



San Joaquin Valley

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DATE: September 18, 2008

TO: SJVUAPCD Governing Board

FROM: Seyed Sadredin, Executive Director/APCO
Project Coordinator: Jessica Hafer

RE: **RECEIVE AND FILE PROPOSED AMENDMENTS TO
RULE 4901 (WOOD BURNING FIREPLACES AND
WOOD BURNING STOVES)**

RECOMMENDATIONS:

1. Receive and file proposed amendments to Rule 4901 (Wood Burning Fireplaces and Wood Burning Stoves).
2. Set October 16, 2008 for the Public Hearing to consider the following:
 - A. Adoption of proposed amendments to Rule 4901.
 - B. Proposed outreach strategy to inform Valley residents of upcoming rule changes, the health impacts of wood smoke, and advice for cleaner wood burning.
 - C. Proposal to provide grant funding for upgrading woodstoves to gas devices in areas where wood burning may be episodically curtailed under amended Rule 4901, and for upgrading to cleaner burning woodstoves in areas exempt from the curtailments.

BACKGROUND:

Rule 4901, Wood Burning Fireplaces and Wood Burning Heaters, has significantly reduced particulate matter (PM) concentrations since the Rule was last amended in 2003. When the San Joaquin Valley Air Basin (SJVAB, or Valley) reached PM10 (particulate matter 10 microns or less in diameter) attainment ahead of schedule, it was clear that Rule 4901 had been successful in raising awareness and achieving cost effective air quality improvements. Strengthening Rule 4901 is an important step towards meeting the challenges of PM2.5 (particulate matter 2.5 microns or less in diameter) attainment in the Valley.

Lowering the threshold for episodic wood burning curtailment to a level consistent with the federal 2006 PM2.5 standards will result in more wood burning prohibitions, and this in turn will have a significant public health benefit.

This control measure is a commitment in the *2008 PM2.5 Plan*, which was adopted by the Governing Board on April 30, 2008. This rule amendment will decrease direct PM2.5 and PM10 emissions, contributing to the Valley's continued attainment of the National Ambient Air Quality Standards for PM10 and helping the Valley make significant progress towards attainment of the PM2.5 standards.

DISCUSSION:

Particulate matter (PM) is any finely divided solid or liquid material (except pure water). PM can include a wide range of chemical compounds, and the type of compound will affect the type and severity of the health impacts from the particles. In the Valley, PM2.5 concentrations tend to be highest in winter months and overnight, due to both source activity as well as wintertime temperature inversions in the atmosphere that act as a lid on the Valley and keep pollution near ground level. The majority of wood burning device use occurs in the evenings and contributes a significant amount of PM2.5 and its precursors. By prohibiting the use of wood burning devices on poor air quality days, Rule 4901 will play a key role in lowering daily average PM2.5 concentrations.

Health Impacts of Particulate Matter and Wood Smoke

Wood burning fireplaces and wood burning heaters emit particulates as a result of combustion. PM2.5 is not filtered out of the body by the nose or upper respiratory system. It can be inhaled and deposited in the alveoli, the gas exchange zone deep in the lungs, and can result in airway inflammation. Once in the alveoli, PM2.5 can be absorbed into the bloodstream or can remain embedded in the lungs for long periods of time without the ability to be exhaled (American Lung Association 2002). PM2.5 may carry toxic and biological materials that can be carried to other parts of the body through the bloodstream.

Numerous studies link PM to a variety of health effects (EPA 2008 and ARB 2004), including:

- Aggravated asthma and increased respiratory symptoms (irritation of the airways, coughing, difficulty breathing)
- Decreased lung function in children
- Development of chronic bronchitis
- Irregular heartbeat and nonfatal heart attacks
- Increased respiratory and cardiovascular hospitalizations
- Lung cancer and premature death in people with heart or lung disease

Wood smoke contains PM2.5, carbon monoxide, formaldehyde, sulfur dioxide, irritant gases, and known and suspected carcinogens, such as polycyclic aromatic hydrocarbons (PAH). The toxic air pollutants in wood smoke can cause coughs, headaches, and eye and throat irritation. 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.

Proposed Amendments to Rule 4901

There are four primary changes to Rule 4901 in this Proposed Amendment:

- A.** The mandatory curtailment (or "No Burn Day") level would be lowered to a 24-hour average PM2.5 level of 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).
- B.** The Rule would be clarified to include Outdoor Wood Burning Devices, such as burn bowls, fire pits, outdoor fireplaces, and chimineas, in mandatory curtailments.
- C.** The elevation exemption would be removed so that residences above 3,000 feet will be subject to mandatory curtailments unless they qualify for another exemption, such as the exemption for those who do not have natural gas service.
- D.** The Rule would contain a contingency measure to lower the mandatory curtailment level to a 24-hour average PM2.5 level of 20 $\mu\text{g}/\text{m}^3$. This provision would be effective 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 PM2.5 National Ambient Air Quality Standards by the applicable deadline.

These amendments are explained in greater detail in the discussion below.

A. Lowering the mandatory curtailment level

Current Rule 4901 set the mandatory curtailment level at an Air Quality Index (AQI) of 150, which is currently equivalent to a 24-hour average PM2.5 concentration of 65 $\mu\text{g}/\text{m}^3$. Lowering the mandatory curtailment level is necessary for the Valley to progress towards attainment of EPA's newest PM2.5 standard (35 $\mu\text{g}/\text{m}^3$). Setting the mandatory curtailment level at a 24-hour average PM2.5 level of 30 $\mu\text{g}/\text{m}^3$, rather than 35 $\mu\text{g}/\text{m}^3$, provides a margin of safety to allow for the uncertainties involved in air quality forecasting. Also, during stagnation events, particulates can accumulate over several days. Wood burning prohibitions issued during a stagnation event can help limit the build up of particulates that can lead to unhealthy air quality. Prohibiting wood burning when the 24-hour average PM2.5 concentration is greater than or equal to 30 $\mu\text{g}/\text{m}^3$ can help the Valley avoid air quality that exceeds the 35 $\mu\text{g}/\text{m}^3$ PM2.5 standard.

Lowering the mandatory curtailment level will result in more wood burning prohibition days each year. To estimate the impact this could potentially have on Valley residents, the table below shows a predicted number of wood burning prohibitions in each county. These numbers are for a wood burning season of about 120 days, from November 1

through the end of February. These estimates are based on the air quality that the San Joaquin Valley experienced during the 2006-07 wood burning season. These numbers are not quotas; the actual number of No Burn Days will depend on the air quality the Valley actually experiences.

**Estimated Number of Wood Burning Prohibitions per County
 (Number of days)**

County	Rule 4901 as amended in 2003: 150 AQI (24-hour PM2.5 concentration of 65 µg/m ³) (Actual prohibitions in 2006-2007 based on air quality predictions)	Proposed 2008 Amendments to Rule 4901: 24-hour PM2.5 concentration of 30 µg/m ³ (Expected prohibitions, based on 2006-2007 air quality predictions)
Fresno	12	48
Kern	8	43
Kings	2	13
Madera	2	12
Merced	2	12
San Joaquin	1	9
Stanislaus	9	12
Tulare	3	11

B. Outdoor Wood Burning Devices

The Rule will be clarified to include Outdoor Wood Burning Devices (such as chimineas, outdoor fireplaces, fire pits, and burn bowls) in mandatory curtailments. When air quality warrants a wood burning prohibition, residents would be asked to refrain from all wood burning, inside or outside, unless they qualify for an exemption.

C. Elevation Exemption

The 3,000 foot elevation exemption will be removed so that residences at all elevations will be subject to mandatory curtailments unless they qualify for another exemption, such as the exemption for those who do not have natural gas service. Since most areas at elevations above 3,000 feet do not have natural gas service, removing the elevation exemption will not affect many residents. Members of the public have commented that air quality has worsened in the Valley's foothill areas when residents in communities with relatively high population densities use their fireplaces (Hearing for the 2008 PM2.5 Plan, April 30, 2008). The District plans to increase air quality monitoring in some of these areas over the next couple of years to better assess how fireplace use affects air quality at higher elevations.

D. Contingency Measure

Proposed Rule 4901 contains a contingency provision to lower the mandatory curtailment level to a 24-hour average PM_{2.5} level of 20 µg/m³. This provision would be effective if the San Joaquin Valley Air Basin fails to attain the 1997 PM_{2.5} standards by April 2015. This component of Draft Rule 4901 was mandated by ARB upon their approval of the *2008 PM_{2.5} Plan* on May 22, 2008. If, as expected, the Valley reaches the PM_{2.5} standard by the deadline, then this contingency measure would not be used, and the "No Burn" action level would stay at 30 µg/m³ of PM_{2.5}.

Emission Reduction Analysis

District staff has estimated the potential emissions reduction to be achieved from implementing the amendments to Rule 4901. Please refer to Appendix B of the staff report for the analysis and detail on the emissions reduction estimate. A Valley-wide No Burn Day would remove 16.9 tons of PM_{2.5}. As a Valley-wide winter average, the Amended Rule 4901 is expected to achieve 2.4 tons per day of PM_{2.5} reductions.

Compliance

The District would enforce the Amendment Rule 4901 in the same manner as the District enforces the current Rule 4901. The District enforces Rule 4901 wood burning prohibitions through inspector surveillance and by responding to citizen complaints made via the District's 1-800-SMOG-INFO number. Notices of violations (NOVs) are issued to those who are found to be in violation of a wood burning prohibition. For first offenses, the fine is \$50, but the fine can be waived with "Compliance School" attendance. Subsequent violations result in increased penalties.

Economic Analysis

The District's independent contractor compiled the draft socioeconomic analysis report, which can be found in Appendix C of the Draft Staff Report. Proposed Rule 4901 does not apply to sources identified for the District's ozone strategy and, therefore, is not subject to the California Clean Air requirement for cost effectiveness analysis.

Environmental Impacts

Pursuant to the California Environmental Quality Act (CEQA), District staff conducted an Initial Study to identify any potential environment impacts. District staff concluded that there are no adverse environmental impacts, so a Notice of Exemption will be filed.

Rule Consistency Analysis

Before adopting, amending, or repealing a rule or regulation, an air district must identify and evaluate any existing federal rules or rules within that air district that apply to the

same source category (California Health and Safety Code Section 40727.2). Adoption of Rule 4901 would not conflict with any existing federal or District requirements.

Rule Development Process

The District held nine evening workshops on Rule 4901, with at least one workshop in every county in the San Joaquin Valley, to allow as much opportunity for public involvement as possible. The first workshop was held on August 4, 2008, and the last workshop was held on August 21, 2008. During these workshops, District staff presented the proposed amendments to the public and allowed time for public questions and comments. In total, approximately 115 people attended the workshops. Written comments were accepted until August 28, 2008. Comments received during workshops and during the written comment period are summarized with District responses in Appendix D of the Final Draft Staff Report. A 30-day public review period is being held on the proposed Rule from September 5 – October 6, 2008.

The notice of the public hearing for the proposed rule amendments was published in a general circulation newspaper in each of the eight San Joaquin Valley counties. The public notice was also mailed to affected sources and interested parties. The notice of public hearing solicits written comments, and identifies the name and telephone number of District staff who can answer questions and respond to comments.

OUTREACH STRATEGY AND GRANT CONCEPTS

For the past five years, the District has engaged in an annual comprehensive outreach strategy to inform all Valley residents of Rule 4901. The outreach has been conducted in English, Spanish, Hmong and Punjabi and has utilized radio, billboards, TV and the internet as media to convey the “Check Before You Burn” message. This message encourages residents to call the District’s 1-800 number or visit the District website to assess the wood burning status for any given day.

The District plans to expand and maximize the advertising dollars budgeted for the 2008-09 outreach campaign to both promote the “Check Before You Burn” message and to educate the public on the new elements to Rule 4901.

The District’s 2008-09 Budget includes \$268,600 to conduct outreach on our annual “Check Before You Burn” program. The District proposes spending one third of these funds on outreach to the public regarding the new components of Rule 4901. This \$88,638 will be used to educate the public on the following key issues regarding the Rule 4901 amendments:

- Health impacts of wood smoke
- Details of the new Rule
- Steps to burn cleanly

In addition to utilizing \$88,639 of already budgeted outreach dollars, the District proposes allocating an additional \$60,000 to produce and distribute a direct mail piece to Valley residents. These funds would be transferred from the contingency account. This direct mail outreach will allow the District to communicate most effectively with those Valley residents uniquely impacted by the changes to the Rule.

This outreach will complement the more traditional "Check Before You Burn" outreach and both of these messages will promote the District's overarching Healthy Air Living initiative.

Finally, the District plans to expand the successful Burn Cleaner woodstove change-out program. For the past two years the District has partnered with Operation Clean Air (OCA) to provide a woodstove change-out program as an incentive for Valley residents to make the switch to a cleaner burning device. OCA has provided the funds over the past two years, but unfortunately will not be providing funds for the 2009 program.

The District's 2008-09 Budget includes \$100,000 to continue this program in 2009. In 2007, the program offered Valley residents an incentive to upgrade to a cleaner wood burning or gas device. In 2008, the program only offered an upgrade to a gas device. In light of the amendments to Rule 4901, the District proposes a two-tiered program for 2009. Tier one will allow any Valley resident with a wood burning device to upgrade to a gas device. Tier two will allow any Valley resident living in an area where natural gas service is not available to upgrade to a cleaner wood burning device. This two tiered Burn Cleaner program will allow the District to target the dirtiest wood burning devices in the Valley and provide an incentive for replacement.

Both the outreach strategy and the grant concepts are being fully developed and will be brought before your Board for approval along with the Rule 4901.

FISCAL IMPACT:

The implementation of the proposed amendments to Rule 4901 will require some additional compliance assistance work. This additional workload will be handled by existing District staff through continued efforts to improve operating efficiency.

At the October 16, 2008 public hearing to adopt the amendments to Rule 4901, staff will present a plan for providing incentive funding and a comprehensive public outreach campaign for the Burn Cleaner program. A budget transfer to move \$60,000 from the contingency account to finance the expanded outreach campaign will also be presented to your Board for approval on October 16th.

Attachments:

Proposed Amendments to Rule 4901 (8 pages)

Final Draft Staff Report with Appendices for Proposed Amendments to Rule 4901 (76 pages)

(Note: Shown on the following pages are proposed amendments to the adopted Rule 4901 dated July 17, 2003. Modified text is shown in underline for additions and ~~strikeout~~ for deletions.)

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

1.0 Purpose

The purposes of this rule are to limit emissions of carbon monoxide and particulate matter from wood burning fireplaces, ~~and~~ 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.
- 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 ~~3-2~~ Consumer: any person other than a distributor or a retailer who buys a wood burning fireplace, ~~or~~ wood burning heater, or outdoor wood burning device.
- 3.4 ~~3-3~~ Distributor: any person other than a manufacturer or a retailer who sells, offers for sale, or supplies wood burning fireplaces, ~~or~~ wood burning heaters, or outdoor wood burning devices to retailers or others for resale.

- 3.5 3-4 EPA: the United States Environmental Protection Agency.
- 3.6 3-5 EPA Phase II Certified: meets the performance and emissions standards set forth in the Code of Federal Regulations, Part 60, Title 40, Subpart AAA.
- ~~3.6~~ ~~Fireplace: any permanently installed masonry or factory built device designed to be used with an air to fuel ratio greater than or equal to 35 to 1.~~
- 3.7 ~~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 weighted (including the weight of the test fuel) on a platform scale.
- 3.9 3-8 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, 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 solid-fueled heating devices must meet the design and construction specifications set forth in ASTM E 1602-3, "Guide for Construction of Solid Fuel Burning Masonry Heaters."
- 3.11 3-9 New Residential Development: any single or multi family housing unit, for which construction ~~begins~~ began on or after January 1, 2004. Construction ~~has begun~~ began when the foundation for the structure ~~was~~ is constructed.
- 3.12 3-10 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 Outdoor Wood Burning Device: any wood burning fireplace, wood burning stove, or other device designed to burn wood that is located outside of a building or structure. This includes, but is not limited to, burn bowls, fire pits, and chimineas. This does not include fire pits at state parks, national parks, or national forests.

- 3.14 ~~3.11~~ 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.
- 3.15 ~~3.12~~ Paint Solvents: any organic solvents sold or used to thin paints or clean up painting equipment.
- 3.16 ~~3.13~~ Pellet-Fueled Wood Burning Heater: any wood burning heater 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.
- 3.17 Pellet Fuel: includes, but is not limited to, compressed sawdust, paper products, forest residue, wood chips and other waste biomass, ground nut-hulls and fruit pits, corn, and cotton seed.
- 3.18 ~~3.14~~ Permanently Inoperable: modified in such a way that a device can no longer operate as a wood burning heater.
- 3.19 ~~3.15~~ PM: particulate matter. PM2.5 has an aerodynamic diameter equal to or less than 2.5 microns. PM10: ~~any particulate matter having~~ has an aerodynamic diameter equal to or less than 10 microns.
- 3.20 ~~3.16~~ 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.
- 3.21 ~~3.17~~ Retailer: any person engaged in the sale of wood burning fireplaces, or wood burning heaters, or outdoor wood burning devices directly to the consumer.
- 3.22 ~~3.18~~ Seasoned Wood: wood of any species that has been sufficiently dried so as to contain 20 percent or less moisture by weight.
- 3.23 ~~3.19~~ Sole Source: the only source of heat in a residence.
- 3.24 ~~3.20~~ Treated Wood: wood of any species that has been chemically impregnated, painted, or similarly modified to improve resistance to insects or weathering.
- 3.25 ~~3.21~~ Used Wood Burning Heater: any wood burning heater that has been used at least once, except wood heaters that have been used by retailers for the purpose of demonstration.

