Forestry Industry Overview: Where are Markets Heading

Western Woodland Conference

March 4, 2017

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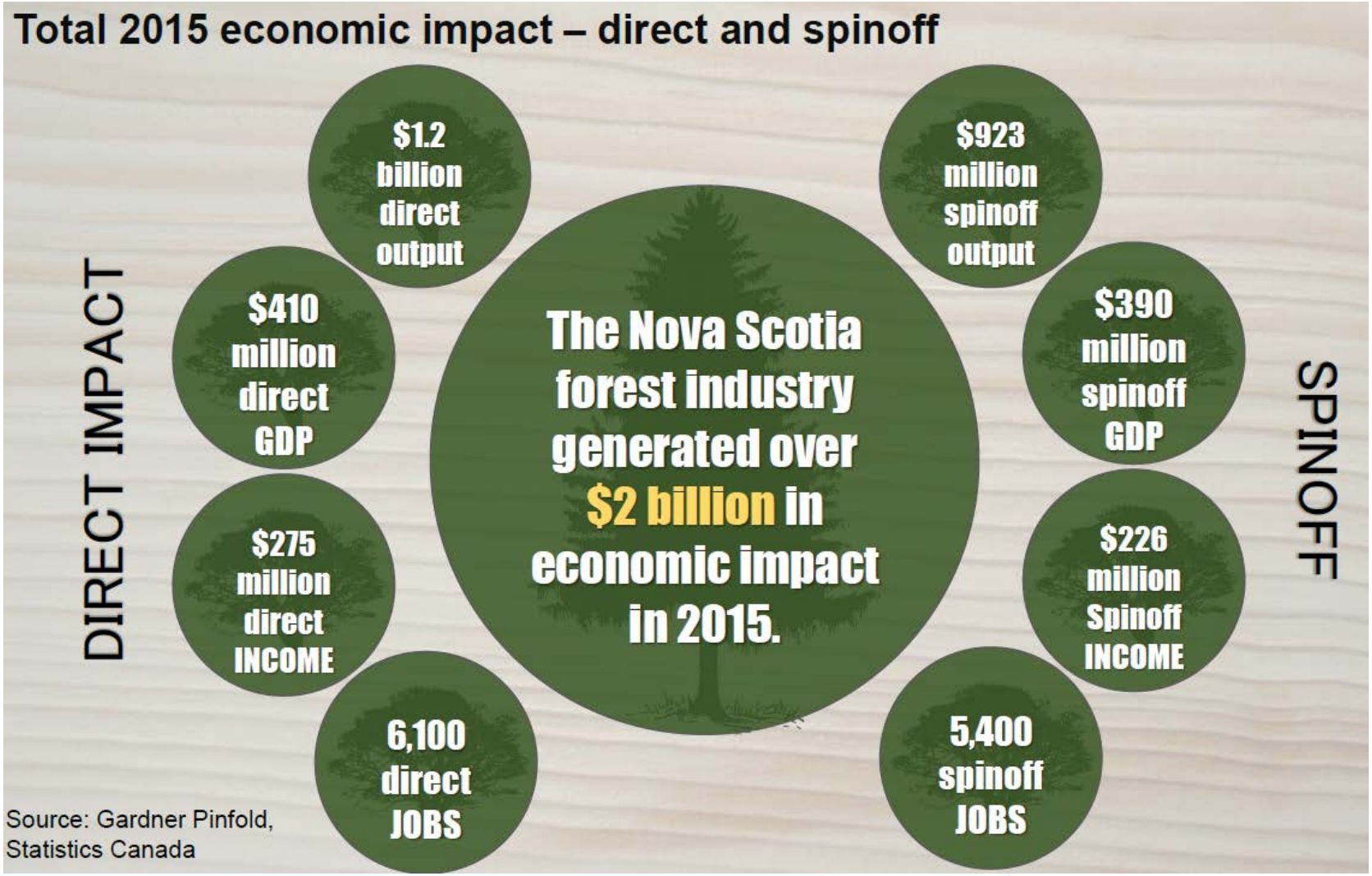
Forestry Economic Impact



