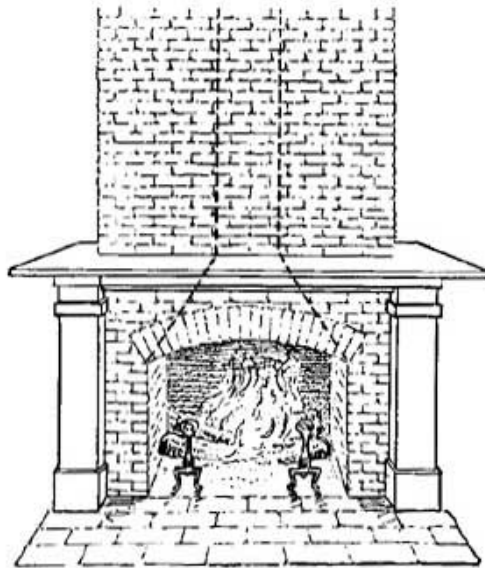
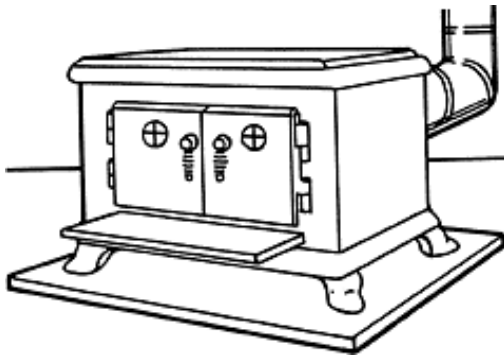


Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Workshop Report

Wood Smoke Reduction Program

Proposed Regulation 6, Rule 3 to Control Particulate Matter and Visible Emissions from Wood-burning Devices



November 2007

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WORKSHOP REPORT
Regulation 6, Rule 3, Wood-burning Devices

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I. INTRODUCTION

This Workshop Report introduces proposed Bay Area Air Quality Management District (Air District) Regulation 6, Rule 3: Wood-burning Devices. The purpose of the rule is to limit emissions of particulate matter (PM) and visible emissions (VE) from wood-burning devices as part of an overall wood smoke reduction program within the jurisdiction of the Air District. Minor changes in current Regulation 1 and Regulation 5 are also discussed as they are necessary to accomplish associated reductions.

PM consists of very small liquid and solid particles suspended in the air, and includes particles smaller than 10 microns in size (PM_{10}) as well as finer particles smaller than 2.5 microns in size ($PM_{2.5}$). PM is of concern because it can enter nasal passages and the lungs and cause serious health effects such as aggravated asthma, nose and throat irritation, bronchitis, lung damage, and premature death. People with respiratory illnesses, children and the elderly are more sensitive to the effects of PM, but it can affect everyone.

The Bay Area experiences its highest PM concentrations in the winter, especially during the evening and night time hours. Wood-burning is the single greatest source contributing to the PM concentrations, based on chemical composition analysis of deposited airborne PM. Emissions calculations indicate wood smoke contributes only about 10 percent of total PM emissions on an annual basis, but approximately 30 percent of total wintertime $PM_{2.5}$.

During recent winters, the Bay Area Air Basin exceeded the 24-hour $PM_{2.5}$ National Ambient Air Quality Standard (NAAQS) 20 to 30 days. Air District staff anticipates a non-attainment designation for this new standard. The emission limitations in this proposed rule are intended to address this expected non-attainment status and reduce the health impacts of PM in the Bay Area. Reductions in wood smoke emissions will be necessary to achieve clean air on a district-wide basis. The Air District's jurisdiction is the San Francisco Bay Area Air Basin which comprises all or part of nine counties: Alameda, Contra Costa, Marin, Napa, San Francisco, Santa Clara, San Mateo, southern Sonoma and the southeastern portion of Solano County.