3.26 ~~3.22~~ 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.

3.27 Wood Burning Fireplace: any permanently installed masonry or factory built device designed to be used with an air-to-fuel ratio greater than or equal to 35-to-1.

3.28 ~~3.23~~ Wood Burning Heater: an enclosed, wood burning appliance capable of and intended for space heating (i.e. wood stove or wood burning fireplace insert).

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.

5.0 Requirements

5.1 Sale of Wood Burning Heaters

5.1.1 No person shall sell, offer for sale, supply, install, or transfer a new wood burning heater unless it is EPA Phase II Certified, or is a pellet-fueled wood burning heater.

5.1.2 No person shall advertise, sell, offer for sale, supply, install, or transfer a used wood burning heater unless it has been rendered permanently inoperable, 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 EPA emission targets and has been approved in writing by the APCO.

5.1.3 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 5.1.3.5. 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.

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

~~Beginning January 1, 2004,~~

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 EPA Phase II Certified, a pellet fueled wood burning heater, permanently rendered 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

~~Beginning January 1, 2004,~~

5.3.1 No person shall install a wood burning fireplace in a new residential development with a density greater than two (2) dwelling units per acre.

5.3.2 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.

- 5.3.3 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.

5.4 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:

- 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 solid fuel burning device.

5.6 Episodic Wood Burning Curtailment

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

- 5.6.1 No person shall operate a wood burning fireplace, ~~or~~ 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 an ~~Air Quality Index (AQI) value~~ the potential for a PM_{2.5} 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 of 150 or greater is predicted for the geographic region (county). ~~AQI is described in 40 CFR Part 58, and is determined daily by the APCO or designee.~~

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

~~5.6.3.1 Those that are 3,000 feet or more above mean sea level.~~

~~5.6.3.1~~ ~~5.6.3.2~~ Those in locations where natural gas service is not available. For the purposes of this rule, propane is not considered natural gas.

~~5.6.3.2~~ ~~5.6.3.3~~ Those that are the sole 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 Curtailment Notice

The APCO shall notify the public of each Episodic 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 µg/m³ or greater or a PM₁₀ concentration of 135 µg/m³ is predicted for the geographic region.

6.0 Administrative Requirements

- 6.1 Upon request of the APCO, the manufacturer shall demonstrate that each wood heater subject to the requirements of Sections 5.1 or 5.2 meets EPA's Phase II certification standards as applicable.
- 6.2 Moisture content of wood shall be determined by ASTM Test Method D 4442-92.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Draft Staff Report: Rule 4901

September 5, 2008

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Draft Staff Report

**Amendments to
Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters)**

Prepared by: Jessica Hafer, Senior Air Quality Specialist

**Reviewed by: Scott Nester, Director of Planning
Errol Villegas, Planning Manager
George Heinen, Supervising Air Quality Engineer**

September 5, 2008

I. SUMMARY

Rule 4901, Wood Burning Fireplaces and Wood Burning Heaters, has significantly reduced particulate matter (PM) concentrations since the rule was last amended in 2003. When the San Joaquin Valley Air Basin (SJVAB, or Valley) reached PM10 (particulate matter 10 microns or less in diameter) attainment ahead of schedule, it was clear that Rule 4901 had been successful in raising awareness and achieving cost effective air quality improvements. Strengthening Rule 4901 is an important step towards meeting the challenges of PM2.5 (particulate matter 2.5 microns or less in diameter) attainment in the Valley. Lowering the threshold for episodic wood burning curtailment to a level consistent with the federal, 2006 PM2.5 standards will result in more wood burning prohibitions, and this in turn will have a significant public health benefit.

The reductions from this rule are necessary to allow expeditious attainment of the federal PM2.5 standard, (CAA Section 172 (c)(1)). The proposed amendments to the rule are considered by staff to be technologically feasible and economically reasonable.

A. Reasons for Rule Development and Implementation

This control measure is a commitment in the *2008 PM2.5 Plan*, which was adopted by the San Joaquin Valley Air Pollution Control District (District) Governing Board on April 30, 2008. This rule amendment will:

- Decrease direct PM2.5 and PM10 emissions from wood burning devices,
- Result in significant public health benefits,

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- Contribute to continued attainment of the National Ambient Air Quality Standards (NAAQS) for PM10, and
- Help the Valley make significant progress towards attainment of the PM2.5 standard as part of the strategy of the *2008 PM2.5 Plan*.

Particulate matter (PM) is any finely divided solid or liquid material (except pure water). PM can include a wide range of chemical compounds, and the type of compound will affect the type and severity of the health impacts from the particles. In the Valley, PM2.5 concentrations tend to be highest in winter months and overnight, due to weather conditions and source activity. For weather conditions, temperature inversions in the atmosphere act as a lid on the Valley and keep pollution near the ground level. The majority of wood burning device use occurs in the evenings and contributes a significant amount of PM2.5 and its precursors. By prohibiting the use of wood burning devices on poor air quality days, Rule 4901 will play a key role in lowering daily average PM2.5 concentrations.

B. Public Health Issues

Health Impacts of Particulate Matter

Wood burning fireplaces and wood burning heaters emit particulates as a result of incomplete combustion. Smaller particles can have larger health impacts. PM2.5 is not filtered out of the body by the nose or upper respiratory system. It can be inhaled and deposited in the alveoli, the gas exchange zone deep in the lungs, and can result in airway inflammation. Once in the alveoli, PM2.5 can be absorbed into the bloodstream or can remain embedded in the lungs for long periods of time without the ability to be exhaled (ALA 2002). PM2.5 may carry toxic and biological materials that can be carried to other parts of the body through the bloodstream.

Numerous studies link PM to a variety of health effects (EPA 2008 and ARB 2004), including:

- Aggravated asthma
- Increased respiratory symptoms (irritation of the airways, coughing, difficulty breathing)
- Decreased lung function in children
- Development of chronic bronchitis
- Irregular heartbeat
- Nonfatal heart attacks
- Increased respiratory and cardiovascular hospitalizations
- Lung cancer
- Premature death in people with heart or lung disease

New studies recently published by the California Air Resources Board show that exposure to fine particulates is more dangerous to human health than previously thought. Children, older adults, and individuals with heart or lung diseases are the most likely to be affected by PM. The health impacts carry economic costs as well. The Hall Study (Hall et al., 2006) estimated that the health impacts due to not attaining the 1997 federal PM_{2.5} standards in the Valley carry an economic cost of about \$3.2 billion per year, nearly \$1,000 per person per year Valley-wide.

Health Impacts of Wood smoke

In addition to the concerns surrounding PM, health concerns can be specific to wood smoke that is emitted from wood burning fireplace and wood burning heater use. Wood smoke contains PM_{2.5}, carbon monoxide, formaldehyde, sulfur dioxide, irritant gases, and known and suspected carcinogens, such as polycyclic aromatic hydrocarbons (PAH). The toxic air pollutants in wood smoke can cause coughs, headaches, and eye and throat irritation. 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; windows and doors cannot keep the particles in wood smoke out of people's homes (EHHI).

Studies show that prolonged inhalation of wood smoke contributes to chronic interstitial lung disease, pulmonary arterial hypertension, and cor pulmonale, which can eventually lead to heart failure, in adults (Sandoval, 1993). Wood smoke has also been linked to detrimental mutagenic and systemic effects such as oxidative stress and coagulation, which can ultimately result in cell damage and possibly lead to cancer (Danielsen et al., 2008; Barregard et al., 2006; Sapkota et al., 2008). Children with the highest exposure to wood smoke had a significant decrease in lung function (Heumann et al., 1991). Studies also found that wood smoke was twelve times more carcinogenic than an equal concentration of cigarette smoke (Lewtas et al., 1991). More information on the studies of wood smoke health effects is available in Appendix A.

II. BACKGROUND

A. Current District Rule 4901

Current Rule 4901, as amended on July 17, 2003, placed restrictions on wood burning devices and fuels in the Valley. These restrictions affected:

- Sale of Wood Burning Heaters: Only EPA Phase II Certified heaters can be advertised and sold, and all retailers must supply public awareness information with each sale of a wood burning heater.
- Sale or Transfer of Real Property: Sale or transfer of any real property containing a wood burning heater must be done with assurance that each wood burning heater on the property is EPA Phase II Certified, a pellet fueled wood burning heater, permanently rendered inoperable, or removed.

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- Installation of new Wood Burning Fireplaces/Heaters in New Residential Developments: Wood burning fireplaces cannot be installed in new developments with more than two dwelling units per acre (only one wood burning fireplace/heater per acre can be installed in developments with density equal to or less than two dwelling units per acre). No more than two EPA Phase II Certified wood burning heaters per acre can be installed in new developments.
- Advertising Requirements for Sale of Wood: “Seasoned wood” must refer to wood with a moisture content of 20% or less by weight.
- Prohibited Fuel Types: The following are not to be burned in a wood burning fireplace/heater: garbage, treated wood, plastic products, rubber products, paints, paint solvents, coal, or any material not intended by a manufacturer for use as fuel in a solid fuel burning device.

The July 2003 amendment to Rule 4901 also required episodic wood burning curtailments whenever an Air Quality Index (AQI) of 150 or greater, currently equivalent to a 24-hour average PM_{2.5} concentration of greater than 65 micrograms per cubic meter (µg/m³), was predicted. During curtailments under Rule 4901 as amended in 2003, a wood burning fireplace or wood burning heater is not to be used unless it is at an elevation of 3,000 feet or more, it is in a location where natural gas service is not available, or it is the sole source of heat in a residence. Since November 2003, the District has declared mandatory curtailments by county and has made notices of curtailments through the news media, recorded telephone messages, fax, email, and the District’s website. Table 1 shows the number of mandatory curtailment days in each county since the 2003-2004 (November – February) wood burning season. District forecasters also declare “Wood Burning Discouraged” days.

Table 1 Number of Mandatory Curtailment Days per County, 2003-2008
(Wood burning seasons are from November through February)

Wood Burning Season	Fresno	Kern	Kings	Madera	Merced	San Joaquin	Stanislaus	Tulare
2003-2004	2	1	0	0	0	0	0	0
2004-2005	2	2	0	0	0	0	0	2
2005-2006	11	16	13	2	2	1	3	9
2006-2007	12	8	2	2	2	1	9	3
2007-2008	6	12	4	3	0	0	1	4

The Central Valley Health Policy Institute of California State University, Fresno evaluated the impact of mandatory wood burning curtailments on PM_{2.5} concentrations.

Through numerous statistical evaluations, researchers concluded that Rule 4901 has been effective in lowering PM_{2.5} concentrations. Their statistical model estimates between 26% to 36% reduction in PM_{2.5} concentrations in the evening (9 pm – 1 am) and between 18% to 28% reduction in 24-hour average PM_{2.5} levels from November 1 to February 28. Researchers also note that the District should strengthen Rule 4901 for the Valley to attain EPA's newest PM_{2.5} NAAQS, which lowered the allowable 24-hour average PM_{2.5} concentration from 65 µg/m³ to 35 µg/m³.

B. Compliance

The District enforces Rule 4901 wood burning prohibitions through inspector surveillance and by responding to citizen complaints made via the District's 1-800 number. Notices of violations (NOVs) are issued to those who are found to be in violation of a wood burning prohibition. Valley-wide, 87 NOVs were issued for Rule 4901 during the 2007-2008 wood burning season, and 203 NOVs were issued for Rule 4901 during the 2006-2007 wood burning season. For first offenses, the fine is \$50, but the fine can be waived with "Compliance School" attendance. Subsequent violations result in increased penalties.

C. Burn Cleaner Fireplace and Woodstove Change-out

The District has partnered with Operation Clean Air to offer financial incentives for residents to replace wood-burning fireplaces, stoves, and inserts with new, cleaner gas devices. Interested parties applied to the District, and eligible applicants were issued a voucher for a discount on the purchase and installation of a new device. The program required old units to be removed and destroyed. In 2008, the voucher program ran Feb. 1 through April 30 and vouchers gave a discount of \$350 toward the purchase of a gas-fueled device. About 600 units were replaced at a total cost of \$168,000. The program was funded through a grant EPA awarded to Operation Clean Air.

D. Wood Burning Rules in other California Air Districts

Since the District amended Rule 4901 in 2003, other air districts in California have also adopted or strengthened rules to limit the sale, installation, and use of wood burning devices:

- Yolo-Solano Air Quality Management District adopted Rule 2.4 on December 8, 2004. While it does not include mandatory wood burning curtailments, it limits the sale of wood burning heaters to certified or approved devices and limits the materials that can be used as fuel in wood burning devices, effective in December 2004.
- Sacramento Metropolitan Air Quality Management District adopted Rules 417 and 421 on October 26, 2006 and October 25, 2007, respectively. Under Rule 421, mandatory curtailment is declared when the 24-hour average PM_{2.5} level is

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forecast to be at or above 35 $\mu\text{g}/\text{m}^3$, starting in 2007. Rule 417 limits the sale and installation of wood burning heaters to certified or approved devices and limits the materials that can be used as fuel in wood burning devices.

- South Coast Air Quality Management District adopted Rule 445 on March 7, 2008. Mandatory curtailment is declared when the 24-hour average PM2.5 level is forecast to be at or above 35 $\mu\text{g}/\text{m}^3$, starting in 2011. The rule also limits the sale and installation of wood burning heaters to certified or approved devices and limits the materials that can be used as fuel in wood burning devices. No wood burning devices may be installed in any new development.
- Bay Area Air Quality Management District adopted Regulation 6, Rule 3 on July 9, 2008. Mandatory curtailment is declared when the 24-hour average PM2.5 level is forecast to be at or above 35 $\mu\text{g}/\text{m}^3$, starting in 2008. The rule limits the sale and installation of wood burning heaters to certified or approved devices and limits the materials that can be used as fuel in wood burning devices.

III. RULE DEVELOPMENT PROCESS

The District held nine evening workshops on Rule 4901, with at least one workshop in every county in the San Joaquin Valley, to allow as much opportunity for public involvement as possible. The first workshop was held on August 4, 2008, and the last workshop was held on August 21, 2008. During these workshops, District staff presented the proposed amendments to the public and allowed time for public questions and comments. In total, approximately 115 people attended the workshops. Written comments were accepted until August 28, 2008. Comments received during workshops and during the written comment period are summarized with District responses in Appendix D of this Draft Staff Report. A 30-day public comment is being held on the revised rule from September 5 – October 6, 2008.

The notice of the public hearing for the proposed rule amendments was published in a general circulation newspaper in each of the eight San Joaquin Valley counties. The public notice was also mailed to affected sources and interested parties. The notice of public hearing solicits written comments, and identifies the name and telephone number of District staff who can answer questions and respond to comments.

IV. THE DISTRICT'S DRAFT RULE 4901 AMENDMENTS

The District's Draft Rule 4901 includes the following proposed amendments:

- The mandatory curtailment level would be lowered to a 24-hour average PM2.5 level of 30 $\mu\text{g}/\text{m}^3$.
- The rule would be clarified to include Outdoor Wood Burning Devices, such as chimineas, in mandatory curtailments.

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- The elevation exemption would be removed so that residences above 3,000 feet will be subject to mandatory curtailments unless they qualify for another exemption, such as the exemption for those who do not have natural gas service.
- The rule would contain a contingency measure to lower the mandatory curtailment level to a 24-hour average PM2.5 level of 20 $\mu\text{g}/\text{m}^3$. This provision would be effective 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 PM2.5 National Ambient Air Quality Standards by the applicable deadline.

These amendments are explained in greater detail in the discussion below.

A. Lowering the mandatory curtailment level

Current Rule 4901 set the mandatory curtailment level at 150 AQI, which is currently equivalent to a 24-hour average PM2.5 concentration of 65 $\mu\text{g}/\text{m}^3$. EPA's 1997 24-hour average PM2.5 standard was also 65 $\mu\text{g}/\text{m}^3$, but in 2006, EPA lowered the 24-hour average PM2.5 standard to 35 $\mu\text{g}/\text{m}^3$ to be more health protective than the 1997 standard. Lowering the mandatory curtailment level is necessary for the Valley to progress towards attainment of the PM2.5 standards. Setting the mandatory curtailment level at a 24-hour average PM2.5 level of 30 $\mu\text{g}/\text{m}^3$, rather than 35 $\mu\text{g}/\text{m}^3$, provides a margin of safety to allow for the uncertainties involved in air quality forecasting. Also, during stagnation events, particulates can accumulate over several days. Wood burning prohibitions issued during a stagnation event can help limit the build up of particulates that can lead to unhealthy air quality. For example, prohibiting wood burning when the 24-hour average PM2.5 concentration is greater than or equal to 30 $\mu\text{g}/\text{m}^3$ can help the Valley avoid air quality that exceeds the 35 $\mu\text{g}/\text{m}^3$ PM2.5 standard.

