

Biomass Cluster Pilot Project FAQ's

What is forest restoration?

Forest restoration includes all treatments that help recover forest resilience and adaptive capacity of ecosystems that have been degraded, damaged, or destroyed. Thinning and small tree removals are treatments often associated with forest restoration.

What is biomass?

In general, biomass is any organic matter. Woody biomass includes the trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, or rangeland environment, that are the by-products of forest management. Often, we think of it as small trees and slash.

What is biomass thermal energy?

Biomass thermal energy is the use of biomass fuel for space heating and cooling, domestic water heating, and process heat (e.g. mills use heat to dry lumber). Thermal energy is the most efficient use of woody biomass. Heat can be used to warm a residence, heat multiple buildings, or even a whole town, known as district heating. Biomass can also be combusted to create electricity, such as a biomass combined heat and power (CHP) plant. Many forms of woody biomass can create thermal energy, including cord wood, wood chips or densified biomass such as pellets and briquettes.

Why is it important to grow the market for biomass thermal energy?

Creating new demand for renewable thermal energy presents an opportunity to improve the health of our forests, provide jobs for rural communities, and increase our energy security.

Thermal energy represents roughly one-third of total U.S. energy consumption and a quarter of all energy used in Oregon. Homes, businesses, and industrial facilities across the country use thermal energy daily for space heat, domestic hot water, , and process heat. Biomass is an efficient source of renewable energy for all of these heating needs. Encouraging the use of biomass for heating can help fill an important piece in Oregon and our nation's renewable energy goals because it:

- Reduces consumption of foreign fossil fuels, thereby increasing energy security
- Lowers emissions of greenhouse gases
- Strengthens local economic development and job creation through the domestic production of fuels, system installation and service, and fuel distribution
- Provides markets and adds value to material like the small trees and slash removed during forest health and fuels reduction treatments.

What is a biomass cluster?

A biomass cluster includes four elements:

- Source of woody biomass like small trees from public and/or private forest management
- Biomass manufacturer like a wood pellet producer
- Market to utilize the biomass product like a school with woody biomass boiler.
- The source, manufacturer and market to be located in relatively close proximity to each other.

John Day, OR is an example of a biomass cluster. In John Day, local contractors perform restoration treatments on the National Forests. Malheur lumber manufactures the larger trees into lumber while small trees are used to create wood pellets and chips that heat the community's schools, hospital and airport. The biomass cluster increases forest health, creates jobs in the local community and helps lower energy costs in public buildings.

Why use the cluster approach?

It is important that the emerging biomass heat sector be efficient and competitive from the beginning. Transportation is a key component of a biomass project, and projects with long transportation distances increase risk and lower the chances of getting built. By grouping projects together and lowering transportation costs, projects are more resilient to rising fossil fuel prices. The cluster strategy will create more attractive investment opportunities and ultimately improve forest health, create local jobs and help rural communities be more energy independent.

Oregon has a lot biomass on the west side of the state. Why focus on eastern Oregon?

The pilot project seeks to leverage other federal investments, and focusing on eastern Oregon aligns with regional National Forest priorities. The Forest Service has already funded Collaborative Forest Landscape Restoration Projects in central, southeast and northeast Oregon that share similar socio-economic challenges, such as poor market conditions for wood products, and high levels of poverty and unemployment (<http://www.fs.fed.us/restoration/CFLRP/index.shtml/index.shtml>). The dry eastside forests are at risk of fire and drought, with the potential to produce large amounts of woody biomass in close proximity to rural communities.

How big are facilities that use biomass?

Biomass facilities come in a variety of sizes. For example, a pellet stove can be used to heat a small building, while district heating at a university can provide space and water heating and air-conditioning to the entire campus. Some woody biomass facilities like those at lumber mills produce heat for dry kilns, power for industrial processing, and still have remaining electricity to add renewable energy to the electrical grid.

Why use biomass for energy production?

We support using woody biomass for a variety of end uses including compost, posts and poles, animal bedding, and others. This project focuses on wood to energy because energy represents a new and growing market that offers multiple economic and environmental benefits.

Woody biomass to energy is:

- Renewable with sustainable forestry practices
- Carbon-neutral over a certain time frame
- A domestic resource
- A substitute for fossil fuels
- A source of economic development and rural job creation

How does biomass save money for schools and other public buildings?

Biomass heat delivers energy savings because it is a less expensive and more stable fuel than its fossil fuel counterparts. Many rural communities burn imported heating oil and propane, both of which are expensive and volatile fuels. Since the maintenance on wood-based systems is nearly equal to fossil fuel based systems, heating and cooling costs go down and the school saves money. In addition to saving money, when building owners install biomass heating systems they create demand for a locally produced fuel and jobs for their neighbors.

What technologies are available for biomass heating?

Biomass heating systems use proven, commercially available technology. Oregon has 18 successful biomass heat installations and a strong track record of success. Domestic and European boilers and furnaces are available, and both meet stringent American Society for Testing and Materials standards. Today's biomass combustion systems are clean and efficient. Many biomass boilers are automated, programmable and offer real-time remote monitoring. Efficient fuel distribution systems are in place to expand the adoption of central heating systems in home and business heating, industrial process heat, district heating of whole communities, and combined heat and power. This proven technology has been widely deployed in Europe in homes, schools, municipal buildings, factories and any other large institutional, commercial or industrial setting.

How will burning woody biomass affect air quality?

Burning forest biomass for energy will result in release of some air pollutants. To accurately assess these impacts, it is important to compare these emissions with effects of more traditional energy sources and disposal methods for forest slash. What distinguishes forest biomass from other fuel sources such as oil, coal, and natural gas is that biomass is renewable, carbon neutral and produced in abundance in Oregon. Forest waste that is not utilized is left in the forest where it may become organic material for the next generation of forest, may be burned on-site in a prescribed burn, or may dry out and contribute to an increased risk of wildfire. Both prescribed

burning and wildfires produce greater volumes of air pollution like carbon monoxide than carefully controlled biomass combustion in an energy facility. Industrial particulate control technologies can remove up to 99% of particulate matter from the combustion woody biomass.

Facilities that install a new biomass boiler are required to submit a Notice of Intent to Construct and receive approval from the Oregon Department of Environmental Quality (DEQ) prior to installation. The Notice of Intent allows the DEQ to determine if a boiler requires an air quality permit, is subject to simple registration or can proceed with no further action. If a permit is required the DEQ will provide technical assistance. There may be additional requirements prior to construction or during operation. All facilities should contact the DEQ to determine the appropriate requirements.