

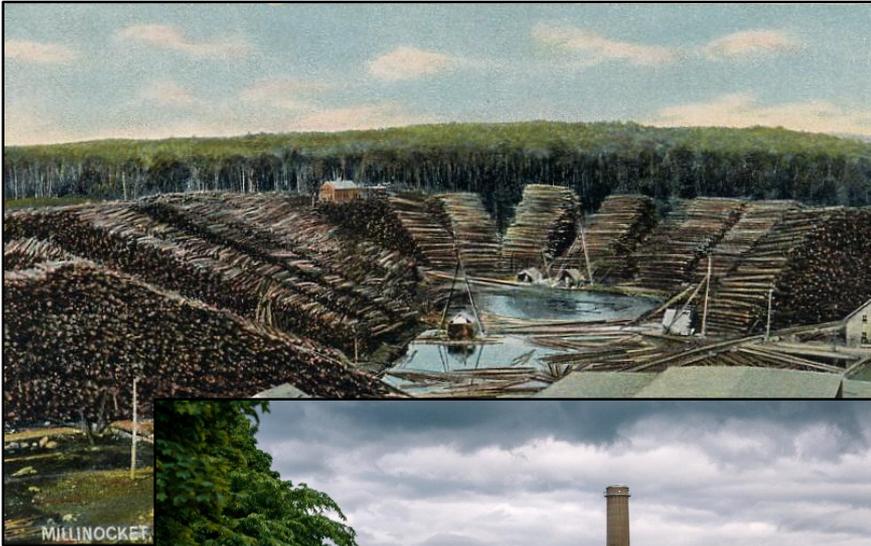
**CHANGES IN WOOD PRODUCTS
MARKETS:
VT WOOD PRODUCTS INDUSTRY FORUM
OCTOBER 5, 2016
PAUL FREDERICK, WOOD UTILIZATION PROGRAM MANAGER**

VT DEPARTMENT OF FORESTS, PARKS & RECREATION

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CHANGES IN WOOD PRODUCT MARKETS

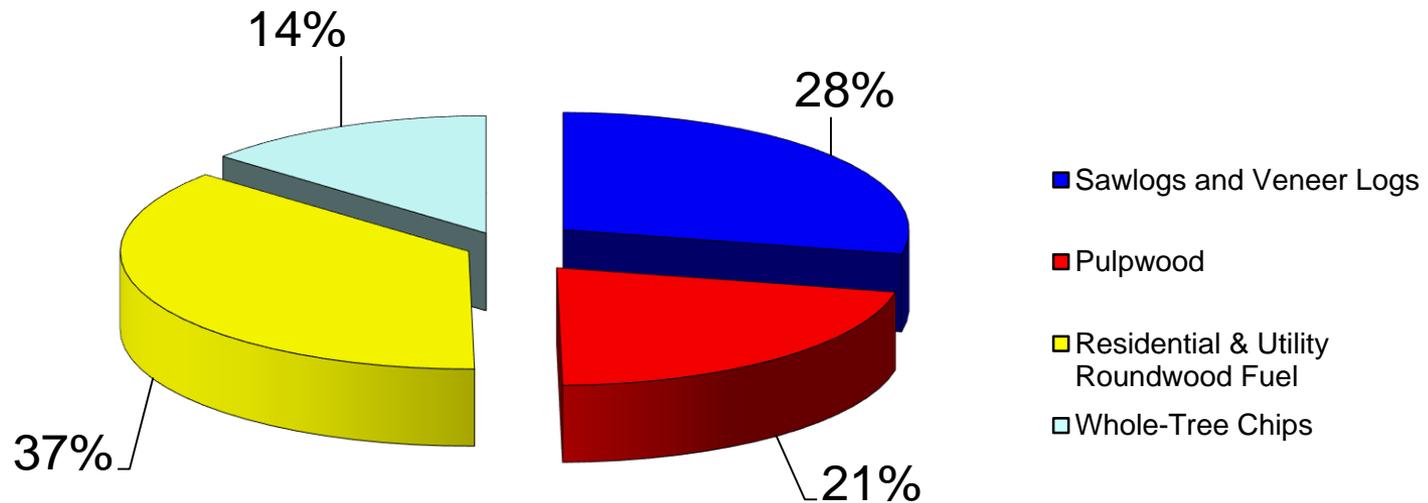


OUTLINE:

