

Collaborative Restoration Workshop

National Forest Foundation | April 2016

Implementation | Removing Biomass: Utilization and Market Opportunities

Speakers

- **Dylan Kruse**, Policy Director, Sustainable Northwest
- **Brad Worsley**, President, Novo Power
- **David Schmidt**, Owner, Integrated Biomass

Overview

This session reviewed the benefits and challenges of emerging biomass technologies and markets. Partnerships with forest restoration projects could be an important benefit for emerging businesses and the U.S. Forest Service, as the raw material for woody biomass is produced from the small trees and forest fuels removed in most restoration projects.

Dylan Kruse – Woody Biomass Energy Production

“Woody Biomass” is made from leftovers and byproducts from various processes. It includes branches, treetops, and slash left over from logging, as well as bark, sawdust, chips and residuals from sawmills. It also includes the products of forest thinning, the small trees and forest floor fuels that are removed in forest restoration and fire treatments. Most mill residuals are sold into a market for products such as paper and particleboard and have long been used to help power paper mills. Other forms of woody biomass have traditionally had little value. Slash and thinnings are often piled and burned in the woods. However, with the right infrastructure, biomass can be used for various products, including heating and energy production. Woody biomass is compressed into pellets or wood “bricks” that can be efficiently transported, stored, and burned.

Dylan Kruse – Biomass Policies

The plummeting costs of oil and gas in the past two years have significantly affected the economics of domestic wood biomass energy production. However, the need to develop markets for small diameter biomass and forest products residuals is necessary to sustain active management and economic development in rural communities. To address this discrepancy, state and federal legislatures and agencies are exploring and implementing a variety of policy tools to develop wood bioenergy markets and enhance competitiveness with fossil fuels and other renewable energy sources.

The cost of creating energy from biomass is sometimes competitive with fossil fuels, and sometimes not. There are many variables and obstacles. To overcome them, government can continue to encourage and support the businesses and communities that are building these young markets. With time, they will learn to operate more efficiently, and the markets can begin to sustain themselves.

The biomass energy production industry has opportunities to grow if certain policies are pursued, including:

- Continued pursuit of distributed energy generation; that is, a network of smaller local power plants rather than large, concentrated sources of power.
- Policies to support utilities’ purchase of biomass power, especially from existing in-state plants that are not running at full capacity.



Explore more: nationalforests.org/crw

- Policies that recognize and monetize the public benefits of local biomass-fueled electricity, such as improved air quality and reduced fire risk.
- Streamlined permitting processes and better education of state and local permitting officials.

Brad Worsley – Novo BioPower, Arizona

Arizona has the largest ponderosa pine forest in the country. Due to a number of causes, this forest has seen catastrophic wildfires over the last 15 years. This imminent wildfire danger has led to the largest restoration project in the nation (the Four Forests Restoration Initiative). Novo Power helps mitigate fire danger by thinning stands for biomass. Removing biomass from the forest provides many of the same benefits as prescribed low-intensity fires. Moreover, when the removed biomass is burned in a power plant, rather than in prescribed or natural fires, it produces less atmospheric carbon. Biomass power plants use scrubbers and bag systems to reduce carbon emissions. In effect, producing energy with biomass duplicates the forest management practices of thinning forests while reducing the overall carbon emissions that would result from forest burning. Novo Power's forest thinning has saved the Forest Service more than \$1-million per year that would have been spent on forest thinning projects.

David Schmidt – Integrated Biomass Resources, Oregon

Using small logs, as well as logging slash from private-land timber harvests, Integrated Biomass Resources started making products they could sell: firewood, compressed logs to be burned in woodstoves, posts and poles for fencing, and landscaping timbers. These are existing markets that can be accessed by those who collect and process forest biomass. Wallowa Resources and Integrated Biomass Resources have also helped create a new market for coarse wood fuel, known as "hog fuel," to heat a school and other buildings in the town of Enterprise. With the help of federal and state grants, Integrated Biomass Resources has constructed a small 100-kilowatt cogeneration plant to produce electricity to run the campus. Whatever material cannot be used to make the company's other products can be burned for heat and electricity. Nothing is wasted, and the campus powers itself.

Discussion about the Benefits of Biomass Energy Production

Cleaner Energy

- Yes, biomass emits pollutants like any other source of fuel, and at a lower volume than some sources (i.e., coal, wood stoves), though not as low others (i.e., natural gas). However, there is debate about whether biomass energy actually reduces net carbon emissions. Arguably, by removing biomass from the forest and burning it in controlled settings that limit emissions we are lowering the overall amount of carbon that would otherwise be released through prescribed burning and wildland fire.

Baseline Energy Production

- Other renewable energy sources (solar and wind) offer intermittent production that fluctuates depending on conditions and often requires energy storage to supplement times of low production. Biomass offers reliable baseline energy production.

Local and Renewable

- Woody Biomass produces affordable, local, renewable energy and other products of value by using material that would otherwise be wasted.
- It can stimulate rural economies, providing jobs and keeping dollars in the community by collecting, processing, and using the resource locally.
- The process supports needed forest restoration projects by offsetting some of the costs and using market forces to leverage the federal dollars spent on forest health to bring broader benefits to the community.



Lessons

- Scaling – biomass markets for energy and other products are hard to predict. The success of the biomass business will depend upon scaling production to a size that matches market demand.
- Support – Public and political support and partnership are critical for this new market. Our current centralized energy grid is as much a political creation as a market-driven one. Renewable energy production has clear advantages over the current system. Still, it requires an immense amount of public and political support to re-organize such an entrenched system.
- Transportation – The cost of getting biomass out of the woods and trucking it even as little as 40 miles can push the cost of producing electricity higher than the price utilities can pay for it. This is a problem of scale and infrastructure. Energy production will become more competitive as it is scaled up, its infrastructure is improved, and policies incentivize more sustainable energy production.

Resources

- [Novo Power website](#)
- [Integrated Biomass Resources website](#)
- [Infographic of Biomass Energy production by Sustainable Northwest](#)
- [Infographic of Thermal Biomass technology by Sustainable Northwest](#)
- [Report by Oregon Forest Resources Institute, *Powered by Oregon – Woody Biomass Offers Potential for Heat, Electricity and Fuel*](#)

