25300		63	Non Catalytic
x	Weitz & Co., Inc.	Eagle 88, Pioneer ZC	6.4	12800-22800		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1

Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Appendix F: EPA Certified and Exempt Wood Burning Heaters

September 18, 2014

List of EPA Certified Wood Stoves December 2013

Out of Production	Manufacturer Name	Model Name	Emission Rate G/Hr	Heat Output btu/hr	Actual Measured Efficiency (CSA B415.1)	EPA Estimated (Default) Efficiency	Type
x	Weitz & Co., Inc.	Briarwood II 87	7.3	9900-45900		63	Non Catalytic
x	Welenco Manufacturing, Inc.	P-1000W	0.7	9600-23900		78	Pellet
	Weso-Aurorahautte GmbH	Prestige 125, 225, 325, 425	7.3	8900-31200		63	Non Catalytic
	Weso-Aurorahautte GmbH	Renaissance 326	8	9200-32900		63	Non Catalytic
	Winrich International	Winrich Pellet Stove	1.6	8500-27900		78	Pellet
x	Winston Stove Company	Model WP-18	0.6	10000-21300		78	Pellet
x	Winston Stove Company	Model WP-24	1.5	9700-29400		78	Pellet
	Wiseway Pellet Stoves	GW1949	1.9	7481-19475		78	Pellet
	Wittus Fire By Design	XEOOS Twinfire	2.4	11,519- 27,432		63	Non Catalytic
	Wittus Fire By Design	Shaker Stove	7.3	9,667-29,242		63	Non Catalytic
	Wolf Steel Ltd.	NPS45	2.4	8,827 - 29,023		78	Pellet
	Wolf Steel Ltd.	1900 series (Napoleon 1900)	2.9	11800-34000		63	Non Catalytic
	Wolf Steel Ltd.	Napoleon 2000	3.2	11000-31100		63	Non Catalytic
	Wolf Steel Ltd.	1400 series (Napoleon 1400, 1400L, 1450,1401)	3.5	11500-33600		63	Non Catalytic
	Wolf Steel Ltd.	2200 series (Timberwolf 2200, 2201)	3.6	12,084-31436		63	Non Catalytic
	Wolf Steel Ltd.	2100 series (Timberwolf)	3.9	11,238-37580		63	Non Catalytic
	Wolf Steel Ltd.	1100 series (Napoleon 1100, 1100L, 1100C, 1150, 1101)	4.1	11700-32700		63	Non Catalytic
	Wolf Steel Ltd.	NZ25	4.46	11200-32300		63	Non Catalytic
	Wolf Steel Ltd.	EPA1600C	5.4	12,375-28,127		63	Non Catalytic
	Wolf Steel Ltd.	NZ-26	5.4	11500-27400		63	Non Catalytic
	Wolf Steel Ltd.	Napoleon 1000	6.5	10200-30800		63	Non Catalytic
	Wolf Steel Ltd.	Napoleon 1500	7	11700-23100		63	Non Catalytic
	Wolf Steel Ltd.	1600C-1	7.18	9,200-33,400		63	Non Catalytic
	Wolf Steel Ltd.	TPSI35	2.1	11,200 - 36,000		78	Pellet
	Wolf Steel Ltd.	NZ3000	7.2	11129-31436		63	Non Catalytic
	Wolf Steel Ltd.	EPI22	2.6	11129-31436		63	Non Catalytic
	Wolf Steel Ltd.	EPI3	2.6	11,281 - 28,500		63	Non Catalytic
x	Wolf's Casual Living	BV	3.8	10800-35400		72	Catalytic
x	Wolf's Stoves	BV2 Elite Bay	2.6	11700-46100		63	Non Catalytic
x	Woodkiln Inc.	Woodkiln WK-23	3.8	10700-27200		63	Non Catalytic
	Woodstock Soapstone Company, Inc.	Catalytic Fireview Soapstone Stove #205	1.35	10900-42900		72	Catalytic
	Woodstock Soapstone Company, Inc.	Paladian Model 202, Paladian Model 203 & Keystone Model 204	1.9	8500-35000		72	Catalytic
	Woodstock Soapstone Company, Inc.	Catalytic Fireview Soapstone Stove #201, Classic #200	3.5	13200-40000		72	Catalytic
	Woodstock Soapstone Company, Inc.	Progress Hybrid Soapstone Stove #209	1.33	12,538 - 73,171	81	78	Catalytic-Hybrid
x	Yunca Heating	Yunca WEGJ E/481	5	10700-30300		63	Non Catalytic
	Zephyr Stoves, Inc.	View 2.0	4.5	10,700-34,800		63	Non Catalytic