The proposed rule would reduce wintertime $PM_{2.5}$ levels by curtailing wintertime wood-burning emissions from wood-burning devices, which includes fireplaces, and achieve additional reductions by requiring cleaner burning technologies in new construction. In addition, non-wintertime burning will be improved by requiring appropriate fuel with low-moisture content be used throughout the year in wood-burning devices. Currently, there is no Air District rule which directly limits emissions from wood-burning devices. Air District Regulation 1 has historically excluded regulation of any fires associated with residential heating and will be amended to remove this exclusion. An amendment to existing Regulation 5, Open Burning, will remove an exemption for outdoor wood fires set for recreational

purposes and create a similar requirement to curtail wintertime burning outdoor as well as indoor.

A wood-burning device is any indoor wood-burning stove or insert, pellet-fueled device, conventional fireplace and/or any indoor permanently-installed device burning solid-fuel for aesthetic or space-heating purposes in structures for residential or commercial use. The proposal for wood-burning devices would:

1. Curtail operation of any wood-burning device during periods forecast to negatively impact public health due to PM_{2.5} levels;
2. Establish limitations on visible emissions from wood burning;
3. Establish criteria for the sale, transfer or installation of wood-burning devices;
4. Establish criteria for the installation of wood-burning devices in new building construction;
5. Prohibit the burning of garbage and certain types of materials;
6. Establish requirements for the sale of wood products for use in wood burning devices.

The proposal to amend Regulation 5, Open Burning, would:

1. Create only a limited exemption for outdoor fires set for recreational purposes which would require curtailment during periods forecast to negatively impact public health due to PM_{2.5} levels.

The proposal to amend Regulation 1, General Provisions and Definitions, would:

1. Remove the language “residential heating” to allow for the regulation of indoor wood-burning devices.

II. BACKGROUND

A. Wood-burning Devices

Wood-burning devices are defined as any wood-burning stove or heater, pellet-fueled device, fireplace, or any indoor permanently installed device burning any solid fuel for space-heating or aesthetic purposes. In the process of burning wood or a solid-fuel product these devices must vent gases and combustion by-products through a flue or chimney. For the purposes of Regulation 6, Rule 3, only use of indoor devices will be considered for regulation. Amendments to Regulation 5 will be addressed later in this report to cover regulation of outdoor recreational fires.

Wood-burning devices can be considered low emitters of PM or high emitters of PM. Low emitting devices produce fewer emissions and are identified as being certified¹ by the U.S. Environmental Protection Agency (EPA), or are exempt from certification such as a pellet stove, pellet insert or a masonry heater. Devices, regardless of level of emissions, are exempt from EPA certification if the certification test methods are not appropriate for that device. Conventional fireplaces do not qualify for EPA certification due to the high air-to-fuel ratio of these devices.

High emitting devices are non-EPA-certified stoves or inserts as well as conventional fireplaces. Older, uncertified wood stoves and fireplaces release more than twenty times the amount of PM_{2.5} as compared to new EPA-certified wood-burning devices. See Figure 1, “Relative Emissions of Fine Particles” for a comparison of the average emissions in pounds per million Btu (British Thermal Unit, a heat value unit) for each type of device. The figure also compares wood-burning devices to oil and gas-fueled furnaces.

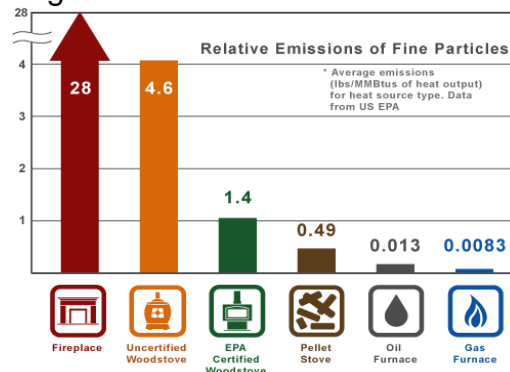


Figure 1. Relative Emissions of Fine Particles, by fuel burning device.

¹ Wood-burning stoves to be sold in the United States (U.S.) must be certified by the U.S. Environmental Protection Agency (EPA) in accordance with Title 40 of the Code of Federal Regulations (CFR), Part 60, Subpart AAA -- Standards of Performance for New Residential Wood Heaters (i.e., the EPA emissions standard).

