

Biomass Carbon Neutrality Rider in Congressional Appropriations Bill Will Increase CO₂ Emissions, Threaten Forests (June, 2015)

The bioenergy rider in the Interior, Environment and Related Agencies Appropriations Bill requires the EPA to treat bioenergy as having zero CO₂ emissions when “forest carbon stocks in the U.S. are stable or increasing on a national scale, or when forest biomass is derived from mill residuals, harvest residuals or forest management activities.” This rider embodies a fundamental error in carbon math, and if enacted, would dramatically increase atmospheric CO₂ as well as allowing forest clearing in the name of “clean energy.”

Forests are our most important carbon sink

Sector	1990	2005	2011
Energy.....	5,806.2	6,891.2	6,333.6
Industrial Processes.....	348.4	364.6	359.9
Solvent and Other Product Use.....	4.9	4.9	4.9
Agriculture.....	456.2	491.9	508.7
Land Use, Land-Use Change and Forestry.....	15.1	28.0	40.3
Waste.....	185.0	150.9	140.8
Total Emissions.....	6,815.9	7,931.5	7,388.0
Land Use, Land-Use Change and Forestry (Sinks)....	(875.8)	(1,099.9)	(997.6)
Net Emissions (Sources and Sinks).....	5,940.0	6,831.5	6,390.4

Cutting forests puts forest carbon into the atmosphere, as shown (pink highlight) by EPA data. New forest growth takes carbon *out* of the atmosphere (green highlight). In fact, forest CO₂ uptake is our only significant **sink** for carbon, taking up more than 13% of CO₂ emissions each year.

U.S. GHG Emissions and Sinks by Sector (million tons CO₂ equivalent).

997.6 (forest carbon sink) ÷ 7,388 (total emissions) = **13.5 %** of US emissions

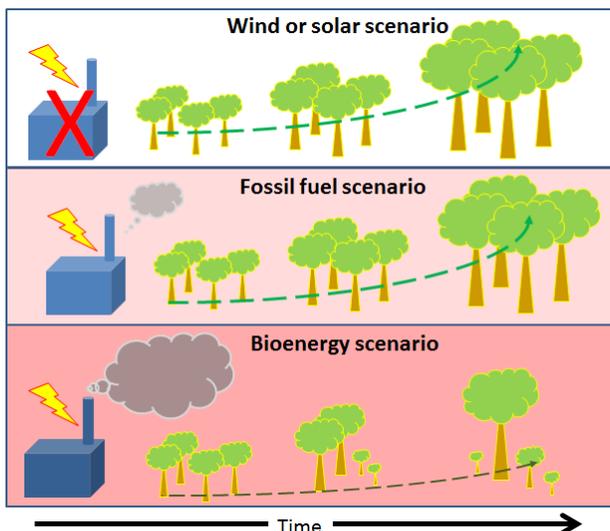
The rider’s math error: It forces EPA to act as if cutting and burning the equivalent of new forest growth for fuel would have no effect on atmospheric CO₂. In fact, this action would dramatically *increase* atmospheric CO₂ because it would reduce our most important carbon sink.

Biomass power plants emit more CO₂ than coal plants

CO ₂ Emission Rates From Power Plants	Lb CO ₂ /MMBtu	Facility efficiency	MMBtu /MWh	Lb CO ₂ /MWh
Gas combined cycle	117.1	0.45	7.6	888
Gas steam turbine	117.1	0.33	10.3	1,211
Coal steam turbine	205.6	0.34	10.0	2,063
Biomass steam turbine	213	0.24	14.2	3,028

Biomass power plants are notoriously inefficient, emitting ~50% more CO₂/MWhr than coal plants. Co-firing biomass with coal increases CO₂ emissions and decreases facility efficiency compared to burning coal alone. Emissions are higher even when mill waste or forestry waste is burned as fuel.

Worse than coal: Bioenergy *increases* emissions and *decreases* forest carbon uptake



Contrasting scenarios demonstrate that bioenergy is a double-whammy for the climate

- 1.) Wind and solar power emit no CO₂ and forests are left to grow and sequester CO₂ from the atmosphere.
- 2.) Fossil fuels emit CO₂, but leaving forests standing provides a growing carbon sink that sequesters and stores at least some emissions.
- 3.) Biomass power plants emit more CO₂ than coal plants, and harvesting forests for fuel reduces the carbon stored in forests for decades to more than a century, moving that carbon into the atmosphere.