Actual Measured Efficiency - Per CSA B415.1
 Default - Category rating assigned by EPA (The estimated efficiency is as follows: 72% (catalyst-equipped), 63% (non-catalyst equipped), and 78% (wood pellets)). § 60.536(i)(3).



List of EPA Exempt Wood Heating Appliances



EPA Wood Heater Program

The United States Environmental Protection Agency (EPA) regulates particulate emissions from wood heating appliances as part of the Clean Air Act's New Source Performance Standard for Residential Wood Heating Appliances at 40 CFR Part 60, Subpart AAA. Wood heating appliances subject to this regulation must have a firebox volume less than 20 cubic feet, weigh less than 800 kilograms, possess a burn rate less than 5 grams per hour and have an air to fuel ratio less than 35 to 1. The wood stove regulations apply to wood heating appliances intended for residential heating. Appliances such as cookstoves, wood burning furnaces, outdoor wood boilers, coal stoves and fireplaces are not subject to these regulations.

The following is a list of wood heating appliances that have been formally exempted from the EPA wood stove program. The manufacturers of these appliances demonstrated that they do not meet the criteria necessary for EPA wood stove certification by submitting test reports and engineering drawings to the EPA. Please note, the appliances on this list are not EPA certified wood stoves and therefore may not be legal for sale or installation in some jurisdictions in the United States.

Please contact John DuPree at 202-564-5950 should you have questions regarding the EPA Wood Heater Program or EPA certified wood stoves.



EXEMPT APPLIANCES

3/16/10

Manufacturer Model Name	Basis for Exemption
<p>Alpha Energy Designs 815 D Street Lewiston ID 83501 , USA 208-746-5502 Alpha A20 Fireplace Insert</p>	Burn Rate > 5kg/hr
<p>Alternative Energy Northwest, Incorporated 16311 Smokey Point Blvd Arlington WA 98223 , USA 206-652-8124 2001 Pellet Stove</p>	Air-to-Fuel Ratio > 35:1
<p>American Energy Systems R.D.M. 50 Academy Lane Hutchinson MN 55350 , USA 612-587-6565 Magnum ZC</p>	Burn rate > 5 kg/hr
<p>American Road Equipment Company 4201 North 26th Street Omaha NE 68111 , USA 402-451-2575 Erik Jr. Elite M</p>	Air-to-Fuel Ratio > 35:1
<p>Andersen Mfg., Inc. 3125 N. Yellowstone Box 434D Idaho Falls ID 83401 USA (208) 523-6460 Elco Fireplace</p>	Burn Rate > 5 kg/hr
<p>Aqua II Manufacturing 2421 west Clemmons ville road Winston Salem NC 27127 , USA (919)768-4800 Aqua II Water Stove</p>	Qualifies as Furnace

Manufacturer Model Name	Basis for Exemption
Aqua-Therm Route 1, Box 1 Brooten MN 56316 , USA 612-346-2264 Aqua-Therm 145, 275, 345	Qualifies as Boiler
Ardisam 1690 Elm Street Cumberland WI 54829 , MF3500	Qualifies as a Furnace.
Biofire, Inc. 3220 Melbourne Salt Lake City UT 84106 , USA 801-486-0266 3x3, 4x3, 4x4, 5x3	Weight > 800 Kg
Century Manufacturing Company, Inc. 1620 East 20th Street P.O. Box 1744 Joplin MO 64801 , USA (417) 624-1480 CO-28-WG CO-36 Fireplace Furnace	Burn Rate > 5 Kg/hr Burn Rate > 5 Kg/hr
CFM Corporation (Vermont Castings, Inc.) Route 107, Box 501 Bethel VT 05032 , USA (802) 234-2300 Dauntless Fireplace	Burn Rate > 5 Kg/hr
Cool Country Enterprises P.O. Box 786 41508 Maycreek Road Gold Bar WA 98251 , USA 360-793-2110 Earth Friendly P.S.	Air-to-fuel ratio > 35:1.

