



# Forest Biomass

Consider rule making to include forest biomass removal in the “forest practice” definition in WAC 222-16-010.

- Important issue in Washington.
- Overview of biomass removal activities in Washington.
- Why forest biomass removal should be specified as a forest practice.
- Request approval to begin rule making process.

# “Forest biomass”

➤ by-product of forest practices activities ...



➤ not wood required to be left on site after forest practices activities.

- Economic opportunity
- Equipment and infrastructure are being developed for collecting, transporting and processing the material for conversion to energy products.



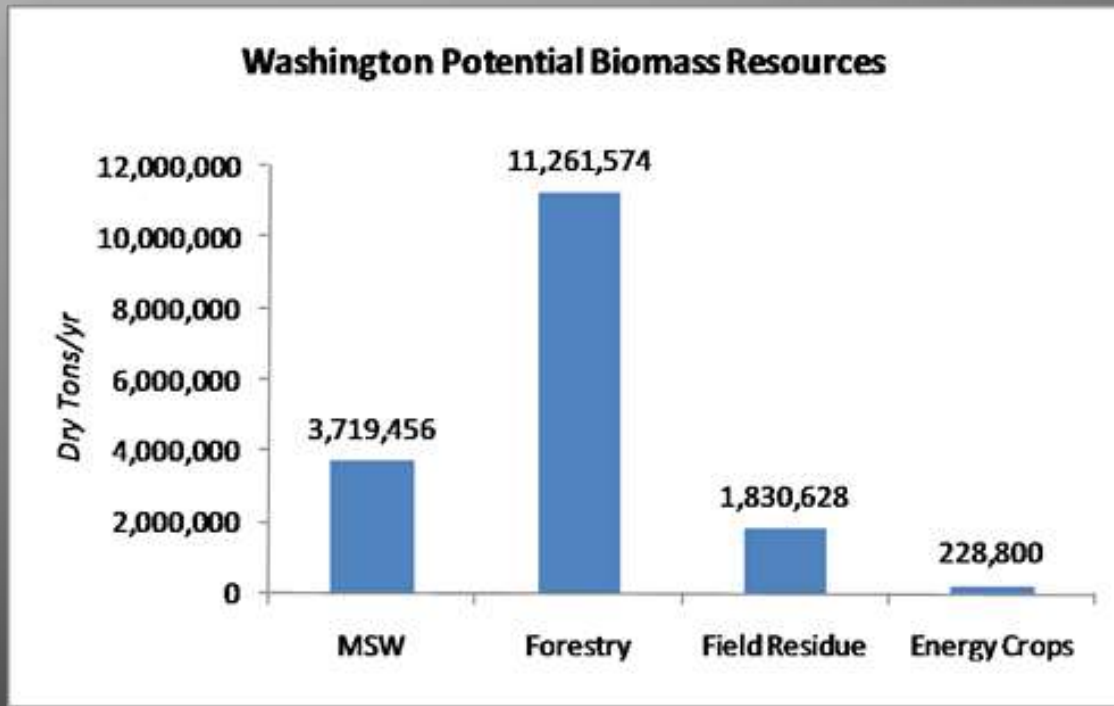
<http://www.forestprod.org/biomass09mitchell.pdf>



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# The primary biomass resource in Washington is wood.

> 11 million dry tons/year, or  
66% of all potentially available  
biomass in the state.



- 900 million gallons of ethanol per year (~1/3 of Washington's 2008 gasoline consumption), or
- 11.5 million megawatt hours of electricity per year (enough to supply 13% of Washington's total electricity use annually).

Mason, et al. 2009

municipal  
solid waste

logging slash  
thinning slash  
hog fuel

corn  
soybeans

willow  
poplar

# Federal Policy Direction

## Federal Energy Independence and Security Act of 2007

- Calls for significant increases in the required volumes of fuels from “renewable biomass” over the next 10 years (including slash and pre-commercial thinnings).

# State Policy Direction

## State Energy Independence Act of 2007 (I-937)

- Requires the state's large utilities to obtain 15% of their electricity from "renewable resources" by 2020 (including forest residues).
  
- Declaration of Policy lists many benefits of developing new energy resources in Washington including
  - Energy independence
  - Economic benefits for counties and farmers
  - Jobs
  - Protection of clean air and water