The proposed amendments to Rule 4901 are linked to PM2.5 concentration instead of AQI because AQI levels change according to EPA guidelines. The current AQI equivalent for 30 $\mu\text{g}/\text{m}^3$ is 80, but EPA is expected to revise the PM2.5 AQI scale. Using concentration levels rather than AQI avoids any conflicts between the current and revised AQI scales.

However, linking wood burning prohibitions to AQI accounts for both PM2.5 and PM10 concentrations. Linking wood burning prohibitions to just PM2.5 concentrations could miss situations in which PM10 concentrations are high but PM2.5 concentrations are not. While this is rare, it could occur during a wind blown dust event. To ensure that Rule 4901 is not weakened for PM10, the rule indicates that wood burning will also be prohibited when PM10 concentrations are forecast to be at or above 135 $\mu\text{g}/\text{m}^3$. This is slightly lower than current Rule 4901 to provide a margin of safety to allow for the uncertainties involved in air quality forecasting. The federal, 24-hour PM10 standard is 150 $\mu\text{g}/\text{m}^3$.

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Lowering the mandatory curtailment level will result in more wood burning prohibition days each year. To estimate the impact this could potentially have on Valley residents, the table below shows a predicted the number of wood burning prohibitions in each county. These numbers are for a wood burning season of about 120 days, from November 1 through the end of February. These estimates are based on the air quality that the San Joaquin Valley experienced during the 2006-2007 wood burning season. These numbers are not quotas; the actual number of No Burn days will depend on the air quality the Valley actually experiences.

The District would also modify the "Check Before You Burn" messages to communicate that, beginning this winter, there will be just two wood-burning designations: "Burning is Discouraged" and "Burning is Prohibited." This reflects the District's position that wood smoke can impact respiratory health in neighborhood "pockets" even when the regional air quality is relatively good.

**Table 2 Number of Wood Burning Prohibitions per County
(Number of days)**

County	Rule 4901 as amended in 2003: 150 AQI (24-hour PM2.5 concentration of 65 $\mu\text{g}/\text{m}^3$) (Actual prohibitions in 2006-2007 based on air quality forecasts)	Draft 2008 Amendments to Rule 4901: 24-hour PM2.5 concentration of 30 $\mu\text{g}/\text{m}^3$ (Expected prohibitions, based on 2006-2007 air quality forecasts)
Fresno	12	48
Kern	8	43
Kings	2	13
Madera	2	12
Merced	2	12
San Joaquin	1	9
Stanislaus	9	12
Tulare	3	11

B. Outdoor Wood Burning Devices

The rule will be clarified to include Outdoor Wood Burning Devices, such as chimineas and outdoor fireplaces, in mandatory curtailments. These devices were not discussed in the current version of the rule. When air quality warrants a wood burning prohibition, residents would be asked to refrain from all wood burning, inside or outside, unless they qualify for an exemption, such as the exemption for those who do not have natural gas service. Furthermore, outdoor fireplaces and chimineas are almost exclusively aesthetic combustion and do not provide residential heat for human comfort and protection of property.

C. Elevation Exemption

The 3,000 foot elevation exemption will be removed so that residences at all elevations would be subject to mandatory curtailments unless they qualify for another exemption, such as the exemption for those who do not have natural gas service. Since most areas at elevations above 3,000 feet do not have natural gas service, removing the elevation exemption will not affect many residents. Members of the public have commented that air quality has worsened in the Valley's foothill areas when residents in communities with relatively high population densities use their fireplaces (Hearing for the *2008 PM2.5 Plan*, April 30, 2008). The District plans to increase air quality monitoring in some of these areas over the next couple of years to better assess how fireplace use affects air quality at higher elevations.

D. Contingency Measure

Proposed Rule 4901 contains a contingency provision to lower the mandatory curtailment level to a 24-hour average PM2.5 level of 20 $\mu\text{g}/\text{m}^3$. This provision would be effective if the San Joaquin Valley Air Basin fails to attain the 1997 PM2.5 standards by April 2015. This component of Draft Rule 4901 was mandated by ARB upon their approval of the *2008 PM2.5 Plan* on May 22, 2008. The contingency measure would be implemented 60 days after the effective date of EPA's published finding of nonattainment for PM2.5.

Because the Valley's air is expected to be significantly cleaner by 2015, it would be speculative to estimate the number of "No Burn" days this would result in. If, as expected, the Valley reaches the PM2.5 standard by the deadline, then this contingency measure would not be used, and the "No Burn" action level would stay at 30 $\mu\text{g}/\text{m}^3$ of PM2.5.

V. EMISSIONS REDUCTION ESTIMATE

District staff has estimated the potential emissions reduction to be achieved from implementing the amendments to Rule 4901. Please refer to Appendix B of this staff report for the analysis and detail on the emissions reduction estimate.

VI. ECONOMIC ANALYSIS

The District's independent contractor compiled the draft socioeconomic analysis report, which can be found in Appendix C of this Draft Staff Report. Proposed Rule 4901 does not apply to sources identified for the District's ozone strategy and, therefore, is not subject to the California Clean Air requirement for cost effectiveness analysis.

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VII. ENVIRONMENTAL IMPACTS

Pursuant to the California Environmental Quality Act (CEQA), District staff conducted an Initial Study to identify any potential environment impacts. District staff concluded that there are no adverse environmental impacts, so a Notice of Exemption will be filed.

VIII. RULE CONSISTENCY ANALYSIS

Before adopting, amending, or repealing a rule or regulation, an air district must identify and evaluate any existing federal rules or rules within that air district that apply to the same source category (California Health and Safety Code Section 40727.2). Adoption of Rule 4901 would not conflict with any existing federal or District requirements.

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APPENDIX A

Summary of Health Impacts from Wood Smoke

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Numerous scientific studies report potentially serious adverse health effects from breathing smoke emitted by residential wood combustion. Smoke contains fine particles, which can affect both the lungs and the heart. Epidemiological studies have shown an increased risk of pulmonary disease and other concerns. With regard to adults, studies show that prolonged inhalation of wood smoke contributed to chronic interstitial lung disease, pulmonary arterial hypertension and cor pulmonale.

In addition, wood smoke has been linked to detrimental mutagenic and systemic effects such as oxidative stress and coagulation. These effects can ultimately result in cell damage and possibly lead to cancer. For example, mutagenicity testing of air containing smoke emitted from wood heaters found that wood smoke was twelve times more carcinogenic than an equal concentration of cigarette smoke. Exposure to wood smoke can affect inflammation, coagulation, and lipid peroxidation resulting in DNA and cellular damage.

Worsened respiratory functions have been correlated to inhalation of wood smoke as well. This occurs especially in children and sensitive groups. Moderate to severe respiratory symptoms have been found to be notably greater in those children in homes where wood burning was prevalent. Significant correlation was found between woodstove use and frequency of wheeze, severity of wheeze, frequency of cough and waking up at night with cough in children. Children with the highest exposure to wood smoke had a significant decrease in lung function. In addition, scientific studies have shown that wood smoke can cause an increased incidence of inflammatory responses, such as bronchitis, and decreased lung function.

The health effects from wood smoke are summarized in the following tables with references to relevant studies. The tables are followed by a health glossary summarizing the medical terms used in the tables and in this discussion.

Health Effects of Wood Smoke

Increased Risk of Pulmonary Issues such as arterial hypertension, cor pulmonale, COPD

Author	Journal	Factoid
Sandoval, J. 1993	Chest	With regard to adults, studies show that prolonged inhalation of wood smoke contributed to chronic interstitial lung disease, pulmonary arterial hypertension and cor pulmonale.
Dennis, R.J. et al. 1996	Chest	Among elderly women of low socioeconomic status, wood smoke exposure was associated with the development of Obstructive Airways Disease.
Montaño, M. et al. 2004	Chest	Wood smoke increases matrix metalloproteinases activity and expression that might produce lung damage similar to that observed in COPD associated with tobacco smoke.

Detrimental Mutagenic and Systemic Effects such as Oxidative Stress, Coagulation, Lipid Peroxidation

Author	Journal	Factoid
Lewtas et al. 1991	Air and Waste Management Association	Mutagenicity testing of air containing smoke emitted from woodheaters found that wood smoke was 12 times more carcinogenic than an equal concentration of cigarette smoke.
Danielsen, P.H. et al. 2008	Mutation Research	Particulate matter from wood smoke was found to cause health effects through generation of systemic effects and oxidative stress with resulting cellular damage.
Barregard, L. et al. 2006	Inhalation Toxicology	Exposure to wood smoke seems to affect inflammation, coagulation, and lipid peroxidation resulting in DNA and cellular damage.
Barregard, L. et al. 2008	Journal of Occupat. & Environ. Medicine	Wood smoke caused an inflammatory response and signs of increased oxidative stress in the respiratory tract, especially in the lower airways.
Sapkota, A. et al. 2008	International Journal of Epidemiology	Increasing level of smokiness from wood burning inside the home was associated with an increasing risk of hypopharyngeal and lung cancer.

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Worsened Respiratory Functions such as Asthma, Wheezing, Coughing, Phlegm Production, etc.

Author	Journal	Factoid
Morten A. et al. 2004	Exposure Anal. and Environ. Epidem.	The prevalence of all the symptoms of asthma was higher in children from households that used open fires compared to improved stoves with chimneys.
Lipsett et al. 1991	Air Waste Management Association	Presence of woodstove or fireplace in the home was associated with shortness of breath in females and both shortness of breath and moderate or severe cough in males.
Honicky, R.E. et al. 1985	Pediatrics	Moderate to severe respiratory symptoms, such as wheezing and cough at night, were notably greater in those children in homes where wood stove use was prevalent.
Steenenberg, P.A. 2006	Inhalation Toxicology	Exposure to wood smoke lead to an increase in response to the respiratory allergy model and health effect markers for pulmonary irritation and acute toxicity.
Butterfield, et al. 1989	Journal of Environmental Health	Significant correlation was found between woodstove use and frequency of wheeze, severity of wheeze, frequency of cough and waking up at night with cough in children.
Morris et al. 1990	American Journal of Diseases of Children	The use of a wood burning stove was associated with a 4 times higher risk of lower respiratory tract infection.

Increased Inflammatory Response like Bronchitis

Author	Journal	Factoid
Rajpandey, M. 1984	Thorax	Prolonged exposure to wood smoke lead to chronic bronchitis in adults.
Lal et al. 1993	Indian J. of Exper. Biology	Rats exposed to wood smoke suffered bronchiolitis, hyperplasia and hypertrophy, congestion, oedema, and mild emphysema.
Pérez-Padilla, J.R. et al. 1999	Gaceta Medica de Mexico	Women exposed to wood smoke had a five-fold risk of chronic bronchitis and chronic airflow obstruction, as compared to the non-exposed.

Enhanced Allergic Sensitization and Decreased Lung Function

Author	Journal	Factoid
Allsten, G.S. et al. 2006	Inhalation Toxicology	A mild increase in eye irritation and a slight increase in nose symptoms with exposure to wood smoke.
Heumann et al. 1991	Air & Waste Management Assoc.	Children with the highest exposure to wood smoke had a significant decrease in lung function.
Tesfaigzi Y. et al. 2002	Journal of Toxicology Science	Pulmonary function was affected in a high-exposure to wood burning group. Mild chronic inflammation and squamous metaplasia were observed in the larynx of all of the exposed groups.

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Medical Terms Glossary

Acute Toxicity: Illness resulting from a single dose or exposure to a toxic substance, such as wood smoke and its components. (Cancer Web)

Asthma: A chronic disease that can cause your airways to become sore and swollen. When your airways are irritated, they get narrower and your lungs get less air, causing wheezing, coughing, chest tightness, and trouble breathing. (MedLine Plus)

Bronchiolitis: An infection of the tiny airways, called the bronchioles, which lead to the lungs. As these airways become inflamed, they swell and fill with mucus, making breathing difficult. (Mayo Clinic)

Chronic Bronchitis: A condition where the inner walls that line the main air passageways of your lungs become chronically infected and inflamed. Smoking and exposure to smoke are also risk factors for bronchitis. (Mayo Clinic)

Chronic Interstitial Lung Disease: Numerous conditions make up the group of disorders called interstitial lung disease. Most cause progressive scarring of lung tissue that eventually affects your ability to breathe and get enough oxygen into your bloodstream, but beyond this, the disorders vary greatly. (Mayo Clinic)

Chronic Obstructive Pulmonary Disease, COPD: (aka chronic obstructive airways disease) A group of chronic lung conditions that block the tubes and air sacs that make up your lungs, hindering your ability to exhale. This results in air getting trapped in your lungs and makes it difficult for you to breathe in normally. (Mayo Clinic)

Coagulation: The process of clot formation. (Cancer Web)

Congestion: A condition when the tissues lining the nose become swollen due to inflamed blood vessels. (MedLine Plus)

Cor Pulmonale: The failure of the right side of the heart caused by prolonged high blood pressure in the pulmonary artery and right ventricle of the heart. (MedLine Plus)

DNA Damage: Incidences that introduce deviations from its DNA's normal double-helical conformation. If the damage is minor, it can often be repaired but if damage is extensive, it can induce cell death. (Cancer Web)

Emphysema: A progressive lung disease that results in shortness of breath and reduces your capacity for physical activity due to damage to the small air sacs and small airways in your lungs. (Mayo Clinic)

Hyperplasia: The abnormal multiplication or increase in the number of normal cells in normal arrangement in a tissue which can cause enlargement of organs and other effects. (Cancer Web)

Hypertrophy: The enlargement or overgrowth of an organ or part due to an increase in size of its constituent cells from hyperplasia. (Cancer Web)

Hypopharyngeal Cancer: A disease in which malignant (cancerous) cells form in the tissues of the hypopharynx, the bottom part of the throat. (MedLine Plus)

Inflammation: A localized protective response which serves to destroy, dilute, or sequester both the injurious agent and the injured tissue. It is characterized in the acute form by the classical signs of pain, heat, redness, swelling and loss of function. (Cancer Web)

Lipid Peroxidation: Oxidative degradation of lipids which causes damage to cell membranes causing them to possibly be mutagenic or carcinogenic. (Cancer Web)

Lung Cancer: A cancerous cell growth in the lung tissue. (Cancer Web)

Oedema: The presence of abnormally large amounts of fluid in the intercellular tissue spaces of the body. Oedema is a sign of venous or lymphatic obstruction, increased vascular permeability, heart failure or renal disease. (Cancer Web)

Oxidative Stress: A highly oxidized environment within cells that is thought to promote HIV replication because cells are forced into a highly activated state due to loss of control of their regulatory systems. (Cancer Web)

Pulmonary Arterial Hypertension: High blood pressure affecting the arteries in the lungs and the right side of your heart. (Mayo Clinic)

Respiratory Tract Infection: Respiratory tract infections affect the nose, throat, and airways causing congestion, coughing, sneezing, facial pressure, running nose and sore throat. (MedLine Plus)

Squamous Metaplasia: Refers to benign (non-cancerous) transformations in the epithelial linings of airways. (Cancer Web)

Glossary references:

The Mayo Clinic
(<http://www.mayoclinic.com/>)

The National Institutes of Health MedLine Plus (<http://www.nlm.nih.gov/medlineplus/>)

The Centre for Cancer Education at the University of Newcastle's Online Medical Dictionary: CancerWeb
(<http://cancerweb.ncl.ac.uk/cgi-bin/omd?query=&action=Home>)

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Draft Staff Report: Rule 4901

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APPENDIX B

Emission Reduction Analysis

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Draft Staff Report: Rule 4901

September 5, 2008

The 2008 *PM2.5 Plan* contained an emissions inventory for Residential Wood Burning, based on the ARB emissions inventory (CEFS v1.06). Tabulating the 2010 emissions by county, the PM2.5 emissions are summarized in Table B-1 as a total of 17.4 tons per day (tpd) for an average winter (October through March) day. District staff has assumed that 2.6% of Valley residents are exempt from the rule. Table B-2 shows the remaining 16.9 tons/day emissions from residents who are subject to the Rule 4901.

Table B-1 2010 direct PM2.5
(tons per day, or tpd)

County	PM2.5
Fresno	4.5
Kern (Valley portion)	3.0
Kings	0.4
Madera	1.4
Merced	1.1
San Joaquin	2.8
Stanislaus	2.5
Tulare	1.8
TOTAL	17.4

Table B-2 Direct PM2.5 Emissions from Valley Residents Subject to Rule 4901
(tons per day, or tpd)

County	PM2.5
Fresno	4.3
Kern (Valley portion)	2.9
Kings	0.4
Madera	1.3
Merced	1.0
San Joaquin	2.7
Stanislaus	2.4
Tulare	1.7
TOTAL	16.9

Table B-3 shows the number of expected "No Burn" days by county (over a 182-day emissions inventory period), based on 2006-2007 air quality.