B. Regulatory Background

Wood smoke has been a concern for the Air District as scientific research began establishing a stronger link between emissions from wood combustion and public health. Since 1991, the Air District has promoted various voluntary programs to reduce wood smoke emissions. These programs include a voluntary curtailment program, an annual random public survey to better understand wood-burning in the Bay Area and a model ordinance for local governments to adopt to reduce PM from wood smoke. The Air District has also directed a financial incentives program on a limited basis promoting cleaner burning technologies, such as natural gas fueled devices, in Santa Clara County.

The voluntary curtailment program is called Spare the Air Tonight (STAT). The program advises Bay Area residents to not burn wood on evenings with meteorological conditions leading to increased PM levels that impact public health. The Air District has also conducted an annual wintertime survey following STAT advisories in order to ascertain and document the public's attitudes and behavior with respect to burning wood.

The Air District developed and promoted a model ordinance that cities and counties may adopt to further reduce wood smoke impacts in their community. The model ordinance developed by the Air District includes the following suggested elements:

- curtails burning during STAT advisories;
- specifies criteria for cleaner wood-burning devices; and
- limits fuel type to materials appropriate for wood-burning devices (no garbage, etc).

The model ordinance has been adopted by city and county governments within the Air District, with different mixes of suggested elements.

In addition, the Air District co-sponsored and managed a financial incentive, or "wood stove change-out", program in Santa Clara County as part of an air quality mitigation program required by the California Energy Commission. Rebates were offered to residents to remove non-EPA-certified wood-burning devices, install only EPA-certified devices, or to retrofit wood-burning fireplaces with natural gas fireplaces. The District's new Cleaner Burning Technology Incentives Program will provide similar incentives in the future.

In 2005 the Air District published the "Particulate Matter Implementation Schedule", pursuant to SB 656, and wood smoke reduction was identified in that Schedule as a priority. Subsequently, the Air District Advisory Council examined wood smoke impacts on PM_{2.5} levels and issued recommendations to the Air District Board of Directors.

The recommendations were accepted by the Air District Board of Directors and staff began work on a wood smoke reduction strategy. Through the rule development process, staff has continued to review wood smoke regulations and programs at other air districts; some are identified in Table 1.

Air District	Rule	Mandatory Solid Fuel Burning Curtailment	Prohibition of Exceeding Visible Emission Limit	Sale, Transfer or Installation Criteria for Devices	Criteria for Devices in New Building Construction	Prohibition Against Burning Garbage or Certain Fuel	Requirements for Sale of Seasoned Wood
Puget Sound (WA)	Chap 173-433	✓	✓	✓	✓	✓	✓
San Joaquin Valley	4901	✓	✓	✓	✓	✓	✓
Great Basin	431	✓	✓	✓	✓	✓	
Sacramento	417 ²	✓		✓		✓	✓
	421 ³	✓	N/A	N/A	N/A	N/A	N/A
Yolo-Solano	2.40			✓		✓	✓
Northern Sonoma	R4-1			✓		✓	✓
Monterey Bay	400					✓	
Shasta	3.23			✓	✓	✓	
Butte	207			✓	✓	✓	
Feather River	3.17			✓	✓		
South Coast	445			✓	✓	✓	

Table 1. Other air districts' wood smoke reduction programs.

The standards shown in the column headings of Table 1 reflect the breadth of current rules regulating wood smoke. The proposed Regulation 6, Rule 3 draws from those standards and methods which have proven effective in maximizing the reduction of PM from wood smoke and at the same time minimizing economic or lifestyle adjustments required of impacted stakeholders such the hearth-related industries and health-related organizations.

² Rule 417 is an existing rule governing wood-burning criteria other than no-burn restrictions.

³ Rule 421 is a proposed rule solely affecting mandatory no-burn restrictions.

Local ordinances, based on the Air District’s model ordinance to reduce PM from wood smoke, have been adopted by 41 cities and eight counties in the Bay Area. The local ordinances that have been adopted vary in the degree to which they incorporate elements of the model ordinance. Those jurisdictions that have adopted an ordinance with a mandatory, as opposed to voluntary, curtailment provision are shown in Table 2, along with other provisions of their ordinances.