Manufacturer Model Name	Basis for Exemption
Country Flame Technologies, Inc. 900 George Street Marshfield MO 65706 , USA 417-466-7161 NPS-1000	Air-to-fuel Ratio > 35:1
Country Stoves, Inc. , PS 40 & PI 40	Air to Fuel Ratio
Dovre, Inc. 401 Hanks Avenue Aurora IL 60505 , USA (312) 844-3353 Focus II, Model FOC2 Sunburst II 2100	Qualifies as Coal Stove Burn Rate > 5 kg/hr
Dumont Refrigeration Corp. P.O. Box 148 Monmouth ME 04259 , USA 207-933-4811 Temptest 150, 350	Qualifies as Boiler
Earthstone 2733 Mariquinta Street Suite 101 Long Beach CA 90803 , USA 310-434-7095 Earthstone Wood Burning Ovens 60, 90, 130	Wood-fired ovens
ECOHEAT of Canada Inc. P.O. Box 93110, 1450 Headon Road Burlington, Ontario L7M 4A3 , Canada 905-331-2702 Ecoheat Cookstove	

Manufacturer Model Name	Basis for Exemption
Energy Equipment and Manufacturing Company 615 South 32nd Avenue Yakima WA 98902 , USA 509-457-1108 Energy Hearth Fireplace Furnace	Burn Rate > 5 Kg/hr
England's Stove Works, Inc. 589 S. Five Forks Road Monroe VA 24574 , USA (804) 929-0120 Model 25-PDV , 55-TRP22 and 55-SHP22 Models 25-PDVC and 55-SHP10 Models 25-PDVC and 55-SHP10	Air-To-Fuel ratio > 35:1 Air-to-Fuel-Ratio > 35:1 Air-to-Fuel-Ratio > 35:1
GEMSTAR Fireplace Co., Ltd. 6265 19th Street Surrey, B.C. V3S 5M8 , Canada 604-530-9060 GEMSTAR	Air-to-Fuel Ratio > 35:1
Gibraltar Stoves, Inc. 512 - 72nd Street Holmes Beach FL 34217 , USA 813-779-2217 LCC, MCC, SCC, CFS, CFI & DDI	Classified as Coal Stove
Hardy Manufacturing Co., Inc. Route 4, Box 156 Philadelphia MS 39350 , USA 601-656-5866 Hardy, Hardy Jr.	Qualifies as Boiler
Hearth and Home Technologies 1445 North Highway Colville WA 99114 , USA 509-684-3745 Quadra-Fire 1000 Pellet Stove Quadra-Fire 1000 Pellet Stove	Burn Rate > 5 Kg/hr. Air-to-Fuel ratio > 35-to-1

Manufacturer Model Name	Basis for Exemption
Hearth & Home Technologies	
PEL-30 Contour	Air-to-Fuel Ratio > 35
Heartland Appliances, Inc.	
1050 Fountain Street North Cambridge Ontario N3H 4R7 Canada (519)743-8111	
A-19-3 Oval Woodburning	Cookstove
A263 Sweetheart	Cookstove
Artisan	Cookstove
Heating Energy Systems, Inc.	
P.O. Box 593 14300 SE Industrial Way Clackamas' OR 97015 USA 503-786-4004	
Trailblazer Classic 1600PS	Air-To-Fuel Ratio > 35:1
Heatmor Outdoor Wood Burning Furnaces	
Highway 11 East, Box 787 Warroad, MN 56763 USA 218-386-2769	
100CSS, 175SSE,200CSS, 400CSS and 400DCSS	Qualifies as Furnace.
Hicks Waterstoves & Solar System	
2541 South Main Street Mt. Airy NC 27030 USA 919-789-4977	
500, 700, 1000 gallon waterstoves	Qualifies as Boiler
High Energy Manufacturing	
PO Box 400 Vermillion Bay Ontario 54829 Canada POV 2VO	
J2000	Qualifies as a Furnace.

