BIOENERGY IN THE FOREST SECTOR

California's forests have gone from being the largest carbon sink in the state to one of the largest sources of climate and air pollution. Wildfire now causes more than two-thirds of California's black carbon emissions, a powerful climate pollutant and toxic air contaminant. To reduce catastrophic fires and restore healthy forests, California has committed to remove excess forest biomass on a million acres annually, which will generate tens of millions of tons of forest waste. Converting that forest waste to energy rather than open burning it cuts climate and air pollution dramatically and provides low carbon fuels, renewable hydrogen, and firm renewable power.

California Forests Going Up In Smoke. California has lost more acres to wildfire in the past 5 years than in the previous 70. In 2020 alone, wildfires burned 4 million acres – 4 percent of the state's total land area. California's forests have gone from being the state's largest carbon sink to a net emitter of carbon. Forest fires emit carbon dioxide, methane and black carbon, a Short-Lived Climate Pollutant that is 900 to 3,200 times more damaging to the climate than carbon dioxide.[1] These are powerful climate pollutants, toxic air contaminants, and an extreme threat to public health and safety.

TO REDUCE FOREST FIRE RISK AND IMPROVE AIR QUALITY, PHOENIX ENERGY IS DEVELOPING A 2 MW BIOPOWER PLANT USING BIOMASS FROM MADERA COUNTY'S WILDFIRE THREAT REDUCTION ACTIVITIES.

Forest Biomass Critical to Meeting State's Climate Goals. According to the California Air Resources Board, reducing wildfire emissions is essential to meet the state's climate goals.[2] Reducing catastrophic wildfires is critical to cut black carbon and carbon dioxide emissions and to stabilize carbon sequestration in California's forests. CARB has also found that converting forest waste to bioenergy with carbon capture and storage (BECCS) can provide significant carbon negative emissions that will be needed for California to achieve carbon

[1] *Short-Lived Climate Pollutant Reduction Strategy*, adopted by the California Air Resources Board, 2017.
[2] *California Forest Carbon Plan,* adopted by CalEPA and the California Natural Resources Agency, 2018.

neutrality.[3] A recent study by Lawrence Livermore National Lab found that BECCS can provide two-thirds of all the carbon negative emissions needed for California to reach carbon neutrality by mid-century.

Increasing Forest Biomass Protects Public Health and Safety. State law requires California to reduce forest fuels on one million acres annually, which will produce enormous quantities of forest biomass waste. According to the California Environmental Protection Agency, converting that forest waste to energy cuts particulate matter (black carbon), methane, and carbon monoxide by 98 percent compared to wildfires or pile and burn.[4] According to the state association of local air districts, CAPCOA, bioenergy also cuts smog-forming pollutants by 40 to 70 percent.[5] When forest biomass is converted to renewable hydrogen or biogas and used in non-combustion generators, such as fuel cells and linear generators, then it reduces pollution even more.

WEST BIOFUELS OPERATES THE FIRST FOREST BIOMAT PROJECT AT HAT CREEK AND IS DEVELOPING A SECOND FOREST BIOMAT PROJECT IN BURNEY.

Forest Biomass Can Generate Low Carbon Fuels, Firm Power, Jobs and Economic Development. Converting forest waste to energy can provide significant energy and economic benefits. Converting forest waste to hydrogen or biomethane generates very low carbon or even carbon negative fuels that can be used in place of fossil fuels in heavy duty trucks, ships, aviation, and other hard to electrify end uses. Converting forest waste to electricity will also boost energy reliability by providing firm, renewable power that is available when needed and can fill in when solar or wind power are not available. Finally, converting forest waste to energy provides local tax revenues and good, skilled jobs in rural, forested communities that suffer from high unemployment rates.

THE CALIFORNIA DEPARTMENT OF CONSERVATION HAS AWARDED FUNDING TO 8 PROJECTS THAT WILL CONVERT FOREST BIOMASS TO CARBON NEGATIVE BIOFUELS. MOST OF THESE PROJECTS WILL PRODUCE HYDROGEN AND WILL USE CARBON CAPTURE AND STORAGE TO GENERATE CARBON NEGATIVE EMISSIONS.

[3] *2022 Climate Change Scoping Plan,* adopted by California Air Resources Board, 2022.
[4] *California Forest Carbon Plan,* above, at pages 130, 135.
[5] CAPCOA Biomass Policy Statement.