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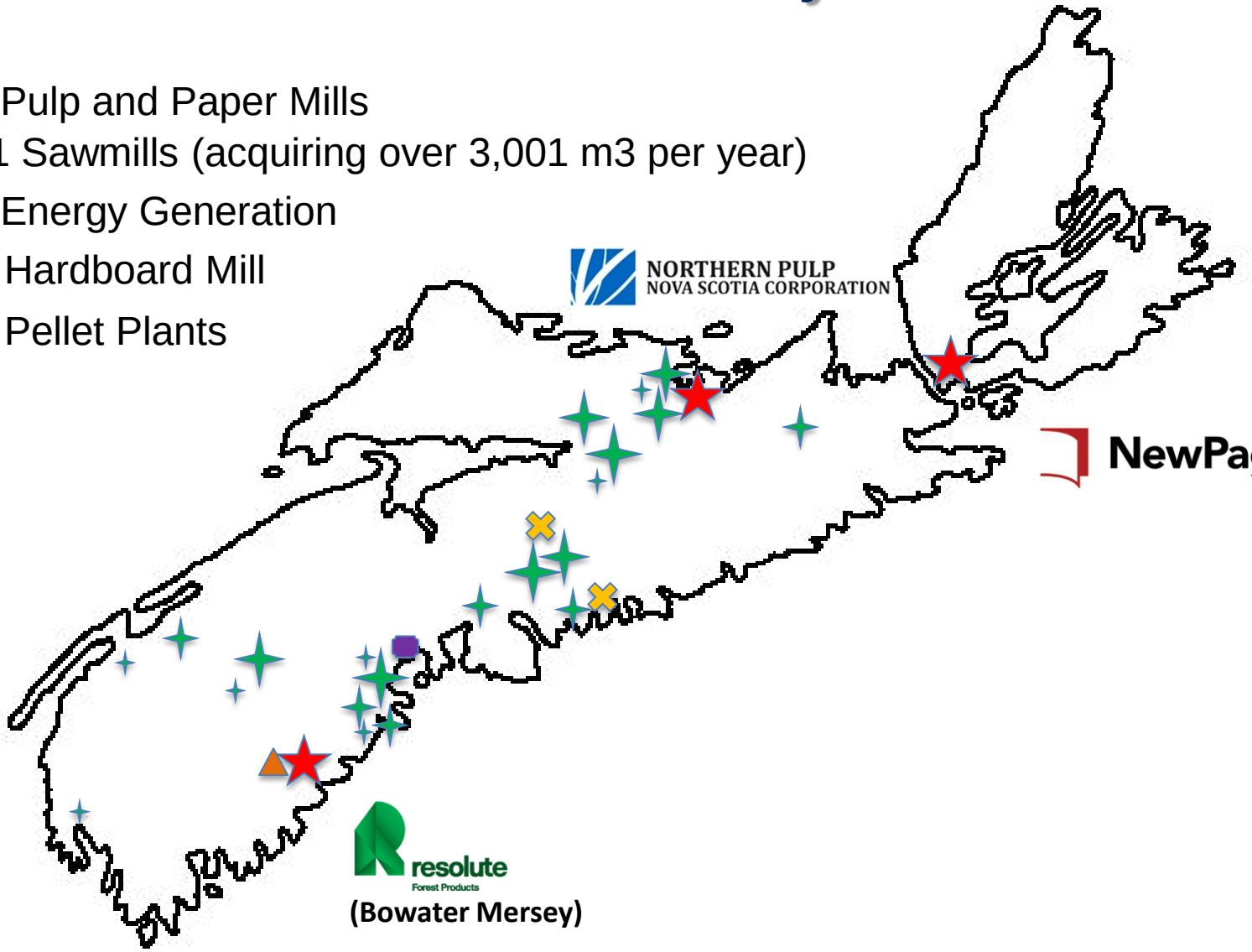
Nova Scotia Forest Industry – 2011

- 3 Pulp and Paper Mills
- 21 Sawmills (acquiring over 3,001 m3 per year)
- 1 Energy Generation
- 1 Hardboard Mill
- 2 Pellet Plants