CITY	Adopted	Curtailment Action upon STAT Advisory	Certified Device in New Construction	Certified Device in Remodels	Prohibits Conversion from Gas to Wood
Fremont	Jul 02	Mandatory	✓	✓	✓
Gilroy	Mar 05	Mandatory	✓	✓	
Los Gatos	Dec-92	Mandatory	✓	✓	
Martinez	Sep 05	Mandatory	✓	✓	✓
Mill Valley	Sep 05	Mandatory	✓	✓	✓
Oakland	May 05	Mandatory	✓		✓
Rohnert Park	Sep 04	Mandatory	✓	✓	✓
San Pablo	Dec 01	Mandatory	✓	✓	✓
Union City	Apr-99	Mandatory	✓	✓	✓

Table 2. Cities that have adopted a mandatory curtailment standard.

In order to further reduce wintertime PM levels to improve public health, a district-wide policy is necessary. The proposed Regulation 6, Rule 3, is designed to best address PM from wood smoke throughout the Bay Area. Any local ordinance that is more stringent than the provisions of proposed Regulation 6, Rule 3, may be appropriate for that area and would not be superseded by adoption of an Air District rule. The Air District will continue to support the adoption process of ordinances in individual jurisdictions, even though the new minimum requirements within the Air District would be the provisions of Regulation 6, Rule 3, if adopted.

Regulation 1, General Requirements and Definitions, has historically excluded fires from residential heating, as well as cooking, from any Air District regulation.

Regulation 5, Open Burning, has historically exempted outdoor recreational fires from any Air District regulation other than to require they be composed only of clean dry wood or charcoal and a small amount of fire starter.

III. TECHNICAL REVIEW

A. Emission Inventory

Burning wood dates back to early human history and, since it is a natural process, is sometimes thought to have a benign impact upon human health (Naeher, et al 2007). However, combustion processes, including the combustion of wood in wood-burning devices, are a major source of anthropogenic air pollution, including hydrocarbons and PM. Carbon monoxide, nitrogen oxides and sulfur dioxides are other dangerous by-products from the combustion of wood (Boman, et. al 2003).

PM is a mixture of very small liquid droplets and solid particles suspended in the air. Negative health effects are linked to both droplets and particles. Numerous studies have shown that mortality and hospital admission are related to pulmonary and cardiovascular disease increase on days with high particulate air pollution levels (Dominici et. al, 2006; Sällsten et. al, 2006). In addition to premature death in people with heart or lung disease, the EPA indicates that health studies have linked exposure to PM, especially fine particles, to several other significant health problems, including:

- increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing;
- decreased lung function;
- aggravated asthma;
- development of chronic bronchitis;
- irregular heartbeat;
- nonfatal heart attacks.

Residential wood combustion is an important contributor to ambient fine particle levels in the United States (Fine 2004). Air District staff has identified wood smoke as the single greatest contributor on peak days (33%) to PM_{2.5} in the Bay Area, as shown in Figure 2 (Fairly 2007).

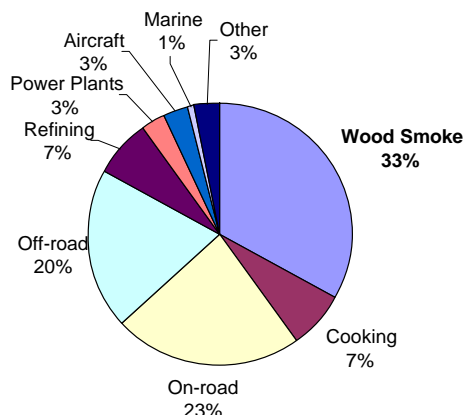


Figure 2. PM_{2.5} Concentration on Peak Days by Constituent in the Bay Area.

Other studies find results and trends that support emission inventory estimates derived from the Air District data. The California Air Resources Board finds residential wood combustion makes up 20 percent to 35 percent of PM (Magliano, 1999).

