

Woody Biomass Assessment:

Developing Investment Grade Feedstock Supply Data for the Olympic Peninsula

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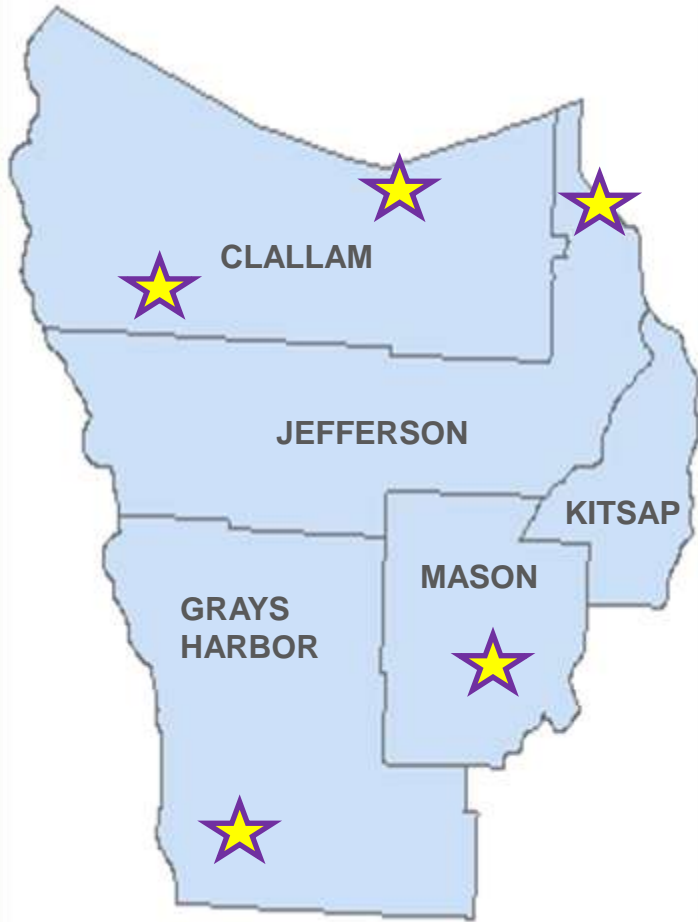
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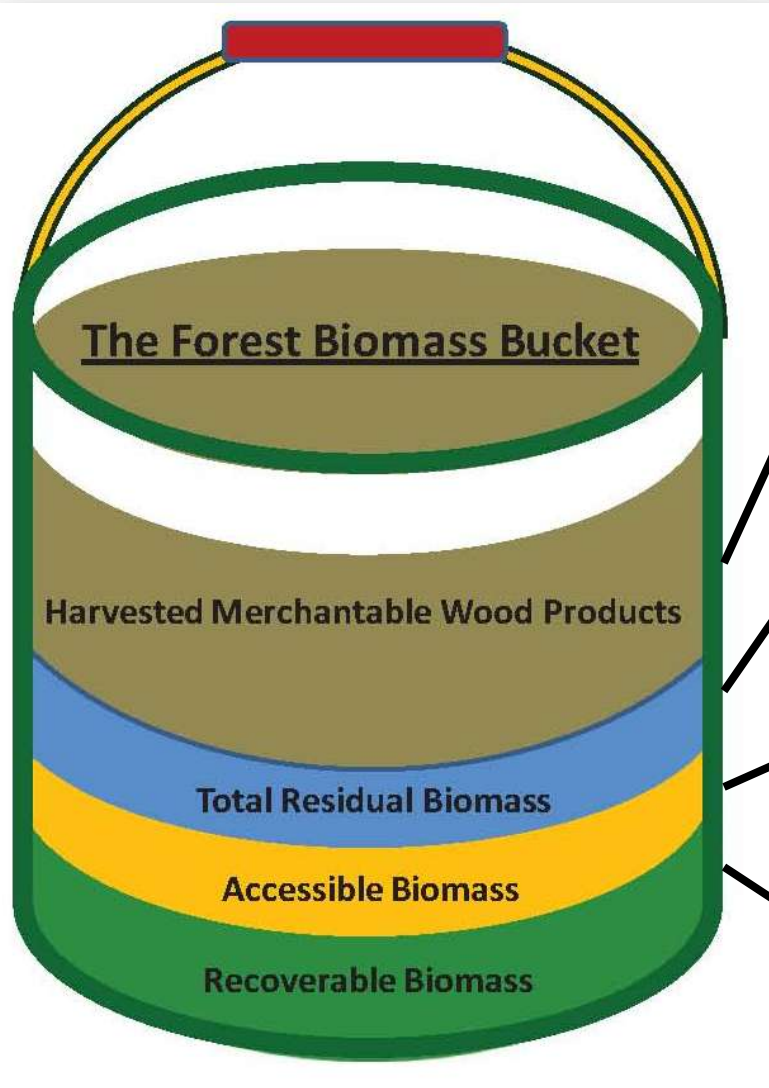


Research Question to be Answered:



- If past timber harvest activity on the Olympic Peninsula is indicative of future activity, then how much residual biomass is being produced that could be utilized as an energy source for electricity production or for combined heat and power (CHP)?
- What are the costs to deliver this biomass to specified locations most likely to host such an operation?

