

# Small Scale Woody Biomass Combined Heat & Power in the West

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# Define Small Scale?

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- Here it is less than 25MW
- Very small scale (<5MW) will typically appear as combined heat and power to be economic

# What are the Small Plant Drivers?

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- Minimum fuel gathering radius
  - May be within confines of mill
- Make maximum use of incentives
  - Incentives often limited by size
- If combined heat and power (CHP)
  - Greatly enhanced efficiency (20 vs. 40-50%)
  - Fuel on site if forest products host
  - 2<sup>nd</sup> & 3<sup>rd</sup> revenue streams

CHP often makes small scale plants feasible!

# How Dramatic is CHP Advantage in Small Plants?

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- Two identical 10 MW plants
- One standalone
- One CHP replacing existing wood fired boiler at sawmill
- Across street from each other

\$20/MWH advantage for CHP plant

# Recipe for a Successful CHP Plant

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- Steam host with 30+ year history
- $\pm 25\%$  of steam to host at  $<150\text{psig}$
- Substantial fuel (fossil or biomass) currently burned for heat
- Fuel mix of 60-70% on site, 30-40% from woods/others
- Flexible pricing in utility contract

# Small Scale Biomass CHP is the SAFE Alternative

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- ◉ **S**ustainable
- ◉ **A**ccepted
- ◉ **F**inanceable
- ◉ **E**conomic/Efficient

# Why is Small Scale the SAFE Alternative?

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- Does not introduce questions of sustainability
- Does not have fuel risk associated with large plant
- Does not have transmission issues
- Host has appropriate zoning/utilities
- Host is accepted/respected member of community



# Why is Small Scale the SAFE Alternative? (Cont.)

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- Small plant makes better use of incentives
- On site fuel/smaller gathering radius
- 2<sup>nd</sup> and 3<sup>rd</sup> revenue stream
- No substantial opposition from existing wood users
- Potential RPS Credit for thermal uses



# Why is Small Scale the SAFE Alternative? (Cont.)

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- Often stay within emissions allowance of current host heat source
- Much higher overall thermal efficiency
- Less stringent emission controls
- Wider choices of vendors/technologies

# Summary of Small Scale Advantages

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- Less risk of project denial
  - Environmental, sustainability, transmission, financing
- More efficient use of resource
- Lower overall fuel cost and risk
- Multiple revenue streams
- More complete use of incentives

# Summary of Small Plant Disadvantages

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- Higher capital cost per MW
- Higher O&M cost per MWH
- Higher development cost per MW

Big companies tend to want big plants!

# Regulated Utilities and Biomass

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- If utilities grow biomass as fuel, absolutely no problem!
- If utilities co-fire waste biomass or build regulated biomass plants in service territory, other projects cannot go forward. Traditional wood waste users also in peril
- This is crucial time in history of biomass power in U.S.