

California Air Districts:
A Case Study in Wood Burning Regulations
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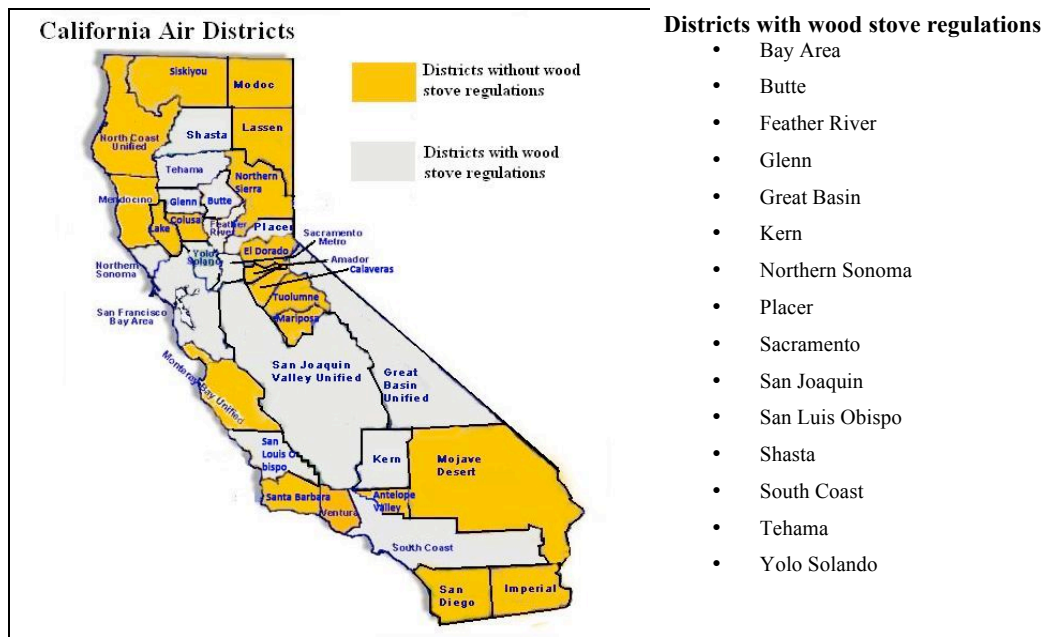
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Summary: California has pioneered and employed an array of incentives and regulations to combat the health effects of wood smoke and today represents a complex patchwork of regulatory approaches.

California faces some of the most challenging air pollution issues in the country. Not only is California the largest state in terms of population, but this population occupies the third largest state by land area in the US. To deal with the distinctive issues caused by great population density and geographical diversity, California divided into thirty-five ‘Air Districts.’ Since each district has a unique set of regulations concerning wood heat, California has become an excellent case-study for the different approaches to wood heat policy. In this article we will dissect the various laws and their permutations throughout California and highlight some of the most effective and environmentally friendly legislation.



Fifteen Air Districts have restrictions on the type of indoor biomass burning devices that can be sold; ten of which also have ‘No Burn Days’ when some wood burning devices can’t be used. In addition to these main restrictions,

each air district has a unique assortment of various regulations including: burning requirements, density requirements, education requirements and enforcement/penalties. Each area also exempts various devices and situations from these regulations.

Curtailment

In many parts of the country winter weather, deep valleys and old polluting stoves create dangerously high small particulate (PM 2.5) levels in the air. These harmful air conditions can cause increased asthma, coughs and general lung issues. This results in unhealthy communities and undermines the reputation of all wood-burners. Old, uncertified woodstoves and poor wood burning practices have pushed many towns, counties, states and air districts to implement strict 'no burn days' that curtail the use of wood burning devices, and these rules all too often lump modern clean stoves in with high polluting models. In areas that fail to meet EPA fine particulate standards, and are considered 'non-attainment areas,' some burning curtailment is often necessary and some jurisdictions will differentiate between clean stoves and old ones.

The Sacramento Air District currently has the most nuanced policy with three levels of restriction. The first level is implemented when PM 2.5 readings exceed $25 \mu\text{g}/\text{m}^3$. At this time all wood burners are asked to voluntarily cease burning, with the exception of EPA Phase II and pellet stoves. The second level (Mandatory stage I) is implemented when PM 2.5 exceeds $30 \mu\text{g}/\text{m}^3$, and again EPA Phase II and pellet stoves are exempt from the burn restriction. The final level is reached when PM 2.5 exceeds $35 \mu\text{g}/\text{m}^3$, and all devices are restricted from burning. This policy could be improved by recognizing and allowing use of the high efficiency wood burning devices that emit less than 2 grams per hour, as their air pollution is very minimal.