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Draft Staff Report: Rule 4901

September 5, 2008

Table B-3 Number of “No Burn” Days Expected per County

County	“No Burn” days
Fresno	48
Kern (Valley portion)	43
Kings	13
Madera	12
Merced	12
San Joaquin	9
Stanislaus	12
Tulare	11

On “No Burn” days, there should be zero tons of emissions from those subject to the rule. In other words, there is a 97% reduction in emissions in a particular county when there is a “No Burn” night for that county. Table B-4 shows the emissions that are being eliminated by the rule.

Table B-4 PM2.5 emissions that are being eliminated due to “No Burn” days

Column 1	Column 2	Column 3	Column 4
County	“No Burn” days, Number of days (Table B-3)	Direct PM2.5 emissions subject to the Rule, tons/day (Table B-2)	PM2.5 emissions prevented, tons (Column 2 x Column 3)
Fresno	48	4.3	206.4
Kern (Valley portion)	43	2.9	124.7
Kings	13	0.4	5.2
Madera	12	1.3	15.6
Merced	12	1.0	12
San Joaquin	9	2.7	24.3
Stanislaus	12	2.4	28.8
Tulare	11	1.7	18.7
Total tons of direct PM2.5 prevented in 2010			435.7 tons

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

Draft Staff Report: Rule 4901

September 5, 2008

The total tons reduced by Rule 4901 can be converted into tons per day of PM_{2.5} reduced for an average winter day. To start, the total PM_{2.5} residential wood burning emissions over the entire winter (October – March) emissions inventory season is the average tons per day (17.4 tons per day) multiplied by the total number of days in the season (182 days):

$$17.4 \text{ tons per day} \times 182 \text{ days} = 3166.8 \text{ tons}$$

The total emissions prevented by wood burning prohibitions over an entire wood burning season is shown in Table B-4 to be 435.7 tons. The remaining emissions are:

$$3166.8 \text{ tons} - 435.7 \text{ tons} = 2731.1 \text{ tons}$$

These remaining emissions are converted into an average tons per day by dividing the total tons emitted by the total number of days:

$$2731.1 \text{ tons} \div 182 \text{ days} = 15.0 \text{ tons per day}$$

This is subtracted from the starting emissions inventory (17.4 tons per day) to determine the tons per day reduced:

$$17.4 \text{ tons per day} - 15.0 \text{ tons per day} = 2.4 \text{ tons per day reduced}$$

For residential wood burning, which occurs during the winter months, a winter emissions inventory reduction of 2.4 tpd is equivalent to an annual average emissions inventory reduction of 1.2 tpd. It is important to note that this is an average reduction. A Valley-wide No Burn Day would remove 16.9 tons of PM_{2.5} (17.4 tpd x 97%).

The *2008 PM_{2.5} Plan* projected that Rule 4901 would achieve 0.76 tpd reductions in the winter and 0.39 tpd of reductions as an annual average in 2010. The emissions reductions calculated in this staff report are higher than those projected in the *2008 PM_{2.5} Plan* for two reasons. First, the calculation here assumes that the rule will be fully implemented by 2010, whereas the *2008 PM_{2.5} Plan* assumed full implementation by 2011. Second, the emissions reductions calculated for the *2008 PM_{2.5} Plan* were based on a Wood Burning Prohibition level of 35 µg/m³ of PM_{2.5}, whereas the draft amended Rule 4901 is based on a Wood Burning Prohibition level of 30 µg/m³. The added reductions that will be achieved by the proposed amendments to Rule 4901 will potentially help the Valley achieve the PM_{2.5} standards ahead of schedule.

APPENDIX C

Socioeconomic Analysis

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**SOCIOECONOMIC
ANALYSIS
PROPOSED AMENDMENTS**

**RULE 4901 (WOOD BURNING FIREPLACES AND
WOOD BURNING HEATERS)**

DRAFT

August 26, 2008

Prepared for

San Joaquin Valley Unified Air Pollution Control District

Prepared by

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1. DESCRIPTION OF THE PROPOSED AMENDMENTS

Rule 4901 (Wood Burning Fireplaces and Wood Heaters) limits the amount of emissions released during the burning of wood in fireplaces, stoves, and pellet-fueled heaters, all generally called “wood burning devices.” Currently Rule 4901, as amended in 2003, restricts wood burning devices and fuels in the Valley in the following ways:

Sale of Wood Burning heaters: Only EPA Phase II Certified heaters can be advertised and sold, and all retailers must supply public awareness information with each sale of a wood burning heater

Sale or Transfer of Real Property: Sale or transfer of any real property containing a wood burning heater must be done with assurance that each wood burning heater on the property is EPA Phase II Certified, a pellet fueled wood burning heater, permanently rendered inoperable, or removed.

Installation of new Wood Burning Fireplaces/Heaters in New Residential Developments: Wood burning fireplaces cannot be installed in new developments with more than two dwelling units per acre (only one wood burning fireplace/heater per acre can be installed in developments with density equal to or less than two dwelling units per acre). No more than two EPA Phase II Certified wood burning heaters per acre can be installed in new developments.

Advertising Requirements for Sale of Wood: “Seasoned wood” must refer to wood with a moisture content of 20 percent or less by weight.

Prohibited Fuel Types: The following are not to be burned in a wood burning fireplace/heater: garbage, treated wood, plastic products, rubber products, paints, paint solvents, coal, or any material not intended by a manufacturer for use as fuel in a solid fuel burning device.

The District seeks to strengthen Rule 4901 as an important step toward meeting the challenges of PM_{2.5} (particulate matter 2.5 microns or less in diameter) attainment in the Valley. Lowering the threshold for episodic wood burning curtailment to a level consistent with the federal, 2006 PM_{2.5} standards will result in more wood burning prohibitions, and this in turn will have a significant public health benefit. The District seeks to amend Rule 4901 in the following ways:

The mandatory curtailment level will be lowered to a 24-hour average PM_{2.5} level of 30 µg/m³.

The rule will be clarified to include Outdoor Wood Burning Devices, such as chimneys, in mandatory curtailments.

The elevation exemption will be removed so that residences above 3,000 feet will be subject to mandatory curtailments unless they qualify for another exemption, such as the exemption for those who do not have natural gas service.

The rule will contain a contingency measure to lower the mandatory curtailment level to a 24-hour average PM_{2.5} level of 20 µg/m³. This provision would be effective 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 PM2.5 National Ambient Air Quality Standards by the applicable deadline.

2. IMPACT OF PROPOSED RULE AMENDMENTS

This section of the socioeconomic analysis describes demographic and economic trends in the San Joaquin Valley region. Following an overview of the methodology for the socioeconomic analysis, the first part of this section compares the Central Valley against California and provides a context for understanding demographic and economic changes that have occurred within the region between 1997 and 2007. After an overview of industries in the region, we focus on households and industries impacted by the proposed amendments to Rule 4901.

METHODOLOGY

The socioeconomic analysis of the proposed wood-burning devices rule involves the use of information provided directly by the District, as well as secondary data used to describe the industries affected by the proposed rule amendments. In addition, the report supplemented District data on wood burning patterns with data from the Bay Area Air Quality Management District (BAAQMD), which recently amended its own wood burning rule for the San Francisco Bay Area region.

Based on information provided by District staff, ADE determined that the impacts would affect households and businesses in a narrow set of industries. With this information we began to prepare economic descriptions of impacted industry groups, as well as to analyze data on the number of jobs, sales levels, the typical profit ratios, and other economic indicators for the San Joaquin Valley region businesses. In addition, we collected demographic information of typical households living in various housing settings, from owner-occupied single-family homes to renters living in multifamily units.

With the annual reports and data from the US Economic Census and other sources such as US IRS, ADE was able to estimate revenues and profit ratios for many of the sites impacted by the proposed rule amendments. In calculating aggregate revenues generated by San Joaquin Valley businesses in affected industries, ADE first estimated annual revenue based upon available data. Using annual reports and publicly available data, ADE calculated ratios of profit per dollar of sales for the businesses on which the analysis focused. ADE also utilized data from California's Board of Equalization. ADE also adjusted impacted retailers' Board of Equalization data to account for non-taxable transactions.

The result of the socioeconomic analysis shows what proportion of profit the compliance costs represent. Based on a given threshold of significance, ADE discusses in the report whether the affected sites are likely to reduce jobs as a means of recouping the cost of compliance or as a result of reducing business operations. ADE also examines whether affected industries can pass costs to consumers. To the extent that such job losses appear likely, the indirect multiplier effects of the job losses area estimated using a regional IMPLAN input-output model.

REGIONAL DEMOGRAPHIC TRENDS

The San Joaquin Valley Region experienced significant growth from 1997 to 2007. Between 1997 and 2002, the eight county region increased by 1.8 percent annually, from 3.1 million in 1997 to almost 3.5 million in 2002. From 2002 to 2007, the population grew to 3.9 million for an annual increase of approximately 2.5 percent. Over the same period, California grew at a slower rate of 1.4 percent per year. Kern County, Madera, Merced, and San Joaquin Counties grew at rates faster than the regional average between 2002-2007.

TABLE 1
POPULATION TRENDS: SAN JOAQUIN VALLEY REGION AND CALIFORNIA, 1997-2007

	Year			Change		- Annual % Change -	
	1997	2002	2007	97-02	02-07	97-02	02-07
California	32,670,019	35,088,671	37,662,518	2,418,652	2,573,847	1.4%	1.4%
Region	3,147,776	3,445,018	3,900,965	297,242	455,947	1.8%	2.5%
Fresno	774,208	827,310	917,515	53,102	90,205	1.3%	2.1%
Kern	629,227	688,875	801,648	59,648	112,773	1.8%	3.1%
Kings	116,727	133,553	151,381	16,826	17,828	2.7%	2.5%
Madera	111,892	130,373	148,721	18,481	18,348	3.1%	2.7%
Merced	200,169	219,554	251,510	19,385	31,956	1.9%	2.8%
San Joaquin	537,669	596,907	679,687	59,238	82,780	2.1%	2.6%
Stanislaus	421,946	469,969	521,497	48,023	51,528	2.2%	2.1%
Tulare	355,938	378,477	429,006	22,539	50,529	1.2%	2.5%

Source: ADE, Inc., based on California Department of Finance

REGIONAL ECONOMIC TRENDS

Economic development practitioners and planners have traditionally divided economies into two broad industrial categories—the economic base and local support industries. Economic base industries are the drivers of local and regional economies in that these industries draw income into a local economy by selling products outside of the local economy, much like the export industries of a national economy. Accrued earnings then circulate throughout the local area in the form of wages and salaries; investments; purchases of fixed assets, goods, and services; and generation of more jobs and wealth.

The economic base is typically comprised of industries within the manufacturing, minerals-resource extraction, and agricultural sectors. There are also the “local support industries” such as retail or service sectors, the progress of which is a function of the economic base and demographic changes, and more so the latter than the former. As population increases in a given area, demand for services—such as realtors, teachers, and healthcare—increases, as does demand for basic retail items like groceries, gas for commuting, or clothing at the local apparel shops.

Agriculture is the economic base of the San Joaquin Valley region by virtue of the amount of goods this sector produces and exports throughout the nation and the globe. Twelve percent of all workers in the region are employed by industries within agriculture, as Table 2 shows. However, in 1997 slightly almost 16 percent of all workers worked in agriculture. By 2002, this ratio stood at 13 percent. In fact, over the five-year period between 2002 and 2007, employment in agriculture barely increased, growing by 0.2 percent per year.

Between 2002 and 2007, local support industries gained in prominence within the San Joaquin Valley region. Service-rendering industries employed the most workers as a proportion of total employment in the region. As Table 2 shows, service-rendering industries comprise 62 percent of all jobs, including public sector positions. In other words, 955,079 jobs out of a total of 1,530,284 jobs are in service-rendering industries. Excluding the public sector, service-rendering jobs account for 45 percent of all jobs in 2007. In 2002, service-rendering industries (excluding the public sector) represented 44 percent of all jobs, indicating that the transition toward a services economy was in place as early as the mid to late 1990s with the significant increase in the number of people during that time.

Increases in employment in service-rendering industries are consistent with regional population growth. In the region, local support industries of construction, education and health, and financial activities increased annually by 3.9 percent, 3.2 percent, and 1.5 percent respectively between 2002 and 2007.

Close examination of Table 2 shows that the region experienced respectable growth in manufacturing, as employment in this sector grew annually by 1.2 percent between 2002 and 2007. In comparison, manufacturing jobs declined annually by 0.7 percent between 1997 and 2002. Another regional bright spot was transportation \utilities, as jobs increased by a healthy clip of 3.2 percent per year between 2002 and 2007.

**TABLE 2
EMPLOYMENT PROFILE OF THE SAN JOAQUIN VALLEY REGION, 1997-2007**

Industry	1997	2002	2007	% of Total Private & Public Employment in 2007: Region	% of Total Private & Public Employment in 2007: California	Annual Percent Chg, 97-02	Annual Percent Chg, 02-07
Total, all private industries	1,121,188	1,159,334	1,273,164			0.7%	1.9%
Goods-Producing	581,277	540,028	575,205			-1.5%	1.3%
Agriculture	207,186	181,777	183,335	12.0%	2.0%	-2.6%	0.2%
Natural Resources and Mining	217,333	184,435	197,798	12.9%	2.6%	-3.2%	1.4%
Construction	43,999	64,992	78,704	5.1%	5.7%	8.1%	3.9%
Manufacturing	112,759	108,824	115,368	7.5%	9.3%	-0.7%	1.2%
Service-Providing	539,911	619,306	697,959			2.8%	2.4%
Trade, Transportation, and Utilities	189,894	209,335	237,788			2.0%	2.6%
Retail	116,765	131,458	145,700	9.5%	10.8%	2.4%	2.1%
Wholesale	33,993	37,443	44,832	2.9%	4.6%	2.0%	3.7%
Transport\Warehouse\Utilities	39,136	40,434	47,256	3.1%	3.1%	0.7%	3.2%
Information	14,485	14,682	15,225	1.0%	3.0%	0.3%	0.7%
Financial Activities	40,287	45,345	48,778	3.2%	5.8%	2.4%	1.5%
Professional and Business Services	81,314	98,203	108,007	7.1%	14.4%	3.8%	1.9%
Education and Health Services	96,624	115,521	135,197	8.8%	10.4%	3.6%	3.2%
Leisure and Hospitality	79,462	89,736	101,415	6.6%	9.9%	2.5%	2.5%
Other Services	37,845	46,484	51,549	3.4%	4.9%	4.2%	2.1%
Federal Government	26,013	29,186	27,784	1.8%	1.6%	2.3%	-1.0%
State Government	23,886	29,000	30,945	2.0%	2.9%	4.0%	1.3%
Local Government	155,836	185,774	198,391	13.0%	11.0%	3.6%	1.3%
Total, all public and private industries	1,326,923	1,403,294	1,530,284	100.0%	102.0%	1.1%	1.7%

Source: ADE, Inc. from data supplied by the Labor Market Information Division of the California Employment Development Department

DESCRIPTION OF AFFECTED HOUSEHOLDS AND INDUSTRIES

Proposed amendments to Rule 4901 potentially affects retailers and households in the San Joaquin Valley region. The discussion below first examines household trends in the region, particularly with an eye toward estimating the number of households that may be subject to this rule. In this regard, the analysis used data from both the SJVUAPCD and BAAQMD to estimate number of log burned during the wood-burning season by households in the region.

Household Trends and Impacts

As Table 3 shows, there are 1,197,554 households in the eight-county San Joaquin Valley region. Of these households, 715,746 live in owner-occupied housing, with 481,808 households living as renters. The table also includes estimates on the number of wood burning units, the vast majority of which are single-family units (including duplexes) according to the Bay Area Air Quality Management District, which recently adopted its own wood burning regulation in early summer 2008. Of the 666,803 owner-occupied single-family units, 480,276 are wood burning units. And, of the 237,002 owner-occupied single-family units, 118,501 are wood burning units. In total, there are 598,777 wood burning units in the Central Valley.

TABLE 3
SAN JOAQUIN VALLEY REGION, 2007: OCCUPIED HOUSING
UNITS, INCLUDING WOODBURNING UNITS

	Total Housing Units	Wood- burning Units
Total Housing Units	1,197,554	598,777
Owner occupied:	715,746	480,276
1, detached or attached	666,830	480,276
2 to 4	4,399	
5 to 9	2,702	
10 or more	39,644	
Mobile home and all other types of units	2,171	
Renter occupied:	481,808	118,501
1, detached or attached	237,002	118,501
2 to 4	103,902	
5 to 9	117,644	
10 or more	23,008	
Mobile home and all other types of units	251	

Source: ADE, Inc., based on California DOF, BAAQMD & SJVUAPCD

If amendments to Rule 4901 are adopted, the number of curtailment days in each county will increase. For example, curtailment days in Fresno County are expected to increase from 12 to 48, and in smaller counties such as Madera and Merced, from two to 12. Similar to Fresno County, the number of Kern County's curtailment days is expected to increase significantly, from 8 to 43. For Kings County, San Joaquin, Stanislaus and Tulare Counties, curtailment days are expected to go from 2 to 13, 1 to 9, 9 to 12, and 3 to 11 days respectively. Currently, there are on average 78 wood burning curtailment days during the wood burning season stretching from November 1 to the end of February. If the proposed amendments are adopted, the number of curtailment days in the region should rise to 320 days, for an increase of 242 days. Thus, to estimate impacts of the amendments, the analysis first needs to quantify the number of wood burning housing units by county (as demonstrated in Table 4 below), estimate average number of logs burned per day during the wood burning season on county-by-county bases, and then multiply these averages against incremental number of curtailment days stemming from Rule 4901 as amended.