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Nova Scotia Forest Industry – 2012

- 1 Pulp and Paper Mills
- 22 Sawmills (acquiring over 3,001 m3 per year)
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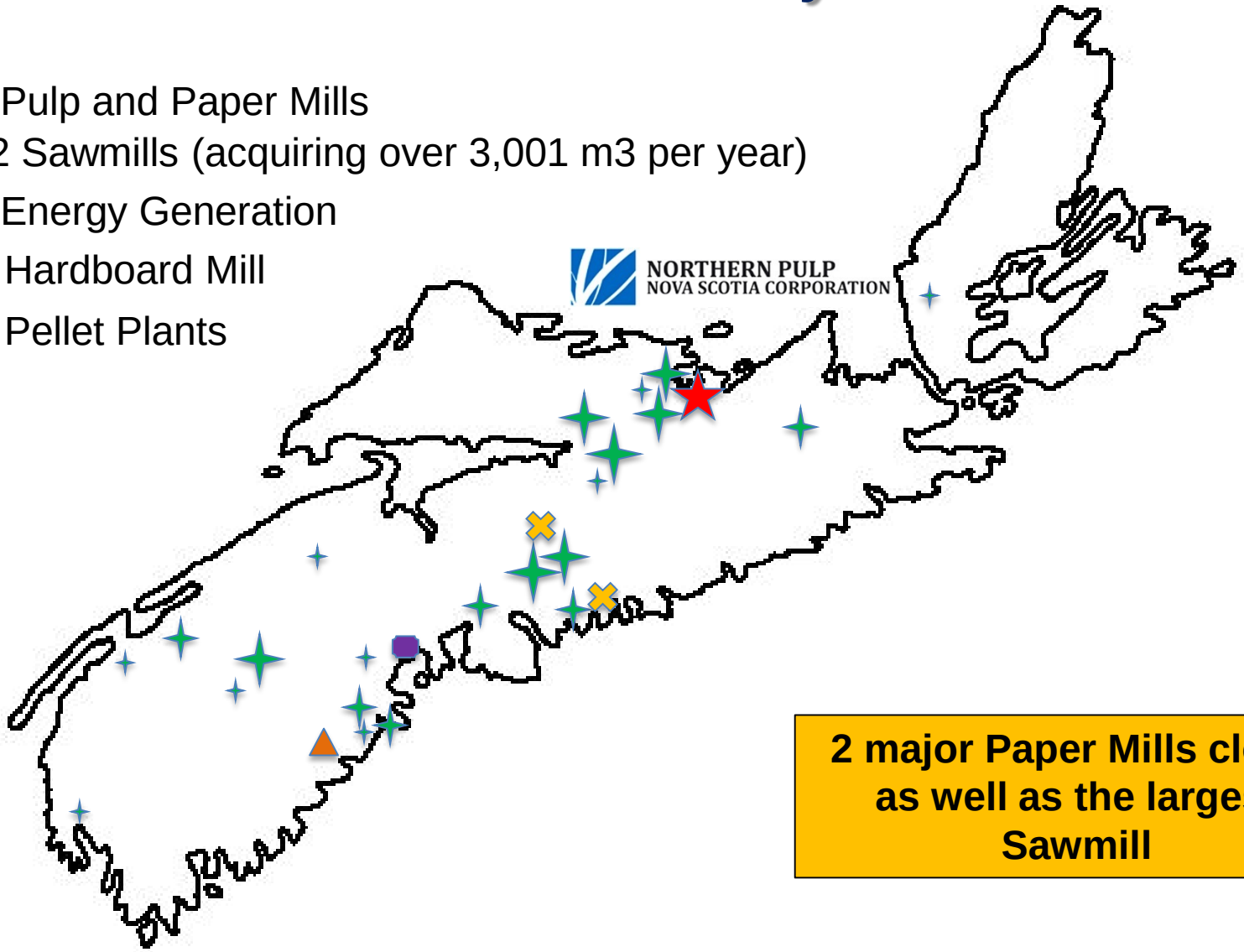

