



OLD TOWN FUEL & FIBER

Technology Leader in Woody Biomass Cellulosic Sugars

James St.Pierre ~ Biorefinery Manager

Michigan Biomaterials Conference Oct. 3-4, 2013



Red Shield Acquisition LLC Old Town, Maine



Lynn Tilton, CEO Patriarch Partners

- Purchased Old Town Fuel & Fiber 2008
- Commitment to producing energy and biofuels as byproducts of the core pulp manufacturing process
- Optimizing manufacturing processes
- Restoring American manufacturing, employment and economic opportunity



Real Estate

- Pulp Mill Proper ~ 53.3 Acres
- Warehouse lot ~ 7.5 Acres
- Wastewater Treatment ~ 23 Acres
- Orono Property ~ 66 Acres

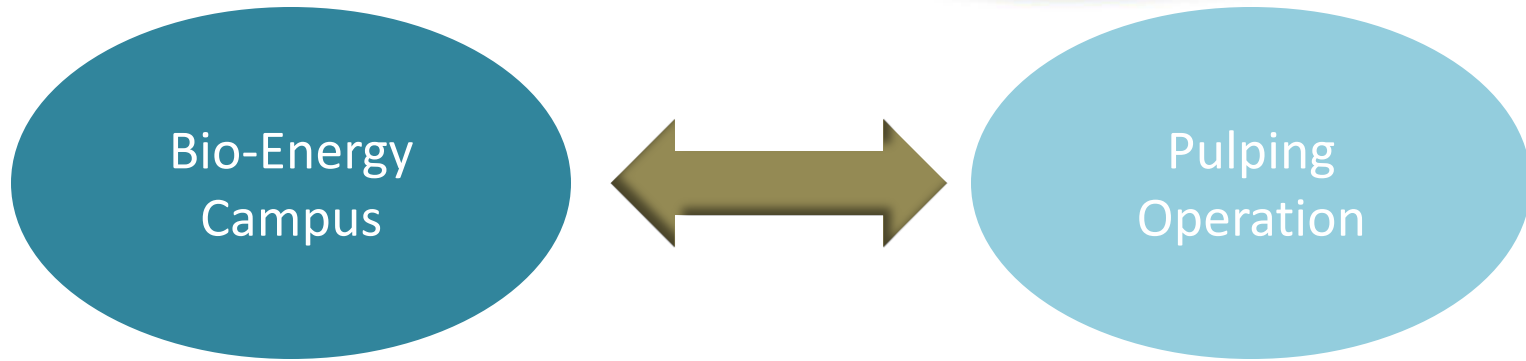
Warehousing

- 135,000 square feet finished goods
- 265,000 square feet converting
- Rail access and loading bays

Energy ~ Environmental Status

- Fully converted to Natural Gas
- Focused on GHG Reduction & Energy Efficiency
- Permitted Air, Water & Beneficial Use Fuel Substitution





- **Configured for Alternative/Renewable Energy Development**
 - UM's FBRI Technology Research Center
 - OTFF's Piloting, Analytical and Technical Services
- Biomass Boiler Operations with 16 MW Turbine
- Integrated into ISO-NE Markets ~ FERC QF Status
- Additional Generating Capacity > 9.5 MW Gas Turbine
- Participation in REC Market (Renewable Energy Credits)

- 200,000 tonne capacity market pulp mill ~ northern bleached hardwood Kraft (NBHK)
- Pre-extraction & acid recovery IP and technology
- Production of high-quality fiber products, while simultaneously producing feedstock for a biorefinery

Goal
Long Term Viability and Sustainable Jobs



- Fiber Security
- Low cost position
- Innovation/Technology Development
- Energy Independence

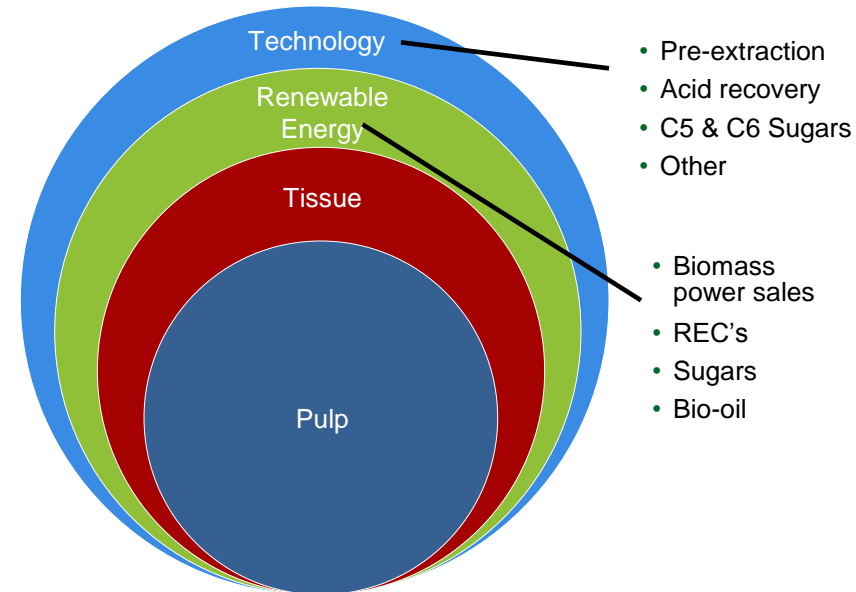
Vision
Creating value through utilization of the existing infrastructure