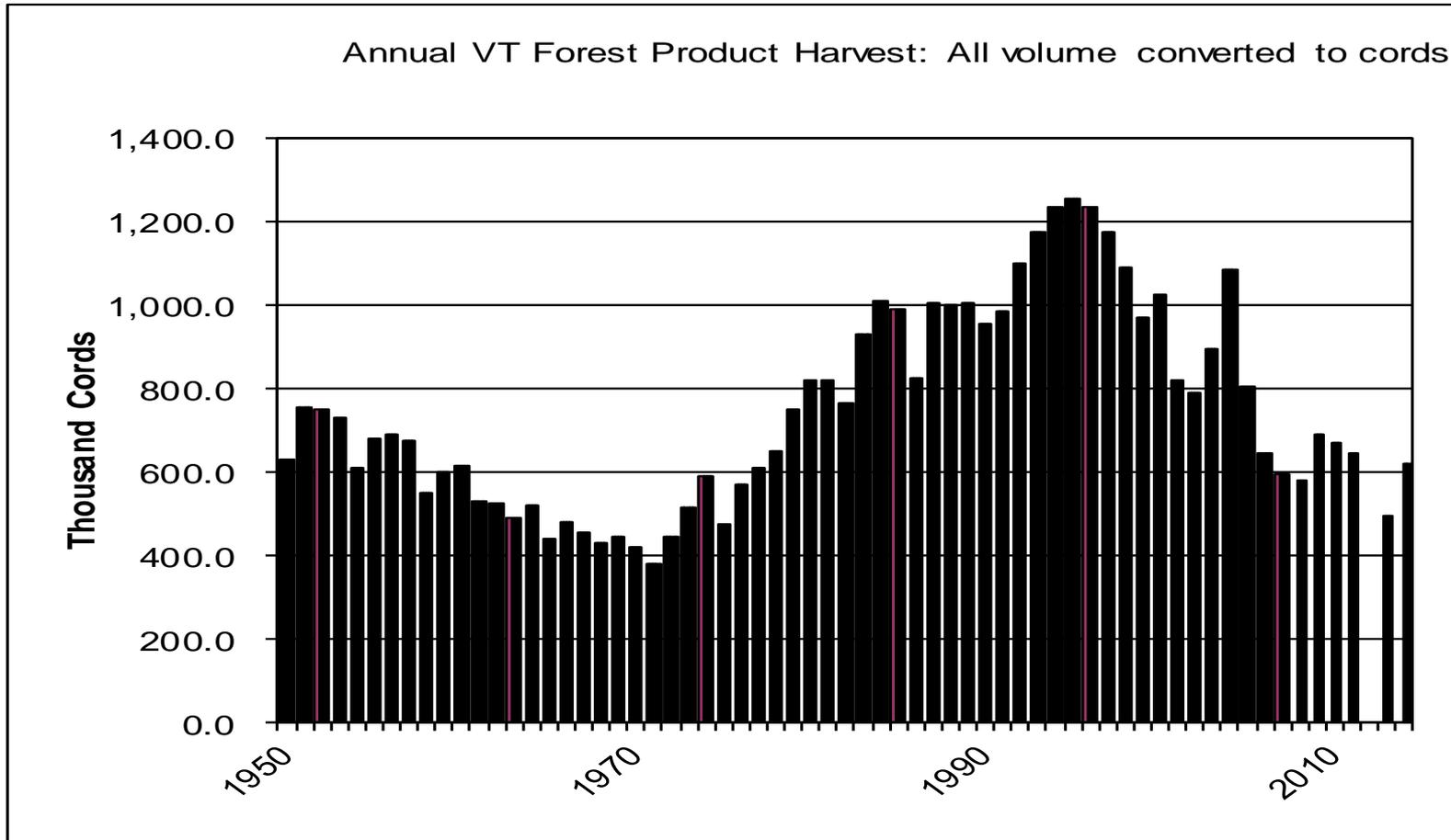
- Current Conditions and General Trends
- Sawtimber Markets and Market Drivers
- “Low-Grade” Wood Markets and Trends
- The Future???