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**TABLE 4
DISTRIBUTION OF WOOD-BURNING SINGLE-FAMILY
UNITS BY COUNTY**

Total Single-Family Housing Units		598,777
Owner-occupied		480,276
1, detached or attached	Fresno	106,486
	Kern	99,392
	Kings	15,680
	Madera	17,135
	Merced	26,958
	San Joaquin	92,255
	Stanislaus	72,092
	Tulare	50,277
Renter-occupied		118,501
1, detached or attached	Fresno	25,197
	Kern	21,815
	Kings	5,300
	Madera	5,020
	Merced	10,414
	San Joaquin	20,501
	Stanislaus	16,081
	Tulare	14,173

Source: ADE, Inc., based on CA DOF

Table 5 below summarizes the impacts of the Rule 4901 amendments on households that burn logs in fireplaces and woodstoves in the region. Appendix A and Appendix B show in greater detail how Table 5 findings were arrived at. The 598,777 wood burning households burn 169,930 logs in fireplaces every day during the wood burning season, as well as 32,512 logs per day in woodstoves. The table below assumes that, over time, households will reduce their log purchases in a fashion that correlates to the incremental change in number of curtailment day. The more curtailment days, the less number of logs purchased. Based on number of households on a county-by-county basis and their respective wood burning characteristics, Table 5 below places the reduction in number of fireplace logs during the wood burning season at 3,261,112, with woodstove logs reduced by 510,434. In the worst case scenario, all logs are purchased at an average price of \$3.03 per log. Thus, retailers selling logs will lose \$11.8 million in sales during the wood burning season as a result of the Rule 4901 as amended.

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**TABLE 5
IMPACT OF CHANGES TO WOODBURNING RULE**

	Total	Owner-Occupied	Renter-Occupied
Wood-Burning SF Units	598,777	480,276	118,501
Average Aggregate Daily Fireplace Logs Burned: Woodburning Season	169,930	136,300	33,630
Average Aggregate Daily Woodstove Logs Burned: Woodburning Season	32,512	26,078	6,434
Current Woodburning Prohibition Days	78	39	39
Woodburning Prohibition Days: Rule Change	320	160	160
Increment	242	121	121
Aggregate Logs NOT Burned As A Result of Rule: Woodburning Season: Fireplaces	3,261,112	2,634,237	626,876
Aggregate Logs NOT Burned As A Result of Rule: Woodburning Season: Woodstoves	510,434	503,999	6,434
Fireplace Impacts	\$9,508,855	\$7,981,737	\$1,527,118
Woodstove Impacts	\$2,262,846	\$1,899,434	\$363,412
Total Impacts	\$11,771,701	\$9,881,171	\$1,890,530

Source: ADE, Inc., based on BAAQMD and SJVUPACD

In some cases, retailers can pass costs to consumers as a way to re-coup losses. Table 6 below shows that right now retailers generate an estimated \$74.2 million in sales during the wood burning season to households purchasing logs for their respective fire places and wood stoves. Households in the region purchase 20,561,500 fireplace logs and 3,933,900 woodstove logs. With the increase in curtailment days, fireplace log purchases will be an estimated 17,300,400, for a 3,261,100 decline in fireplace logs. Likewise, woodstove logs will go from 3,933,900 to 3,310,000 as a result of the proposed amendments, for a 623,900 decline in woodstove logs. As a result of the decline in the number of logs purchased during the wood burning season, retailers' sales could decline by \$11.8 million, going from \$74.2 million to \$62.4 million. To recover their losses, retailers would need to increase the price of a log sold during the wood burning season by \$0.58, from \$3.03 to \$3.61 on average. This change represents a significant increase of 19 percent, which suggests that retailers will not be able to pass costs to consumers in full. If retailers increase the price of the remaining logs (i.e. 17,300,400 fireplace logs and 3,310,000 woodstove logs not impacted by the proposed amendments), consumers might reduce the purchase of these logs, resulting in lost sales on top of losses stemming from the proposed amendments.

**TABLE 6
PER UNIT PRICE INCREASES NEEDED TO RE-COUP LOST REVENUES STEMMING FROM ADOPTION OF WOODBURNING RULE**

	Total	Owner-Occupied	Renter-Occupied
Wood-Burning SF Units	598,777	480,276	118,501
Aggregate Fireplace Logs Burned: Woodburning Season: Pre Rule Change	20,561,523	16,492,290	4,069,233
Aggregate Woodstove Logs Burned: Woodburning Season: Pre Rule Change	3,933,965	3,155,413	778,552
Aggregate Fireplace Logs Burned: Woodburning Season: Post Rule Adoption	17,300,411	13,858,054	3,442,357
Aggregate Woodstove Logs Burned: Woodburning Season: Post Rule Adoption	3,310,028	2,651,413	658,614
Original Woodburning Season Revenues	\$74,221,329	\$59,532,540	\$14,688,789
Original Price Per Log	\$3.03	\$3.03	\$3.03
Price Per Log To Return To Original Aggregate Revenues	\$3.61	\$3.61	\$3.61
Increment	\$0.58	\$0.58	\$0.58
Potential Percent Change In Price	19.0%	19.0%	19.0%

Source: ADE (Note: "Price Per Log To Return To Original Aggregate Revenues" analysis conducted on a county-by-county basis)

Table 7 below compares annual cost impacts against revenues and net profits generated by retailers that sell logs. Approximately 41 percent of firewood is sold in food stores such as grocery stores, with almost 30 percent sold in general merchandise stores. The remaining firewood is sold in lumber/building material stores, hardware stores, and drug stores. Table 7 distributes the \$11.8 million cost impact by retail store types and, across the board, this table shows that retail store type compliance cost-to-retail store type net profit ratios are below the level used to gauge whether impacts are significant or not. For example, of the \$11.8 million in impacts, food stores in the region will bear an estimated \$4.8 million in costs, which, when compared against estimated net profits of \$76.8 million, amounts to a ratio of 6.3 percent, which is below the ten-percent threshold level. Similarly, almost 30 percent of all logs are sold in general merchandise stores, which suggest that these stores will bear \$3.4 million of the \$11.8 million in impacts, which translates to a less than significant cost-to-profit ratio of 2.2 percent. Thus, impacted retailers can absorb the cost of the rule as impacts across the board are less than significant; they can also mitigate impacts by somewhat increasing the per unit price of remaining logs, although not as high as 19 percent. It is also important to note that there may be no impacts on retailers whatsoever. Households deciding to forgo purchasing \$4.8 million or \$3.4 million in logs from food stores or general merchandise stores may, instead, use that \$4.8 million or \$3.4 million to purchase a range of other goods in the same store types.

TABLE 7
MINIMUM AND MAXIMUM POTENTIAL IMPACT ON SAN JOAQUIN VALLEY REGION RETAILERS SELLING FIREWOOD

	Total	General Merchandise Stores	Drug Stores	Food Stores	Lumber\Bldg Materials	Hardware
Actual Sales	\$15,350,333,094	\$5,732,547,320	\$1,399,601,783	\$5,226,780,303	\$2,533,384,999	\$458,018,690
Net Profit Rates	2.92%	2.73%	2.68%	1.47%	6.70%	1.76%
Est. Net Profits	\$448,639,464	\$156,498,542	\$37,509,328	\$76,833,670	\$169,736,795	\$8,061,129
Distribution of firewood sales by retail store types	100.0%	29.2%	9.6%	41.0%	14.3%	5.8%
Firewood Impacts By Retail Store Types	\$11,771,701	\$3,440,706	\$1,132,878	\$4,826,399	\$1,687,630	\$684,090
Recycled Retail Spending That Otherwise Would've Gone for logs	\$11,771,704	\$3,440,706	\$1,132,878	\$4,826,399	\$1,687,630	\$684,090
Minimum Potential Cost as Percent of Net Profit	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Maximum Potential Cost as Percent of Net Profit	2.6%	2.2%	3.0%	6.3%	1.0%	8.5%
Significant	less than sig.	less than sig.	less than sig.	less than sig.	less than sig.	less than sig.

Source: ADE, Inc., based on California Board of Equalization, US IRS, and Duraflame

IMPACT ON SMALL BUSINESS

DEFINITION OF SMALL BUSINESS PER CALIFORNIA STATUTE

For purposes of qualifying small businesses for bid preferences on state contracts and other benefits, the State of California defines small businesses in the following manner:

- Must be independently owned and operated;
- Cannot be dominant in its field of operation;
- Must have its principal office located in California
- Must have its owners (or officers in the case of a corporation) domiciled in California; and,
- Together with its affiliates, be either:
 - A business with 100 or fewer employees, and an average gross receipts of \$10 million or less over the previous tax years, or
 - A manufacturer with 100 or fewer employees

SMALL BUSINESS IMPACT ANALYSIS

The analysis above shows 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. As a result, small businesses, particularly retail and services, are not disproportionately impacted by the rule.

APPENDIX A

**TABLE A-1
AMOUNT OF LOG USED BY HOUSEHOLDS USING WOOD-BURNING DEVICES SUBJECT TO RULE BY COUNTY**

		Estimated Number of Wood-Burning Households in SFU By Counties	Annual Average #logs per Day per Wood-burning Household				Household Adjustment Factor : Annual Aggregate #logs per Wood-Burning Household by Wood-burning Device**		Aggregate #logs per Day per Year per Wood-Burning Household			Annual Aggregate #logs per Wood-Burning Household	
			fireplaces (BAAQMD)	woodstoves (BAAQMD)	fireplaces (BAAQMD: adjusted for SJVUAPCD by 60/50 factor)	woodstoves (BAAQMD: adjusted for SJVUAPCD by 60/50 factor)	fireplaces (.84)	woodstoves (.16)	fireplaces (use BAAQMD annual daily use .14 factor)	woodstoves (use BAAQMD annual daily use .15 factor)	Days in the Year	fireplaces	woodstoves
		598,777											
Owner-occupied 1, detached or attached	REGION	480,276	0.14	0.15	0.17	0.18	0.84	0.16	70,416	14,371	365	25,701,904	5,245,287
	Fresno	106,486	0.14	0.15	0.17	0.18	0.84	0.16	12,523	2,556	365	4,570,804	932,817
	Kern	99,392	0.14	0.15	0.17	0.18	0.84	0.16	11,689	2,385	365	4,266,324	870,678
	Kings	15,680	0.14	0.15	0.17	0.18	0.84	0.16	1,844	376	365	673,063	137,360
	Madera	17,135	0.14	0.15	0.17	0.18	0.84	0.16	2,015	411	365	735,508	150,104
	Merced	26,958	0.14	0.15	0.17	0.18	0.84	0.16	3,170	647	365	1,157,133	236,150
	San Joaquin	92,255	0.14	0.15	0.17	0.18	0.84	0.16	10,849	2,214	365	3,959,963	808,156
	Stanislaus	72,092	0.14	0.15	0.17	0.18	0.84	0.16	8,478	1,730	365	3,094,464	631,523
	Tulare	50,277	0.14	0.15	0.17	0.18	0.84	0.16	5,913	1,207	365	2,158,105	440,430
											365		
Renter-occupied 1, detached or attached	REGION	118,501	0.14	0.15	0.17	0.18	0.84	0.16	13,936	2,844	365	5,086,541	1,038,070
	Fresno	25,197	0.14	0.15	0.17	0.18	0.84	0.16	2,963	605	365	1,081,548	220,724
	Kern	21,815	0.14	0.15	0.17	0.18	0.84	0.16	2,565	524	365	936,405	191,103
	Kings	5,300	0.14	0.15	0.17	0.18	0.84	0.16	623	127	365	227,507	46,430
	Madera	5,020	0.14	0.15	0.17	0.18	0.84	0.16	590	120	365	215,491	43,978
	Merced	10,414	0.14	0.15	0.17	0.18	0.84	0.16	1,225	250	365	447,025	91,230
	San Joaquin	20,501	0.14	0.15	0.17	0.18	0.84	0.16	2,411	492	365	879,977	179,587
	Stanislaus	16,081	0.14	0.15	0.17	0.18	0.84	0.16	1,891	386	365	690,244	140,866
	Tulare	14,173	0.14	0.15	0.17	0.18	0.84	0.16	1,667	340	365	608,345	124,152

Source: ADE, Inc., based on BAAQMD and SJVUPACD

APPENDIX B

**TABLE B-1
ESTIMATING AMOUNT OF LOGS BURNED DURING WOODBURNING SEASON**

		Estimated Number of Wood-Burning Households in SFU By Counties	Annual Aggregate #logs per Wood-Burning Household		Annual Aggregate #logs per Wood-Burning Household: WOODBURNING SEASON: November through February			Average Aggregate Daily #logs per Wood-Burning Household: WOODBURNING SEASON: FOUR NOVEMBER-February	
			fireplaces	woodstoves	fireplaces (80%)	woodstoves (75%)	Number of Days: November - February	fireplaces (Assume 80% Occurs in WB season [BAAQMD])	woodstoves (Assume 75% occurs in WB season [BAAQMD])
		598,777	25,701,904	5,245,287	20,561,523	3,933,965		169,930	32,512
Owner-occupied	REGION	480,276	20,615,363	4,207,217	16,492,290	3,155,413	121	136,300	26,078
1, detached or attached	Fresno	106,486	4,570,804	932,817	3,656,643	699,613	121	30,220	5,782
	Kern	99,392	4,266,324	870,678	3,413,059	653,009	121	28,207	5,397
	Kings	15,680	673,063	137,360	538,450	103,020	121	4,450	851
	Madera	17,135	735,508	150,104	588,407	112,578	121	4,863	930
	Merced	26,958	1,157,133	236,150	925,706	177,112	121	7,650	1,464
	San Joaquin	92,255	3,959,963	808,156	3,167,970	606,117	121	26,182	5,009
	Stanislaus	72,092	3,094,464	631,523	2,475,571	473,642	121	20,459	3,914
	Tulare	50,277	2,158,105	440,430	1,726,484	330,322	121	14,268	2,730
Renter-occupied	REGION	118,501	5,086,541	1,038,070	4,069,233	778,552	121	33,630	6,434
1, detached or attached	Fresno	25,197	1,081,548	220,724	865,239	165,543	121	7,151	1,368
	Kern	21,815	936,405	191,103	749,124	143,327	121	6,191	1,185
	Kings	5,300	227,507	46,430	182,006	34,822	121	1,504	288
	Madera	5,020	215,491	43,978	172,393	32,983	121	1,425	273
	Merced	10,414	447,025	91,230	357,620	68,422	121	2,956	565
	San Joaquin	20,501	879,977	179,587	703,981	134,690	121	5,818	1,113
	Stanislaus	16,081	690,244	140,866	552,195	105,650	121	4,564	873
	Tulare	14,173	608,345	124,152	486,676	93,114	121	4,022	770

Source: ADE, Inc., based on BAAQMD and SJVUPACD

APPENDIX D

Public Comments

August 4, 6:30pm Bakersfield Workshop

4 people in attendance

- 1. Comment:** Does the public or elected officials vote for the final draft of the rule?
Response: A governing board of 15 members (2 people appointed by the Governor and 13 elected officials: 8 county supervisors and 5 city council members) votes on the final draft after public comments have been recorded and presented.
- 2. Comment:** Why is the AQI threshold for "No Burn" days decreased so much at once instead of gradually between now and 2015 deadline?
Response: In the interest of public health, the "No Burn" level should be lowered to a level consistent with EPA's health protective standards as soon as possible.
- 3. Comment:** Will forest fires and population increase be taken into account?
Response: Population and forest fires are both considered in the air quality planning process, but not when the District determines whether a particular day is a "No Burn" day. Even if high pollution levels are dominated by forest fires on a particular day, it would not be good for public health for more PM2.5 to be emitted from fireplaces.
- 4. Comment:** Why is Rule 4901 affecting Kern County and not other areas that are polluting the air that travels down through Kern County, such as the Bay Area?
Response: The proposed rule is expected to most significantly affect Fresno County. The rule applies to all Valley counties, and other air districts are implementing similar fireplace rules.
- 5. Comment:** Why does it seem like open burning is not regulated in Kern County but it is in other areas?
Response: The Air District regulates open burning in all eight Valley counties, including Kern County. Permits are required for all open burning, and air quality forecasting determines how much burning is allowed on a particular day.
- 6. Comment:** What are the regulations for Shaver area if there is no propane or natural gas heating? Does burning at high elevations still affect the Valley?

