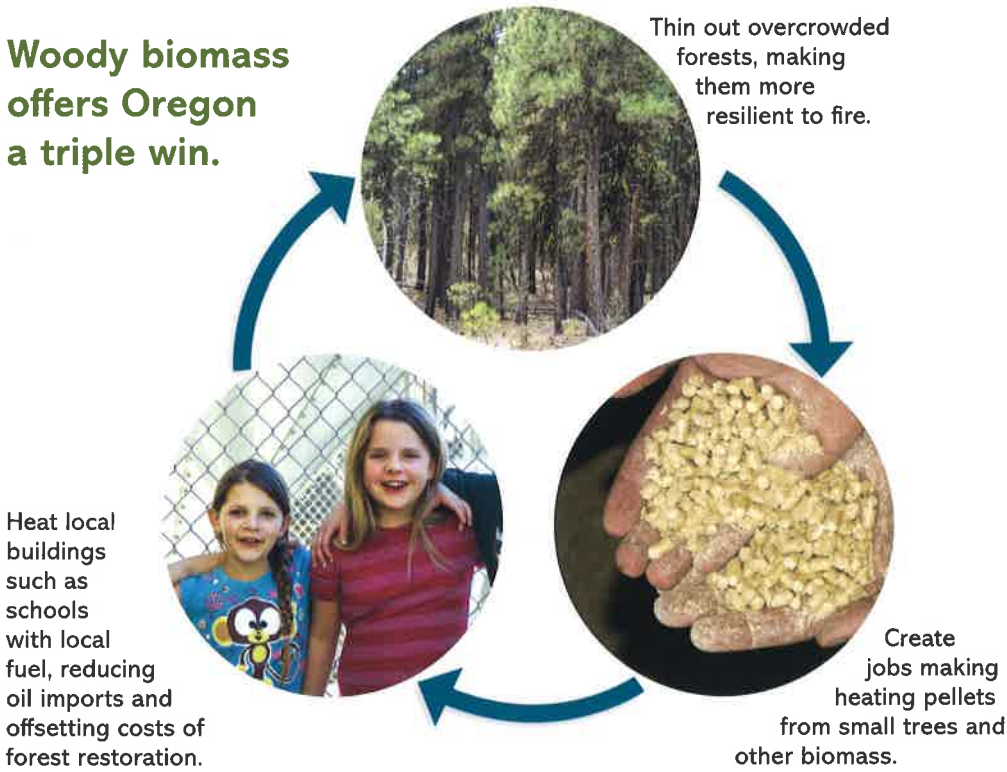


# HOW CAN WE GET GREEN ENERGY FROM OVERCROWDED FORESTS?

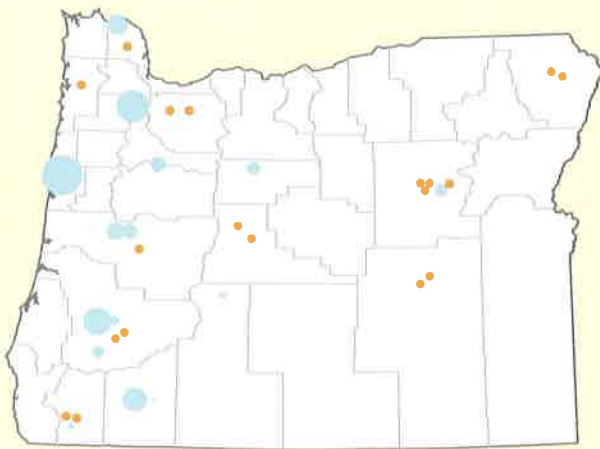
Oregon can reduce its reliance on fossil fuels, improve the health of overly dense federal forests and give a boost to rural economies – all at the same time – by expanding the way we use a huge and sustainable resource called “woody biomass.”

## Woody biomass offers Oregon a triple win.



## A HOME-GROWN, RENEWABLE RESOURCE

Oregon produces millions of tons of woody “waste” products every year, from logging slash to sawdust to small trees from US Forest Service thinning projects. All of it contains stored solar energy. The cost of extracting that energy is sometimes competitive with fossil fuels and sometimes not. Entrepreneurs, scientists and advocates are at work finding the most beneficial and cost-effective ways to use biomass to heat schools and hospitals, generate electricity, and fuel cars, trucks and airplanes.