2 major Paper Mills close, as well as the largest Sawmill

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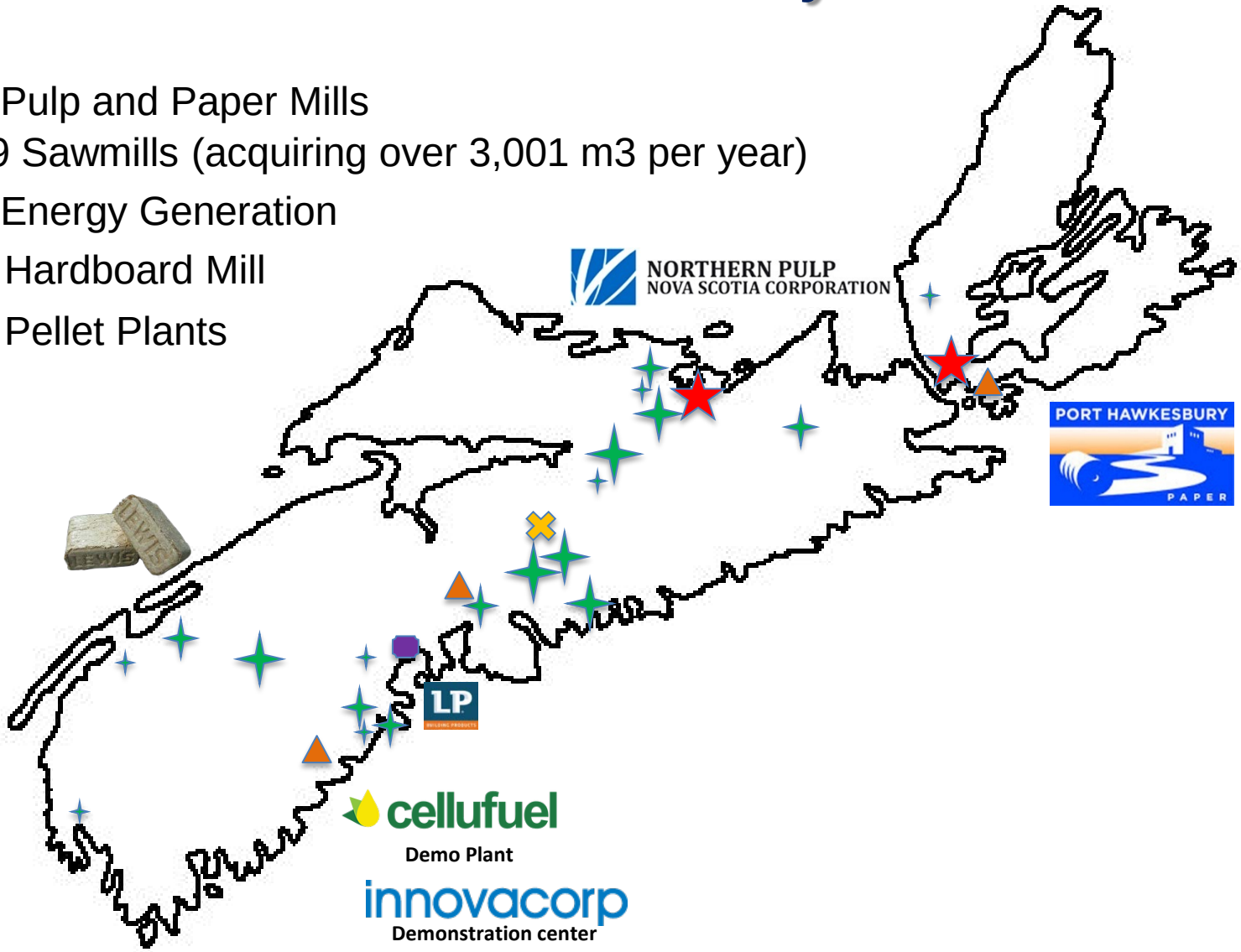
Nova Scotia Forest Industry – 2017

- 2 Pulp and Paper Mills
- 19 Sawmills (acquiring over 3,001 m3 per year)
- 3 Energy Generation
- 1 Hardboard Mill
- 1 Pellet Plants



