Ways to Manage Particulate Matter

Issues that Bridge Residential biomass – to Institutional Biomass

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SMOKE

The Ultimate Downside Issue to Biomass At Any Scale

Smoke is Not Health Food
Emission Factors

Do Not Translate well between Residential & Institutional

Mass/ Unit of Time (G/H)
Mass/ Unit of Fuel Burned (G/Kg)
Mass/ Useful Heat Output (Lbs/MMBTU)
Emission Metrics Cannot Be Separated From Emission Method

- G/H Woodstoves – Hot Starts, 4 outputs, Dimensional Lumber
- g/MJoule – Engineered combustion systems – Specified Fuel & Draft
Burn Rate Is The Key To Emissions

• Draft - Natural vs. Forced
• Fuel – Moisture & Surface Area
  – Water doesn’t burn
  – Transporting Water is Costly
  – Surface to volume ratio major influence on Burn Rate
    • chips up to Round Wood
Biomass Systems Often Start with Fuel Issues

- Cordwood, -simple – labor intensive
- Chips, - cheap – bulky - moisture
- Pellets, - cost –
  - transport & storage are plus
- Other Densified Fuels?
  - Pucks?
Load Matching (Sizing)

- Building Energy Efficiency
  - (Biomass not an excuse to waste energy)
- Biomass Systems are not on/off
- Size for 50-60% of Peak Load
  - (capture 80-90% of Total Load)
  - Let Oil cover the Peak
Finally – Why Biomass?

• Save Money – Homes & Communities
• Support Your Local Economy
• The Forests Need It
This

Or

This