## PROJECTS POPPING UP

Woody biomass can be used to create energy. Many such projects have gotten off the ground over the past decade, from a biomass electrical plant at the Seneca sawmill in Eugene to biomass heating systems at schools and other public buildings. Thinning the forest, especially in eastern Oregon, and making and selling the fuel creates jobs. It also keeps money at home that would otherwise have been spent importing fossil fuel, such as heating oil or propane.

- Electrical plants that are powered by woody biomass. The larger the circle the greater the electrical output.
- Institutional buildings – such as schools, hospitals and government offices – that are heated by woody biomass.





## Oregon Forest Biomass Energy Opportunity Map

The Oregon Forest Resources Institute (OFRI) contracted with Mason, Bruce and Girard, Inc. (MBG) to create this *Forest Biomass Energy Opportunity Map* as a follow on to the OFRI-funded, MBG-led study on *Biomass Energy and Biofuels from Oregon's Forests*.

The *Forest Biomass Energy Opportunity Map* shows:

- Oregon Forest Biomass Supply
- Oregon Forest Biomass Facility Locations
- Oregon Power Transmission Line Locations
- Oregon Federal and State Highway Locations

**Oregon Forest Biomass Supply** is taken from the OFRI/MBG study. The map shows net biomass supply that can be recovered through a program of forest thinning to reduce the risk of uncharacteristically intense wildfires in eastern and interior southwest Oregon. The map indicates 160,000 acre E-map hexagons colored in different shades of green to show the range of Bone Dry Tons (BDT) of biomass available. Classes include:

- 0 – 45,000 BDT
- 45,001 – 100,000 BDT
- 100,001 – 200,000 BDT
- 200,001 – 300,000 BDT
- 300,001 – 500,000 BDT
- 500,001 – 1,000,000 BDT
- 1,000,000 + BDT

Note: 100,000 BDT/year is enough biomass fuel to generate about 15 megawatts (MW) of electricity for a year, depending on power plant design and efficiency.

**Oregon Biomass Facility Locations** are taken from an MBG database, using data from the Northwest Power and Conservation Council. The map shows the location of 55 facilities currently using biomass for steam production listed by:

- Fuel Type – Wood Fiber Solids or Pulping Liquor
- Cogeneration of Electricity or no cogeneration (12 of 55 facilities do cogeneration)
- Fuel Consumption is listed in BDT/year

**Oregon Power Transmission Line Locations** are taken from the National Renewable Energy Lab (NREL) website. Transmission line capacity is classified as:

- 115 kilovolts
- 138 – 161 – 230 kilovolts
- 345 – 500 kilovolts

The *Forest Biomass Energy Opportunity Map* also shows:

- County boundaries
- Locations of major Oregon cities
- Locations of federal and state highways

In reviewing this map, there are some obvious opportunities for expansion of biomass energy in Oregon. These are areas that appear to have good biomass supplies, existing biomass facilities that may be capable of expansion, excellent electric transmission opportunities, and excellent transportation. It is no surprise that many of these locations are already under consideration.

Identified forest biomass energy opportunities include:

- Grants Pass/Cave Junction
- Medford/White City
- Glendale/Riddle
- Roseburg/Glide/Sutherlin
- Klamath Falls
- Lakeview
- Gilchrist
- Warm Springs
- Canyon City/Prairie City/John Day
- LaGrande/Elgin/Walloa

A small-scale, low-resolution copy of the *Forest Biomass Energy Opportunity Map* is included in this document. Full sized (36" x 45") high resolution prints of the map are available from OFRI.

For information contact:

Mike Cloughesy  
Director of Forestry  
Oregon Forest Resources Institute  
317 SW Sixth Ave., Suite 400  
Portland, OR 97204

Phone: 971-673-2955  
E-mail: [cloughesy@ofri.com](mailto:cloughesy@ofri.com).