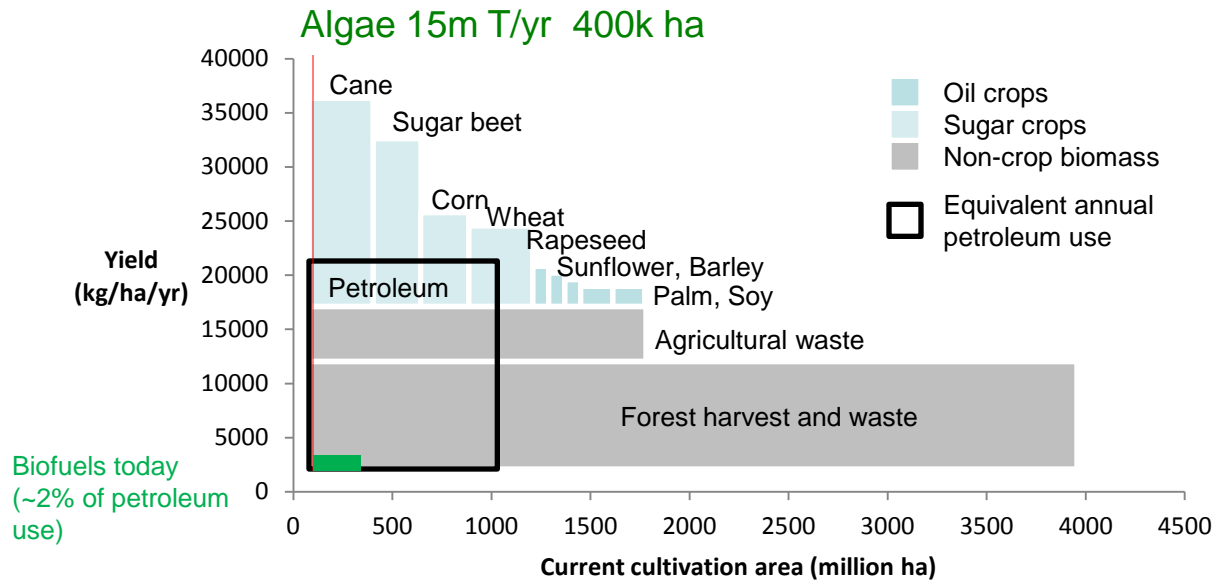


- Create an environment of “continuous improvement” focused on efficient and economically viable operations given the “high cost of wood” in the Northeast
- Development and demonstration of a technically and economically viable biofuels process that converts “wood to jet fuel”
- Pursue opportunities for growth that create value and diversity of its manufacturing model in Old Town
- Operate a green, efficient energy platform reducing greenhouse gas emissions and carbon footprint
- Create a “center of excellence” for developing technologies and intellectual property in the area of bio-energy

- **150 + years combined pulp, paper & biotechnology experience**
 - John Harrington, Patriarch Managing Director
 - Dick Arnold, President/CEO
 - Brian McAlary, VP Sales & Marketing
 - Austin Durant, Contracts Specialist
 - Jim St. Pierre, Biorefinery Manager
 - Darrell Waite, Biorefinery Process Manager
 - Rino Dumont, Biorefinery Project Manager
- **Operational and turnaround expertise**
- **Technology innovation & forward integration**
- **Innovation**
 - Opportunity driven Innovation
 - Product and business development
 - Process development
 - Piloting/commercial scale
- **Renewable energy platform development**

