Governor’s Economic Recovery Committee

Manufacturing & Natural Resource-Based Industries Subcommittee

Report from the Forestry Sector –
Stephen Schley
Maine forest essentials

- Most forested state in the U.S. (89%).
- As much forestland now as when Europeans arrived in the 1600s.
- 91% of Maine’s forest is privately owned. It is the largest contiguous block of private commercial forestland in the U.S.
- Early adopter of forest certification and now the national leader in certified acres (8.3 million)
- Most dependent state on forest sector (4-6% of GDP)
- Leader in conservation easements (4 million+ acres)
Productivity has increased for loggers

Pre-1960s
- Length of season: 30 weeks
- 1950 loggers: 4,677
- About 270 cords per logger per year
- 1950 harvest: 2.9 million million cords

1960 - 1980
- Length of season: 40 weeks
- 1970 loggers: 4,500
- About 1,333 cords per logger per year
- 1970 harvest: 5 million cords

1980 – present
- Length of season: 47 weeks
- Loggers in 2018: 1,988*
- 2,523 cords per logger per year
- 2018 harvest: 5,042 million cords
And sawmills . . .

**1950**
- Mills: 232
- Workers: 3,326
- Production (MBF): 497,486
- MBF per worker per year: **126**

**1981**
- Mills: 368
- Workers: 3,326
- Production (MBF): 742,652
- MBF per worker per year: **223**

**2018**
- Mills reporting: 70
- Workers: 2,045
- Production (MBF*): 933,240
- MBF per worker per year: **456**
And pulp and paper mills

**1960-1961**
- Mills: 27
- Workers: 17,109
- Tons per year: 1.7 million
- Tons per worker per year: 99

**1981-1983**
- Mills: 21
- Workers: 18,076
- Tons per year: 3.2 million
- Tons per worker per year: 177

**2018**
- Mills: 6
- Workers: 3,096
- Tons per year: 2.5 million
- Tons per worker per year: 826
Wood is the most environmentally sound material on earth

It’s renewable, highly versatile, grown with relatively little effort, carbon friendly, and most important, it is produced and stored in the form of forests that provide a wide array of valuable ecosystem services, including . . .
Clean air
Clean water
Biodiversity
Wildlife habitat
Recreation
Aesthetic places
Wood buildings sequester carbon
Start from wood, and MAKE IT ALL.
The market for biobased materials and chemicals has reached $1B (a 28% annual increase).

2/3 of total chemicals worldwide can be produced from biobased material - over 50,000 products, a $1T annual global market.

Global demand for biobased and biodegradable plastics will rise 19% per year. Rising demand for bioplastics for food + beverages.
Maine’s Carbon Policy: What’s the Role of the Forest?

Presenter: Patrick Strauch, Executive Director, Maine Forest Products Council
More biobased opportunities

➢ Shoes – Allbirds uses wood, wool, and sugarcane to make shoes for men and women.

➢ Biofuel - Red Rock Biofuels jet fuel - (uses the Velocys technology to transform waste to fuel).

➢ Plastic - for example, Lego is making their bricks from plant-based plastic. They're using sugarcane now, but they could be made from wood.

➢ Lignin from wood, traditionally burned for heat, can be used in tires, paints, coatings and resins

➢ In Maine, GO Lab in Madison is producing wood-based insulation. Motto: “A well insulated home can change the world.”

➢ Heating oil from Biofine (demo plant at the University of Maine)
Nanocellulose Projects at UMaine

➢ The Process Development Center is the only facility in the U.S. that can manufacture cellulose nanofibers (CNF) at a rate of one ton per day.

➢ Nanocellulose is a naturally occurring material composed of nanofibrils that have been isolated from a cellulosic material. Saves space, time, material, and energy.

➢ The PDC primarily works with nanocellulose that is derived from trees and wood pulp.

➢ Nanocellulose can be used to make bioplastic-like materials, and is being tested for biomedical applications, such as for bone replacements.
Potential Biobased Opportunities

• Nanocelluose
  (papermaking, cosmetics, foam insulation, thickening foods)

• Bioplastics
  (food containers, packaging, 3D printing)

• Advanced biofuels
  (for planes and ships)

This Shelby Cobra was 3D printed at the Department of Energy's Manufacturing Demonstration Facility at the Oak Ridge National Laboratory.
Wood based fibers - the natural choice

- biodegradable
- compostable
- recyclable
- renewable
Did you even suspect you were wearing wood pulp?

➢ Tencel, also known as Lyocell, is manufactured from natural wood pulp cellulose. Often blended with cotton, stronger and softer.

➢ Clothes can be dressy or casual.

➢ Highly absorbent, breathable and comfortable.

➢ Wrinkle resistant, shrink resistant and static resistant.

➢ Machine washable and dryable.

