

## WFPA Biomass Q&A

***Q1. What are some of the advantages of biomass energy production?***

A. Biomass is a **renewable energy source**, because the planting and growth of new plants and trees replenishes the supply, and burning biomass to generate energy is also **carbon neutral**.  
Also:

- By thinning overcrowded and unhealthy forests, removal of woody biomass can **improve the health of forests**.
- Biomass energy generation **creates and sustains jobs**, especially in rural areas affected by economic downturns in the timber and construction industries.
- Biomass energy **reduces our reliance on fossil fuels**, and specifically reduces our reliance on imported petroleum, which can **improve our trade imbalance and enhance our national security**.

***Q2. Why is the burning of wood waste to produce electricity considered carbon neutral?***

A. When wood is burned to produce energy, the carbon dioxide (CO<sub>2</sub>) that is released into the atmosphere is the same CO<sub>2</sub> that would be released if the wood decomposed, so there is no net addition of carbon dioxide to the atmosphere. Also, forests are replanted and the new trees continue the cycle of absorbing and storing CO<sub>2</sub> from the atmosphere. In the United States, forestlands are net carbon sinks, meaning more wood is grown than is removed. The Pacific Northwest has the highest productivity forests in the nation, and wood is the dominant biomass resource in Washington, accounting for two-thirds of all potentially available biomass.

***Q3. Does burning woody biomass to produce energy create more carbon emissions than burning coal?***

A. No. Geologic carbon emissions from fossil fuels such as coal, which have been buried underground for centuries and otherwise would not be released, add “new” carbon to the atmosphere. Biogenic carbon from biomass would be released anyway as part of the natural cycle of growth, decay and regrowth. As long as the source of biomass comes from sustainable practices, biogenic carbon emission is not dirtier than coal, since it does not increase overall carbon in the atmosphere.

***Q4. Did a June 2010 study out of Massachusetts find that biomass plants actually have worse air quality impacts than coal-fired plants?***

- A. No. The Manomet Center for Conservation Sciences, which did the study, issued [a clarification](#) after the media misinterpreted its findings and those misinterpretations were widely reported. John Hagan, the President of the Center, and Thomas Walker, the study team leader, told *The New York Times* that the media reports "fail to recognize that over time using wood for energy can lead to **lower** atmospheric greenhouse gas levels."<sup>1</sup> (Emphasis added)

Despite media headlines, the Manomet report indicated that the long-term benefits of biomass fuels far outweighed fossil fuels, largely due to "recycling" trees by planting new ones that absorb carbon dioxide.

***Q5. How was it that the study was widely misinterpreted?***

- A. The study focused largely on the carbon cycle implications of whole trees grown specifically as biomass fuel in Massachusetts, rather than on the use of residual fiber (chips, bark, branches, etc.), which is what most biomass power plants actually utilize. In addition, the study looked specifically at impacts related to a single forest, rather than biomass from a broader region. Some readers apparently went directly to conclusions based on those parameters instead of looking over the qualifications related to the study, and leapt to incorrect assumptions of cumulative impact.

***Q6. What are some of the specific environmental benefits of biomass energy plants?***

- A. In addition to providing **renewable energy**, biomass power plants utilizing wood waste can provide numerous other benefits. They:
- **Help stop disease and infestation.** In Inland West areas such as Eastern Washington and Eastern Oregon and other states, insects such as the mountain pine beetle have devastated millions of acres of pine forests. Removing these infected trees to utilize them as fuel can stop the spread of the insect and also provide energy while reducing the risk of catastrophic wildfire.
  - **Reduce the use of prescribed fire (also known as slash burning).** Forest land managers occasionally use prescribed fire to reduce the amount of logging residue known as slash. This is necessary to improve planting success, reduce wildfire risk and in some cases is required by law. Burning this fuel in a biomass plant with effective emission controls is more efficient and reduces the

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<sup>1</sup> "Q.-and-A.: Woody Biomass, Pros and Cons," by Tom Zeller, in *The New York Times* blog "Green – A Blog About Energy and the Environment," first question, June 22, 2010.

particulates and other substances that otherwise would be released into the atmosphere.

- **Improve forest health and sustainability.** After a century of fire suppression, and abrupt lack of management on federal forests, unhealthy conditions have developed in some forests, with an unnatural amount of trees or trees that are not well adapted to the site. Thinning the forest and removing undergrowth to utilize it for energy production, while leaving the hardiest trees in place, helps make the forest less susceptible to damage by wind, fire, and disease and helps provide a resource that can help fund these restoration activities.