VT FOREST PRODUCT HARVEST

Total Forest Product Harvest by Product in Vermont: 2014 (967,763 cds)

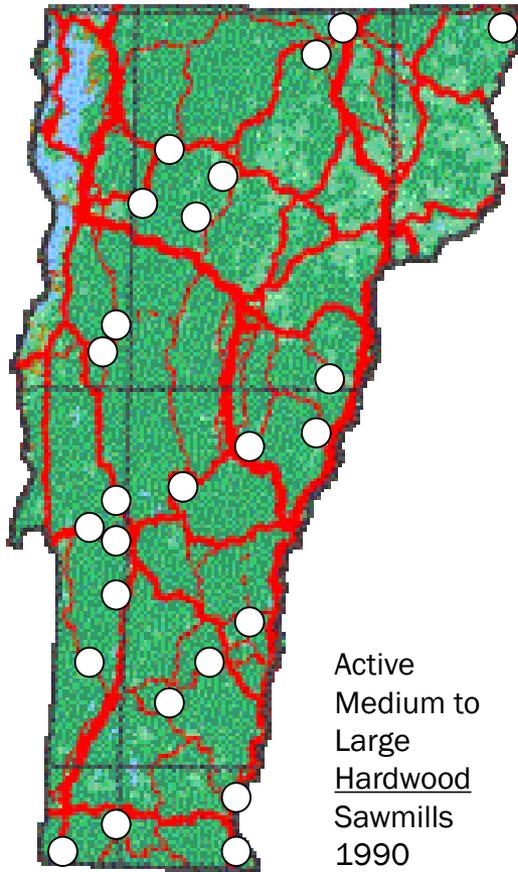


VT FOREST PRODUCT HARVEST*



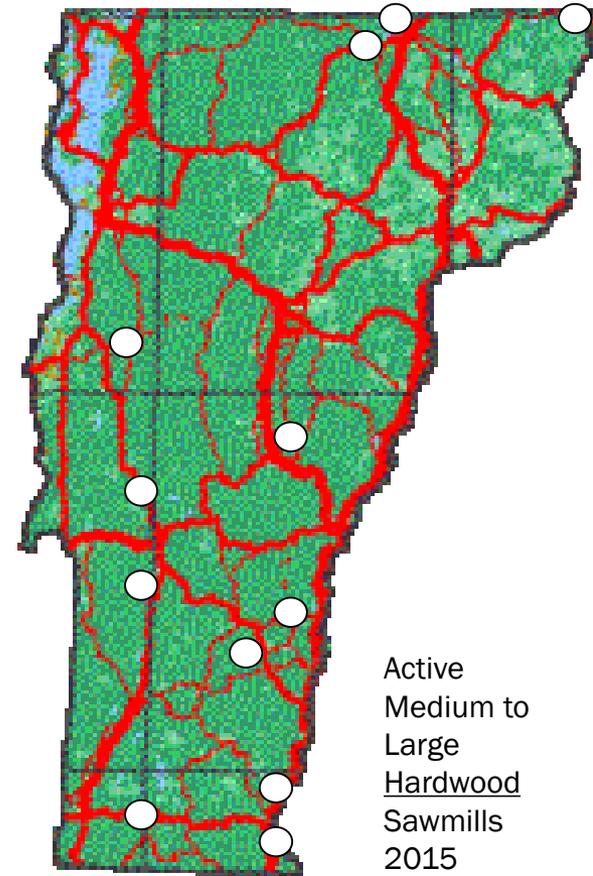
*Volumes do not include residential firewood volume.

