Existing Infrastructure: Wood Fiber and Water

Notes for Discussion

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Major Points

- Biomass Fiber is a complex area…
  - Many sources & existing uses
- Many generators are now getting paid something
- Abundant sources _ e.g. forest WTC – are not cheap
- Logging infrastructure under $$ stress – cost outlook uncertain.

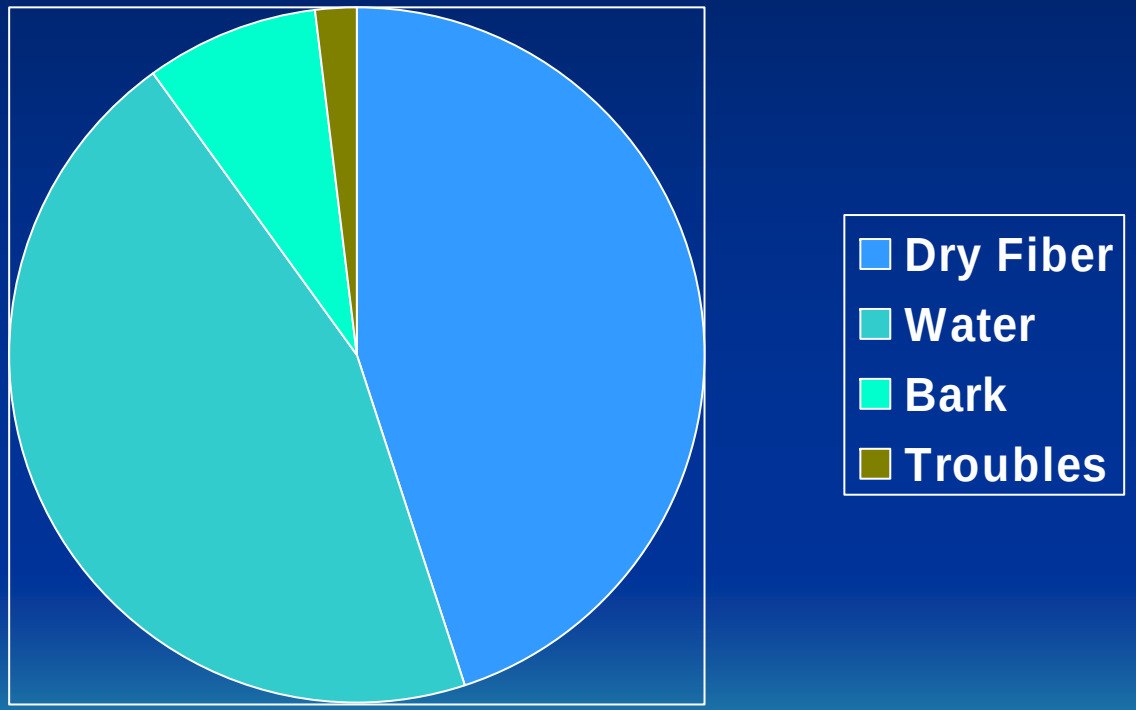
Major pts

- Utilization standards have pushed downward
  - Less is left for other users
  - Is of lower quality
  - Is costly to assemble/process
- Even logging “waste” has alt. uses: “DWD”
  - Best practice operations haul it back to the woods from delimber piles

Points, cont…

- Generators skewed by size
  - Low cost, large units spoken for
- Some of these items coming from "inventory"
  - e.g. old bark piles
- Process thinks "dry" but you buy "Green"

Content of Green Logs/WTC



Maine Forest biomass 2002 million dry tons

• Poletimber	215	
• Sawtimber	209	
• Upper stem	40	
– Subtotal		464
• Branches	69	
• Foliage	34	
• Stump/root	148	
• Cull trees	73	
• Salvable dead trees	12	
• Saplings	183	
– Subtotal		519

Note:

BC & S 154

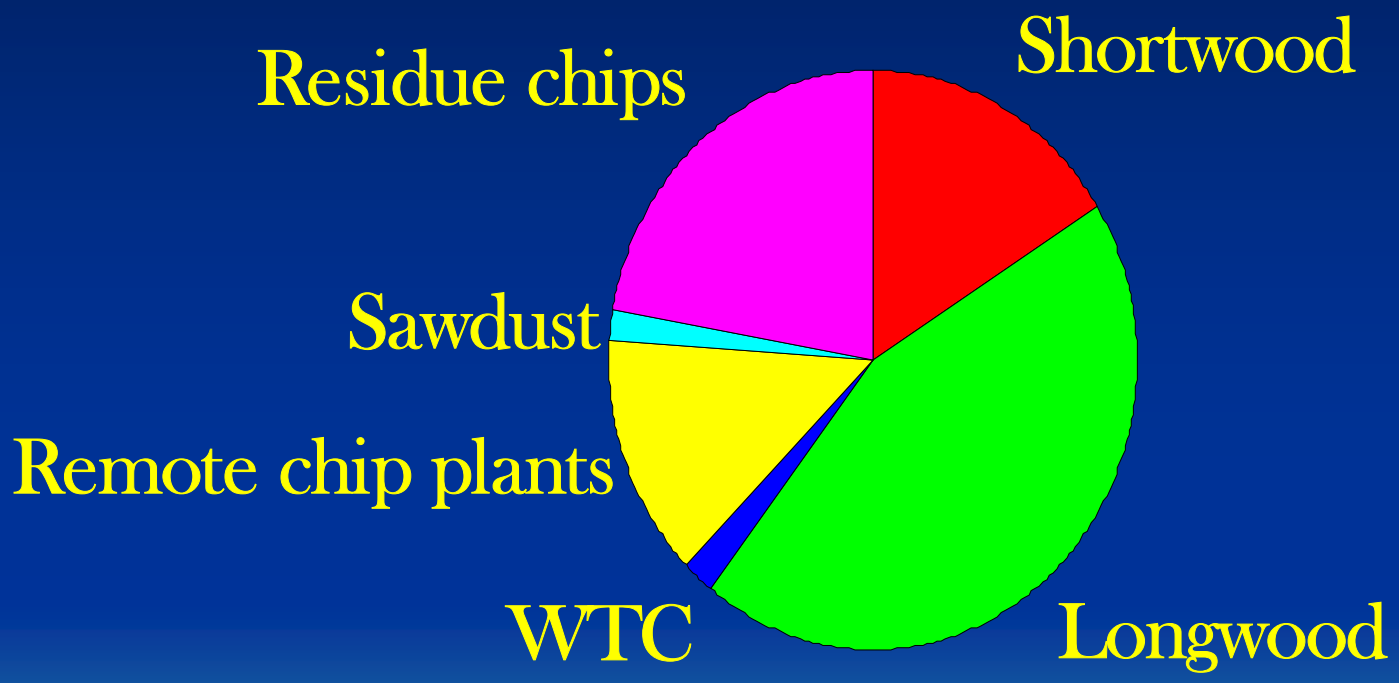
Current Usage

- Large Pulp mill can use 700,000 cords plus per yr

  = 1.5-2 MM tons green
- Biomass elec. plant 200-250 M grn ton
- Bio-Product plant? Up to 2 MM ?

Northeast Pulpwood Sources, 1999

Source: Forest Resources Assn.



Fiber Uses

- Feedstock for Product
- Energy Needs
- Pallets/shipping for nonbulk shipment
- Composting for plant organic wastes, if any

Maine Fiber Usage 2002 green tons

- 17 million tons used by FPI
- 25% from out of state
- Approx 9 MM tons to pulp industry
- Sawmill res. 1.3 MM tons*
- Biomass chips: 1.8 MM tons
- Hog fuel: 2.3 MM tons*

Source: MFS, 2002 Wood processor report

* Not a net addition to standing timber harvest

Fiber Sources

- Silvic. Byproducts
- Logging residue
- Hogfuel
- Bark
- WTC

- Pulpwood
- Urban demo
- Land Clearing
- Secondary plant residuals
- Primary Residuals

Silvicultural

- Material generated in stand improvement
  - Or other treatments
- Del. Cost may benefit from silvic. Motive
- This amount likely decreasing

Logging Residue

- Tops and branchwood
- Higher bark content
- Leaves
- Many prefer to leave this in forest
- Volumes very large
- Not cheap

Hogfuel

- Mill byproducts that are “hogged” in a grinder
- Generally a mix of bark and wood,
- Some dirt content
- Usually a disposal cost to producer
- Some ship to biomass plants

Bark

- Depending on species, 6-12% of green weight
- Removed for pulping/Sawmilling
- Tiny sawmills don’t debark – hence hogfuel (cum. volume small)
- Some burn for energy
- Many sell onsite to bark processors15

WTC

- Entire tree not just topwood
- Trend toward WTC production has moderated
- Shrinkage of biomass plant usage
- May be equipment around, but may not work at bargain basement rates of the past
- Ten yrs ago, operators not breaking even at $20-22/del. Grn ton

Pulpwood

- Quality feedstock
- At current prices there is excess demand
- Is this now the normal condition? D.K.
- Delivered prices – a range???