L.L. Bean flannel shirt made of 52% organic cotton and 48% Tencel.
Cellulosic fibre properties helping drive growth

Fibre properties and applications

### Applications

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<th>Function and feel</th>
<th>Durability</th>
<th>Absorbency</th>
<th>Breathability</th>
<th>Softness</th>
<th>Drape</th>
<th>Dyeability</th>
<th>Brightness/Lustre</th>
<th>Renewable and biodegradable</th>
<th>Resource efficiency</th>
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### Overall value proposition

- Natural and attractive, ‘greener’ alternative to cotton
- Natural, functional and well established
- Cheap, durable and versatile

Source: IHS Global, RISI, Hawkins Wright.
Every day, almost everyone here today touches a texture that was created by Sappi’s Release Paper Business.
Today, trees are replacing plastic, supplanting fossil fuels, advancing medical technology, improving clothing’s comfort, even making toothpaste work better.

New technology, Yankee innovation and continued sustainable management practices are driving the Maine forest industry’s rise to meet global demands.
The future demand for wood is projected to increase.

*Source: Elias & Boucher 2014. Planting for the Future. Union of Concerned Scientists*
Global Textile Fiber Demand

CAGR 2018 - 23
- Total Fiber: +3%
- Wood based: +5%
- Synthetic: +4%
- Cotton: +1%
- Other: +0%
US Actual and Predicted Housing Starts

The Financial Forecast Center™
ME Historic & Potential Sustainable Harvest
(Sources: MFS Wood Processor Report; FOR/Me Wood Supply Report)

Annual Harvest of Commercially Important Species in Maine (sawlogs, pulpwood & firewood)
Your road to success in Maine!

Just some of the reasons to build an MDF or particle board mill in Maine:

• A world class labor force.
• 6 million acres of privately owned forestland with landowners who want to cut wood - no federal red tape!
• For the next 20 years, Maine’s forests will sustainably produce three million tons per year of currently unutilized spruce and fir fiber.
• The University of Maine has one of the top research laboratories in the world for forest products, including nanocellulose.
• The average wildfire in Maine is less than one acre. Wildfires are attacked quickly and kept small. In 2019, Maine was 45th of 50 states with only 142 acres burned.
• “The Way Life Should Be” – Maine is an absolutely beautiful place to live and a great place to run a business.

Contact Charlotte Mace
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Wood Used for Energy in Maine (green tons), 2010 – 2016 (FOR/Maine Wood Energy Report)
Wood Used for Energy In Maine 2010-2016
Green Tons Reported In-Woods Biomass (MFS) and Mill Residuals (DEP)
Consumer demand for biobased products

- Market for biobased materials and chemicals has reached $1B (a 28% annual increase).
- 2/3 of total chemicals worldwide can be produced from biobased material -- over 50,000 products, a $1T annual global market.
- Global demand for biobased and biodegradable plastics will rise 19% per year. Rising demand for bioplastics for food + beverages.
Global market analysis weighted scores
Future is positive but planning and action are required.

In the two years prior to COVID-19 over $1 Billion in Capital Investments had been made in Maine’s Forest Economy, fueling a strong period of growth.
Short term response actions focused on protecting the businesses that we have (retention)

• Examine overall sector and all components of the supply chain. (Designation of Essential Services was critical)
  • Landowners
  • Loggers & Truckers
  • Manufacturers

• Market resetting factors;
  • Pulp & Paper (consumer demand for paper packaging, container stock, tissue)
  • Solid Wood and Panels (consumer demand – housing starts)
Short term response actions focused on protecting the businesses that we have - Retention

• COVID Testing plan and resources for manufacturing & logging
• PPP program continuance and revisions (Congress)
• Economic Damage Relief Package USDA Loans/Grants
  • Logging & Trucking business interruption loans
  • Manufacturing COVID PPE Expense relief
• Focus on assistance to Pixelle rebuilding pulp capacity
• Work with regional governors to ensure building permit processing (FIAC national concern)
• Address challenges of extended benefits for unemployment claims hindering back-to-work needs.
Business Stabilization and Expansion

- Renewable Chemicals Act Implementation
- Exercise State of Maine purchasing muscle in forest products:
  - Cross Laminated Timber construction of State Building
  - Off-take agreements for forest biofuel products
  - Wood thermal heating in public buildings (chips, pellets, biofuel)
- Continue collaborative DOT planning efforts with forest industry and support federal stimulus funding
- Support MTI, MTAF competitive grant programs
- Assist in residual wood market development:
  - Long-term PSA efficient and smart sized CHP power plants
  - Establish CHP co-location opportunities matching energy and thermal needs between energy producers (e.g. sawmills) and energy users (e.g. industry and institutions)
  - Thermal Credit market development
- Assist northern Maine businesses establish a comprehensive energy plan for the region to stabilize costs and guide energy development.
- Capitalize on potential rural migration of workers with broadband development
Business Attraction

• Focus on global climate opportunities for Maine to build circular bioeconomy similar to efforts in Finland.

• Support collaborative effort of FOR/ME Market Attraction Plan with DECD, Industry, MITC, UMO.

• Strong marketing for MDF panel facility location in Maine using low grade wood.

• State Workforce Development efforts to be supplemented by FOR/ME industry survey.