



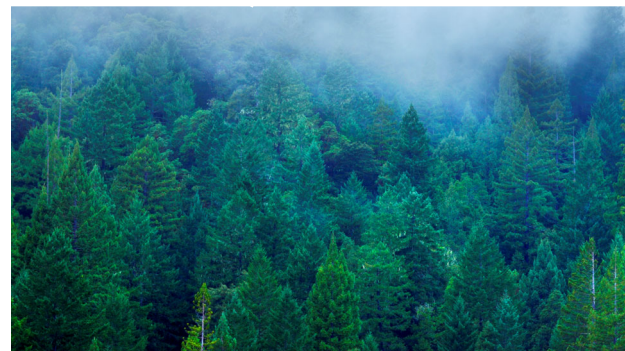
# CALIFORNIA'S FOREST HEALTH: THE CASE FOR BIOMASS

**Climate change intensifies extreme weather events. In 2017 and 2018, the combination of increased fuel-loading vegetation from the winter storms, millions of dead trees and extreme winds triggered the most destructive wildfires in the state's history.**

According to a Crocker Laboratory air quality analyst from UC Davis, the 2017 Napa fire produced more than 10,000 tons of PM 2.5, which is roughly the same amount of particulate matter from the annual use of all California vehicles. If California is going to address greenhouse gas (GHG) emissions, it must address forest health.

As greenhouse gas emissions continue to accumulate and climate disruption grows, such destructive events will become more frequent. California will need to build on its current climate policies to mitigate the effects of climate change, and biomass can play a crucial role.

As highlighted in the *California Forest Carbon Plan* biomass plants provide multiple benefits, including a reduction in GHG and criteria air pollutant emissions and creation of economic incentive to perform forest restoration work, especially in the six hardest-hit counties for tree mortality. With an estimated 10 billion board feet of dead and dying trees within these counties, the equivalent of about 50 million bone dry tons of material that needs to be removed, existing bioenergy facilities are responding and are at capacity taking as much material as possible since there are few other available markets.





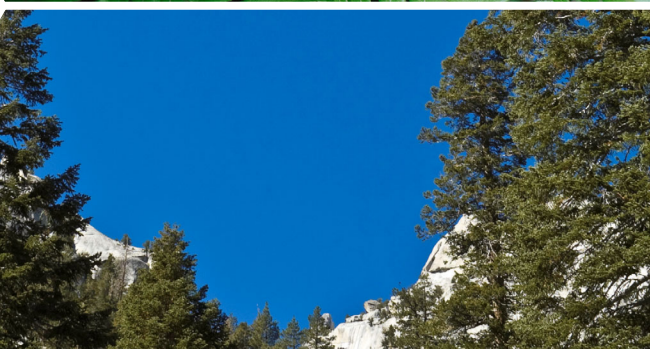


Leaving overgrowth material in the state's ecologically-stressed forests leaves the forests at high risk for massively destructive wildfires, impedes the functioning of watersheds, diminishes wildlife habitat, and has other adverse effects on the forests. Undisturbed mature forests in California typically had a canopy-closure density in the neighborhood of 60 percent. Some of the state's overgrown forests today have canopy closures over 90 percent. These forests are being choked, and as a result, they are unable to provide the level of ecosystem services they once furnished.



Runoff from the snow and rain in the Sierra Nevada forests and mountains provide nearly 60 percent of California's water supply. Forest density reduces water runoff into rivers and streams for downstream uses. Overgrown mountain meadows and valleys cannot hold the same volume of water as healthy forests.

Biomass energy production promotes healthy forests by lowering the cost of performing forestry treatments designed to reduce fire risks and accomplish other forestry goals. The value of the residues as fuel is not enough to pay the entire cost of the forest treatment, but it can bring the net cost down enough to make the difference as to whether or not a needed treatment is performed. It is no coincidence that some of the healthiest tracts of National Forest in California are located close to biomass power plants.



Bioenergy has been the only near-term option to manage the dead and dying trees and avoid open pile burning and accumulation in the forest. These drought and disease killed trees present an extreme fire and safety hazard that, in many areas, are being mitigated by bringing this material to biomass facilities thereby avoiding significant black carbon emissions during wildfires.



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