The air districts not only have a wide variety of different curtailment criteria and stages, they also vary widely in who is exempt from these rules. The Sacramento and South Coast air districts both have important low income/hardship and 'sole source of heat' exemptions from no burn days. Exemptions such as these are important since many low-income families can only afford to heat their houses with wood, and even a few days on their backup systems could prove a significant financial burden. South Coast also exempts stoves on properties 3,000 feet above sea level which is a good example of a logical local adjustment (at these heights wind will disperse particulates before they become a concentrated air pollutant).

Allowed Stoves

States such as Washington and Oregon both have strict state-wide regulations on what stoves can be sold or installed in their states, California however has few over-arching regulations. Only fifteen out of the thirty five air districts have restrictions on what can be sold or installed in their district. Areas that only allow the cleanest devices can help drive manufacturers and consumers to the cleanest models and

helps keep the air from ever reaching non-attainment status. Ideally, if more pellet stoves and only the cleanest modern stoves are used in an area, the community will never need to implement a 'no burn day,' wood burners will be able to burn year round, neighbors will be less impacted by smoke and ambient air quality will improve.

Great Basin, Northern Sonoma, Placer, Sacramento, San Louis Obispo, South Coast and Yolo Solanado all have policies that only allow the installation of devices that meet EPA Phase II emission standards of 7.5 for non-catalytic stoves. While this certification is not as strict as it could be, requiring all devices meet this standard (even if they are not required to be certified by the EPA) cracks down on wood burning devices that escape EPA certification because of loopholes in the rules, such as the low cost, high air to fuel ratio stoves. Great Basin Unified also has an interesting policy that requires homeowners to replace outdated polluting stoves with clean stoves upon the sale of the home. Policies such as this enable a community to slowly switch to cleaner stoves more affordably as the change-out cost can be bundled into the overall home price tag. Several air districts also have density requirements where there are a set number of stoves that can be installed in certain neighborhoods.

Burning and Education Requirements

The most modern clean burning technology is often rendered useless if people burn unseasoned wood or trash in their stove. Trash type items, such as varnished wood, garbage, etc build up dangerous creosote and release many more emissions. Unseasoned wood is generally considered any wood with moisture content above 20%. The higher a wood's moisture content, the more PM 2.5 is released. Unseasoned wood should never be burned, and the wood burner is not getting as much heat per log as they would otherwise. In the Bay Area Air District, no one is allowed to sell firewood with a moisture content higher than 20%, while in Feather River Air District no one is allowed to *burn* wood with a moisture content higher than 20%. This distinction is important since many low income families may want to buy the cheaper green wood to season it themselves before they burn it to save money.

Many first time wood burners might not realize how much good burning habits can promote low emissions and safer operation. To combat this issue, some areas require educational information to be distributed upon sale of stove, installation of stove or application for a permit to burn from the city. Placer Air District requires both the retailer and installer to provide information on good burning practices. This keeps the financial burden off of the city/district while making sure homeowners have two chances to become educated. Sometimes people install their own stove or will buy a used stove from the classified, so requiring two different outlets of information dispersal is sound policy.

Conclusions

There are many other ways for a government to promote clean air and modern woodstoves. California merely serves as a good case study for the range of different, inventive unique programs that attempt to address this difficult issue. Increasingly, it appears that the most effective programs that are more readily embraced by the public start by allowing only the cleanest stoves, educating the wood burners, allowing only seasoned wood to be burned and then if they need to implement wood burning

curtailment days they must take into account the emission levels of different appliances and allow the high efficiency stoves to continue burning longer.

Appendix:

Bay Area

Curtailment:

November- February

1. PM_{2.5} exceed 35 µg/m³

Exempt:

Stoves installed where natural gas or electric are unavailable, sole heat

Sale:

Allowed: Only EPA Phase II, pellet, low mass fireplace

Exempt: Installed fixtures on a property

Burning requirements:

-No trash, etc

-Can't sell firewood with over 20% moisture

Education:

The person selling or installing must provide information

Butte

Sale

Allowed: EPA Phase II, catalytic- less than or equal to 4.1, non-catalytic- less than or equal to 7.5, pellet, gas, cookstoves, antique, items in escrow

Density

Yes, there are density requirements

Education

Retailers must provide information

Feather River

Curtailment:

Air Pollution Control Officer decides when to implement, and can order reduction, curtailment or complete cessation.