***Q7. What are some of the economic benefits of biomass electricity generation?***

- A. Biomass plants can provide economic benefits through the creation or retention of jobs. For example, a 35-megawatt biomass plant would provide about 30 full-time jobs, and potentially another 50 to 100 jobs to collect and transport fuel to the plant. Biomass plants also provide additional economic benefits in terms of taxes paid, supplies purchased, etc. Biomass electricity generation can also help reduce the import of other fuels such as natural gas from out of state.

***Q8. How long has biomass been used as an energy source?***

- A. The earliest inhabitants of this region burned wood in their campfires as heat. The forest products and maritime industries began utilizing wood to power steam donkeys, in the late 1800s. Today, lumber mills generate nearly all of their energy using waste from the milling process, and there are currently about 40 biomass plants operating in the state of Washington. Biomass sources currently provide about 3 percent of all energy consumed in the U.S, and about 14 percent of the world's energy needs.

***Q9. What is the potential impact of the EPA rule to include limitations on greenhouse gas (GHG) emissions from biomass plants in its clean air standards beginning in January 2011(also know as the Tailoring Rule)?***

- A. Depending on the interpretation and regulatory impact, this could severely constrain the future of biomass plants. If the federal government takes a shortsighted approach of looking solely at carbon dioxide emitted from the smokestack, instead of the full carbon cycle, then it will severely discourage the responsible development and utilization of renewable biomass in the future. Burning wood debris for biomass energy production is not only renewable and carbon neutral, but it also burns methane, a greenhouse gas, which would be released if the debris were left to decompose.

**Q10. *Should people who live near biomass energy plants be concerned about any potential negative health impacts from a plant's emissions?***

A. These facilities burn the same fuel as a fire place or wood stove, but they employ state-of-the-art emission control technology that must meet federal and state air quality laws and regulations. State and federal agencies are also required to monitor these plants to ensure compliance. Without specific approval from regulatory agencies, they would not be allowed to operate.

**Q11. *Isn't it beneficial to have wood debris and other plant materials on the forest floor to improve forest health and provide habitat for wildlife?***

A. State laws requires that forest landowners leave both standing trees and downed wood in harvested areas to provide wildlife habitat and enrich soils. Most of the litterfall, or organic matter is delivered to the forest floor during the forest growing cycle. During tree harvest, biomass fuel harvesters are required to ensure that sufficient woody debris is left to comply with state law.

**Q12. *Will an increase in biomass plants for energy mean less availability of wood as a source for other products such as lumber or paper?***

A. Forest managers utilize the whole tree, seeking the highest and best use of each part. The highest value end use for wood fiber is generated through traditional manufacturing jobs in the forest products industry, which generate four to 11 times as many jobs using the same quantity of wood fiber to generate energy. The beauty of energy generation is that it can be accomplished using excess woody biomass that is available after traditional use needs are met. Biomass energy plants, especially in the Northwest, utilize wood residuals that are a byproduct of the timber harvesting process, rather than timber that could be made into more profitable products such as furniture, lumber and pulp for paper.

**Q13. *How is electricity created from biomass?***

A. Generally, biomass generation plants burn organic fuel such as wood waste to heat water, which creates steam that runs through a turbine to create electricity. Some biomass energy plants also reuse the steam, once it has passed through the turbine, to provide steam heating. Some plants also use biomass in combination with fossil fuel to produce electricity as a way to cut down on the volume of fossil fuel they consume. Each biomass plant must meet the specific federal, state and local regulations applicable to it, its fuel supply and any impacts, in order to be approved by the regulatory agencies.

***Q14. Are there efforts underway to find other ways biomass can be used to create renewable energy or improve the environment?***

A. Biomass energy is particularly beneficial because it can provide “base load” electricity, meaning that it is available 24/7/365, unlike intermittent sources of energy such as solar or wind that are only available part of the time.

Organic biomass is also the only renewable resource that can be used to create liquid transportation fuels, also known as biofuels.

Washington State University is leading a research project to assess the commercial viability of sustainable aviation fuel production from biomass grown, harvested and refined in Washington, Oregon, Idaho and Montana. WSU has been working with Boeing, the U.S. Air Force, Sea-Tac International Airport and others on aviation biofuels for several years.

Woody biomass can be processed into wood pellets, biochar and other materials. These products can be used in wide applications from helping reduce emissions in coal plants to providing sustainable fuel sources for African farmers and improving soil and water quality. Researchers around the world are studying ways to mass produce biochar that could help everything from African farmers to the fight against climate change.