To estimate the amount of PM coming from wood-burning devices, including fireplaces, Air District staff used data from survey sample results from Bay Area residents. These results were then correlated with projected demographic trends from the Association of Bay Area Governments (ABAG), which were based on U.S. Census data, and used to arrive at the estimated number of devices. These data, along with an annual through-put (fuel load), also derived from survey results, and an emission factor were then used to generate a PM₁₀ estimate for each county in the Bay Area. These data are summarized in Table 3 in tons per day (tpd) and tons per year (tpy), for both PM₁₀ and PM_{2.5}.

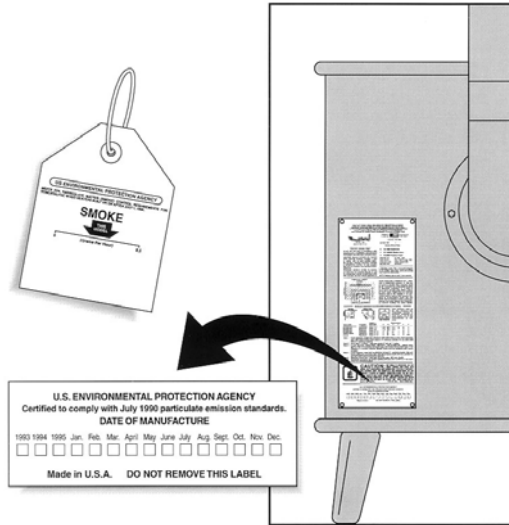
County	Wood Stove PM ₁₀ (tpd)	Fireplace PM ₁₀ (tpd)	Wood Stove PM _{2.5} (tpd)	Fireplace PM _{2.5} (tpd)
Alameda	0.03	2.28	0.03	2.19
Contra Costa	0.76	4.32	0.73	4.15
Marin	1.03	0.37	0.99	0.36
Napa	0.33	0.41	0.32	0.39
San Francisco	0.03	0.28	0.03	0.27
San Mateo	0.38	0.70	0.36	0.67
Santa Clara	0.65	3.11	0.62	2.99
Solano	0.05	0.89	0.05	0.85
Sonoma	1.27	1.43	1.22	1.37
Total Emissions Bay Area (tpd)	4.54	13.80	4.36	13.25
Total Emissions Bay Area (tpy)	1657	5037	1591	4836

Table 3. Summary of PM emissions from wood-burning devices by county.

Because the category of PM₁₀ also includes PM_{2.5}, a large portion of PM₁₀ particles are also PM_{2.5} particles (Houck 1998). Therefore, the majority of PM from wood smoke are fine particles. It is these fine particles that are of greatest concern to public health according to recent studies (Woodruff 2006).

B. Evaluation of Controls for Wood-Burning Devices

PM emissions from wood-burning result from inefficient combustion of the wood. Increasing combustion efficiency reduces emissions and can be achieved through use of EPA-certified wood stoves (See certification example at Figure 3) and proper burning techniques.



How To Tell If You Have A Clean-Burning Stove: All new wood stoves sold after July 1, 1992 are certified by the EPA to be clean-burning. A sticker on the back bears the name of the United States Environmental Protection Agency.

Figure 3. Example of an EPA certification on a wood burning stove.

Another alternative in reducing PM emissions from wood-burning combustion is to replace solid fuel combustion (wood as a fuel source) with natural gas or propane, which essentially eliminates PM.

Wood stoves are wood-burning devices that are enclosed to control combustion. EPA-certified stoves employ either a catalytic or non-catalytic system to increase combustion of the exhaust stream. These units are either stand alone or installed into a building's walls. A wood-burning insert can be placed in either a new or an existing fireplace.

Some EPA-certified stoves utilize a catalyst to reduce the ignition temperature of volatile gases resulting from wood combustion. A catalyst in a stove is a ceramic honey-combed combustor that is coated with a noble metal, such as platinum or palladium. These types of stoves require maintenance and eventually catalyst replacement during the lifetime of the stove in order to operate properly. The EPA certification emission limit for catalytic stoves is 4.1 grams per hour (g/hr).

Non-Catalytic stoves, on the other hand, achieve low-emission, cleaner burning by decreasing the firebox size, increasing turbulence (mixing) within the firebox, and adding baffles as well as secondary burn tubes to combust emission gases. These stoves still require maintenance to operate effectively, but do not have a catalyst to replace. The EPA certification emission limit for non-catalytic stoves is 7.5 g/hr.