Mill ID#	Mill Name	Mill Type	City	Net Consumption (BDF/Year)	Fuel Source	Cogeneration
47	Biomass One, L.P.	Power Plant	White City	11,865	WFS	✓
77	Alveng Lumber Co.	Sawmill	Talent	7,153	WFS	
96	Pacific Wood Laminates	LVL	Buckings	25,432	WFS	
99	Rosburg Forest Products	Plywood	Cogille	34,570	WFS	
100	Johnson Lumber Co. - CoGen H	Sawmill	Riddle	62,752	WFS	✓
104	Globe Lumber Products Co.	Sawmill	Glide	5,220	WFS	
112	Rough & Ready Lumber Co.	Sawmill	Cove Junction	3,250	WFS	
117	Fremont Sawmill	Sawmill	Lakeview	7,659	WFS	
119	Indorfor Pacific Inc.	Sawmill	Gresham	79,180	WFS	✓
126	Biose Cascade - Medford	Sawmill	Medford	101,768	WFS	✓
133	Marply Plywood	Plywood	Sutherlin	9,700	WFS	
137	Superior Lumber Co.	Sawmill	Clatskanie	27,777	WFS	
138	Panel Products, LLC	Veneer	Rogue River	5,040	WFS	
140	Biose Cascade	LVL	White City	20,942	WFS	
141	Columbia Plywood	Plywood	Rainbow Falls	15,791	WFS	
142	San Stata LLC	Sawmill	Roseburg	13,641	WFS	
156	Blue Mountain Forest Products	Sawmill	Princeton	3,702	WFS	
157	Biose Cascade - Elgin	Plywood	Elgin	83,055	WFS	
161	Biose Cascade - La Grande	Sawmill	La Grande	24,400	WFS	
163	Biose Cascade - Willamette Veneer	Veneer	Willamette	8,538	WFS	
167	Weyerhaeuser - Warrenton Sawmill	Sawmill	Warrenton	18,939	WFS	
187	Fort Hill Lumber Co.	Sawmill	Grady Road	1,188	WFS	
188	Frank Lumber Co., Inc.	Sawmill	Mill City	8,133	WFS	
189	Frees Lumber Co.	Sawmill	Lynn	33,851	WFS	
194	Grant Western Lumber	Sawmill	John Day	7,695	WFS	
199	Hill Oaks Lumber Co.	Sawmill	Morro	1,660	WFS	
405	Milheur Lumber Company	Sawmill	John Day	4,026	WFS	
417	Johnson Lumber Co. - CoGen I	Sawmill	Praine City	96,695	WFS	✓
421	Walkers Forest Products	Sawmill	Walton	7,143	WFS	
422	Rosburg Lumber Company	Plywood	Springfield	no data	no data	
424	Rosburg Forest Products	Plywood	Riddle	82,364	WFS	
431	McKenzie Forest Products	Plywood	Springfield	21,150	WFS	
435	Slinson Lumber Co.	Sawmill	Forest Grove	83,329	WFS	
444	Tillamook Lumber Co.	Sawmill	Tillamook	29,308	WFS	
448	Warm Springs Forest Products Ind.	Sawmill	Warm Springs	35,348	WFS	✓
451	Weyerhaeuser - Coburg Sawmill	Sawmill	Eugene	56,938	WFS	
454	Weyerhaeuser - Foster Plywood	Plywood	Sweet Home	11,579	WFS	
458	Weyerhaeuser - Springfield Plywood	Plywood	Springfield	12,200	WFS	
575	South Coast Lumber Co.	Chipmill	Brookings	4,600	WFS	
592	Blue Heron Paper Co.	Paper	Oregon City	564	WFS	
594	Fort James Wauna Mill	Paper	Clatskanie	401,567	PL	
595	Biose Cascade - St Helens	Paper	St Helens	577,500	PL	
597	Weyerhaeuser - Springfield	Paper	Springfield	469,140	PL	✓
598	Georgia-Pacific West, Inc.	Paper	Tillamook	470,721	PL	
599	Weyerhaeuser - Albany Paper Mill	Paper	Albany	287,500	PL	✓
600	Pape & Tabbot	Pulp	Halsey	400,420	PL	
604	GP Newsprint	Paper	Newberg	159,800	WFS	✓
635	Mid West Inc. Thomas Lumber Co	Sawmill	Rainbow Falls	19,431	WFS	
645	Rosburg Forest Products	Plywood	Roseburg	137,577	WFS	✓
670	SirmFlex Ltd	Particleboard	Springfield	5,749	WFS	
701	Elk River Enterprises, Inc	Sawmill	Sweet Home	1,580	WFS	
702	Happer Power Plant	Power Plant	Boardman	12,961	WFS	✓
703	Oregon Industrial Lumber Products	Sawmill	Springfield	3,400	WFS	
704	Fort James Wauna Mill	Paper	Clatskanie	65,067	WFS	✓
705	Georgia-Pacific West, Inc.	Paper	Tillamook	71,995	WFS	