Three-Year Growth Paradigm





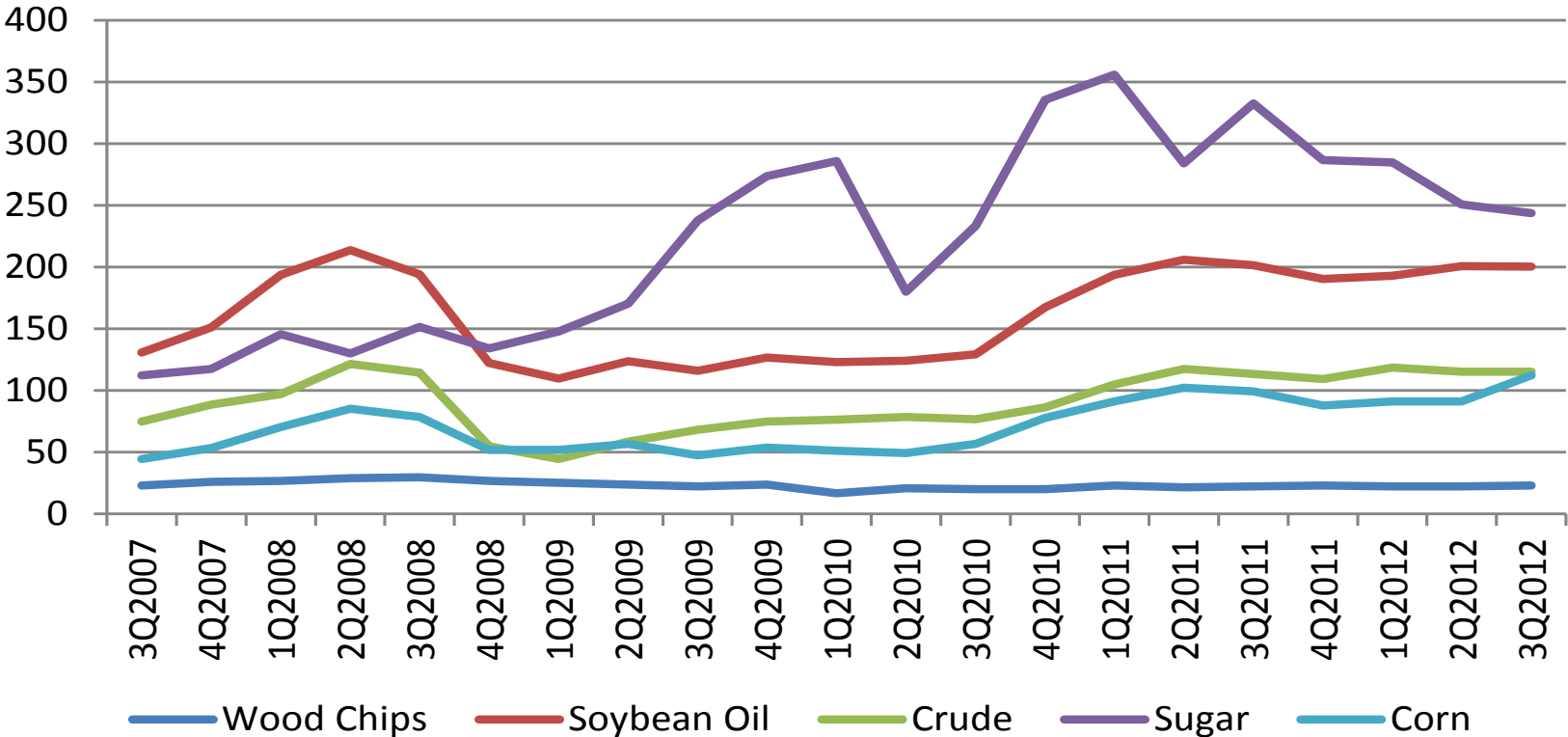
- **Biofuels use a small amount of biomass today**
 - Potential to become local and global constraint
- **Biomass yield depends highly on local sun, soil, and water**
 - **Losers:** Purpose-grown energy crops and algae bioreactors
 - **Winners:** Agricultural and forest waste
 - **Wildcards:** low-capex and offshore algae



Conclusion:

Biomass cultivation technologies and opportunities are highly local

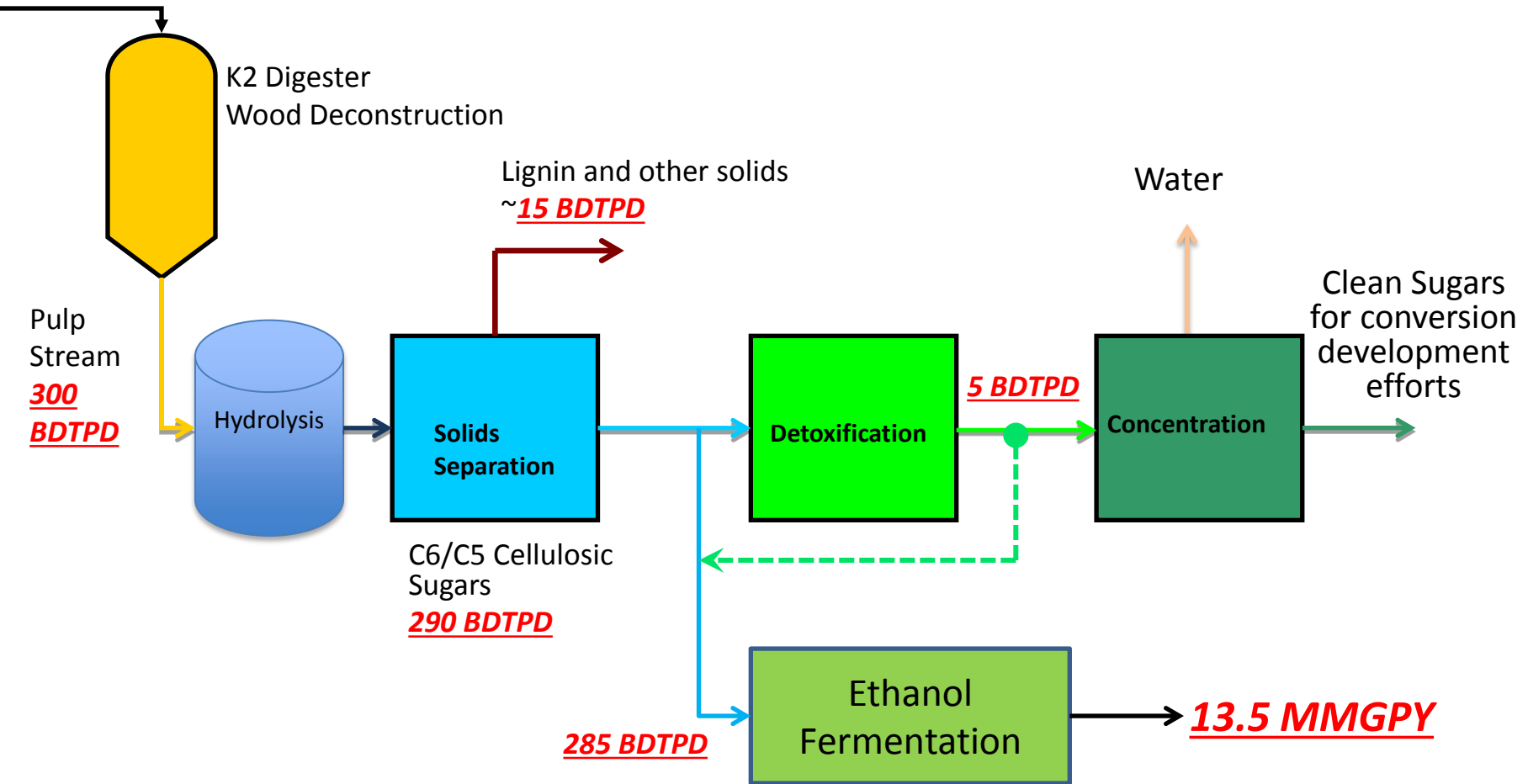
Feedstock Cost \$/5.8mmBTU (Barrel of Crude Equivalent)



OTFF Wood Conversion Processes

840 TPD

Woody Biomass



Why Ethanol as First Step?

- Established technology with low risk
 - OTFF sugar to ethanol validated with NREL testing and others
 - Ready market exists in local region for final product
- Revenue potential creates attractive ROI at our scale
 - Current “sugar market” is dominated by high volume, established low cost producers
 - No premium advantage for cellulosic sugars
- Ethanol builds a revenue generating base process
 - Leading to higher value bioproducts which need more development time
- Opportunity to partner with experienced ethanol fermentation equipment & process supplier



