Full Fibre Utilization
Perspectives from Southern British Columbia

September 30, 2015
Company Statistics

Celgar Fibre Sources
- >35 Canadian chip suppliers
- >10 US chip suppliers
- >80 Roundwood Suppliers (BC only)

Celgar consumes 2.6 million m3 of chips annually
- 1.9 million m3 residual chips
- 0.7 million m3 roundwood

BC Timber Supply – The Challenge
- Crown – 75 Million m3
- Private – 9 Million m3
- BC Interior Harvest Levels are projected to decline by 25% in the coming decade
AAC Reductions – What are the Implications?

- 15,000,000 m³ sawlog harvest reduction projected for the BC Interior
- Projection for >6 large sawmill closures to follow the harvest reductions
- Residual chip reductions will be equivalent to the consumption of 2.5 large pulp-mills
- How will the market adjust?
  - Scenario 1: Mill Closures
  - Scenario 2: Residual chips replaced by non-traditional fibre sources
  - Scenario 3: A combination of both
Whole Tree Pulp Fibre Replacement Opportunities

• Most of the easily accessible traditional pulpwood (non-sawlog grades) is gone
• Future pulpwood options will be challenging
  – Transportation issues (water vs truck, incremental distance)
  – Steep Slope terrain issues (cable ground)
  – Profile avoidance (tenure holders/sawmillers continue to target sawlog leading stands over pulp stands)
  – Public policy distortions that discourage fibre utilization are difficult to fix
Traditional Pulpwood Fibre
Utilizing the Best of the Worst

- Species and quality limitations (whitewood preference, rot limitations)
- 20’ minimum lengths – conversion facility limitation
- 4” to 35” diameters – conversion facility limitation
Future Pulpwood Fibre
Special Forest Products

- Limited species/quality limitations
- 6’ minimum lengths (long butts, sawlog merchandising waste)
- Utilizing the Rat Tails - 1” to 4” diameters (top logs, undersized stems)
- Conversion facilities will have to be retooled for this fibre
Celgar Fibre Initiatives to 2020

Celgar’s objective is to improve fibre utilization across all segments of the supply chain by focusing on innovations in **Whole Tree Utilization, Transportation, and Yield Improvements.**
Whole Tree Utilization – Celgar’s Midway Trial (2012)
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Establishment of fibre transfer yards to encourage utilization

- We changed the fibre specifications
- We introduced new equipment to facilitate utilization
- We undertook a large-scale demonstration logging project in problem forest types
- The resulting growth in fibre utilization has been very encouraging!

**Midway Chip Yard Growth**

- Year 1: 120,000 m³
- Year 2: 160,000 m³
- Year 3 (projected): 200,000 m³

[Graph showing growth over three years]
Whole Tree Utilization – Celgar’s Midway Trial (2012)

Success of the Midway program has spurred the development of one additional transfer yard with a third yard under development in a key fibre catchment area.
Current R&D Focus for Whole Tree Utilization

A new R&D program was initiated in July 2015. The new project is testing and gaining knowledge on harvesting methods, equipment, and trucking and realizing the potential for developing programs around underutilized fibre profiles.

The multi-year program is testing costs/benefits of the following:

- Changing Public Policy Instruments to encourage utilization
- Full Stand Utilization concurrent with harvest
- Industrial scale waste fibre salvage – 2\textsuperscript{nd} pass harvesting system
  - Roundwood salvage
  - In-woods Chipping
- Innovations to log/chip transportation configurations
Shaping Public Policy – A Work in Progress

Working with public agencies to adjust Policy Instruments to encourage utilization. This requires us to understand the current game.

• How do pricing systems influence current utilization behaviour?
• Who are the players who are affected by existing/changing policies? Will they support or resist changes to the current model?
• What needs to change?
• Why are people wasting wood?
• Where is the problem occurring?
• When do we need to change?
Shaping Public Policy – A Work in Progress
Full Forest Utilization

- Underutilized fibre volumes represent an unrealized opportunity of 10% to 20% of annual timber harvests in BC.
- Investments to modify forestry equipment and trucking are required to improve efficiency and encourage utilization of waste fibre.
- Investments in processing facilities are also required to convert non-traditional fibre into usable chips.

The logging culture will need to change – This will take time and can’t always be fixed with money.
Full Forest Utilization

2\textsuperscript{nd} Pass Salvage Trials (2015)

Celgar has operationalized a program of harvesting the debris piles for roundwood extraction. The greatest challenge is transporting the salvaged product.
Full Forest Utilization

Transportation Innovations

• Log trailers for hauling short wood
• Chip trailers for hauling chips on forestry roads
• Barges for Lake Towing to reduce trucking needs
• Transportation initiatives have the benefit of reducing the overall carbon footprint while saving money.

Challenge – Transportation is heavily administered by government and slow to adjust.
Innovations Don’t Always Lead to Success

Optimized and Safe

Safe But Legal Weight Payload Achieved Before Truck Fully Optimized

Optimized But Unsafe

Under-optimized and Unsafe
Forestry Transportation
Future Prototypes – 10 axle Configurations
Yield Improvements – Continual improvement in fibre recovery programs (controlling fibre losses within manufacturing operations)

The pulp sector has maintained Green House gas emissions at 1980 levels in spite of a 23% increase in energy use and a 30% increase in pulp and paper production.
Challenges, Roadblocks, and Threats

Special Forest Products – Future Considerations

– Fear of the unknown (how will it affect me, will it cost me more)
– Simplifying the Policy Framework and educating the workforce
– Establishing a realistic market value for marginal forest products – what is this material really worth to the landlord?
– Sharing the risk between government, producers, and consumers
– Operational challenges: Integrated 1\textsuperscript{st} pass vs 2\textsuperscript{nd} pass, tenure limitations, time delays, silviculture, temporary roads, etc.

Public Perception – Greenhouse gases, health considerations of smoke particulate, abuse of public resources, etc.
Working together to be the best for our communities, our environment... our future.