WFS - Wood Fiber Solids PL - Pulp Liquor LVL - Laminated Veneer Lumber BDF - Bone Dry Tons

### Legend

#### Oregon Biomass Facilities

- Wood Fiber Solids
- Wood Fiber Solids / Cogeneration
- Pulping Liquor
- Pulping Liquor / Cogeneration

#### Net Biomass Supply (Bone Dry Tons)

- 0 - 45,000
- 45,001 - 100,000
- 100,001 - 200,000
- 200,001 - 300,000
- 300,001 - 500,000
- 500,001 - 1,000,000
- 1,000,001+

#### Transmission Lines (Kilovolts)

- ~ 115 KV
- ~ 138 - 161 - 230 KV
- ~ 345 - 500 KV

- Counties In Study
- Other Counties

## House Energy and Environment Committee

Thank you for allowing me to testify. Recent graphs presented by Or. DEQ showed Greenhouse Gas Emissions of (transportation-34%, waste-3%, residential-17%, commercial-14%, industrial-25% and agriculture-14%. No forest fire emission listed.

High density fuel buildup and high- intensity fire particulate emission (PM) figures from :  
Pyne, Stephen J., Patricia L. Andrews, and Richard D. Laven, Introduction to Wildland Fire (1996). New York: Wiley

Battye, William, and Rebecca Battye of EC/R Incorporated. 2002. Development of Emissions Inventory Methods for Wildland Fire Final Report, February 2002, Prepared for U.S. Environmental Protection Agency, EPA Contract No. 68-D-98-046, Work assignment No. 5-03  
<http://www.epa.gov/ttn/chief/ap42/ch13/related/firerept.pdf>

80% of (PM) "particulate matter" is one micron or less and more than 90% of wood smoke particulate can enter the human lung up to 10 micron. (U.S. EPA)

25 to 40 pounds of (PM) is produced per ton of wood fuel burnt. Using 20 pound average of (PM)/ton of fuel, the Biscuit Fire of 2002 of 500,000 acres, with 20 ton of fuel per acre consumed produced 3,000,000 pounds of (PM).

In 2007 wildfires scorched hundreds of thousands acres in Oregon, producing an estimated 4.5 million pounds of (PM). EPA states, forest fires nationally 2000-2005 unleashed 562 million tons of carbon.

In addition in 2007 greenhouse gas (GHG) emissions, principally CO<sub>2</sub>, from forest fires in Oregon resulted in emissions of 56 teragram. One teragram equals 1.1023 million tons (US). Emissions from Oregon forest fires in 2007 were equivalent to GHG emissions from 11.1 million cars driven all year, and constituted as much or more than all human-caused emissions in the State combined.

Among other emissions from forest fires are carbon monoxide, sulfur dioxide, nitrogen dioxide, ammonium, volatile organic compounds, formaldehyde, methanol, and air-borne lead and mercury. The Environmental Protection Agency states after years of study exposure to these PMs and compounds listed above can cause elevated cardiovascular and infant mortality. Patients with asthma, COPD, pneumonia, respiratory diseases, cardio-vascular diseases and diabetes are especially affected.

Representative's, the point I'm getting at is uncontrolled forest fires are responsible for a major source of Oregon's air pollution and I feel that the Oregon DEQ needs to factor these forest fire emissions into their graphs when they discuss air quality. By reducing forest fires we could save lives, save billions in medical costs and create 1000's of jobs working in our forests.

Thank you,  
Bill J. Kluting  
Carpenters Industrial Council