Ethanol
Biofuel



Further Upgrading



BioJet

- BioJet
- Naptha
- Kerosene



BioPET

- Soft Drink Bottles/Caps
- Water Bottles/Caps
- Recycled Plastics



Bio chemicals

- Ethyl Halides
- Ethyl Esters
- Diethyl Ether
- Ethyl Amines



Antiseptic



Solvent

Medical Ethanol

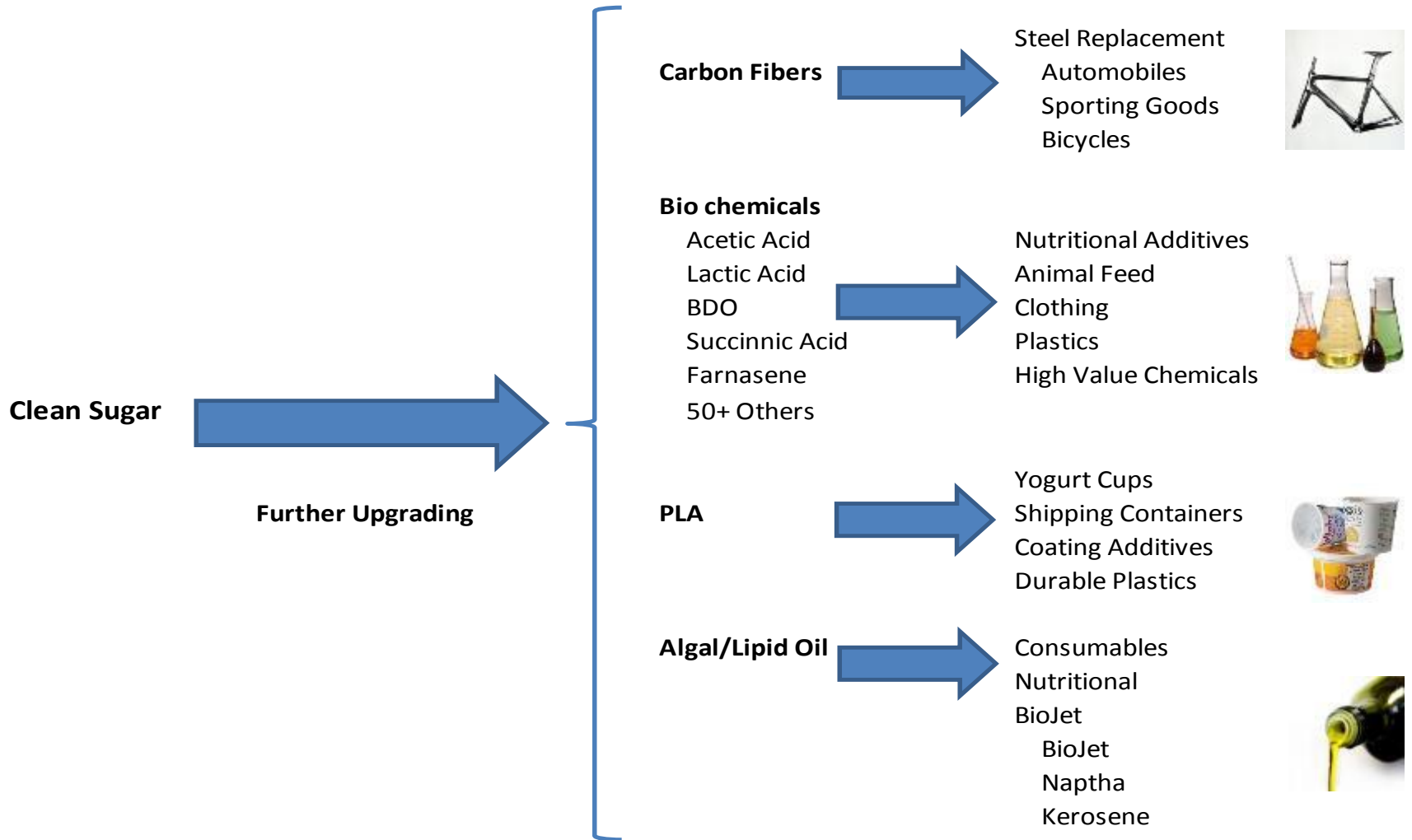


Bridging the Gap to Value

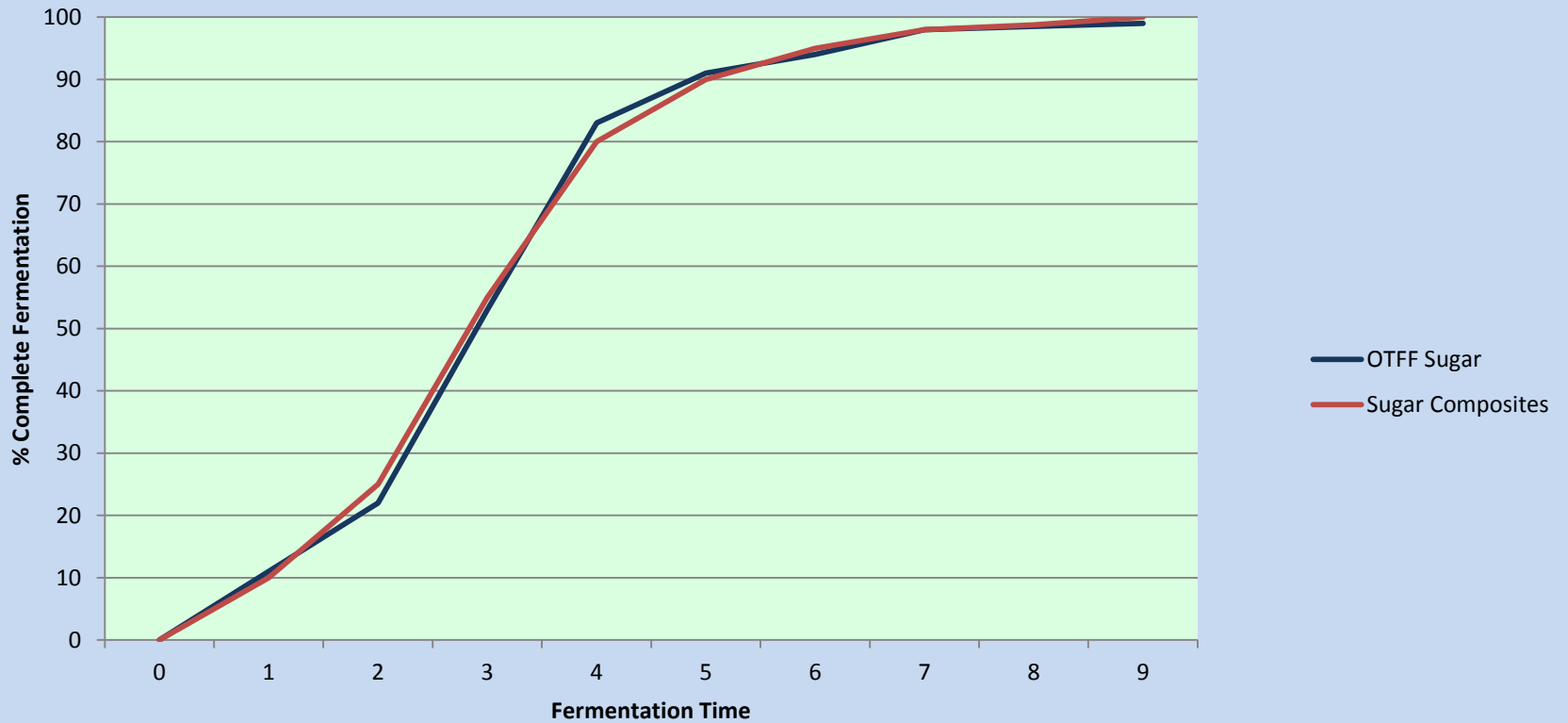


- **The Ethanol Platform**, is the first step in mitigating scale-up risk for cellulosic feedstock production.
- **Old town has proven technology** for producing clean cellulosic sugars from wood for conversion to bio-fuels, bio-plastics, bio-chemicals and potentially carbon fibers.
- **The steps to commercialization** over the next several years:
 - **a logical pathway** that demonstrates the technology, incorporating a model that maximizes profitability, manages debt and capital;
 - **a continuation of technology development** to higher value conversion technologies and products; and
 - **a commercial deployment strategy** that includes the “viability of bolt-on technology”, licensing and re-purposed pulp mills.