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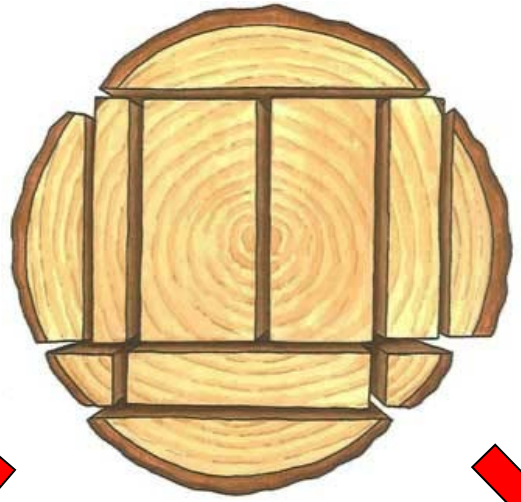
Healthy Markets = Healthy Industry



50 – 60% lumber

25 - 30% chips

5 - 10% sawdust and shavings

10% bark and wastes

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Bio-Energy Challenges in Nova Scotia

1. Low price of natural gas
2. Relatively high cost of biomass
3. Relatively low price received for bio-energy
4. Provincial government lacks the ability to subsidize
5. No price on carbon? – in the begining stages of putting a program together

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CAP AND TRADE

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WOOD PELLETS

Residential

VS

Industrial

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cellufuel

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Cross Laminated Timber (CLT)