25-YEAR TREND IN HARDWOOD SAWMILLS

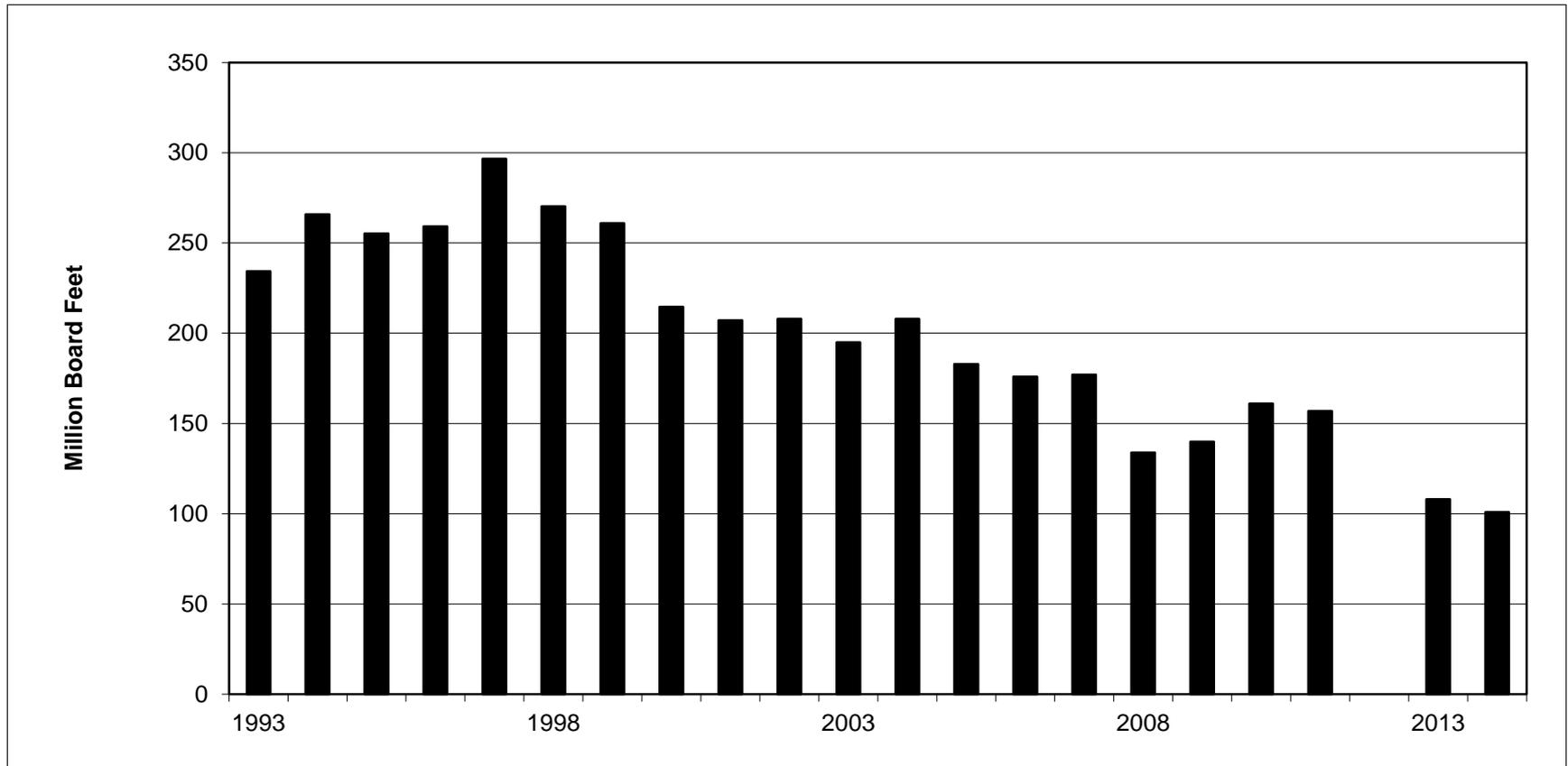


SAWMILLS
THEN...