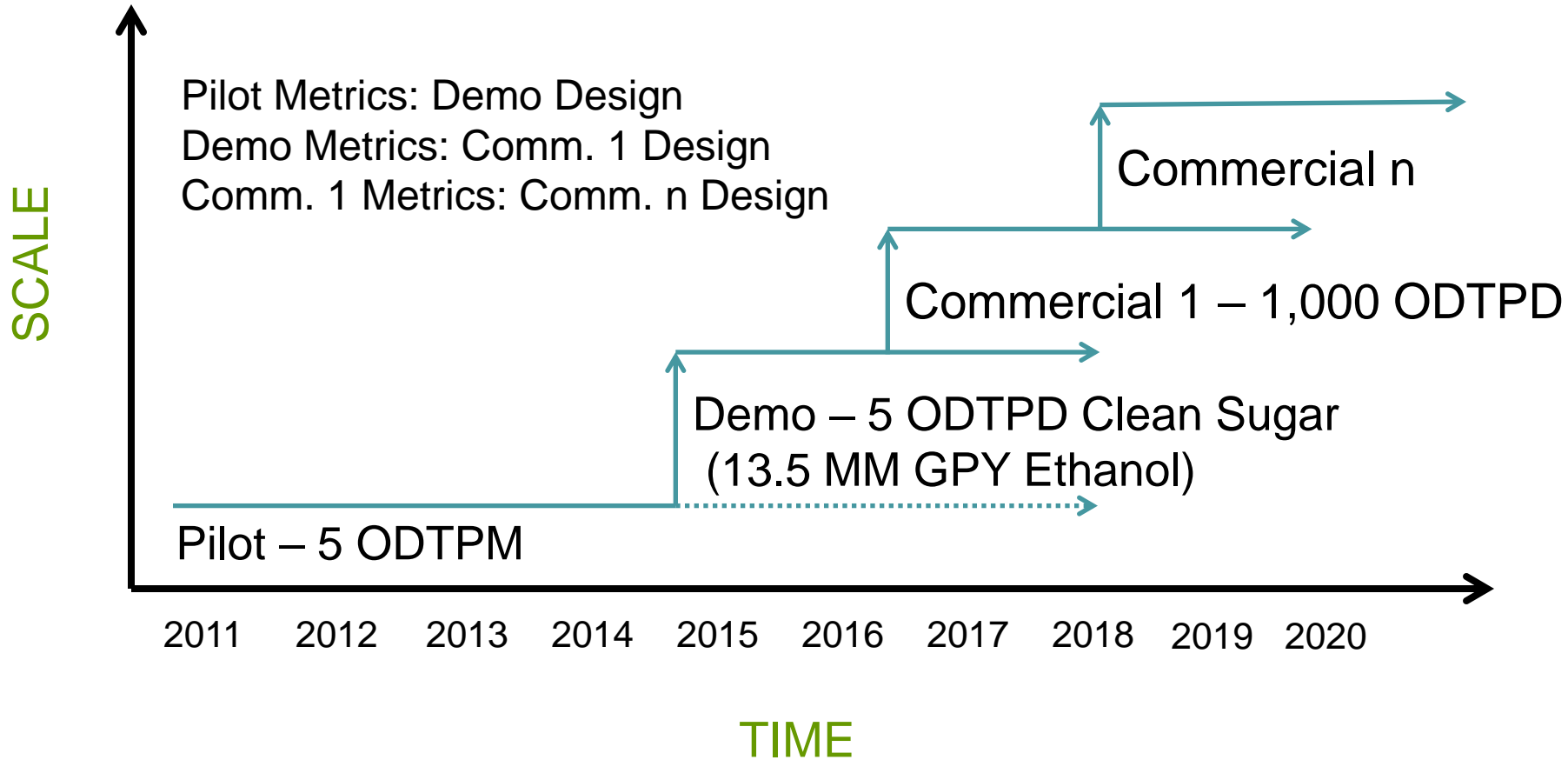
Clean Sugar Platform



RSA Sugar Performance

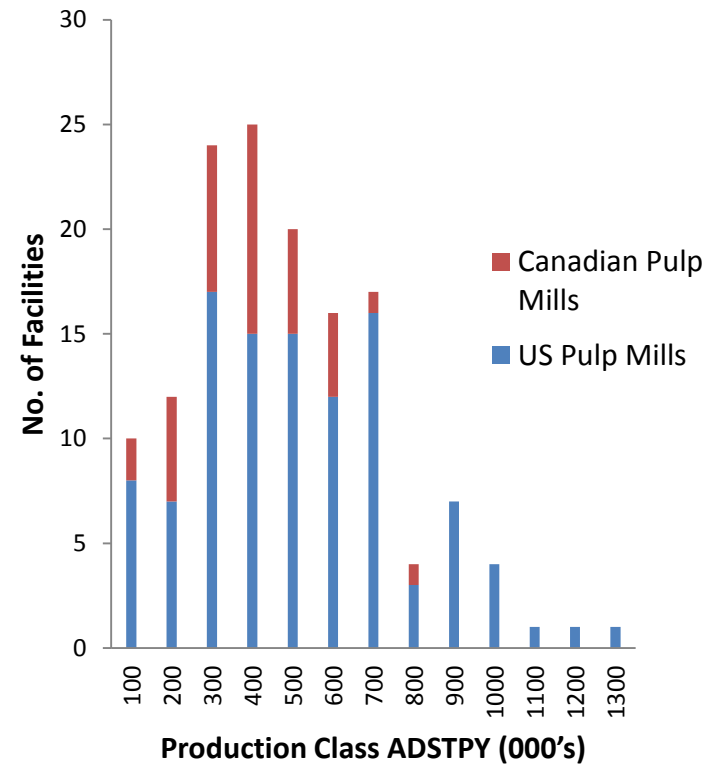


OTFF Technology Maturity



- Capacity
 - 50 MM Ton/year US
 - 12 MM Ton/year Canada
- Repurposing 10% of this capacity would correspond to 12.4 Billion # sugar/year

Chemical Digesters in North America (2011)





- **Technology Center with unmatched capability**
 - Industrial manufacturing environment
 - Operating pilot plant
 - Experienced Industry professionals
- **Demonstratable expertise**
 - Made 20 tons of wood derived clean lignocellulosic sugar (2012)
 - Sold for a variety of fermentation applications
- **Poised as outsourced technology partner to other businesses**
 - Lab & Pilot scale cellulosic feedstock development
 - Manufacturing experience perspective in development work
 - Engineering Services for limited project scopes
 - Innovative and Creative follow through to meet customer goals
 - Extensive piloting equipment & capability
 - Validation of customers' theoretical ideas/concepts
 - Cellulosic sugar and acid analytical lab capabilities
 - Capable of supplying cellulosic sugars for customer processes



Strengths

- Sustainable, non food feedstock.
- Pathway to low cost cellulosic sugar.
- Clean, monomeric, fermentable sugar.
- Demonstrated performance on several fermentation platforms.
- Traceable from wood to sugar.
- Co-location with post sugar processing process.