Need

- Non res and multi family mid-rise contractors looking for building solutions offering technical, cost competitive and environmental performance
- Green alternatives to concrete slabs

Approach

- Align North American industry and other stakeholders
- Develop a generic product standard and gain code acceptance (5 yrs)
- In short run, promote the “alternative solutions” clause in the IBC

Benefits

- 10%-50% less expensive shell costs
- Green: high carbon storage, superior Life Cycle Analysis
- Pre-fabicated system (fast, safe, precise)
- Excellent seismic, fire and sound performance.

Competition

- Steel/concrete

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Thermally Modified Wood

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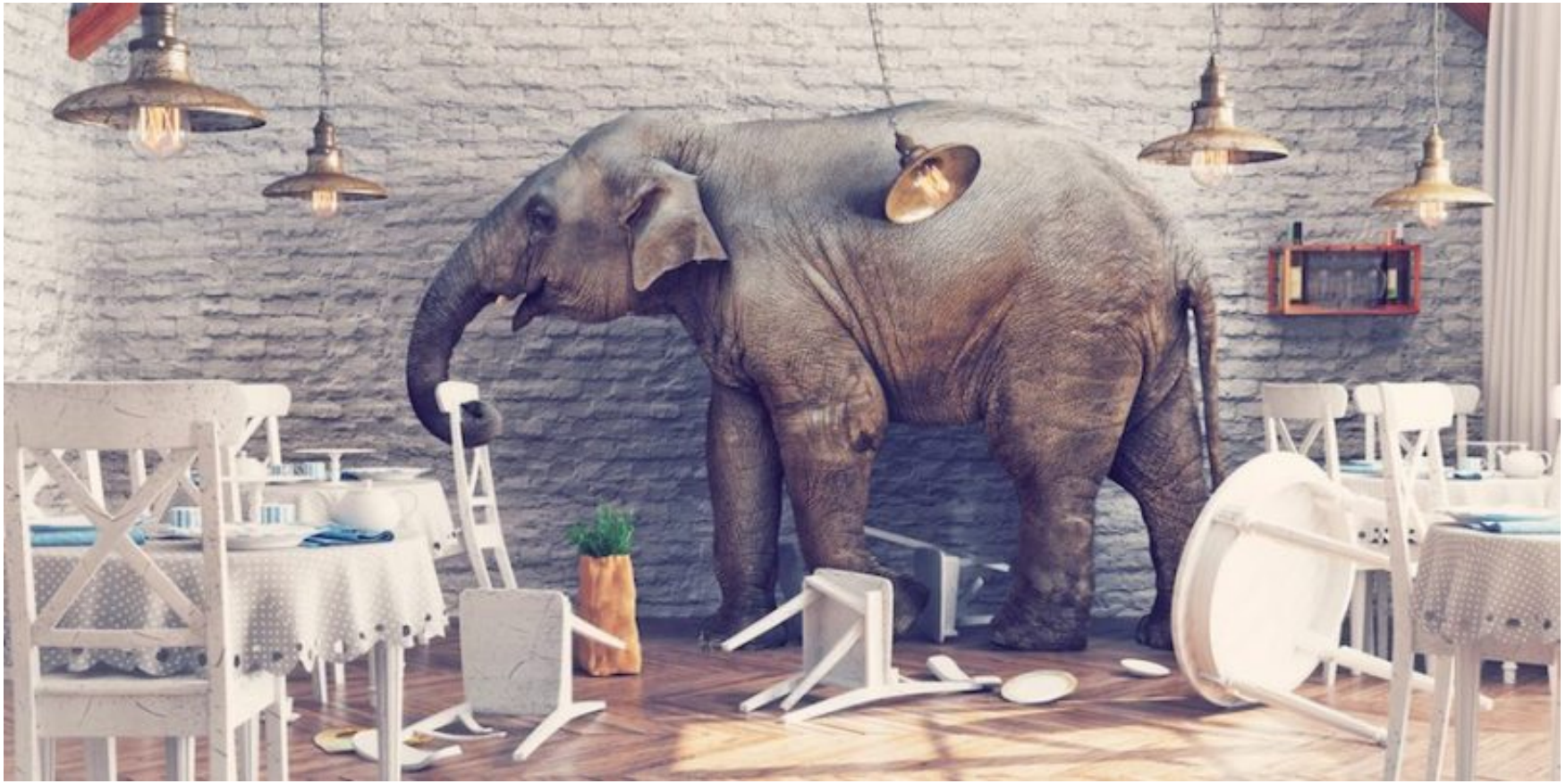
Softwood Lumber Agreement



