

Clean Burn: Frequently Asked Questions

For the Person New to Clean Burns

This FAQ is intended as a first step to using the information on this site. It provides an overview of common questions and answers, allowing the user to then drill down on specific learning or resource needs related to using Clean Burns effectively.

What is a Clean Burn?

A Clean Burn is a small fire that is done in a specific way (sometimes with special equipment) in order to reduce smoke and thereby improve air quality. Clean Burns are used by agricultural and residential landowners and in forestry to dispose of biomass (e.g, old vines, trees, brush). When done correctly, Clean Burns are a safe and effective disposal method that has many advantages over uncontrolled burning, chipping, or leaving biomass to break down on its own.

Who are the people who might use Clean Burns?

Overall, everyone in the Napa Valley benefits from having cleaner air, reduced fire risk, and to address climate change. Specifically, vineyard owners and vineyard service companies are important users to dispose of biomass safely and effectively. Also, all landowners who want to clear defensible space around their homes and buildings may benefit from using Clean Burns.

What's the difference between a Clean Burn and an "uncontrolled burn"?

An "uncontrolled burn" may burn biomass that is not dry (less than 20% moisture content), and the biomass is not stacked nor fire-started properly. As a result, the fire produces a lot of smoke that reduces air quality and the biomass is reduced to ashes. Such a fire also releases a lot of carbon into the atmosphere, which contributes to climate change. By contrast, a Clean Burn releases very little smoke, burns at a higher and more efficient temperature and the biomass is transformed into charcoal rather than into ashes, capturing carbon in the process. This charcoal, known as biochar, can be used as a soil amendment known to enhance soil water and nutrient holding capacity.

Have Clean Burns been proven to work well?

Yes. Many Napa landowners are using Clean Burns successfully, with low smoke and repeatedly using the approach over years. Several Napa organizations such as Napa Green, Grape Growers and RCD have sponsored Clean Burn demonstrations and conducted training for users. Research studies have shown the benefits of Clean Burns are significant over uncontrolled burning, chipping or leaving biomass to degrade.

Is the biomass disposal problem getting worse, to need Clean Burns more?

Yes. With drought and climate change, more biomass needs disposal. More vineyards are being pulled out for replanting, more trees are cut down to create defensible space around buildings, more plant matter is dying from drought---all of this needs to be disposed of. If not, there is an increase in pests and disease from the biomass as well as more fire risk.

What are the different techniques and equipment for using Clean Burn?

There are three basic levels of doing Clean Burn, from basic to sophisticated. The simplest solution is with a stack of biomass that is dry, properly stacked, and with the fire lit from the top of the pile. This requires some training, but can be performed effectively with minimized smoke. It requires some labor but is the least expensive option.

The medium option is with a mobile kiln used to concentrate the heat when biomass is burned. This approach is more efficient and produces less smoke, as well as making some biochar. The kilns come in pieces that can be easily assembled and stored---they fit in the back of a pickup truck. This option also requires some labor and training, and kilns cost a few thousand dollars but can be reused many times.

The most sophisticated and expensive option is to use mobile “burn boxes” (big metal machines) that can go to a location and be used to burn biomass extremely efficiently at high heat with very little smoke and nice biochar left over. This class of equipment is probably best suited to a company that rents the burn boxes to different customers by the day or for very large landowners (Napa Valley does have some landowners that own their own burn box).

How does Clean Burn produce biochar and how can it be used?

In an uncontrolled fire, biomass is burned and results in ash, while it releases the carbon from the biomass into the atmosphere. This contributes to climate change. In a Clean Burn (especially in the more sophisticated methods), the biomass is not burned but is baked into a substance called biochar which looks somewhat like coal. Biochar actually seals the carbon and prevents it from releasing into the atmosphere. The carbon remains contained in the biochar for potentially hundreds of years. Biochar is a very effective soil amendment for home or vineyard use and can be combined with compost for maximum results.

Could all burning be banned in Napa County in the future?

Yes. In some parts of California, all fires are banned because the “uncontrolled fires” have contributed so much smoke that air quality regulations have banned all burning. If Clean Burns are used, Napa County would get the benefits of effective burning without the problems of uncontrolled burning. If no burning is permitted, this places significant expense and burden on agricultural and residential landowners. Burning that is not Clean Burn creates more carbon emissions, disposal problems and increased pest and disease risks to the environment---while increasing the chance that all burning will be banned in Napa.

What is the difference between a Prescribed Burn and Clean Burns?

A Prescribed Burn is much larger than a Controlled Burn, typically used as a part of forest management. In a Prescribed Burn, an entire area of land is burned in order to create a buffer that would inhibit a larger forest fire in the future. Prescribed Burns actually date back to much earlier days when Native Americans lit fires to reduce overgrowth and minimize catastrophic forest fires.

Can Clean Burn technology be used in Napa at an industrial scale?

Yes. Napa Recycling Center and similar operations in Sonoma and Marin County are investigating the potential use of “gasification” plants, which would do a process similar to Clean Burns at industrial scale. These plants use very high temperature, non-combustion processes to turn biomass into new energy while minimizing greenhouse gas. This approach would have significant environmental and practical value for landowners to dispose of biomass, and Marin County was awarded \$500,000 in early 2023 for a pilot project.