Opportunity

- First to market product.
- Provide support to currently marginal sugar fermentation platforms.
- Promoter customization.
- Forward integration opportunity.
- Bolt on technology with existing pulp mills.

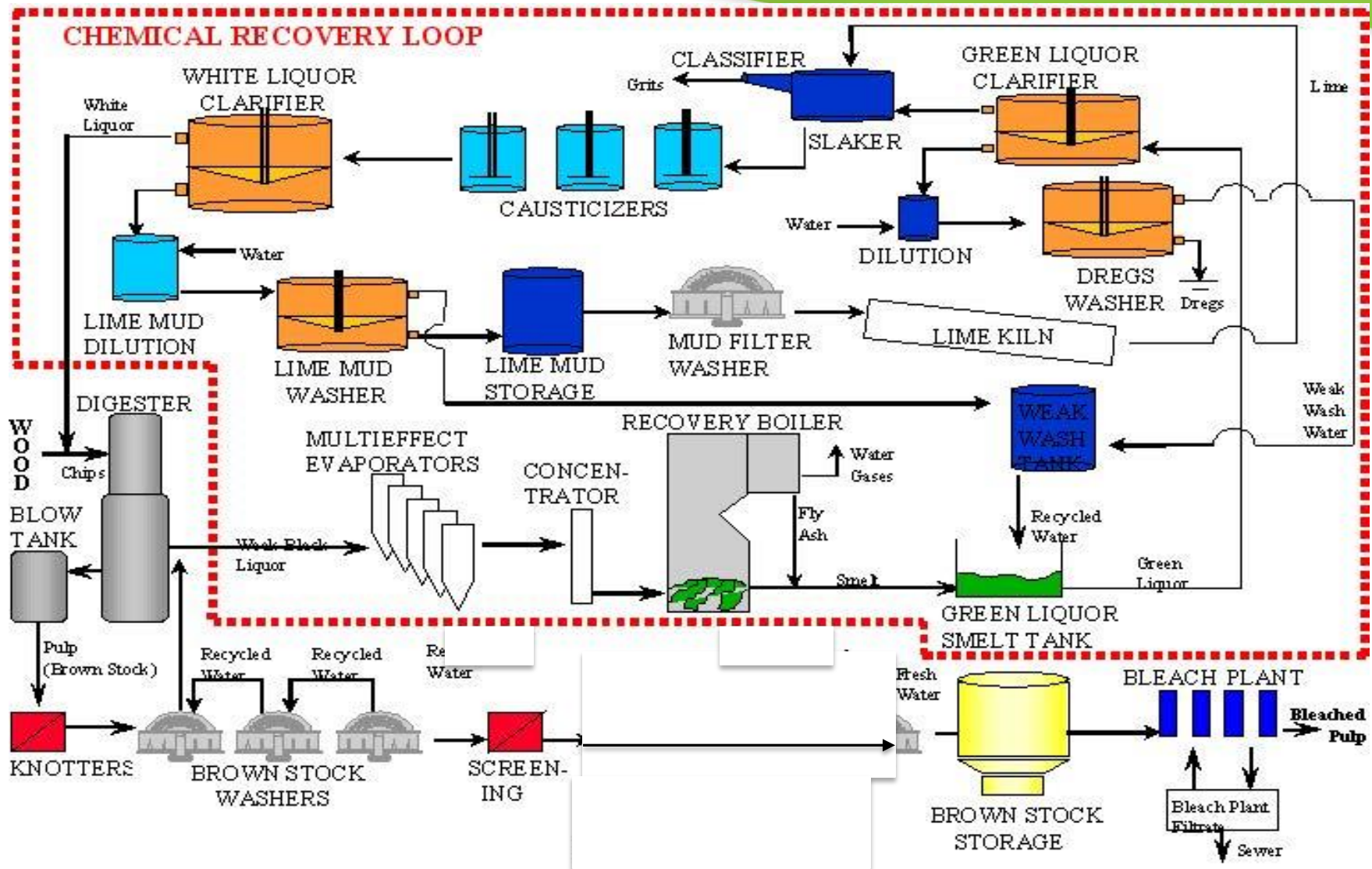
Weaknesses

- New technology requiring demonstration before commercialization.
- The technology has not been proven at, or greater than, demonstration scale.
- Dependent on externally developed sugar conversion technologies.

Threats

- Small to non-existent market for woody biomass cellulosic sugar.
- Capital intensive process.
- Lack of an economically feasible sugar conversion process.

Kraft Pulping Process



Thank You!