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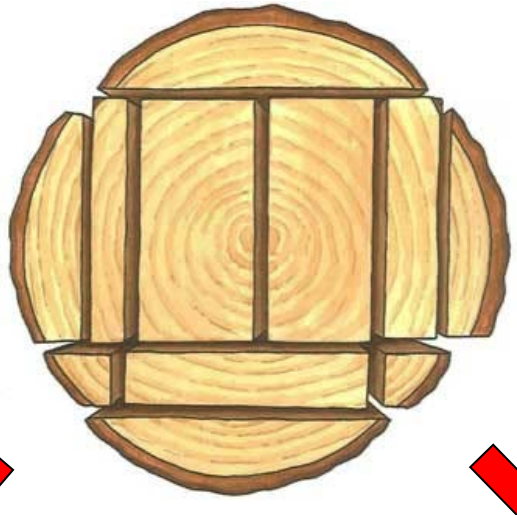
Need to make $ from each



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Questions

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Appendix

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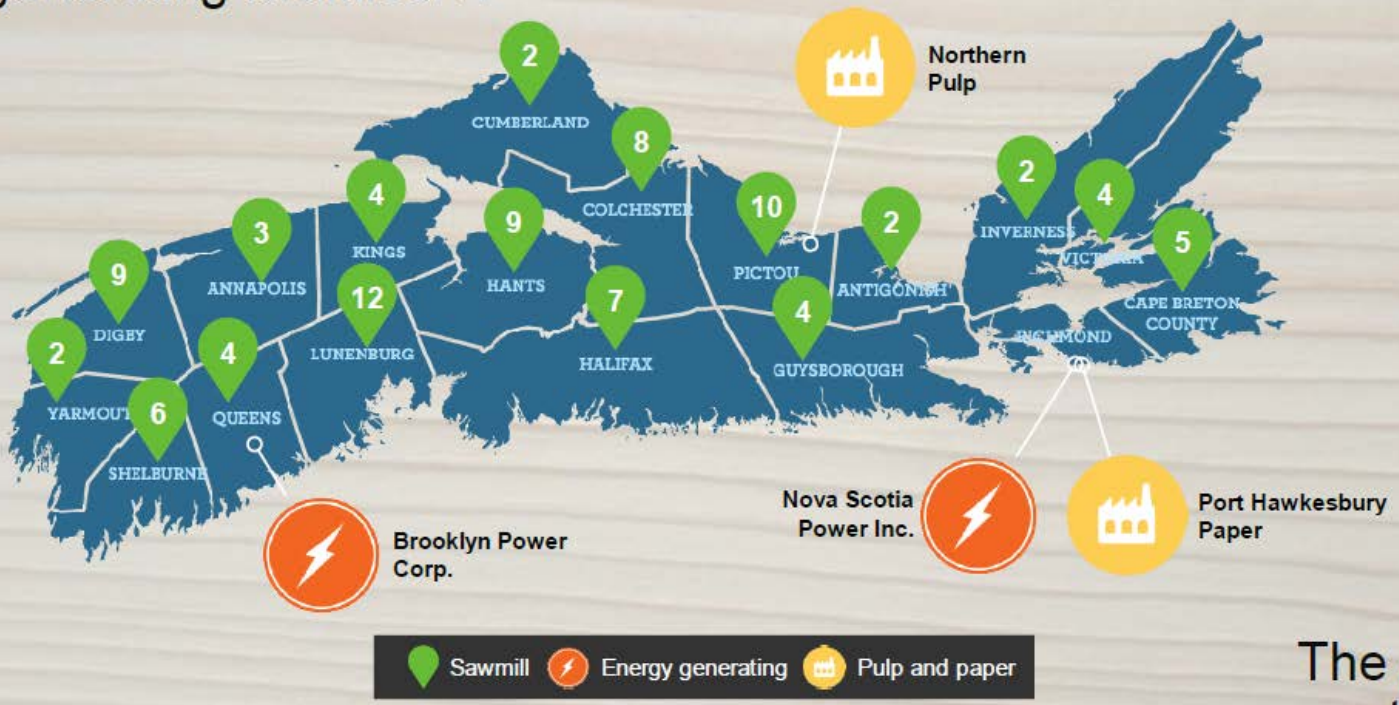
Nova Scotia Forest Industry – 2017

Sawmills: 93

Pulp and paper mills: 2

Energy generating facilities: 2



The greatest concentration of operations in Lunenburg and Pictou Counties.

Source: Gardner Pinfold: Nova Scotia Forest Industry Economic Impact, Dec. 2016

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Forest Value Chain

In order for the forest value chain in Nova Scotia to be healthy producing lumber, pulp & paper, engineered wood products, and biomass/biofuel products must be innovative and sustainable.

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Nova Scotia Innovation Hub

Hub partners:

innovacorp

Emera

BioApplied™ INNOVATION PATHWAYS

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FPInnovations

Atlantic Canada Opportunities Agency | Agence de promotion économique du Canada atlantique

Canada

- Feedstock Assessments by County and Mobilization of Biomass Supply
- Dynamic modelling of the Nova Scotia based Forest Products Industry
- Diagnostic of the existing trucking infrastructure in Nova-Scotia
- Paths to a High Performance Forest Fibre Supply Chain – Contractor Infrastructure Assessment
- Substitution of Bio-based Products in Heating Oil and Marine Diesel Applications

