Al-Pac’s Evolution

from pulp mill to biorefinery

Geoff Clarke, MBA, MF, RPF (AB & SK)
Corporate Planning
Alberta-Pacific Forest Industries Inc.

2012 Pacific Rim Summit on Industrial Biotechnology and Bioenergy
October 10-12th, 2012
Vancouver, BC, Canada
About Alberta-Pacific

- 68,664 km² boreal mixedwood
- FSC certified since 2005
- Al-Pac’s Sustainable Harvest
  - 2.4 million m³/yr deciduous
  - 727,000 m³/yr coniferous
- Largest single line kraft pulp mill in North America
- Products
  - kraft pulp (first pulp produced in ’93)
  - green power (first exported in ‘01)
- Other Notables
  - ownership
  - Top 100 Employer
  - 2011 Safest Mill in Canada
“New Al-Pac” Objectives

- Realize a sustainable and diversified EBITDA
- Mitigate risks; including fibre and economic risks
- Leverage our 3-biggest assets: people, pulp mill & fibre
- Improve its ROCE and enhance shareholder value
- Develop opportunities based on regional advantages:
  - fibre availability (woody biomass and agriculture residues)
  - proximity to the Energy and Agricultural sectors
  - existing pulp mill infrastructure and by-products
  - existing knowledge base (i.e. materials handling)
## Escalating “Green” Power Export

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012+</th>
<th>2015+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status Quo</td>
<td>After substation activation with transmission line</td>
<td>With condensing steam turbine</td>
<td>Adding second ACC bank</td>
<td></td>
</tr>
<tr>
<td>Max Export Potential</td>
<td>10 MWh/hr</td>
<td>14 MWh/hr</td>
<td>28 MWh/hr</td>
<td>40 MWh/hr</td>
</tr>
<tr>
<td>Max Export Capacity</td>
<td>81,900 MWh/yr</td>
<td>93,700 MWh/yr</td>
<td>224,700 MWh/yr</td>
<td>339,900 MWh/yr</td>
</tr>
<tr>
<td>Equivalent # of homes</td>
<td>3,500 /yr</td>
<td>4,700 /yr</td>
<td>9,620 /yr</td>
<td>14,290 /yr</td>
</tr>
</tbody>
</table>

www.lightsxmas.com
Bio-Methanol

- Commission date: August 2012
- Product designed to IMPCA standards
- Estimated production ~4,200 MT/yr
- Internal consumption ~1,300 MT/yr
- CapEx $10MM
Continual improvement regarding...

- Leading in low cost, high quality, FSC certified kraft pulp
- Green power (self sufficient & revenue generating)
- Bio-Methanol
- Integrated land services
- Carbon offsets
- Value creation of waste streams
- Valourisation of by-products

Augmented with transformative innovation...

- 1-2 additional synergistic initiatives
  - Commodity
  - Specialty Product
Valourising Existing By-Products
Cellulosic Derivatives and Sugars

- Woody Biomass
- Fractionation
- Agriculture Residues
- Lignin
- C5
- Fermentation
- Acetic Acid
- Esterification
- Ethyl Acetate
- Hydrogenation
- Ethanol
- C6
- default use until markets develop
- Fuel
A Sustainable Business Model for Forestry

- Ethanol
- NCC
- Ethyl Acetate
- Methanol
- Lignin
- Acetic Acid
- Fly Ash
- Bio Chemicals
- ILS
- Bio fuels
- Power
- Pulp
- Planted 1993