Response: Wood burning is not prohibited if it is the sole source of heat for a home and a permit is not needed to burn. Wood burning at high elevations does not generally affect the Valley floor, but wind conditions and other factors can change that.

7. **Comment:** How many days after the Governing Board meeting until the rule is effective?

Response: Due to the significant health effects of wood burning, the rule will be implemented as soon as possible.

8. **Comment:** How will the rule be enforced?

Response: The rule will be enforced through the Compliance Department in each area. Inspectors will look for violators and respond to citizen complaints. A \$50 fee or compliance school is required for a first time Notice of Violation. Fees will increase with each violation.

9. **Comment:** How many days in advance will the public be notified before the rule is proposed to the Governing Board?

Response: A public notice will be given at least 30 days in advance before the Governing Board hearing. Public comments will still be allowed during that time.

10. **Comment:** The cost of electricity and natural gas is too high and the increased regulations proposed by this rule will have a significant impact economically. The government does not need to address the health effects and regulate wood burning.

Response: The San Joaquin Valley Air District is a public health agency charged with ensuring that the Valley reaches EPA's health-based air quality standards. Wood burning contains PM2.5 and other compounds that can impact public health, and the health affects carry economic costs as well.

11. **Comment:** Have there been any legal objections or some kind of appeal to previous rules?

Response: There are not usually appeals. In the past, if there is absolutely no avenue to comply with a rule, a variance can be made specific to the situation.

12. **Comment:** Will there be an opportunity to amend the rule before the Governing Board hearing?

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Response: Public comments are accepted and will be taken into account for the final draft of the rule before August 28. After the draft is finalized, a public notice will be given 30 days before the Governing Board hearing to allow for further public comments and questions that will not be incorporated into the rule but will instead be presented to the Governing Board at the hearing.

13. Comment: Is there a specific number to call during the day to gain permission for the burning of tumble weeds?

Response: The Air District issues annual open burning permits for a fee. Allowance to burn takes into account many factors and therefore requires that each individual calls each day to gain permission to burn for that specific day.

14. Comment: I continue to burn constantly to avoid the additional pollution during the start of a fire. Am I supposed to just stop burning during a "No Burn" day and then increase pollution by starting again?

Response: On a "No Burn" day, it is important for residents to refrain from wood burning (unless they qualify for an exemption) so that the Valley's air quality stays within EPA's health-based air quality standards. It would be better to restart a fire on a day that does not have poor air quality.

August 5, 6:30pm Hanford Workshop

2 people in attendance

15. Comment: Is the current "No Burn" level of 150 AQI (Air Quality Index) the worst air quality level?

Response: No, the AQI continues to increase up to 300 for worse air quality. The AQI range of 100-150 is unhealthy for sensitive groups.

16. Comment: Are those above 3,000 feet elevation with natural gas service using a certified EPA woodstove still subject to "No Burn" days?

Response: Under the current proposed rule, any resident who has natural gas service would be asked to refrain from wood burning on a "No Burn" day regardless of the type of woodstove they have. On days that are not "No Burn" days, the District encourages residents to burn as cleanly as possible (if at all), and using a certified EPA woodstove is one way to try to burn more cleanly.

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17. Comment: Why is the "No Burn" level being set lower than that of South Coast Air Quality Management District, at $30 \mu\text{g}/\text{m}^3$ instead of $35 \mu\text{g}/\text{m}^3$?

Response: When PM_{2.5} levels reach $35 \mu\text{g}/\text{m}^3$, the air quality is already unhealthy. Setting the "No Burn" level at $30 \mu\text{g}/\text{m}^3$ allows for a margin of safety in air quality forecasting and helps prevent the accumulation of PM_{2.5} over several days that can lead to an air quality exceedance.

18. Comment: Are there going to be any recommendations given to those who live at higher elevations to be more aware of possible fuels surrounding their houses to prevent forest fires?

Response: There are two measures in the PM_{2.5} plan that address that situation, including the feasibility study and prescribed burning.

August 7, 6:30pm Visalia Workshop

2 people in attendance

19. Comment: Is there a definite way to determine the amount of PM_{2.5} produced by wood smoke alone?

Response: Surveys are conducted to estimate the amount of PM from various sources, including wood smoke, when the emissions inventory is compiled. Chemical speciation analysis is also performed on air filters from the various air monitoring sites throughout the San Joaquin Valley.

20. Comment: Does the rule apply to restaurants that use wood stoves for cooking?

Response: Cook stoves are exempt from Rule 4901. The District has a separate rule for charbroiling that is currently undergoing revisions.

21. Comment: How many "No Burn" days are estimated for the contingency plan?

Response: PM_{2.5} levels are expected to improve significantly by 2015, the earliest the contingency plan would be implemented, as compared to recent air quality. As such, it would not be accurate to use recent air quality to estimate the potential impacts of the contingency plan.

22. Comment: The estimation of "No Burn" days after the rule goes into effect will discourage residents from purchasing wood burning devices in the future, even though they may be EPA certified. This will lead to people burning with less clean

devices when they do burn than if they would have purchased an EPA certified wood burning device. Why are EPA certified wood burning devices prohibited?
Response: When PM_{2.5} air quality is nearing 35 µg/m³, air quality is about to exceed EPA's health-based standards. Adding emissions will add to the severity of the exceedance. EPA certified devices are not exempt from "No Burn" days because they are still emitting particulates. However, as more people use cleaner devices, it is likely that overall air quality will improve and there will be fewer "No Burn" nights Valley-wide.

23. Comment: Children should not be used for public advertisement of "No Burn" days and bad air quality. Also, children should not be involved through colored flags at schools representing the daily AQI. Advertisements describing poor air quality in general should not only refer to wood burning but also the other major sources of air pollutants.

Response: Comment noted.

24. Comment: The public tends to think burning is banned altogether by the way "No Burn" days are illustrated through the media. Many residents in Tulare also do not burn if Fresno has called a "No Burn" day even though they may not be affected. Tulare tends to have relatively good air quality and a lesser amount of "No Burn" days overall, so there should be better outreach with more accurate information depicting that.

Response: Comment noted. As this rule is amended, the District will be undergoing more public outreach.

25. Comment: Other sources of PM_{2.5} are not portrayed as important as wood burning devices although they may contribute to more pollution. Why aren't other sources prohibited when the air quality is poor as well?

Response: The District has many rules and programs that reduce pollution from many sources. Through implementation of the *2007 Ozone Plan*, the District will be investigating the economic and technical feasibility of instituting regionally-focused episodic controls on stationary, area, and mobile sources. Legally, however, the District would not be able to implement episodic controls that disrupt interstate commerce.

26. Comment: Working for a chimney sweep company, business has decreased so much since this rule has regulated burning. The Air District is not taking the economic effects of businesses into consideration. People are burning without cleaning their fireplaces and chimneys because they have the impression that

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they may be penalized for burning at all. This results in less clean burning and overall making air pollution worse.

Response: If people are mistaken about how often they are allowed to burn or about the importance of clean burning, the commenter can encourage them to contact the District for more information.

27. Comment: There should be better outreach for workshops and information about proposed regulations that will affect so many people.

Response: The District's outreach effort for these workshops was above and beyond what is normally done for rule workshops. Because this rule will affect so many people, the District scheduled workshops in each county and scheduled these workshops in the evening (usually, rule workshops are during the day and just in District offices in Bakersfield, Fresno, and Modesto). The District published the workshop notice in eight Valley papers, posted the notice on the District website (with information on the homepage), and sent the notice to individuals on our mailing list and to those who signed up for our email list for residential wood burning. The notice was sent to media outlets on our press release list. District staff participated in a few media interviews and responded to several phone calls from members of the public.

August 12, 6:30pm Oakhurst Workshop

80 people in attendance

28. Comment: Many attendees expressed concern about changes that are going to come after this rule change, concerned that in the future there will be many more wood burning restrictions that will affect them since the 3,000 foot exemption is being removed. For example, will the rule eventually apply to people who have propane? Removing the 3,000 foot elevation exemption is not necessary, so this part of the rule should just be left alone.

Response: District staff cannot speak to possible changes to this rule in the future. There are no further rule amendments or feasibility studies for residential wood burning in our most recent PM_{2.5} plan, the *2008 PM_{2.5} Plan*. The District can only speak to the current rule amendment. Removing the 3,000 foot elevation exemption is not expected to have a large impact because most residents at or above an elevation of 3,000 feet qualify for another exemption, such as the exemption for those who do not have natural gas service or those for whom wood burning is the sole source of heat.

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29. Comment: Does this rule affect Mariposa County? If not, why not?

Response: This rule does not affect Mariposa County because it is not part of the San Joaquin Valley Air Basin, so it is not within the San Joaquin Valley Air Pollution District's jurisdiction. Emissions from Mariposa County do not generally impact the San Joaquin Valley because Mariposa is on the other side of the mountains that define the San Joaquin Valley Air Basin.

30. Comment: If this rule does not affect the people of Oakhurst, there was no need for the workshop.

Response: Because the proposed rule removes the 3,000 foot elevation exemption, the District wanted to hold at least one workshop in a foothill community. However, the commenter is correct that the changes are not expected to impact Oakhurst residents because most Oakhurst residents will qualify for one of the other exemptions.

31. Comment: Which is correct: "No Burn" days or "No Burn" nights?

Response: While the terms have been used interchangeably, "No Burn" day is more accurate because "No Burn" declarations cover a twenty-four hour period.

32. Comment: What action would be taken if a neighbor was just calling to report his neighbor when nothing was wrong but the neighbor wanted to be mean and just had a grudge against them.

Response: The District follows up on complaints related to District rules, and the District issues Notices of Violation if the District's rules are not followed. Issues between neighbors are beyond the authority of the District, but such issues are generally taken up by civil lawyers in court.

33. Comment: Several commenters said there is a lot more pollution coming from cars than from wood burning, so the District should be focusing on cleaning up vehicle exhaust.

Response: The District has many rules to target the many sources of air pollutant emissions in the Valley. Every source of pollution in the Valley is evaluated for potential reductions. However, the District does not have legal authority over vehicles. The state agency, the California Air Resources Board, regulates vehicles. However, the District works to decrease vehicle emissions through incentives and through voluntary programs like Healthy Air Living. The District will also be working on an Employer-based Trip Reduction rule in the near future.

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- 34. Comment:** Most of the people in Oakhurst use cured and dried wood that produces little smoke. The District should focus on those that are burning pine needles and wet wood.
Response: The District's outreach will emphasize the importance of burning as clean as possible
- 35. Comment:** Several people asked what the procedure was for when a home with a fireplace or wood stove is sold.
Response: If the home has a wood burning heater that is not a pellet stove or is not EPA Phase II Certified, then (according to the District's current rule) the seller is responsible for removing it or rendering it inoperable. The seller should submit a statement of compliance to the District.
- 36. Comment:** Many people have EPA stoves that burn much cleaner than the old wood stoves. There should be incentives and rewards for them, such as being exempt from the "No Burn" days.
Response: The District's incentive program provides a monetary incentive for residents to change to a cleaner device. See also the response to Comment 22.
- 37. Comment:** Many people commented that forest fires cause much more smoke and pollution than woodstoves. By burning some wood and clearing their land of dead limbs and brush, they are preventing pollution from forest fires.
Response: This may be a good idea for those residents who are exempt from the "No Burn" days, or on days that are not "No Burn" days. However, forest fires can eventually overwhelm these efforts.
- 38. Comment:** The District has done nothing to improve the pollution. It is still hazy and people now are living longer. Health risks are not a true part of why this rule is taking affect.
Response: The District and the Valley's businesses and residents have done a lot to improve pollution over the past several years, and air monitoring data shows that air pollution has decreased. However, there are still air quality challenges ahead. There are many peer-reviewed studies that show that air pollution is linked to a range of health effects, including (but not limited to) premature death in people with heart or lung conditions. These health effects are the driving force behind this rule.

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39. Comment: Do “No Burn” days affect barbeques or grills?

Response: The rule does not apply to barbeques or grills because they are cook stoves.

40. Comment: Several people commented that the workshop should have been announced in their local paper, the *Sierra Star*.

Response: Please see the response to Comment 27.

41. Comment: It may be more helpful to forget getting rid of the 3,000 ft exemption and instead get rid of the natural gas exemption.

Response: The natural gas exemption accomplishes a couple of things. For one, it ensures that people have a relatively economical way to keep warm (natural gas is generally much cheaper than propane). Secondly, it provides a way for the District to target densely populated urban areas with this rule, and urban areas experience more problems with wood smoke.

42. Comment: Where in the documents does it show that those without natural gas are exempt from “No Burn” days?

Response: See Section 5.6.3 of the rule (page 6).

43. Comment: There should be more hazard reduction burnings in the area to help reduce the spread of forest fires.

Response: More options are becoming available instead of just burning everything. The goal is to slowly get rid of large outside burning with things like wood chippers.

44. Comment: Forest fires and trucking in alternative fuels generates more pollution than residential wood burning, so wood burning actually reduces pollution.

Response: The District’s ability to control forest fires is limited. Trucking in fuels does increase pollution, but those who truck in fuels (that is, those without natural gas service) are exempt from “No Burn” days.

45. Comment: Several commenters asked if these comments have any impact.

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Response: The District tracks all comments for inclusion in the public record. Public comments are folded into future drafts, and Governing Board members have access to the comments.

46. Comment: The District should have brought a microphone and a tape recorder.

Response: The District agrees and will try to have these things on-hand at off-site meetings in the future.

47. Comment: Thank you for doing the workshop in Oakhurst and giving the community your time.

Response: Comment noted.

48. Comment: How does the rule affect new housing developments?

Response: There are limitations on whether wood burning fireplaces or wood burning stoves can be installed based on the number of houses per acre.

49. Comment: A few attendees asked whether the county had chippers that were available for use or whether they could have a wood and trimmings weekly pick up that is controlled by the county.

Response: The County Supervisor in attendance, Supervisor Tom Wheeler, said that this could be a possibility.

50. Comment: The District shouldn't control dust by making farmers use fish oil and truck out extra oil on an old water wagon that is putting even more emissions into the air.

Response: The road dust controls that have been put in place through the Conservation Management Practices program and Regulation VIII (Fugitive Dust) have resulted in significant decreases in PM10 emissions.

51. Comment: Propane is too expensive, so there needs to be an allowance to burn wood because individuals may not be able to afford to heat the house any other way.

Response: The District acknowledges the expense of propane, and that's why there is an exemption for those who do not have natural gas.

52. Comment: There should be an incentive or grant program to buy chippers in order to decrease burning of limbs and twigs.

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Response: This comment will be forwarded to our Incentive Program department.

53. Comment: There are environmental groups, such as the Sierra Club, that support fuel reduction burning in forests. There are options if people want to decrease forest fire fuel near their homes and still decrease the amount of burning.

Response: Comment noted.

54. Comment: Where can one get more information on the study and report that showed the effectiveness of decreasing the woodstove smoke?

Response: The Central California Health Policy Institute is still completing this study, but they reported on their initial findings in a presentation to the District Governing Board in May 2008.

55. Comment: Who is on the District's Governing Board?

Response: See Comment 1.

56. Comment: Stoves that are not EPA certified but just as clean should be allowed.

Response: The District has changed Section 5.1.2 accordingly.

57. Comment: The public should hold their own meeting to be able to comment some more and make suggestions to submit to the District.

Response: Supervisor Tom Wheeler said that it could be a possibility for his next public meeting.

58. Comment: With so many foreclosed or bank-owned properties, would the District still hold the bank responsible for complying to the requirement that old stoves be replaced or rendered inoperable?

Response: Yes; as the owner, the bank would be responsible.

59. Comment: There should be incentives for people to change out their old woodstoves to newer, cleaner burning stoves.

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Response: Although the District only funded gaseous devices during this past year, the District is considering expanding the program to replace devices with cleaner wood stoves in areas where there is no natural gas service.

60. Comment: Many people don't know that they should wait to burn their wood for about a year until it is dry. It would help to have more practical information in the newspapers about procedures like that.

Response: The District agrees that it would be a good idea to have more outreach on how residents can burn more cleanly.

61. Comment: Enforcing "No Burn" days is an invasion of privacy.

Response: Inspectors do not go onto private property when enforcing Rule 4901.

62. Comment: If there is an insert in a fireplace, is it OK to use it?

Response: Yes, but only when wood burning is not prohibited.

63. Comment: Next time the District may want to use the local radio station to announce the workshop and time so more people know about it.

Response: Buying time on all of the local radio stations to announce workshops would be difficult to coordinate and expensive. Please see Comment 27.

August 13, 6:30pm Madera Workshop

1 person in attendance

64. Comment: It was a great idea to have these workshops in the evening so that people could come. Also, it was great that you got such great turnout in Oakhurst.

Response: Comment noted

65. Comment: How does the layout and system for natural gas work? Is it by house or by area?

Response: It is set up by area with a basic grid layout.

