

The Myths that Sustain the Biomass Energy Industry ***“Renewable – Sustainable - Carbon Neutral”***

The current boom in biomass energy depends entirely on the mutually reinforcing myths of renewability and carbon neutrality. This is particularly true of biomass electricity generation, which has exploded over the past three years precisely because it is considered carbon neutral renewable energy, making it eligible for massive federal, state, and ratepayer subsidies, and placing it alongside true renewables like solar and wind.

But in practice, biomass energy is far from renewable or carbon neutral. In practice, it looks a lot more like coal and oil.

Biomass is the BIGGEST Carbon Polluter of All

No form of electricity generation is a worse carbon polluter than biomass, per megawatt of electricity produced. Biomass energy means burning trees, and wood burning power plants emit 50 percent more CO₂ than coal, and 3 to 4 times more CO₂ than natural gas, per unit of energy generated.

How can this be? First, wood contains less energy relative to carbon content and its weight than fossil fuels. That’s one of the reasons industry switched to coal 150 years ago. Second, wood burning power plants are inherently inefficient, about 30 percent less efficient than coal facilities, and half as efficient as natural gas. The combination of these two factors means a lot more carbon pollution per unit of energy generated.

Biomass Energy is NOT Carbon Neutral

Here’s why.

Although many existing biomass plants burn mill waste, the current expansion of biomass power will require cutting and burning a lot of trees to provide fuel – because existing sources of “waste” wood just won’t meet fuel demand. Trees actively sequester carbon; they take it out of the air and lock it up into new growth. Cutting a living forest means radically crippling that capacity. Burning those same trees creates a double whammy by sending all that carbon straight into the atmosphere.

In theory, most of this carbon will be pulled back out of the atmosphere as the forest grows back. But that process takes many decades, if not a century or more, depending on forest type and location. And it is not guaranteed to happen at all. The Manomet study, commissioned by the State of Massachusetts, found that it

would take 40 years of re-growth just to bring carbon pollution from biomass energy down to the level that would have occurred had utilities burned coal for those same four decades.

This means that in New England forests, switching to biomass makes carbon pollution worse than coal for the first 40 years. If you hang in there and burn biomass for four decades, forest re-growth will finally reduce overall carbon pollution to the level it would have been if you hadn't bothered cutting trees and investing in biomass in the first place, and just kept burning coal. This is not exactly a ringing endorsement for biomass as a green, renewable, carbon neutral energy source.

Sustainable Does Not Equal Carbon Neutral

Industry often claims that sustainably harvested wood equals carbon neutral energy. Absolutely not true. These are two unrelated concepts.

Sustainable forestry is important and necessary, but it has nothing to do with carbon neutrality. In general, sustainable forestry refers to a set of practices and a cutting rotation that ensures a perpetual supply of mature trees. An important goal, but not at all related to carbon neutrality.

Consider this scenario. On a 50 thousand acre forest we could cut 1,000 acres a year and ensure a perpetual supply of 50 year old trees ready to harvest. All other things being equal, this could be described as sustainable. But it is anything but carbon neutral. Here's why.

Prior to cutting we would have 50 thousand acres of mature, growing trees all pulling carbon out of the atmosphere. Then the cutting and burning begins. Every year we cut and put 1,000 acres worth of tree carbon into the atmosphere. At year 20, for example, we would have cut and injected 20 thousand acres worth of tree carbon into the atmosphere. We would then have just 30 thousand acres of mature trees pulling carbon out of the atmosphere, and 20 thousand acres of saplings pulling just a fraction of the carbon out of the air compared to the amount that was both being sequestered by, and that was captured in the mature trees on this acreage before they were cut.

At this point the difference between sustainability and carbon neutrality is the 20 thousand acres of tree carbon injected into the atmosphere, compared to the carbon pulled back out by 20 years of re-growing saplings -clearly not a neutral situation. This would continue through year 50 when the entire forest would have been cut, its carbon injected into the atmosphere, and its carbon sequestration capacity replaced with baby trees that would now be at various stages of maturity.

This scenario could very well be "sustainable". It is hardly carbon neutral.