Pellet stoves were developed during the 1970's to develop alternatives to fossil fuel. These devices burn pellets very cleanly and do not require EPA certification, although many manufacturers have the devices certified by the EPA. Pellet stoves burn wood that has been compressed into pellet form for combustion and easy storage. Some pellet stoves burn products other than wood, such as wheat or

corn. In addition to the need to be vented to the outside of the structure, pellet stoves require electricity to operate in order to utilize active air and fuel management systems to control combustion efficiency. Some pellet stoves cannot meet the EPA certification requirements due to excessive air-to-fuel ratios. These stoves, however, are efficient and clean burning.

A masonry heater is a site-built, or site-assembled, solid-fueled heating device consisting of a firebox, a large masonry mass, and a maze of heat exchange channels. While a masonry heater may look like a fireplace, it operates differently. It stores heat from a rapidly burning fire within its masonry structure, and slowly releases the heat over time. These devices currently do not require EPA-certification.

Proper burning techniques focus on proper fuel selection and fire-building. Dry or “seasoned” wood has a moisture content of 20 percent or less. This wood burns more efficiently since less heat is required to vaporize water in the wood. Proper wood placement for a fire also improves the combustion efficiency. Requiring proper labeling of seasoned wood for sale will provide the consumer with the necessary information on how to comply with mandatory wood-burning curtailment. Overall, an efficient fire leads to more complete combustion, lower emissions and lower fuel costs.

C. Evaluation of Potential Reductions

Emission reductions are calculated using the best available data and methodology. Reduction calculations for the proposed regulation are based upon baseline emission inventory data for wood-burning devices in the Bay Area, utilizing survey data and household population estimates from the ABAG.³

1. Mandatory Solid Fuel Burning Curtailment: Reductions from this standard were calculated using a total annual emission (see Table 3) from both wood stoves (1591 tpy) and fireplaces (4836) which totals 6427 tpy of PM_{2.5}.⁴ The daily amount of emissions can be estimated to be:

$$\begin{aligned} &6427 \text{ tpy (total annual emissions) divided by} \\ &120 \text{ days (number of days in the winter burning season) =} \\ &53 \text{ tpd (tons per day during winter season).} \end{aligned}$$

Air District staff estimates an average of 20 days per year of mandatory curtailment on wood burning. Therefore, the Air District anticipates a reduction based on:

³ Please note that values were rounded following the reductions calculations and therefore totals may not appear to be cumulative. For example, conversions from “tons/day” to “tons/year” were calculated before rounding the resulting values.

⁴ For the purposes of this calculation, staff allocated annual emissions to the wintertime period (Sacramento, 2007).

20 days (number of estimated curtailment periods) times
53 tpd (tons per day during winter season) =
1071 tpy of PM_{2.5}.

According to Air District survey results, 77 percent of all Bay Area residents support mandatory curtailment. However, only 18 percent of households with a wood burning device did not burn at all during the season or refrained from burning due to the STAT campaign. Air District staff is, therefore, assuming a conservative 18 percent compliance rate, which reduces emissions of PM_{2.5} to a total reduction of 192 tpy for the lower range of reductions. Staff anticipates that increased outreach and the transition from voluntary to mandatory curtailment will increase compliance rates and emission reductions over time to 77 percent, or a higher range of 825 tpy of PM_{2.5}.

2. Prohibition of Exceeding Ringelmann No. 1 (20 percent opacity): Air District staff has not calculated an emission reduction value for this standard due to the lack of sufficient data. A Ringelmann No. 1 standard, however, is consistent with visible emission standards applied to industrial sources and indicates efficient combustion. Staff anticipates the cumulative effect of this standard will contribute to lower local and overall PM concentrations.

3. Criteria for Sale, Transfer or Installation of Wood-burning Devices:

To calculate the emission reduction on a per unit basis, data calculations were based on assumptions of 50 g/hr of PM_{2.5} for high-emitting or non-certified devices and 5 g/hr of PM_{2.5} for low-emitting or certified devices were used. Therefore, the reduction is calculated as the difference between the two rates, or 45 g/hr.