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- 66. Comment:** With enforcement, how do the compliance people know that the person who is burning on a “No Burn” day isn’t burning because it’s the sole source of heat?
Response: Compliance staff takes a photograph and sends it with a notice of violation to the resident. The notice of violation explains that if they qualify for an exemption, they can contact the District for reconsideration.
- 67. Comment:** This person is in support of the lower micrograms level for the “No Burn” days and was wondering about extending the burning season to more than just 120 days.
Response: District staff considered this but concluded that extending the wood burning season would probably not be as effective as lowering the “No Burn” level.
- 68. Comment:** People who oppose this rule amendment need to take a closer look at the health effects instead of focusing on the fact that they can’t burn as much.
Response: Comment noted
- 69. Comment:** Are the documents from the workshop available online?
Response: All materials except the PowerPoint presentation are available online. If you would like the PowerPoint, email Jessica Hafer.
- 70. Comment:** Who would be impacted by the removal of the 3,000 foot elevation exemption?
Response: Since most residents above 3,000 feet do not have natural gas service, most are still exempt from “No Burn” days. While the extent of natural gas service has been difficult to confirm, there may be people in Frasier Park who are above an elevation of 3,000 feet and who do have natural gas service.
- 71. Comment:** A commenter referred to a friend in Oakhurst who mentioned that she is worried about health effects of all the smoke because sometimes it gets pretty bad there.
Response: Comment noted
- 72. Comment:** Does the Governing Board get a summary of all the comments?

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Response: A summary of all public comments is added to the District's final rule documentation, which is available to the Governing Board and the general public.

August 14, 6:00pm Merced Workshop

3 people in attendance

73. Comment: Would a geothermal unit qualify for the Burn Cleaner Program?

Response: A geothermal unit would not qualify for the program. At this time the Burn Cleaner Program only offers a voucher given by the manufacturer to purchase a wood burning stove.

74. Comment: February through April is not an ideal time to change out stoves for the Burn Cleaner Program because people are still using their stove during that time.

Response: Residents apply for the voucher between February and April and then use the voucher before it expires to buy the new unit. In 2008, recipients had until June 2 to change out their device.

75. Comment: Why is PM10 still an issue in this rule when the San Joaquin Valley is in attainment for PM10 and PM2.5 is smaller and poses more health risks?

Response: The District still needs to consider PM10 through the *2007 PM10 Maintenance Plan and Request for Redesignation* so that the Valley continues to attain the PM10 standard. However, PM2.5 is the primary focus.

76. Comment: What in the PM2.5 standards will be changed, and when will they change?

Response: The EPA revised the PM2.5 standard in 2006, lowering the 24-hour standard from 65 $\mu\text{g}/\text{m}^3$ to 35 $\mu\text{g}/\text{m}^3$. The *2008 PM2.5 Plan* focuses on the 65 $\mu\text{g}/\text{m}^3$ standard but also ensures progress towards the 35 $\mu\text{g}/\text{m}^3$ standard. EPA's official designations for the new standard should be finalized next year, and the plan for that standard will probably be due in 2012. The District's proposed changes to Rule 4901 should help the Valley make significant progress toward EPA's new standard.

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77. Comment: It's good that the District is removing the 3,000 foot elevation exemption.

Response: Comment noted.

78. Comment: How is enforcement handled on the weekends?

Response: Inspectors are on-call on the weekends. Residents can call the complaint line, and the on-call inspector in the closest area will be notified and sent to the scene. A Notice of Violation will then be given to violator within 48 hours.

79. Comment: Why is propane not considered natural gas? The rule should include propane as a natural gas and therefore prohibit wood burning if propane is used also.

Response: See Comment 41.

80. Comment: Doors and windows do not seal smoke inside or outside of a house, and wood smoke can greatly increase the severity of asthma. It is difficult for people to comprehend effects of asthma and respiratory problems unless they have experienced them firsthand; therefore, the rule should be stricter sooner than later for health reasons.

Response: Comment noted.

81. Comment: How is the quality of wood enforced?

Response: The rule includes restrictions for the sale and advertising of seasoned wood. If a party is found in violation of the regulations, a Notice of Violation will be given.

82. Comment: Taking out the elevation exemption will decrease the amount of smoke that can travel through cold air currents down into the urban areas.

Response: Comment noted.

August 19, 6:30pm Stockton Workshop

7 people in attendance

83. Comment: What is the advantage of having an EPA Phase II stove? Are these exempt from “No Burn” nights?

Response: They are not exempt from “No Burn” days. See Comment 22.

84. Comment: What are the regulations regarding manufactured logs?

Response: There is not an exemption for manufactured logs.

85. Comment: What percentage of people use wood burning?

Response: The latest surveys and census information suggests about 50%.

86. Comment: How are wild fires and agricultural burns factored into the regulations? Are emissions from these sources, cigarette smoke, and other organic materials distinguishable from emissions from fireplaces?

Response: Emissions from a variety of sources are evaluated during the planning process and in the *2008 PM2.5 Plan*. There are regulations in place for agricultural burning. Regardless of the sources, though, if air quality is about to exceed health based standards, limiting wood burning has been shown to help prevent exceedances.

87. Comment: Is transport from the Bay Area and Sacramento incorporated into the rule restrictions? It is unfair for those living in the northern part of the San Joaquin Valley with economic disadvantages be regulated and end up paying more for heating due in part to the pollution from the Bay Area and Sacramento.

Response: Studies show that the Bay Area and Sacramento impacts on Valley air quality can be small (though there may be exceptions in extreme cases, like the recent wild fires). The Valley generates much of its own pollution. However, both Bay Area and Sacramento have rules that will limit residential wood burning.

88. Comment: Have the current rule restrictions shown an improvement in air quality, and have PM10 levels decreased?

Response: Yes, PM10 and PM2.5 levels have decreased under the current rule. Strengthening this rule is expected to help the Valley make significant progress towards attaining EPA's revised, more health-protective PM2.5 standard.

89. Comment: Wood is a renewable source, but natural gas is not.

Response: Comment noted.

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90. Comment: The District should consider calling days when wood burning is not prohibited something to the effect of “Smart Burning” to avoid using the term “discouraged” and to highlight the importance of burning cleanly, if at all.

Response: The District will consider this. This is a multi-faceted message: wood burning is discouraged when there are economically feasible alternatives, and if someone does burn, they are encouraged to burn as clean as possible. The District’s concern is that by having a three-tiered system, people think that there are nights when it’s just OK to burn, and this doesn’t capture the complexity of the Valley’s situation.

August 20, 6:30pm Modesto Workshop

3 people in attendance

91. Comment: There are so many variables involved (weather, etc), and we may be at the point of diminishing returns. How much PM is actually caused by fireplaces?

Response: According to the emissions inventory compiled for the *2008 PM2.5 Plan*, an estimated 16.9 tons per day of directly emitted PM2.5 will come from residential wood burning in 2010 out of a total direct PM2.5 inventory of 81.7 tons per day (winter averages). Some secondary PM also forms, so air quality modeling evaluates the effectiveness of proposed control strategies. Based on the *2008 PM2.5 Plan* analysis, this amendment to Rule 4901 is an important point of the strategy to reach attainment of the PM2.5 standards.

92. Comment: There are concerns surrounding the need to burn brush and trucking wood to another area for chipping or burning.

Response: The combustion emissions from burning brush outweigh the emissions from trucks that take the materials to another area for chipping or burning.

August 21, 6:00pm Fresno Workshop

12 people in attendance (12 Fresno, 0 Bakersfield, and 0 Modesto)

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93. Comment: Are rebates offered for devices other than natural gas devices through the Burn Cleaner Program? Are rebates offered to replace older wood burning stoves for more efficient stoves?

Response: Currently only natural gas appliance rebates are offered, but the Burn Cleaner Program is under review and will be expanded to possibly include other types of devices. More information should be available early 2009.

94. Comment: Does pollution from higher elevations travel down to the Valley?

Response: This can depend on meteorology.

95. Comment: Why are prescribed burns allowed even on "No Burn" days?

Response: The Air District works closely with the Forest Service to predict good days for needed prescribed burns. There are instances when a forecast might allow for burning, but then the forecast changes once the fire has been started. Prescribed fires can take multiple days and may not be able to be extinguished. These fires are regulated and are intended to not coincide with a "No Burn" day.

96. Comment: Will the public comments in this workshop even be taken into consideration in the rule proposal? Many people feel the comments will not be taken into consideration.

Response: All comments received at the workshops and received by mail will be taken into consideration when writing the final draft rule proposal.

97. Comment: Pollution from wood burning seems miniscule compared to other sources, and it seems as though the District is not taking the proper steps to acquiring concrete information about the source. The District does not take surveys, inspect chimneys, conduct lab tests, or even know an accurate number of wood stoves and fireplaces in the air basin. The District should be using these means to produce more reliable information for the development of the rule.

Response: A wide range of surveys, evaluations, and tests are incorporated into air quality plans (like the *2008 PM2.5 Plan*), which specify which rules should be adopted. Direct PM2.5 emissions are the most significant contributor to ambient PM2.5 concentrations, and residential wood burning accounts for 16.9 tons per day of emissions out of a total direct PM2.5 emissions inventory of 81.7 tons per day, based on winter projections for 2010. See also Comment 33 and Comment 85.

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98. Comment: Many people have expressed interest in knowing more about the District such as its jurisdiction and funding.

Response: The District's jurisdiction covers the eight-county San Joaquin Valley Air Basin, from San Joaquin County down to Kern County. Funding comes from permit fees, DMV fees, and from the State. More information is available on the District's website: www.valleyair.org.

99. Comment: Are the estimated "No Burn" days given as a quota to meet? If not, why stipulate a figure at all? Will the District stop calling "No Burn" days after a certain amount?

Response: The given estimation is how many "No Burn" days would have occurred in 2006 as an example of the potential effects of this rule. This is not a set quota; there may be more or less "No Burn" days after the implementation of this rule. The amount of "No Burn" days is based on the Air Quality Index and is not a preset amount of days. The staff report language will be clarified to explain this more accurately.

100. Comment: The Valley residents should have a right to burn. There is no difference in emergency room and allergy visits in the winter months compared to the rest of the year.

Response: There are many peer-reviewed studies that show that PM2.5 and wood smoke are linked to a range of health effects. These health effects are the District's primary motivation for this rule amendment.

101. Comment: Representing the Huntington Lake Association, we are glad the exemption regarding wood burning as the sole source of heat is being retained. Are camping sites (fire pits for camp fires) governed by this rule?

Response: Camp sites are not regulated by this rule. The rule is meant to be interpreted to apply to residences only.

102. Comment: Why doesn't the District work with ARB to create a plan to incorporate bioprocess plants to rid forests of dry kindling instead of prescribed burns, especially when forest fires are as prevalent as in summer 2008?

Response: The District works to regulate prescribed burns. Land management plans are incorporating alternatives to prescribed burning.

103. Comment: Does the natural gas exemption apply at elevations below 3,000 feet?

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Response: The natural gas exemption applies everywhere. If a residence does not have natural gas service, regardless of where they live, they are exempt from "No Burn" days.

104. Comment: I commend the District for dropping the criteria for "No Burn" days and know it will be influential in affecting air pollution. The District should also look into using a meteorological based model when determining "No Burn" days to decrease credibility issues. The District should look at how the air quality will be affected when a "No Burn" night is called because a high AQI could be caused by a variety of things, and not necessarily high PM concentration.

Response: When PM_{2.5} air quality is nearing 35 µg/m³, air quality is about to exceed EPA's health-based standards. Adding emissions, regardless of the initial cause, will add to the severity of the exceedance. The District can incorporate meteorological criteria in its forecasting.

105. Comment: Representing Coalition for Clean Air, we appreciate the outreach for this rule and night workshops. The community is not losing the right to burn, but gaining the right to clean air and healthier living. We are glad the District is making changes now for cleaner air in the upcoming winter.

Response: Comment noted.

106. Comment: Are pellet stoves considered clean burning? Would the District provide incentives to change out wood burning stoves with pellet stoves?

Response: Pellet stoves are a very clean alternative. The Burn Cleaner Program is under revision to possibly include other alternative devices, and pellet stoves will be taken into consideration.

107. Comment: Where do we send written comments, and how can the public be involved throughout the rest of the process?

Response: Written comments should be sent to Jessica Hafer at 1990 E. Gettysburg, Fresno, Ca, 93726 or by email at Jessica.hafer@valleyair.org. Written comments will be accepted until August 28, 2008. The final draft of the rule will be posted on September 5, 2008, with another public comment period until October 6, 2008. The public can also attend the public hearing at the District offices on October 16, 2008.

108. Comment: Multiple people stated that the air quality is poor in their neighborhoods due to wood smoke. Air quality is worse here than other places

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they have lived, and it prohibits them from enjoying time spent outside. They agreed they were in favor of anything that could be done to strengthen the rule.

Response: The District will be implementing a change in outreach on wood burning. Wood burning will always be discouraged and if burning is needed, the District encourages everyone to burn as clean as possible.

109. Comment: Is the air quality as bad in the countryside?

Response: The air quality is often better due to the lower population density. There can be exceptions in down-wind areas.

110. Comment: My neighbors are always burning something. They are either burning in their fireplaces or outside using their barbeque. The smoke from these sources seeps into my house, although I have all of the windows and doors closed. My fire alarm has even gone off due to their burning. Why do they have the right to burn when I do not have the right to clean air? The District should promote gas fireplaces and offer discounts to finance it. Wood burning should be banned year-round and not just in the winter months.

Response: If your neighbors are burning on a "No Burn" night in an area that has natural gas service, they are probably violating Rule 4901. The District's grant program provides vouchers for people to change to gas fireplaces. Wood burning is regulated from November – February because, in general, that's when most people use their fireplaces and wood stoves.

Written Comments on the Proposed Rule 4901

Comment period held from July 30, 2008 through August 28, 2008.

Comments were received from the following people and organizations:

Alaska Masonry Heat Distributing (AMHD)

Air Resources Board (ARB)

Jeanne and Lou Aceto (Aceto)

Ed Alves (Alves)

George S. Arata (Arata)

John Boogaard (Boogaard)

Christine Burke (C. Burke)

Gail Burke (G. Burke)

Dale E. Dodge (Dodge)

Duraflame Incorporated (Duraflame)

Leonora P. Ellis (Ellis)

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Loran W. Harding (Harding)
Kurt A. Kautz (Kautz)
John Russell Kelly (Kelly)
D. Kirbie (Kirbie)
Richard and Kathleen Kirkman (Kirkman)
Chanda Meloni (Meloni)
Brian C. Moorehead (Moorehead)
Steve Moye (Moye)
Norma Rogers (Norma Rogers)
Milton Raugust (Raugust)
Mr. and Mrs. John T. Ross (Ross)
Roy Sherman (Sherman)
Cindy Wheeler (Wheeler)

Regulations

- 111. Comment:** Although I have stopped using my fireplace in a conscious effort to reduce pollution, I am still greatly affected by the pollution and smoke from my neighbor's wood burning. Please pass a law that bans all fireplace burning in Fresno. (G. Burke, C. Burke)
Response: The proposed Rule 4901 will limit wood burning in Fresno more than the rule currently does. The District is modifying its outreach to discourage wood burning when there are other feasible alternatives and to encourage people who burn wood to burn as clean as possible.
- 112. Comment:** The use of wood burning devices for heating should be regulated with tests, such as smog checks for cars, to ensure the equipment used meets regulation requirements. Wood burning should require a permit and equipment upgrades to meet standards. Wood burning devices should not all be considered as one category as they burn differently, with some more efficient than others. Therefore controls should be implemented to allow only those whose equipment qualifies to burn wood. Allowance to burn should be based on smoke opacity for each device rather than an overall outlaw of wood burning for everyone. (Boogaard)
Response: See Comment 22.
- 113. Comment:** Why is the change in the AQI limit so drastic and how many days would have been triggered by such a limitation in previous years? (Kelly)

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Response: The change in “No Burn” level is based on EPA’s update of the PM2.5 standard. In 2006-2007, the proposed “No Burn” level would have resulted in 48 “No Burn” days in Fresno County (see Table 2 of the Staff Report).

114. Comment: As was stated in the information given, most of the “No Burn” days in the 2006 data actually measured well below the projected levels. Were the projected levels based on an assumption that considered the amount of people that would be burning and by making it a “No Burn” day the lower levels were achieved? (Kautz)

Response: The commenter is correct. Air quality forecasts consider the air quality that would be experienced with wood burning, based on past trends on days with similar meteorology. Prohibiting wood burning reduces direct PM2.5 emissions so that the measured air quality is lower than the forecasted levels.

115. Comment: The ARB commends and supports the District’s proposed amendments. They are important in the plan to effectively reduce PM2.5 concentrations in the Valley and reaching attainment of the national PM2.5 standards. The proposed rule amendments will also result in reducing public exposure to PM2.5 and its associated health effects. The District has proposed a trigger level lower than required which will build a margin of safety to allow for uncertainties in forecasting. The proposed contingency provision is consistent with the Resolution 08-28 that the ARB adopted in May 2008. (ARB)

Response: Comment noted.