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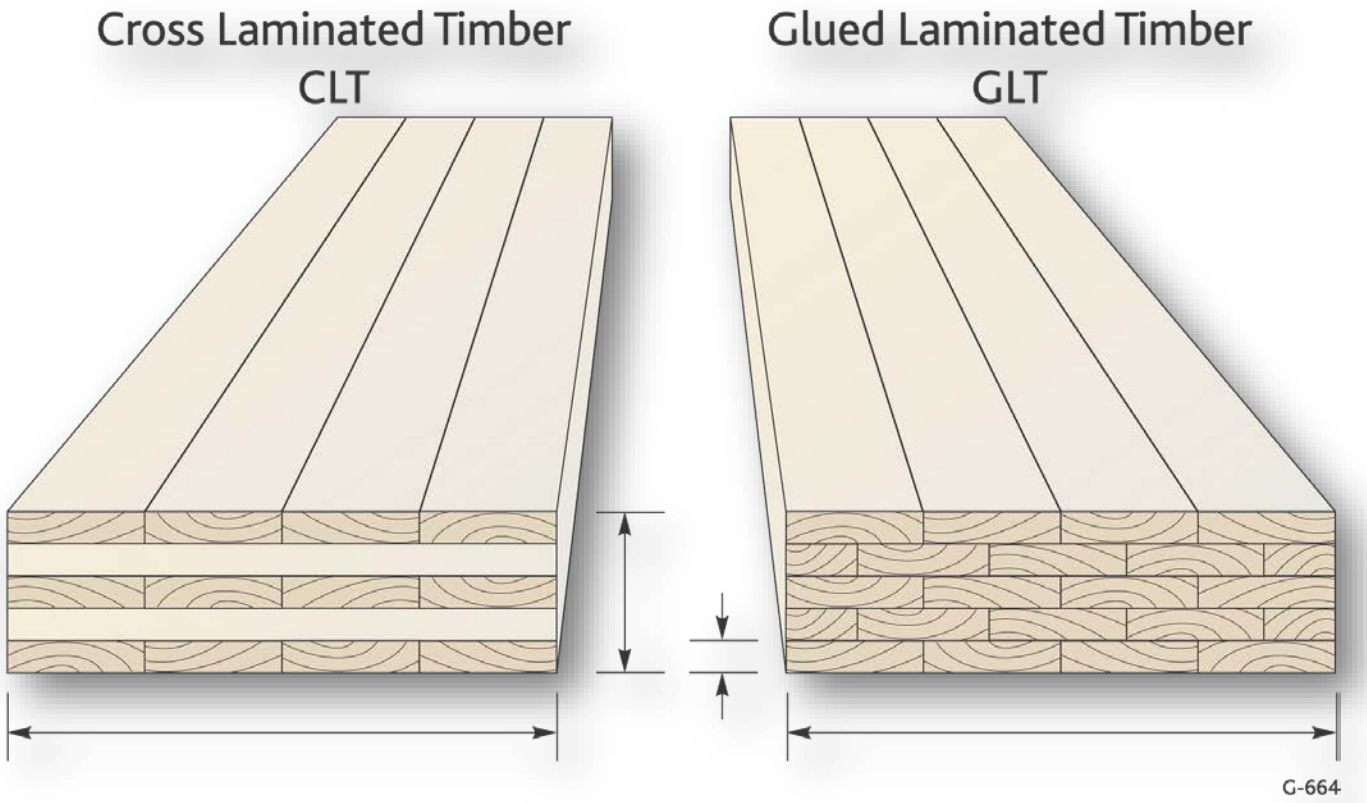
CLT and Glued-Laminated Timber



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Bio-Energy Options

Technology Type	Pros:	Cons:
Torrefaction	• Increased energy density • Lower transportation costs	• High volume of low cost fibre • Commodity price • Technology not proven
Bio – diesels cellufuel	• Renewable fuel for the transpiration sector • Easier managed fibre supply	• Regulatory issues • High capital costs
Fast - pyrolysis	• Proven technology • Wide range of feedstocks	• Need to find use and markets for all by products • Will need low cost fibre
Biomass	• Proven technology • Low grade feedstock	• Duel heat and power use is optimal solution • Competes with natural gas

Bio-energy plants integrated with traditional forest product operations offer a more attractive risk/reward trade-off than do stand alone bio-energy plants.

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Bio-Energy Economics

Four key variables shape the economics of investing in bio-energy:

1. The price of fossil fuels (the main substitute)
2. The conversion technology
3. The cost of the feedstock (50%-80% of the variable cost)
4. Public Policy (eg., price of carbon, RFS)

In general, the long-term outlook for bio-energy is positive.

However, bio-energy remains "the Cinderella" of renewable energy because of its "feedstock price risk".

	Cap and Trade	Carbon Tax
Emissions	Declining emissions cap set by government	Emissions volume based on market
Price	Price based on market	Rising price set by government

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