Starters: Biomass Terminology[†]



Harvested Merchantable Wood Products

- 50% of all woody biomass in forest

Total Residual Biomass

- 15% sustain ecological functions (unaccessible)

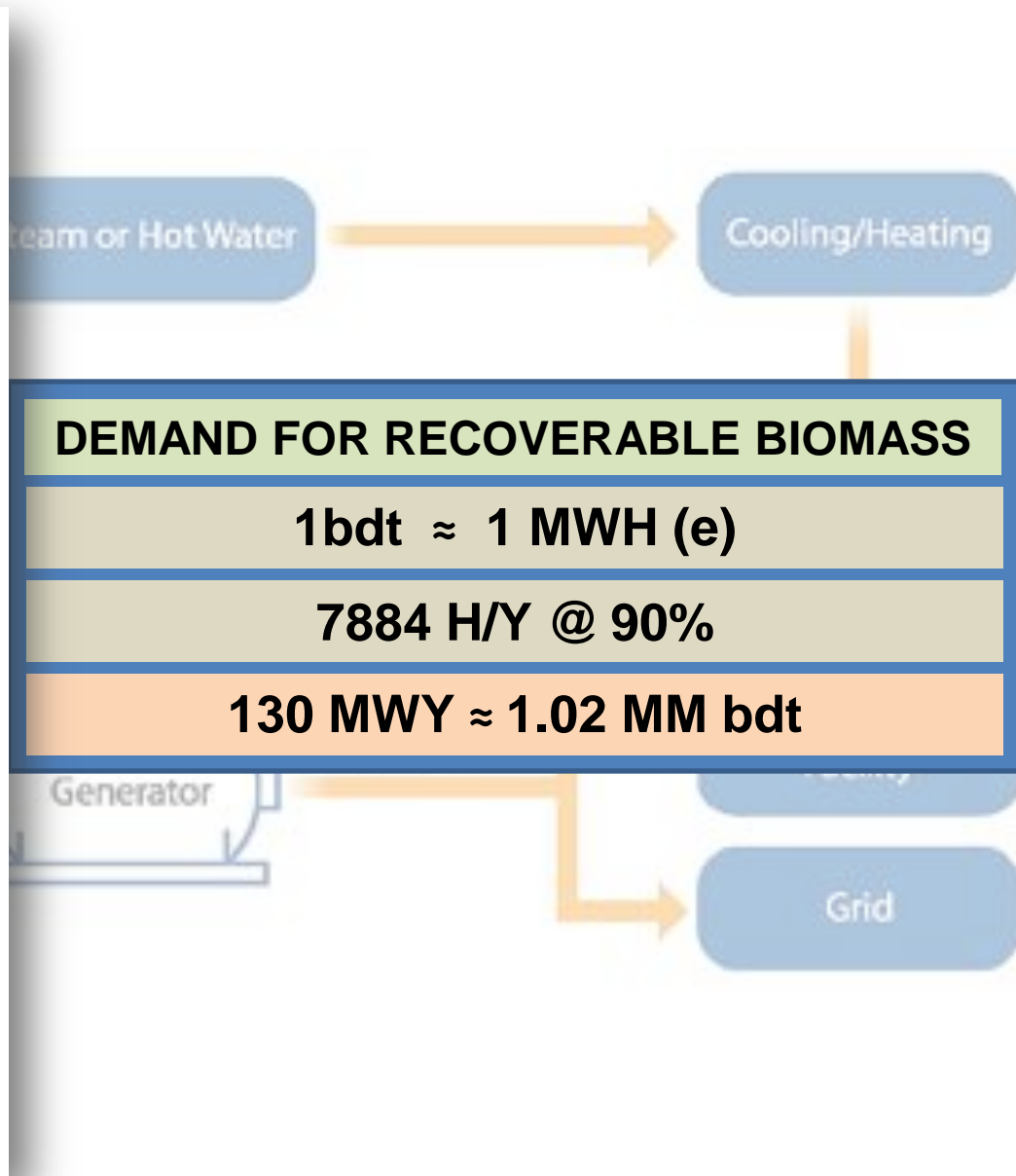
Accessible Biomass

- 0-35% Determined by economic conditions

Recoverable Biomass

- Remainder, determined by economic conditions

How Much Wood is Needed and Available for Combined Heat & Power Energy Production?