116. Comment: We would like to ask you to consider other measures before placing more restrictions on wood burning. We think the District is misplacing blame and going after something that causes a small amount of pollution in comparison to other sources. The air quality is no better in the summer months when wood burning stoves are not in use. (Kirkman)

Response: The Valley’s summer air quality is dominated by ozone, while the Valley’s fall and winter air quality is dominated by particulate matter. The District has many rules that affect a wide range of sources. Every source of pollution in the Valley is evaluated for potential reductions. Central California Health Policy Institute research showed that wood burning prohibitions have been effective in decreasing PM2.5 emissions. Direct PM2.5 emissions are the most significant contributor to ambient PM2.5 concentrations, and residential wood burning accounts for 16.9 tons per day of emissions out of a total direct PM2.5 emissions inventory of 81.7 tons per day, based on winter projections for 2010.

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- 117. Comment:** Please differentiate between fireplaces and wood burning stoves, as wood burning stoves burn more efficiently than fireplaces, which produce more emissions and negligible heat. (Kirkman, Ellis)
Response: See Comment 22.
- 118. Comment:** The District is faced with the challenge of reducing all PM2.5 emission sources and precursor pollutants under its jurisdiction. Still, as the District evaluates revisions to Rule 4901, it should take care to find a balance between compliance with the new Federal standards without unfairly increasing the burden for emissions reduction on residential wood burning, especially considering clean burning appliance and solid fuel technologies exist today allowing the public to burn with very few particulate emissions. (Duraflame)
Response: See Comment 116.
- 119. Comment:** The trigger for mandatory curtailments should be set at 35 $\mu\text{g}/\text{m}^3$, which is the federal standard for 24 hour PM2.5 violations, not the lower 30 $\mu\text{g}/\text{m}^3$ threshold the District has proposed, for which there is no regulatory compliance justification. This will cause a significant increase in curtailment days and may result in more resistance to compliance from Valley residents. Also, setting the mandatory curtailment at 35 $\mu\text{g}/\text{m}^3$ is consistent with other California Air Districts. Some districts share common media markets with parts of the San Joaquin Valley Air Basin and having a different trigger for curtailments may make communication of curtailments more confusing in those regions of the Valley where the trigger would not match neighboring districts. (Duraflame)
Response: Setting the mandatory curtailment level at a 24-hour average PM2.5 level of 30 $\mu\text{g}/\text{m}^3$, rather than 35 $\mu\text{g}/\text{m}^3$, provides a margin of safety to allow for the uncertainties involved in air quality forecasting. Also, during the Valley's stagnation events, particulates can accumulate over several days. Prohibiting wood burning when the 24-hour average PM2.5 concentration is greater than or equal to 30 $\mu\text{g}/\text{m}^3$ can help the Valley avoid air quality that exceeds the 35 $\mu\text{g}/\text{m}^3$ PM2.5 standard. The District expects to maintain an easy-to-understand communication approach that will tell residents of particular counties whether or not they can use their fireplaces, rather than just providing a PM2.5 concentration and leaving interpretation to residents or the media.
- 120. Comment:** I fully support your proposed strengthening of the Rule 4901. I support lowering the threshold for episodic wood burning curtailment to a level consistent with the Federal PM2.5 standards and the further wood burning prohibitions. I live in Fresno and from October to March the outdoor air in my neighborhood is almost not breathable. The air is so polluted in my neighborhood

that the smoke from other's fireplaces gets inside my home although it is closed up and sealed off. I know for various reasons that wood burning in my neighborhood so frequently is not due to economic necessity. The threshold for wood burning curtailment should be lowered even more than you are proposing. I personally would outlaw all fireplace burning on the floor of the San Joaquin Valley and provide strict fines for violators. I feel the current situation is intolerable and I hope you will consider any drastic additional restrictions on fireplace burning beyond what is under consideration now. (Harding)

Response: The District's current proposal is to call "No Burn" days by county to prevent exceedances of EPA's health-based standards in the county. However, because of more localized, neighborhood-level impacts, the District will be implementing a change in outreach on wood burning. Wood burning will always be discouraged and if burning is needed, the District encourages everyone to burn as clean as possible.

- 121. Comment:** Please consider changing the current curtailment proposition to a staged curtailment system instead of lumping all wood burning devices together. A staged system would have an initial curtailment where at some reasonable level, say $40\mu\text{g}/\text{m}^3$, all non-EPA Certified wood burning devices would be prohibited and then at $30\mu\text{g}/\text{m}^3$ all wood burning would be prohibited. A three stage type of system has worked in the Seattle Air Basin where the first stage is voluntary, the second stage prohibits non-certified wood burning devices and the third stage prohibits all wood burning. People who spend a considerable amount of money to burn responsibly should be rewarded with this type of system as an incentive that will cost little to implement. Those with EPA Certified devices can register and then be able to burn cleanly still on the second level of curtailment without being fined. (Rogers)

Response: See Comment 22.

Public Notice

- 122. Comment:** There is a concern about the District's proposal to change the tone of its successful "Check Before You Burn" public outreach program by categorizing all good air quality and non-curtailment days as "wood burning discouraged." The previous campaign gave balanced information that made the implementation of curtailments palatable to Valley residents leading to strong compliance and necessary reductions in emissions from wood burning. The District should therefore classify all non-curtailment days as "Burn Cleanly" days in order to clearly communicate there are days where wood burning is acceptable, and it should continue to educate residents of the need to use the least emitting options on those days when burning is allowed. This approach will

continue a balanced public education message and will not only foster better compliance but will also promote cleaner burning practices everyday of the burning season overall delivering greater emission reductions from wood burning. (Duraflame)

Response: This will be considered as the District's public outreach materials related to wood burning are revised.

123. Comment: The three tier notification system seems to be working in regards to notifying residents of the recommendations on burning but with the proposed two tier system the second tier could be labeled as "please burn cleanly" or "use only seasoned firewood" instead of burning being "discouraged." These types of labels will produce less hassle and promote smart and clean burning overall. People have a right to use their fireplaces and the best goal is to guide residents on how to burn cleanly. (Kautz)

Response: See Comment 122.

Exemptions and Contingency Measure

124. Comment: A sentence should be added to the natural gas exemption clarifying that a residence qualifies for the exemption even though propane may be used for heating purposes. (Aceto)

Response: The District is clarifying this in the September 2008 draft of Rule 4901, in Section 5.6.3.1.

125. Comment: The elevation exemption should not be removed and exemptions at lower elevations should be explored such as regulations dependent on parcel size and rewarding those who have EPA Certified wood stoves. (Aceto)

Response: See Comment 41.

126. Comment: The elevation level for the exemption has been chosen arbitrarily and is not based on data showing actual air flow patterns. Our house is located at 2,700-feet on a south-facing hillside near the top of a 3,000-foot plus ridge. There is almost continuous uphill flow of air from the southwest due to the direction of the prevailing winds and thermals as warm air from lower elevations rise and continue to flow uphill. This air does not seem to travel downhill towards the Valley. Why should we be prohibited from wood burning when our neighbors across the street just happen to hit the 3,000-foot mark and are allowed to use their woodstoves and higher emitting fireplaces? (Ellis)

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Response: The proposed rule removes the exemption for those at elevations above 3,000 feet.

127. Comment: The proposed contingency provision to reduce the trigger for mandatory curtailments to a level of 20 $\mu\text{g}/\text{m}^3$ is an unfair, disproportionate restriction of wood burning as an emission contribution source and should be deleted from draft Rule 4901. The District's *2008 PM2.5 Plan* predicts that emissions from residential wood burning will decline faster than other. The Plan also predicts the Valley will comply with the Federal 24 hour emission standard by 2015 and will have a greater challenge complying with the PM2.5 annual emission standard. Therefore residential wood burning is only a concern for compliance with the 24 hour emissions standards during the winter months and makes a very insignificant contribution to annual PM2.5 emissions. If the Valley fails to meet federal standards by 2015, it will not be due to emissions from residential wood burning; rather it will be due to the District's failure to cut other significant sources of PM2.5 precursor pollutants which account for a larger percentage of wintertime pollutants. Residential wood burning will be an insignificant source of PM2.5 pollution in 2015 while other sources that contribute more are not being regulated and therefore the contingency measure will have little or no positive effect. (Duraflame)

Response: This component of Draft Rule 4901 was mandated by ARB upon their approval of the *2008 PM2.5 Plan* on May 22, 2008. If the Valley attains the PM2.5 standards by 2015, as the *2008 PM2.5 Plan* predicts, then the contingency measure will not be implemented. To calculate compliance with the annual PM2.5 standard, first the 24-hour average PM2.5 concentrations are averaged in each quarter, and then the four quarters are averaged to obtain the annual average. Since wood burning prohibitions occur during two out of four quarters, it can have a significant impact on lowering the annual average.

Controlled Burning

128. Comment: Fireplaces should not be regulated more when agricultural burning pollutes the air as well. Burning should be allowed if seasoned hard wood is used and the house is closed up because people don't just stand around breathing in particulate matter. (Sherman)

Response: Agricultural burning is managed and regulated.

129. Comment: The Air District fails to recognize issues unique to the foothill and mountain areas affected by this rule. The residents in these areas are integral in helping to maintain a safe environment by clearing the land of possible

fire starters to avoid wildfires. There are fewer pollutants emitted from wood burning in residences and controlled burns than there are emissions from wild fires that start from land that is not tended to. The residents and woodcutting businesses should be acknowledged as part of the solution to clean air as the wildfires have greatly polluted these areas and even the Valley. (Aceto)

Response: Using materials that might otherwise fuel forest fires to instead fuel fireplaces or wood burning heaters can be appropriate for residents who are exempt from the "No Burn" days (such as those who do not have natural gas service) or on days that are not "No Burn" days.

- 130. Comments:** The manner of the public process and the lack of background research and documentation lead the public to believe the amendments proposed and exemptions removed will only escalate to eventually ban wood burning all together. Those who live above 3,000 feet especially are heavily dependent on wood burning days to maintain proper fire prevention around our homes and the surrounding forest. It is critical that we continue to be able to burn hazardous fuels for fire protection as well as recycling the renewable source for heating purposes. (Aceto)

Response: The current rule amendment will not ban all wood burning.

- 131. Comment:** By using a woodstove instead of other heating methods, we are putting to beneficial use, for heat, wood that we would burn anyway on permitted burn days to reduce fuel load and fire hazard on our large wooded lot. This is also the alternative to importing wood. The emissions from burning a small amount of wood to heat portions of our house would be spread out over weeks, rather than burning a very large amount of wood with no emission controls over a period of a few hours or days. (Ellis)

Response: Using hazardous waste removal materials to fuel fireplaces or wood burning heaters can be appropriate for residents who are exempt from the "No Burn" days (such as those who do not have natural gas service) or on days that are not "No Burn" days.

Approved Wood Burning Devices

- 132. Comment:** The regulations regarding the sale of wood burning devices should be changed to include other approved wood burning devices that burn cleaner but may not necessarily be EPA certified. (AMHD)

Response: The District is incorporating this in the September 2008 draft of Rule 4901, in Section 5.1.2.

133. Comment: A distinction in the rule regulations should be made regarding EPA Certified stoves versus regular stoves and fireplaces. By not separating EPA certified units from the common fireplace in the rule restrictions, the District is not giving the public an incentive to do what they can to improve air quality unless forced to. The regulations should be changed or removed from the rule altogether. (Ross, Kirbie, Raugust) Is there any opportunity for an exemption, perhaps at a lower level elevation, for those with EPA Certified units? (Aceto)
Response: See Comment 22.

134. Comment: The rule should recognize the difference between those who use their fireplaces for heating and those who use it for the ascetic value. (Raugust)

Response: The District is modifying its outreach to discourage wood burning when there are other feasible heating alternatives and to encourage people who burn wood to burn as clean as possible.

135. Comment: The District should be advocating all clean burning technologies that can reduce emissions from fireplaces. Promoting manufactured firelogs for use in fireplaces on non-curtaiment nights is a viable strategy that can produce dramatic emission reductions versus wood burning for a typical evening fire and is consistent with the District's stated objective of embracing new technologies as a method to reducing emissions. (Duraflame)

Response: The District will consider a wide variety of methods of cleaner burning as public outreach materials as revised.

136. Comment: Please include EPA Certified fireplaces in your definition for wood burning heater. They are as clean burning as the units the definition specifies and should be recognized. (Rogers)

Response: EPA Phase II Certified devices are defined in Section 3.6 of the September 2008 draft rule.

Cost

137. Comment: Other sources of pollution need to be regulated instead of increased restrictions on fireplaces. Taking away a cost effective heating source will be hard on people in light of the current economic conditions. (Moye, Wheeler, Dodge from Sugarloaf Area, Kelly, Arata, Moorehead, Ellis)

Response: See Comment 116.

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- 138. Comment:** Building more houses brings more cars and therefore more pollution to the Valley. Builders should have to pay for mass transit instead of further regulating fireplace use to decrease pollution. (Alves)
Response: All sources of pollution are evaluated for potential reductions. The District's Indirect Source Review program (Rule 9510) regulates development projects that add more automobiles to the road, and the District's public outreach emphasizes the importance of carpooling, bicycling, and other means of trip reduction.
- 139. Comment:** I live in the country and I can not afford propane heating. I have to use my insert and woodstove nonstop throughout the winter for heating. I would choose not to burn if I could afford any alternative, but that is not an option. (Meloni)
Response: Residences that use propane (residences that do not have natural gas service provided by a utility company) are exempt from "No Burn" days.
- 140. Comment:** The drastic increase of "No Burn" days will amount to possibly over one and a half months out of four months in the season. Those living in the metropolitan part of the basin will have to heat with more expensive means during this time. This will pose a great hardship on Valley residents and it is short sighted not to recognize the expense owners pay to burn cleanly. (Rogers)
Response: While some residents may experience higher utility bills as they shift their heating away from their fireplaces, the health benefits will result in an economic benefit (according to the Hall study). This is one of the most cost effective rules the District can adopt, and residents may be able to alleviate some of their personal costs by finding efficient ways to keep their homes warm.
- 141. Comment:** We invested over \$2,500 in the purchase and installation of a Pacific Energy woodstove that meets EPA criteria for low emissions. We anticipated we would recover the expense with the savings from heating a small area of our large house with the woodstove instead of heating our whole house with propane. Because we will be living in retirement with a fixed income, the savings would be very significant to us. Also by burning to heat a smaller area in our home and for stove-top cooking, we are reducing our electricity costs and carbon footprint. (Ellis)
Response: Residences that use propane (residences that do not have natural gas service provided by a utility company) are exempt from "No Burn" days. EPA Certified woodstoves are a great way to burn more cleanly and efficiently.

Rule Process

142. Comment: How many people are aware of this proposal and what means did the Air District use to notify the public? Is the purpose of the workshops to gather public input or promote the proposed changes? (Kelly)

Response: The purpose of the public workshops was to explain the proposed changes and gather public input about the changes. See Comment 27.

143. Comment: There appeared to be no effort to conduct public outreach in Eastern Madera County. Though there may have been a legal notice in the *Fresno Bee*, there was not an obvious attempt in the local paper or legal notices. There should be better outreach to the make the public aware of a rule that will affect them greatly and the rule process should be reviewed and altered before the proposal to the Board. (Aceto)

Response: See Comment 27.

144. Comment: The workshop given in Eastern Madera County was run with a top-down format making it seem as though there was predetermined outcome. The public's comments were not recorded with a tape recorder but written down under the interpretation of a District staff member. There was also no attempt to educate the public with respect to the broad-based issue of air quality or existing federal and state laws. There was no context provided to explain how the proposed amendments to this rule would fit into an overall plan. It would have also been helpful to know more about the Air District itself such as the organization, mission, sources of funding, etcetera. (Aceto)

Response: The District wanted to keep the workshop presentation short to allow maximum time for public questions and comments. District staff can answer general questions about air quality and the District's organization, mission, and funding. The District will consider bringing a tape recorder to future off-site meetings.

145. Comment: This rule targets the private citizen and not automobiles, which is stated as producing more pollution. Residents are targeted for more rules and regulations while development projects continue to add more and more automobiles without being regulated. The District does nothing to ameliorate this perception. (Aceto)

Response: See Comment 138.

146. Comment: There is a lack of background information for the formation of this rule, such as studies of the number of wood burning devices in the Valley and the amount of use for each. How can the public make informed and constructive comments on the proposed rule with estimates given instead of solid background information on the possible outcomes of this rule and no critical informational documents such as a Socioeconomic Analysis, CEQA Report, and Environmental Impact Report? One of your Twelve Guiding Principles is to allow adequate time for full public participation when scheduling regulatory actions and your compressed schedule and top-down approach absent with complete information appears to violate that principle. (Aceto)

Response: The staff report includes technical information on wood smoke health effects and the reductions expected to come from this rule. The Socioeconomic Analysis is available in the September 5, 2008 revised Draft Staff Report for a 30-day public review period.

147. Comment: We are in the process of moving to Coarsegold in Madera County and currently subscribe to the *Sierra Star*. We did not see any notification of the meeting held in Oakhurst on August 12, 2008. I learned of the meeting from an article in the *Coarsegold Gazette* on the day before the meeting. (Ellis)

Response: Please see Comment 27.