Manufacturer Model Name	Basis for Exemption
Jensen Metal Products, Inc. 7800 Northwestern Avenue Racine WI 53406 , USA (414)886-9318 Models 24A,24AC,30A & 30AC	Qualifies as Furnace
Ka-Heat Kachelofen, Ltd. R.R. NO4, 670 Packer Road Roseneath, Ontario K0K 2X0 , Canada 905-352-3848 FK07 and FK09	Burn rate > 5 kg/hr
Klass Waterstove 4931 Elkorn Ct. Salem OR 97301 , USA 503-391-2880 Klass Waterstove	Qualifies as Furnace
L.B. Brunk & Sons, Inc. 10460 S.R. 45N Salem OH 44460 , USA (216) 332-4297 120, 150, 190	Qualifies as Furnace
Lamppa Manufacturing & Distributing Co., Inc. P. O. Box 422 Tower MN 55790 , USA 218-753-2330 Kuuma Wood Sauna Stove	Air-To-Fuel Ratio > 35:1
Lennox Hearth Products 1110 West Taft Ave. Orange CA 92865 , USA 714-921-6100 Whitfield Profile 20 / Optima 20 Whitfield Profile 30 / Optima 3 Whitfield Renaissance WW 1 Pellet Stove	Air-to-Fuel ratio < 35:1 Qualified for exemption. Air-To-Fuel Ratio > 35:1

Manufacturer Model Name	Basis for Exemption
Majco Building Specialties, L.P.	
1000 East Market Street P.O. Box 800 Huntington, IN 46750 USA (219) 356-8000	
Majestic BFC 36	Burn rate > 5 kg/hr.
Model FC-36	Burn rate > 5kg/hr.
National Steelcrafters of Oregon	
P.O. Box 2501 Eugene, OR 97402 USA (503) 683-3210	
P24FS and P24I	Air-to-Fuel Ratio > 35:1
P2700FSA	Air-to-Fuel Ratio > 35:1
Nature's Furnace, Inc.	
3338 Ute Avenue Waukegan, IA 50263 USA 515-987-2397	
Biomass Reactor	Qualifies as Furnace.
NHC Inc.	
317 Stafford Avenue Morrisville, VT 05661 USA 802-888-5232	
L07	Cookstove
Model American Heritage Wood Burning Stove	Burn Rate > 5 Kg/hr
Model Hearthstone 1	Burn Rate > 5 Kg/hr
Rais A/S	
23 Hack Green Road Pound Ridge, NY 10576 USA (914) 764-5679	
Rais #2,#3,#4,#86,#101,#106,#115	Cookstove

Manufacturer Model Name	Basis for Exemption
Reed Metal Works, Inc. HC2, Box 656 Warroad MN 56763 , USA 218-386-2769 JR Heatmor Model 200CSS and 400CSS	Qualifies as Furnace.
Reliant Industries, Inc. 333 Industrial Dr. #3 Placerville CA 95667-6849 , USA 916-622-5887 Essex Reliant Tempest Pellet Stove	Air-to-Fuel Ratio > 35:1 Air-To-Fuel > 35:1.
Riteway-Dominion Manufacturing Company, Inc. 1680 Country Club Road Box 5 Harrisonburg VA 22801 USA (703) 434-3800 Omni I, Omni II	Qualifies as Furnace.
RJM Manufacturing, Inc. Route 5, Box 190 Chippewa Falls WI 54729 , USA 715-723-9667 Energy King Furnace 120, 145, 185	Qualifies as Furnace
Royal Crown European Fireplaces, Inc. 333 East State, Suite 206 Rockford, IL 61104 , USA 815-968-2022 100-0, 100-2, 200-0, 200-3, 202-1, 202-4, 206-0	Weight > 800 Kg
RSF / Industrial Chimney Company, Incorporated 400 J-F Kennedy St Jerome QC J7Y 4C7 , Canada 450-565-6336 Omega Opel 2000E, OPEL AP Oracle	Burn Rate > 5 Kg/hr Burn rate > 5 Kg/hr Burn Rate > 5 Kg/hr

