

Burning Trees for Electricity Will Accelerate Climate Change and Destroy Southern Forests

Power companies in the United States and Europe are expanding their use of trees—known as woody biomass—as a fuel source to replace fossil fuels. The wood is chipped or turned into pellets and burned in power plants just the same as coal. To meet this increasing demand, a new, rapidly growing industry of manufacturing facilities has emerged across the southeastern United States to supply wood fuel to electric utilities on both sides of the Atlantic. In the Southeast, the massive fuel needs of these energy companies could double logging rates and significantly increase carbon emissions, contributing to climate change at a time when we need to actively cut our carbon pollution. As important, local forest ecosystems and watersheds could be devastated.

OUR FORESTS AREN'T FUEL

Americans know how valuable our forests are, in the Southeast and across the country. In addition to providing one of the best tools to fight climate change, forests filter water, give us open spaces to hunt, fish, and camp, and provide habitat to a multitude of species. If big power plants turn increasingly to whole trees for their fuel, it will intensify pressure to overharvest our forests, threatening our climate, wildlife, land, and water. For the biomass industry to grow in a way that helps reduce pollution and protects our forests, large power companies and pellet manufacturers must commit to a wood-sourcing policy that excludes whole trees.



Over the past year alone, wood pellet exports from southeastern ports increased 70 percent, making the southern United States the largest exporter of wood pellets in the world. This growth is expected to continue: numerous additional manufacturing and export facilities are planned, particularly in the South.

While some forms of woody biomass can reduce carbon emissions, burning *whole trees* and some larger woody debris for energy actually increases carbon pollution for decades compared with fossil fuels such as coal or natural gas. Unfortunately, as pellet manufacturers continue to source whole trees to produce wood fuel, and power companies invest heavily in biomass energy without long-term sourcing policies against burning whole trees, large-scale use of whole trees for energy production will create a growing demand for limited forest resources. This will not only exacerbate existing pressures on southern forests but also increase climate pollution.

BURNING TREES FOR ENERGY INCREASES CARBON POLLUTION FOR DECADES

Power companies and pellet manufacturers promote biomass energy as a way to reduce carbon emissions and mitigate climate change. They argue that the carbon emitted when burning trees for energy is equal to the amount of carbon those trees have absorbed from the atmosphere while growing and a new tree will absorb as it grows. Until recently, energy from biomass was considered an important part of a robust portfolio of renewable energy sources—alongside such technologies as solar, wind, and geothermal—to address climate change. However, advances in science and accounting for pollution from different types of woody biomass have clarified that burning whole trees to produce electricity actually increases carbon emissions compared with fossil fuels for many decades. There are two key reasons.

- **Burning trees for electricity is highly inefficient.** By substituting trees for coal, power plants avoid fossil-fuel carbon emissions. But trees are approximately half water by weight, which means they contain less potential energy



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per unit of carbon emissions than coal and other fossil fuels do. In other words, to get the same amount of energy from trees as from fossil fuels, many more trees have to be burned, resulting in 40 percent more carbon emissions at the smokestack per unit of energy generated. And even if trees are replanted immediately, it takes many decades for a tree to grow and absorb all the carbon released from the burning of just one tree.

- **If left alone, trees will continue to grow and absorb carbon out of the atmosphere.** In the United States, we count on our forests to expand each year, offsetting approximately 13 percent of the carbon emissions coming from our factories, homes, and cars—the equivalent of taking more than 180 million cars off the road.¹ Cutting trees down to burn as fuel in power plants means this carbon sequestration is lost.

Together, the initial increase in carbon pollution at the smokestack and the lost carbon sequestration mean it can take new trees anywhere from 40 years to more than 100 years before there are carbon benefits from this kind of bioenergy production.² At a time when the United States urgently needs to clean up its power plants, a major shift to burning whole trees for energy production would not only increase carbon pollution but also degrade our forests—one of the country's best natural air scrubbers.



INVESTMENTS IN WHOLE-TREE BIOENERGY SHIFT FOCUS AWAY FROM LOW-CARBON ENERGY SOLUTIONS

We need utility companies to invest in expanding energy efficiency and clean, renewable, and truly low-carbon energy sources, such as solar, wind, and geothermal power. Investing in wood-burning power plants distracts from these efforts, and erodes hard-won victories for forest conservation.

FEASIBLE, COST-EFFECTIVE ALTERNATIVES ARE AVAILABLE

Clean waste products—the unused by-products of sustainable forestry that otherwise would be burned or would rapidly decay—and some timber harvest residues—the small-diameter portion of tree tops and branches left after logging—can be good sources of biomass. If it is done right, timber residue can be removed in limited amounts from a forest without compromising soil health or wildlife habitat. Other dedicated biomass sources, if sustainably managed and grown on land that does not compete with food production, can offer a low-carbon supply of energy as long as the released carbon is reabsorbed quickly by growing replacement crops for more biomass. Perennial grasses such as switchgrass and short-rotation woody crops are examples. Real biomass solutions must not be established at the expense of natural forests.

The Natural Resources Defense Council and Dogwood Alliance believe that large utility companies must shift to real renewables and that they and their pellet and chip suppliers must establish adequate policies to protect our climate and forests by committing not to use whole trees before expanding their biomass operations.



Southern pine plantations are a major source of biomass for wood pellet manufacturers. Unlike natural forests, which are home to a rich and diverse array of plants and animals, tree plantations provide little biodiversity. In the early 1950s there were approximately 2 million acres of planted pine in the South. That figure has skyrocketed to more than 40 million acres of pine plantations today. According to the United States Forest Service, if current trends continue, pine plantations will likely increase by 60 percent—to 54 million acres by 2040—and make up more than one-quarter of all regional woodlands, an area the size of North Carolina and South Carolina combined.

1 U.S. Environmental Protection Agency, *2011 Inventory of U.S. Greenhouse Gas Emissions and Sinks*, <http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html>.

2 Based on findings from the following studies: Manomet Center for Conservation Sciences, *Biomass Sustainability and Carbon Policy Study*, June 2010; Oregon State University, *Impacts of Thinning on Carbon Stores in the PNW: A Plot Level Analysis*, May, 2011; The Biomass Energy Resource Center, Forest Guild, and Spatial Informatics Group, *Biomass Supply and Carbon Accounting for Southeastern Forests*, February 2012; Duke University and Oregon State University, *Carbon Debt and Carbon Sequestration Parity in Forest Bioenergy Production*, May 2012.