Sale

Allowed: EPA Phase II, masonry, pellet, inoperable, catalytic: 4.1 g/hr, non-catalytic: 7.5 g/hr, permanently installed

Burning requirements

No trash, etc

Can't sell firewood with over 20% moisture

Glenn

Curtailment:

Voluntary: PM10 exceeds 60 $\mu\text{g}/\text{m}^3$

Sale

Allowed: EPA Phase II, Oregon Certified, pellet, inoperable, fireplaces 7.5 g/hr

Burning requirements

No trash, etc

Enforcement/penalties

\$1000 per day

Up to \$10,000 if a person burns incorrectly

Great Basin Unified

*Rules only apply to high wood smoke areas

Curtailment

Voluntary: PM10 exceed 100 $\mu\text{g}/\text{m}^3$

Mandatory: Nothing is allowed to burn if PM10 exceeds 130 $\mu\text{g}/\text{m}^3$

Exempt

Pellet stoves

Sale

EPA Phase II certified, or certified as being able to meet EPA Phase II standards

Must replace on sale of property

Burning

No trash, etc

Density

Yes, there are density requirements

Education

Town manager must provide information

Enforcement/Penalties

Town Air Quality manager can enter buildings to inspect

Escalating fines starting at \$50

One violation=infraction, 3=misdemeanor

Kern

Sale

Allowed: EPA Phase II, pellet, inoperable, gas fireplace, cookstove

Education

Retailers of new wood stoves must provide information

Northern Sonoma

Sale

Allowed: EPA II emission standards, Masonry

Burning Requirements

No trash

Can't call wood 'seasoned' unless it has less than 20% moisture

Enforcement/penalties

Misdemeanor or civil penalty

Placer

Sale

Allowed: EPA Phase II, pellet, masonry, meets EPA Phase II standards, cook stoves

Density

Single families can own more than one stove if the total emissions don't exceed EPA Phase II for a single non-catalytic.

Education

Anyone selling or installing must provide information

Burning requirements

No trash

Can't burn wood with over 20% moisture

Sacramento

Curtailement:

November- February

1. Voluntary if PM_{2.5} exceed 25 $\mu\text{g}/\text{m}^3$: EPA, Pellet exempt
2. Mandatory stage I: exceed 30 $\mu\text{g}/\text{m}^3$: EPA, Pellet exempt
3. Mandatory stage II: exceed 35 $\mu\text{g}/\text{m}^3$

Exemptions:

EPA Phase II & pellet stoves at voluntary and mandatory stage I, hardship (with city council approved waiver), sole heat, religious, cookstoves & gas

Sale:

Allowed: EPA Phase II, pellet, masonry, meets EPA Phase II standards

Burning Requirements:

No trash

Can't advertise 'seasoned' wood unless the moisture is less than 20%

Education

Anyone selling or installing new appliances must provide info

Enforcement:

\$50 1st time fine or wood smoke awareness course, progressively increased fines

San Joaquin

Curtailement:

November-February

1. PM_{2.5} exceed 30 $\mu\text{g}/\text{m}^3$ or PM₁₀ exceed 135 $\mu\text{g}/\text{m}^3$

Exempt:

-Cookstoves, sole source, no natural gas available

Sale:

Allowed: EPA Phase II, Pellet, low mass, masonry
Destroy old (even when selling property)

Education

Retailers of new wood burners must offer information

Density Requirements

Yes

Burning

-No trash
-Can't sell 'seasoned wood' if it has over 20% moisture

San Luis Obispo

Curtailement

Voluntary: dependent on Chap 1, Sub 2, Article 3

Exempt

Cookstoves, boilers, furnaces, antiques, sole heat, Oregon certified, EPA Phase I, appurtenances,
other wood burning devices not defined

Sale

Allowed: EPA Phase II, Oregon, pellet, catalytic with emissions of 4.1, Non-catalytic with
emissions of less than or equal to 7.5, pellet, gas, can meet EPA Phase II certification

Education:

Retailer must provide information

Burning:

No trash
No one can sell wood with moisture content higher than 20%

Shasta

Curtailement

Voluntary: stop using uncertified stoves with PM10 concentrations of 60µg/m³

Sale

-EPA Phase II, EPA exempt, pellet, destroyed

Burning

No trash, etc

Enforcement/Penalties

\$1,000 per day
\$15,000 for burning trash items

South Coast

Curtailement

November-February

No criteria listed

Exempt

Low income, sole source, no natural gas within 150 feet, properties 3,000ft above sea level, ceremonial fires, cook stoves

Sale

Allowed: EPA Phase II, masonry, gas, stoves that meet EPA Phase II standards but aren't certified

Burning

No trash, etc

Commercial firewood sellers are only allowed to sell seasoned wood (20% moisture or less)

Enforcement/Penalties

1st time: \$50 or wood smoke class

2nd time: \$150 or proof of a new gas fireplace

3rd time: \$500 or an environmental project

Tehama

Curtalement

Voluntary: Stop using uncertified appliances if PM10 exceeds 60µg/m³

Sale

Allowed: EPA Phase II, Oregon certified, exempt from EPA Phase II, pellet stoves, inoperable

Yolo Solanado

Sale

Allowed: Pellet, EPA Phase II, meet EPA Phase II standards

Education

Retailers of new appliances

Burning requirements

No trash

Can't sell wood advertised as seasoned if it exceeds 20% moisture