Manufacturer Model Name	Basis for Exemption
Scott Stoves, Inc. P.O. Box 1033 Hayden Lake ID 83835 USA 208-772-7310 Pellet Stove Model 1	Air-to-Fuel Ratio > 35:1
Sedore Stoves USA 47909 County Road 37 Deer River, MN 56636 USA 218-246-2908 Model 3000	Qualifies as Furnace/Boiler
Sherwood Industries, Ltd. 6782 Oldfield Road Saanichton BC V8M 2A3 Canada 604-652-6080 Empress/Windsor OMEGA Vista Flame Envirofire EF II Vista Flame Envirofire Evolution Model EF 5/VF 5 Vista Flame Envirofire Pellet Stove	Air to Fuel Ratio Air to Fuel Ratio Air to Fuel Ratio Air to Fuel Ratio Air to Fuel Ratio
Snorkel Stove Company 108 Elliott Avenue West Post Office Box 20068 Seattle WA 98102 USA 206-283-5701 Snorkel, Scuba Hot Tub Heater	Hot Tub Heater
Stove Builder International Inc. 1700 Leonharmel Street Quebec City Quebec G1N 4R9 Canada 418-527-3060 Series EE1200 Acorn	Minimum burn rate greater than

Manufacturer Model Name	Basis for Exemption
Suburban Manufacturing Company	
P.O. Box 399 676 Broadway Street Dayton, TN 37321 USA (615) 775-2131	
Coalchief CC6-88	Coal Stove
Coalmaster C6-88	Coal Stove
Woodchief FP6-88U & FP6-88WCU	Burn Rate > 5.0 kg/hr
Taylor Products, Inc.	
P.O. Box 518 Elizabethtown, NC 28337 USA (919) 862-2576	
Taylor Outside Wood Fired Hot Water Furnace	Qualifies as Furnace.
The Maxson Company/Acucraft Fireplace Systems	
Z-Max	Burn Rate > 5 Kg/hr
The New Alberene Stone Company	
P.O. Box 300 Schuyler, VA 22969 USA 804-831-2228	
H 950, HPU 950	Weight > 800 Kg
HU 2850, HU 3750	Weight > 800 Kg
KTU 1650, KTU 1650L, KTU 1900L	Weight > 800 Kg
LLU 1150 1H, LLU 1150 2H, LU 2150, HU 3750, LU2750	Weight > 800 Kg
LU 1900, KTLU 1800L, TLU 2700L, TLU 2800L, TLU3300	Weight > 800 Kg
P&M 1450, P&M 1500, P&M 2050	Weight > 800 Kg
SKU 850	Weight > 800 Kg
TU 1100	Weight > 800 Kg
TU 1400, TU 1400L	Weight > 800 Kg
TU 1700, TU 1800, TU 1800 L	Weight > 800 Kg
TU 800, TU 1025, TU 1250	Weight > 800 Kg

Manufacturer Model Name	Basis for Exemption
Thelin Company Inc.	
P.O. Box 847 Nevada City, NV 95959 USA (916) 273-1976	
Echo	Air-to-Fuel Ratio > 35:1
Focus II, FOC2	Coal Stove
Thompson, Design E	Air-to-Fuel Ratio > 35:1
Turbo-Burn, Inc.	
4225 E Joseph Spokane, WA 99207 USA (509) 487-3609	
TB-1 & TB-2	Qualifies as Furnace.
U.S. Stove Company	
227 Industrial Park Drive South Pittsburg, TN 37380 USA (615) 837-2100	
Logwood 2421	Burn Rate > 5 Kg/hr
Model 1261	Burn Rate > 5 kg/hr
MODEL 127	Burn rate > 5 kg/hr
MODEL 4300	Burn Rate > 5 Kg/hr
Paragon 5440	Air-To-Fuel Ratio > 35:1
Tri-Star 5448-Q	Air-To-Fuel Ratio > 35:1
Unique Functional Products	
135 Sunshine Lane San Marcos, CA 92069 USA (619) 744-1610	
UFP Free Heat Machine	Fireplace Accessory
Vogelzang International Incorporated	
400 West 17th Street Holland, MI 49423 USA (616) 396-1911	
BK50E, BK100E, BK150E	Burn Rate > 5.0kg/hr
BX42E, FS260E, HH005, P205E, PB65XL, SR57E	Burn Rate > 5.0kg/hr
VG450ELG, VG450EL, VG450ELGB, VG650ELGB, VG810CL	Burn Rate > 5.0kg/hr