Two Sequential Projects:

$$M_x = V_p \cdot R_{Vc:Vp} \cdot [1 - (a / 100)] \cdot [1 + (x / 100)] \cdot P_b$$

V_p

Volume of slash pile measured on site prior to processing

$R_{Vc:Vp}$

Ratio of slash pile volume to chipped pile volume measured in sort yard

a

Air space in chipped pile determined from samples in lab

x

Moisture content of chipped pile determined from samples in lab

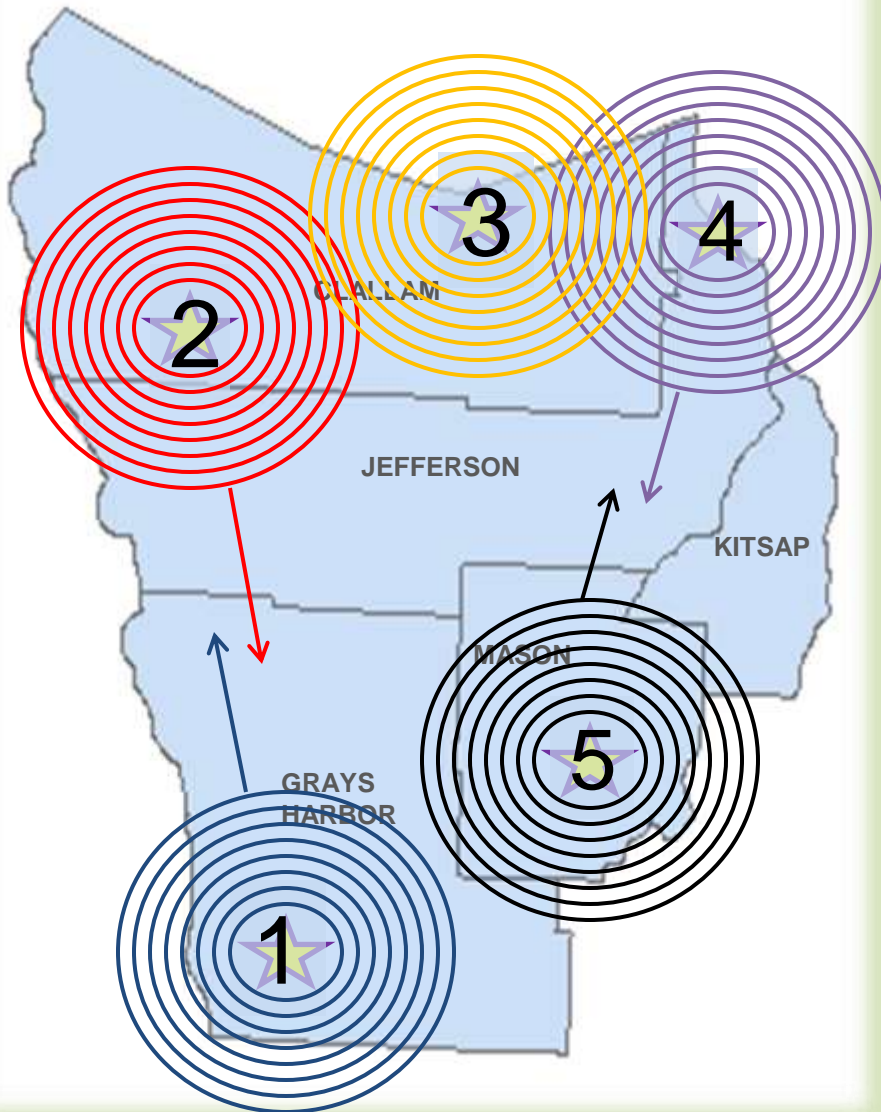
P_b

Base density of chipped material determined in lab (density of water · base specific gravity)



Two Sequential Projects:

BUILD SUPPLY CURVES



- Select Market Centers
 1. Aberdeen, WA
 2. Forks, WA
 3. Port Angeles, WA
 4. Port Townsend, WA
 5. Shelton, WA
- Quantify Factors
 - Quantity of residue
 - In-woods cost of recovery
 - Transportation to market centers
- Develop Supply Curves
 - 5 mile radii increments to overlap.



Biomass Estimation Results can be Exported for use in Other Regions

1. Each Forest Practice Application within a specified geographic region can be stratified
2. In the absence of direct, region-specific calibrating measurements, assumptions can be made.
3. Web delivery of query & results possible.

Level 2 Feasibility Studies are Required to Support Investment Decisions

- The first step in developing a wood-to-energy industry is reliable feedstock estimates.
- Uncertain feedstock estimates will result in *under-utilization* of the woody biomass resource.
- Improved region-specific supply information will limit the “hype”.
- It is important to note that biomass of the type we are investigating here is the icing on the cake; the cake itself is the timber harvested for merchantable wood products!