According to Air District survey results, data indicates likely annual burn times in residences range from 30 to 150 hours per year. Therefore, in pounds per year based on a per unit basis for upgraded units, estimated reductions will be 3 to 15 pounds per year of PM_{2.5}.

It is anticipated that upgrades to cleaner burning technology will result in additional reductions. However, at this point in time it is not possible to determine where device upgrades will occur and to what extent Bay Area residents will upgrade.

4. Criteria of Wood-burning Devices in New Building Construction: Air District staff anticipates that requiring installation of wood-burning devices which are EPA certified or designated low emitting into any new housing construction will reduce annual PM_{2.5} by 58 tpy. This value is based on survey results indicating the type of fuel Bay Area households are burning and the frequency at which the households are burning. These trends were applied to ABAG household projections forward looking to 2015 from 2005.⁵

⁵ The Bay Area Air Quality Management District is comprised of the nine counties of the San Francisco Bay Area: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa

To calculate a reduction achieved for emissions from installed wood burning devices in new construction, staff started with two assumptions:

- (1) Current emission levels carried forward to 2015 without New Construction Standard will increase by 2.8 tpd of PM_{2.5} over ten years,

And,

- (2) Lower emission levels projected forward to 2015 with New Construction Standard will increase by 1.2 tpd of PM_{2.5} over ten years.

The difference between (1) and (2) is 1.6 tpd of PM_{2.5}. The annual results are achieved by multiplying 1.6 by 365, and then dividing by 10 to achieve per year averages which are summarized in Table 4.

Process description	PM ₁₀ (tpy)	PM _{2.5} (tpy)
(1) Projected emissions WITHOUT new construction requirement	105	102
(2) Projected emissions WITH new construction requirement	45	44
Bay Area Reduction [Difference between (1) and (2)]	60	58

Table 4. PM reduction annualized amounts based upon new household population growth.

According to Air District survey results, 64 percent of all Bay Area residents support a policy that all new construction use only gas fireplaces or EPA certified fireplace inserts, woodstoves or pellet stoves.

5. Prohibition Against Burning Garbage or Certain Materials: The prohibition against burning garbage or other materials not intended for wood-burning device use has no emission reduction calculated. This standard, however, is anticipated to reduce toxic air contaminants from residential burning.

6. Requirements for Seasoned Wood: Air District staff anticipates that burning seasoned wood increases combustion efficiency and decreases emissions.

According to Air District survey results, 4% of all Bay Area residents burned fresh cut wood and 5% were unsure of their firewood source. Air District staff approximated that 50% of those unsure of their fuel source burned non-seasoned wood for a total of 6.5% of all residents that burned non-seasoned wood. A total of annual emission (see Table 3) from both wood stoves (1591 tpy) and fireplaces (4836) is 6427 tpy of PM_{2.5}. Therefore,

Clara, Solano, Sonoma. Solano and Sonoma county populations are 75 percent and 87 percent within the Air District jurisdiction, respectively.

6.5% of 6427 tpy of $PM_{2.5}$ = 417 tpy of $PM_{2.5}$ and
assuming seasoned wood emits 1 percent less of $PM_{2.5}$ than non-seasoned wood,
1% of 417 tpy of $PM_{2.5}$ = 4 tpy of $PM_{2.5}$.

IV. PROPOSED RULE AND AMENDMENTS BEING CONSIDERED

Proposed Regulation 6, Rule 3, consists of six standards to reduce PM from wood smoke as well as amendments to existing regulations:

1. Mandatory Solid Fuel Burning Curtailment: This standard would prohibit the operation of a wood-burning device whenever the Air District anticipates a negative impact upon public health as a result of PM_{2.5} levels. Mandatory curtailments will be forecast and the public will be notified via the Air District's website, news release, phone-line or email list-serve as well as other mass media and means deemed appropriate by the Air District.

The proposed rule has a limited exemption for this standard only for a person:

- whose wood burning device is the sole source of heat; or
- who is located where natural gas is unavailable.