Manufacturer Model Name	Basis for Exemption
Waterford Stanley Limited Bilberry , Waterford Ireland 011-353-51-302300 The Stanley Cookstove	Qualifies as Cookstove
Wolf Steel Limited 24 Napolean Road Barrie Ontario Canada Canada L4M 4Y8 NPS 40 NZ6000	Qualifies as a Furnace. Qualifies as a Furnace.
Wood-aire P.O. Box 296 Commerce OK 74339 Canada 918-675-4355 3225 Fireplace Furnace	Burn Rate > 5 Kg/hr

N.B.: This list only shows those appliances for which manufacturers have requested and been granted exemption by EPA. Other appliances may exist which are exempt but for which EPA has not made a determination. EPA does not require manufacturers of exempt appliances to demonstrate that their products are exempt. However, to appear on this list, a manufacturer must submit documentation or test data from an accredited testing laboratory.

Other States and localities may have other exempt appliance policies which differ from EPA's policy.

San Joaquin Valley Unified Air Pollution Control District
Meeting of the Governing Board
September 18, 2014

**ADOPT PROPOSED AMENDMENTS TO THE DISTRICT'S RESIDENTIAL
WOOD BURNING PROGRAM**

Attachment E:

Registration Forms
(2 PAGES)

INTERIM REGISTRATION APPLICATION

2014/15 Wood Burning Season

*Required Fields

Applicant Information

Full Name*

Mailing Address*

City*

State*

Zip Code*

Primary Phone #*

Email Address

Alternate Phone #

Device Information

Was this wood burning heater purchased and installed under the District's Burn Cleaner incentive program?

If yes, please specify the project identification number:

Device Address*

City*

State*

Zip Code*

Device Type*

Device County*

Manufacturer

Model

CONDITIONS

1. The following materials shall not be burned in a registered wood burning heater: garbage, treated wood, plastic products, rubber products, waste petroleum products, paints and paint solvents, coal, or any other material not intended by a manufacturer for use as a fuel in a wood burning fireplace, wood burning heater, or outdoor wood burning device.
2. The registered wood burning heater shall be maintained and operated per manufacturer specifications.
3. The registered wood burning heater shall not be operated during periods of District announced "No Burn" days for the county in which the registered wood burning heater is located.
4. The registered wood burning heater shall have no visible smoke, except when a fire is started, when fuel is added and when the fire is being extinguished. Visible smoke produced during these three events shall not exceed fifteen minutes per event.
5. The registration of a wood burning heater is non-transferable.

By providing my signature below, I hereby agree to the above conditions and certify that all information provided in this registration is true and correct to the best of my knowledge. I understand that my interim registration may be revoked if at any time the San Joaquin Valley Air Pollution Control District discovers that any of the information I provided is untrue, inaccurate, not current, or incomplete.

Signature

Date

WOOD BURNING DEVICE REGISTRATION

REGISTRATION NO: W-123456-1

EXPIRATION DATE: XX/XX/XXXX

REGISTRATION HOLDER: JANE DOE

MAILING ADDRESS: 1234 MAIN STREET
MODESTO, CA 93765-4321

DEVICE LOCATION: 1234 MAIN STREET
MODESTO, CA 93765-4321

DEVICE COUNTY: STANISLAUS

DEVICE TYPE: EPA CERTIFIED WOOD INSERT

MANUFACTURER: GREEN BURNS STOVE

MODEL NO: GB-3534-ADD

CONDITIONS

1. The following materials shall not be burned in a registered wood burning heater: garbage, treated wood, plastic products, rubber products, waste petroleum products, paints and paint solvents, coal, or any other material not intended by a manufacturer for use as a fuel in a wood burning fireplace, wood burning heater, or outdoor wood burning device.
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Northern Region

4800 Enterprise Way
Modesto, CA 95356-8718
Tel: 209 557 6400
Fax: 209 557 6475

Central Region

1990 E. Gettysburg
Fresno, CA 93726-0244
Tel: 559 230 6000
Fax: 559 260 6061

Southern Region

34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661 392 5500
Fax: 661 392 5585