Urban Demo Wood

- Generally mixed with urban secondary and other
- Suburban areas, states ban wood from landfills
- Get paid on both ends
- Paint, nails etc?
- Can cost more than WTC on del. Basis
- Long hauls from volume sources

Land Clearing

- Portland – sprawl capital of the galaxy!
- States banning onsite stump/tree burial
- N. Jersey – paying contractors $5K/A to strip/stump lots! $300K houses)
- Vulnerable to housing cycles (what's that??)

Secondary plant residuals

- Furniture & other plants
  - Total wood usage large
  - Fairly large individual units
  - Yields 50-60%
- Succumbing to offshore competition
- May burn resids for power/heat
- Quality often high (often, not always dry)

Primary Residuals

- Often fairly uniform as to species
- Large volumes at many mills
- Quality residuals from volume generators spoken for – can be bid away at a price

Generating the Cost Curve

- Will be site-specific
- Specific to infeed specifications
- Validate volumes/competing uses
- Validate delivered cost estimates
- And, like Santa's list, check them twice!

Infrastructure/ Logistics

- Traffic -- Low energy density of wood
  - For 1.5 MM Grn tons/yr:
    - 60,000 loads (25 T)
    - 164/day at 365 d/y
    - 14/hr on 12 hr day
- Site Selection
  - Material siting factor
  - Significant source of community opposition

Sourcing Logistics

- Numerous Chip Plants
  - (some under contract)
- A number of chip/residue brokers
- Chippers, related Equipment at hand
- Entrepreneurial Logging/trucking sector
- Recycling sector could be an ally

Supply Practices

- Last time around, little success

  in getting Long term supply deals from landowners
- Supply contracts with chip plants difficult
- Volume protection possible, price protection probably won't be

Air/Water Issues

- Wastewater management
  - Small streams – nondegradation
  - Larger ones – quality contentious
- Air emissions issues Significant
- Solid waste management

Process Water

- Large volume requirements
- Regulatory issues
- Neighbor issues
- Not to be taken for granted

Logistics: Truck

- Most users are hauling long distances
- Backhauls -- should be explored
  - seasonal – mulch season
  - Out of state mills etc.
- Large generators best sources
  - But they have buyers for most resids
  - Or internal uses
- Heavier loads not the lever on costs that they once were

Logistics: Rail

- Rail a current policy issue
- Era of surplus cars has ended
- Railroad cooperation not to be taken for granted
- Hint: it won't be the RR's money….
- DOT is trying (call Rob Elder)
- (some state aid may be available)

Logging/Trucking Cost Pressures

- 20 years of heavy investment and intense competition have driven down rates
- Load limits unevenly enforced at present
- Current Returns on capital very low
- Working Hours too long (witness rage over HOS regs)
- Intergenerational continuity at risk (Egan work)
- Biomass Products/Pulp subsidized in past by high-grade products (go figure)

Log/Truck cont.

- Several very large trucking operators fully capable of handling massive quantities
- Costs – for roundwood, beyond 50 mi. is ½ trucking

Del. Fiber Cost Assumptions for Plant Feasibility

- History may not be a good guide
- Most costly words in history: “this time it’s different”
- Validate delivered cost assumptions thoroughly at an early stage
- Extrapolations of trend vs time – could be big mistake

General Observations

- Small is Better
  - Water
  - Labor markets
  - Traffic
  - Hauling cost
- Volumes & Capacity are Here
- Infrastructure is Here, w. some gaps (rail)
- Cost & Availability are issues

Gen. Obs, cont.

- Longterm supply agreements – unlikely anywhere
- Government Support – Helpful Helpers at State, Regional levels, can mobilize cash, other help

Backup Information

Where is the forest biomass?

- Eastern Region 224
- Northern 451
- Southern 165
- Western 150
  - Grand Total 990

  - Source: Laustsen, Griffith & Steinman, 4th Ann. Inventory Report Oct 16, 2003/

What Kind? (1995)

- Evergreen 416 MMDT
- Deciduous 484
  - Total 900

  - Source: Wharton & Griffith, Res. Bull NE-142.

MFS Data WTC & Hogfuel Balance 2002

Thou. Grn tons	Biomass	Hog Fuel
Me wood Proc.	1141	1552
Exported w/o proc	215	68
Total Harv.	1676	1620
Imported	305	754
Total Processed	1766	2306

Maine Pulpwood Receipts 2002 MM Grn tons

	Soft	Hard	Total
Roundwood	1.7	3.4	5.1
Chips	2.3	2.4	4.7
Total	4.0	5.8	9.8

Source: Forest Res. Assn. 2003