

# DNR Biomass Initiative



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**  
Peter Goldmark - Commissioner of Public Lands



Photo: Aaron Toso/DNR

## Borgford Energy

### Project Using Sawmill Waste to Produce Bio-oil, Bio-char and Power

Created in 2009, DNR's Forest Biomass Initiative aims to provide leadership to create new public-private partnerships between forest biomass suppliers, biomass purchasers, and end users. These projects – funded by investors, federal grants and other sources – can pave the way for Washington State and local communities to use biomass materials to create renewable energy and green jobs.

### Project Summary

Before Borgford Bioenergy purchased Springdale Lumber Mill, the facility north of Spokane had been closed for nearly five years. The sawmill – now fully operational – focuses on specialty cutting and has created 34 green jobs in the rural community of Springdale.

Using waste from the sawmill's operations, Borgford Bioenergy's Octoflame Burner will produce biochar and pyrolysis oil, as well as power for mill operations.

The project is one of the biomass-to-energy projects in the state selected by the Washington State Department of Natural Resources (DNR) as a pilot project to encourage the use of residual forest biomass to produce energy products.

## The DNR Biomass Initiative

Washington's forests have an abundant and renewable supply of woody biomass. Using some of this material for liquid transportation fuel, heating, and electrical power generation can play an important role in Washington's emerging green economy and help address climate change. Removing biomass from forests in ecologically sustainable ways also can provide income for forest landowners, improve forest health, create jobs in rural areas, and reduce wildfire risk and greenhouse gas emissions.

Commissioner of Public Lands Peter Goldmark launched the DNR Forest Biomass Initiative in 2009. Projects of high interest to the department are those that can convert biomass stock into uses with sufficiently high market value, such as aviation fuel and other fuels and products, while continuing to protect ecological health.

## Definitions

### Slow Pyrolysis

Slow pyrolysis converts solid biomass into easily stored and transported liquids and solids, making it a flexible and affordable way to produce and deliver heat, power, and other products to market. Slow pyrolysis (performed at temperatures between 300° and 800° C) can efficiently produce biochar and pyrolysis oil.

### Pyrolysis

Pyrolysis is the thermal decomposition of biomass (such as sawmill residue or logging slash) in a nearly oxygen-free process. Pyrolysis can be performed on a relatively small scale and at remote locations.

### Pyrolysis Oil

Pyrolysis oil (also known as bio-oil) is a synthetic fuel extracted after biomass is heated and then cooled. As a fuel source, it can be used for heating or steam production.

### Biochar

Biochar is a solid material, rich in carbon content. It can be used to store carbon, but also to improve water quality, enhance soil fertility and increase agricultural production.



▲ ASV Skidsteer outfitted with a Fecon mulching head for stump and small material grinding, leaving the forest in a parklike condition.

## Borgford Bioenergy Facts

**Owner:** Dale Borgford

### Grants Received Through Pilot Project

- \$4 million U.S. Forest Service grant
- \$750,000 Washington State Energy Program (SEP) Grant through the state Department of Commerce (funded by the federal American Recovery & Reinvestment Act)

**Jobs Created:** 34 full-time-equivalent positions

**Biomass Need:** 17,520 green tons/year [approximately 8,760 bone dry tons (BDT)/year]

**Biomass Source:** 100 percent of needed biomass will come from mill residue from the sawmill operated by Springdale Lumber & Bioenergy LLC in Springdale, Washington.

**Pilot Project Team:** A team comprised of representatives from the Washington State Departments of Natural Resources, Ecology, Commerce, the Governor's Office of Regulatory Assistance, and Washington State University was convened to facilitate the project's success.

**Websites:** Springdale Lumber & Bioenergy LLC  
[www.springdalelumber.com](http://www.springdalelumber.com)

Washington State Department of Natural Resources  
[www.dnr.wa.gov](http://www.dnr.wa.gov)

## Origin of the DNR Biomass Initiative

In 2009, the Washington State Legislature authorized DNR to work with private firms to develop and implement forest biomass-to-energy pilot projects.

In summer 2009, DNR's invitation for partners in biomass pilot projects drew over 30 letters of interest. An advisory committee comprised of diverse expertise in the technology, research, conservation, forest industry and biomass energy fields evaluated the responses.

Activities proposed in current DNR biomass pilot projects include:

- Co-producing electricity, bio-oil, and "syngas" at an integrated facility using pyrolysis technology
- Combined heat and power systems for existing forest products manufacturing facilities
- Production of electricity for sale to utilities with renewable energy requirements