Biomass Markets in Maine:
Current Challenges and Opportunities
E2 Tech – GrowSmart Maine
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Innovative Natural Resource Solutions LLC

• Founded in 1994
• Offices in New Hampshire and Maine
• Focus at the intersection of forest industry, energy and economic development
• Services include:
  - consulting in renewable energy
  - advocacy
  - forest management and protection
  - forest certification and sustainability
• Clients from the private, non-profit and government sectors
• Conducted work in all regions of North America
• www.inrsllc.com
Limbs
Tops and branches - Chipped for biomass or mulch, or left in woods

Fiber Wood
8'-16' - Depending upon quality and local markets, sent to sawmill, pulp mill or chipped

Solid Wood
8'-16' sawlog sent to sawmill or veneer mill, unless diameter is too small or the stem is crooked and then to pulp mill or for energy
Maine Timber Harvest by Product

Data Source: MFS Timber Processor Report
Data in tons (INRS conversion)
Volume and Value from a Timber Harvest

Maine, Statewide, 2014

- **Biomass**: 23% Volume, 5% Value
- **Pulpwood**: 51% Volume, 31% Value
- **Sawlogs**: 26% Volume, 64% Value
Biomass
Biomass Markets in Maine (Major)

- Operating Stand-Alone
- Operating Stand-Alone with Maine Support
- Operating Forest Industry
- Closed – Stand-Alone and Forest Industry (Since 2005)
Biomass Electricity (MWh)

“Green” Attributes (Renewable Energy Certificate)

Electricity (MWh) (Wholesale)
Average Real Time Wholesale Electricity Prices
Dollars per MWh, Futures Prices for On-Peak, as of 3.7.2017 11:30 AM

[Graph showing fluctuating electricity prices over time]
Average Monthly Wholesale Electricity Price
Trailing 12 Month Average
Source: Testimony (and verification through order) in DE 16-850 - ELECTRIC RENEWABLE PORTFOLIO STANDARDS Adjustment to Renewable Class Requirements Order Maintaining Class III RPS Requirements for 2017 and Modifying Class I Useful Thermal RPS Requirements for 2016 Order Number 25,978 17-Jan-17
What does it take to operate biomass electric in 2016?

- Assumes:
  - Electricity at current futures price for the next year ($41)
  - REC at recent broker quote ($24)
  - Biomass fuel at $25, 1.7 green tons per MWH
  - O&M at $30 per MWh

- With these assumptions, this is not an attractive business
The Wood
The Markets
The glass is half full...

• We have **markets**, and are incredibly well positioned compared to other parts of the country
• We have the **forest resource and supply infrastructure** (landowners, loggers, entire forest industry ecosystem) that would make other regions jealous
• We live in close proximity to (and are part of) the **greatest collection of consumers** in the history of the world
• It is cold in New England, we heat buildings, we need process heat
• There may **never be a better time** to be develop a project or technology that uses low-grade, particularly softwood
New Biomass Combined Heat & Power Projects at Maine Forest Industry

• 2 projects funded through the “Community-based Renewable Energy Pilot Program”
  • Maine Woods Pellets, Athens
  • Georges River Energy (at Robbins Lumber in Searsmont)

• Provide opportunity for electricity, REC and thermal – in some cases may be future co-location opportunities
Opportunities in Biofuels / Bioproducts

• Most things that can be made from oil can be made from wood fiber.

• In many cases, the technology exists at pilot scale, but has not been proven at commercial scale.

• A key question is economics – what works at $50 per barrel oil (hint – not as much as what works at $100 per barrel oil).

• Lots of opportunities here, but there will be challenges, there will be failures, and Maine needs to figure out where we can be most successful.

“...once wood is reduced to a pure and stable chemical it provides the base on which the chemist can build a hundred different products.

More and more the wood pulp and paper industry is joining forces with the chemical industry.

It is conceivable that the forests of the United States and Canada within the next half century will supply us not only paper for many varied purposes... but also quantities of foodstuffs, alcohol, and chemical raw materials from parts of the wood which we are only beginning to use today.”

President, International Paper
John Hinman, January 31, 1948
Projects on the Drawing Board

- Sherman Station (18 MW power, activated carbon)
- East Millinocket Biorefinery
- Maine Biomass Exports (Searsport export)
- Phyto-Charter (Eastport exports)
- Ensyn (bio-oil, no location publicly suggested)
Biomass Heating Has Real Potential in Maine

• Wood pellets, wood chips and cordwood all provide opportunities for wood heat. Some very modern pellet and chip systems available.

• Some relatively large users now – Colby College, Jackson Labs, etc.

• Often a large cost savings on a $ / btu basis (modest with current oil prices)
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