2. Prohibition of Exceeding Ringelmann No. 1: The Ringelmann No. 1 is a visible emission standard equivalent to 20% opacity and will limit visible emissions from chimneys or flues based on visual observation.

The proposed rule has a limited exemption for emissions from the startup of a new fire for a period that is not to exceed twenty minutes in any four-hour period.

3. Criteria for Sale, Transfer or Installation of Wood-burning Devices: This standard applies to both used and new devices. A wood-burning device shall not be sold, transferred or installed within the Bay Area unless it is one of the following:

- A U.S. EPA Phase II certified wood-burning device;
- A pellet-fueled device;
- A masonry heater;
- A device approved in writing by the APCO that meets low mass fireplace emission targets.

Retailers and manufactures will be required to provide public awareness information (to include: the proper sizing, installation, operation and maintenance of the wood-burning device as well as the health effects of wood smoke) with the sale of each new wood-burning device. This information will be made available in print or electronic format, including email distribution, to the purchaser(s) of the device.

4. Criteria of Wood-burning Devices in New Building Construction: This proposed standard specifies that a wood-burning device installed in new construction must be one of the following:

- A U.S. EPA Phase II certified wood-burning device;
- A pellet-fueled device;

- A masonry heater;
- A device approved in writing by the APCO that meets EPA low mass fireplace emission targets.

Builders will provide public awareness information (to include: the proper sizing, installation, operation and maintenance of the wood-burning device, as well as the health effects of wood smoke) with any new construction which contains a builder-installed wood-burning device.

5. Prohibition Against Burning Garbage or Certain Materials: This standard requires that the following materials cannot be burned under any circumstance: garbage, chemically treated wood, non-seasoned wood, used or contaminated wood pallets, plastic products, rubber products, waste petroleum products, paints and paint solvents, coal, animal carcasses, glossy and/or colored paper, salt water driftwood, particle board, and any material not intended by a manufacturer for use as a fuel in a wood-burning device.

6. Requirements for Seasoned Wood: This standard requires that seasoned wood supplied or offered for sale must contain a moisture content of 20 percent or less by weight for cleaner burning.

A related administrative requirement requires that any seasoned wood packaged for sale include a package label identifying the wood as having a moisture content of 20 percent or less by weight. Seasoned wood and other solid fuels, with the exception of those intended for cooking, such as charcoal, also require additional labeling explaining the solid-fuel burning mandatory curtailment notification process and the health effects of solid fuel combustion.

7. Amendments: Regulation 1 establishes general provisions and definitions which apply to all other Air District rules and regulations. Regulation 1 currently excludes from any Air District regulation any fire for residential heating. An amendment is being proposed to eliminate this exclusion in order for Regulation 6, Rule 3, to regulate residential fires. Fires used indoor for residential cooking will not be affected.

Currently, Regulation 5 regulates open burning, or fires conducted outside of buildings. However, recreational fires are exempt if using only clean and dry wood. In order for a mandatory curtailment to be effective in reducing PM, the curtailment must be applicable also to outdoor recreational fires. Therefore, an amendment to Regulation 5 is being proposed to remove the exemption for recreational fires. Fires used outdoor for residential cooking will not be affected.

V. RULE DEVELOPMENT/PUBLIC CONSULTATION PROCESS

This Report and the associated Public Workshops are the most recent steps in the Air District's consultation process with industry, health organizations, and the public regarding Regulation 6, Rule 3: Wood-burning Devices. Following public workshops, Air District staff will evaluate comments before presenting a final draft for a public hearing by the Air District's Board of Directors.

Air District staff has met with concerned and interested stakeholders including: the American Lung Association and members of the Hearth, Patio & Barbecue Association. Air District staff has also spoken with the Home Builders Association of Northern California and the Marin County Community Development Sustainability Team.

The purpose of the Public Workshops is to solicit comments from the public on the proposed new Regulation 6, Rule 3. At the workshops, the staff will also respond to questions about information presented in this Workshop Report. Based on the input staff receives prior to and at the workshop, staff will decide whether changes to the proposal are necessary prior to a public hearing before the Air District's Board of Directors.

VI. REFERENCES

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