# The stage is set.

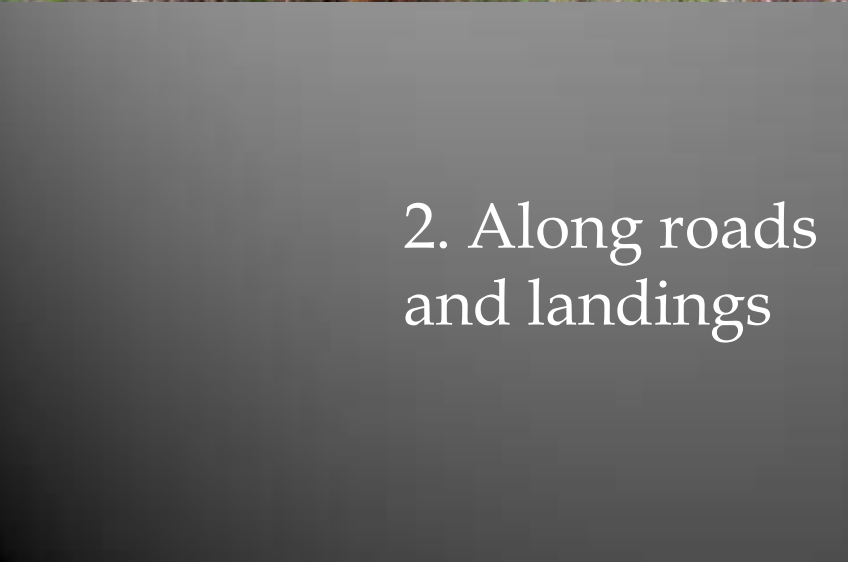
- Economic benefit
- Availability of material
- Development of equipment and infrastructure
- Federal and state legislative support



Oneil and Lippke (UW) 2009  
[http://www.dnr.wa.gov/Publications/em\\_biomass\\_final\\_report\\_eastern\\_study.pdf](http://www.dnr.wa.gov/Publications/em_biomass_final_report_eastern_study.pdf)



1. Scattered within  
harvested units



2. Along roads  
and landings





### 3. Transported from the source



to a central location for chipping in the woods or collection yard.

# Some biomass operators in Washington



MCR  
ENTERPRISES  
NASELLE

BAKER  
WOODCHIPPER  
SERVICES  
BELLINGHAM

R & K  
LOGGING  
YELM

GILLIARD  
LOGGING  
TACOMA

CHERRY  
VALLEY  
LOGGING  
DUVALL

NORTHWEST  
CHIPPING &  
GRINDING  
BELLINGHAM

HERMAN BROS.  
LOGGING

RAINIER WOOD  
RECYCLERS  
FALL CITY

SCHEARER  
BROS BELFAIR

BRADY  
TRUCKING  
SHELTON

DIAMOND WOOD  
RECYCLERS  
BLACK DIAMOND



On site chipping and grinding by Herman Bros. Logging

Machinery being used by the Herman Bros. Logging



**300 Doosan loader w/Young grapples  
Peterson 5710 grinder**

# Specialized harvest equipment



- JD1490 Slash Bundler used to bundle material for collection and transport off site.



- Baler making woody debris bales.

# Forest biomass derived products

- **Hog fuel** for boilers in power generating or co-gen plants and landscaping industry.
- **Chips** for power generating plants or co-gen plants but is mostly used for pulp production.
- Logging slash **bundles and bales**, strictly for power generating plants.



# Industry's Evolution



Problem solved.



# FPAs including biomass removal

- OLYMPIC REGION **35/month**
- NE REGION: **40/ month**
- SE REGION **12/month**
  
- PC REGION **55 active FPA**
- NW REGION **30 active FPA**
- SPS REGION **20 active FPA**





# Types of biomass removal



# Equipment and products



# Degrees of extraction



# Ensure resource protection.

Example: wildlife reserve tree management rules



## Down logs

westside 2 / acre  
eastside 2 / acre



## Wildlife retention trees

westside 3 / acre  
eastside 2 / acre

# GOAL

Ensure landowners and operators successfully implement existing rules that protect resources while conducting forest biomass removal activities.

# STRATEGY

Include “forest biomass removal” in the definition “forest practice” in WAC 222-16-010.

# BOARD ACTION

Direct staff to file a CR-101, *Preproposal Statement of Inquiry*, to inform the public that the Board is considering rule making related to forest biomass removal.

# References

Frear, C. et al., 2005. Biomass inventory and Bioenergy Assessment; an Evaluation of Organic Material Resources for bioenergy Production in Washington State. Publication No. 05-07-047. Washington Department of Ecology and Washington State University. 120 pp. <http://www.ecy.wa.gov/pubs/0507047.pdf>

Frear, C., 2008. Cellulosic Feedstock Availability by County in Washington State. Working paper. Dept. Biosystems Engineering, Washington Sate University. Pullman, WA.

Mason et al., 2009. Wood to Energy in Washington: Imperatives, Opportunities, and Obstacles to Progress, College of Forest Resources, University of Washington. [http://www.ruraltech.org/pubs/reports/2009/wood\\_to\\_energy/index.asp](http://www.ruraltech.org/pubs/reports/2009/wood_to_energy/index.asp)

Oneil, C. and B. Lippke, 2009. Eastern Washington Biomass Accessibility. School of Forest Resources, College of the Environment, University of Washington. [http://www.dnr.wa.gov/Publications/em\\_biomass\\_final\\_report\\_eastern\\_study.pdf](http://www.dnr.wa.gov/Publications/em_biomass_final_report_eastern_study.pdf)