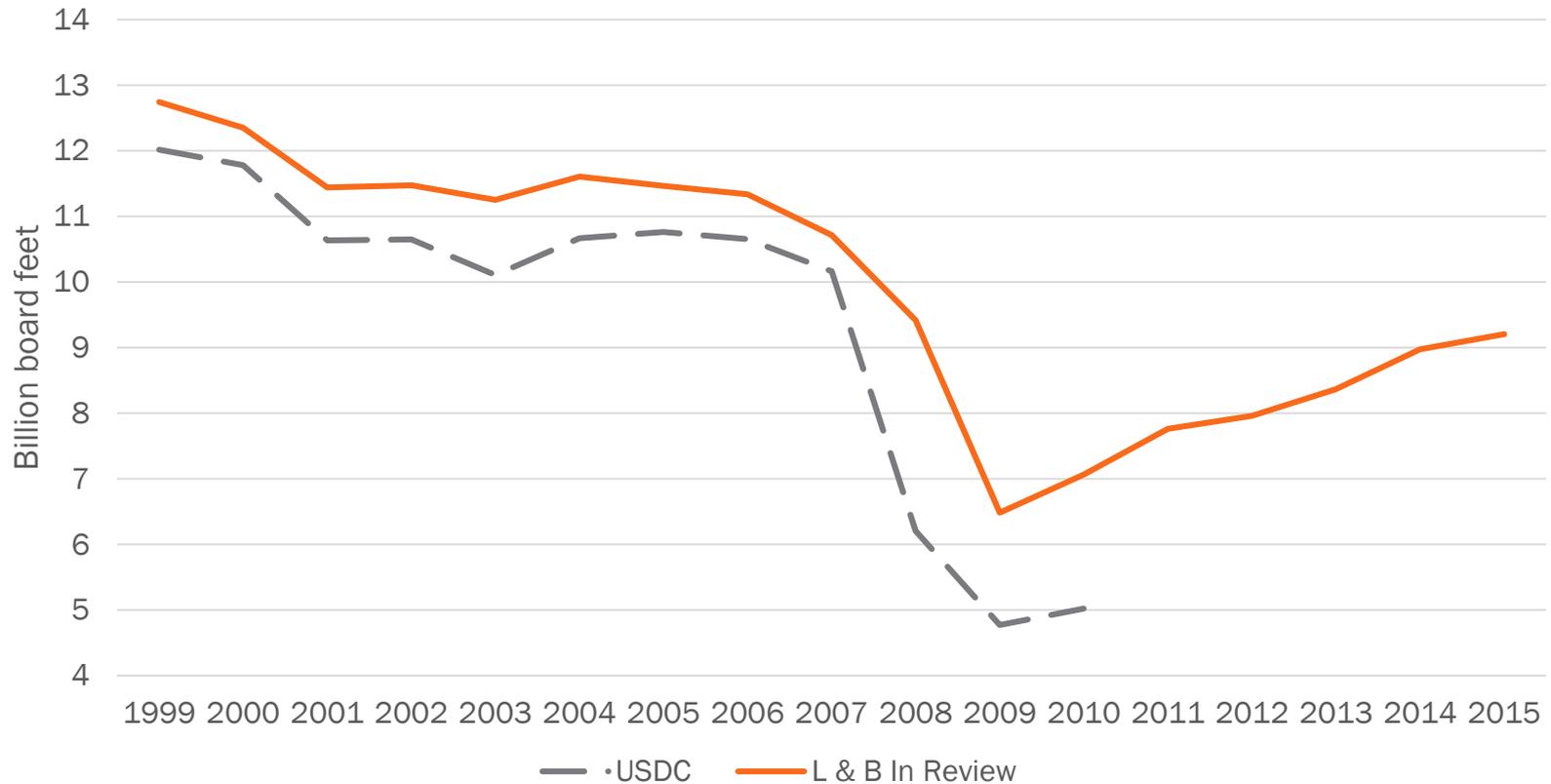
and
NOW...



VERMONT SAWMILL DEMAND

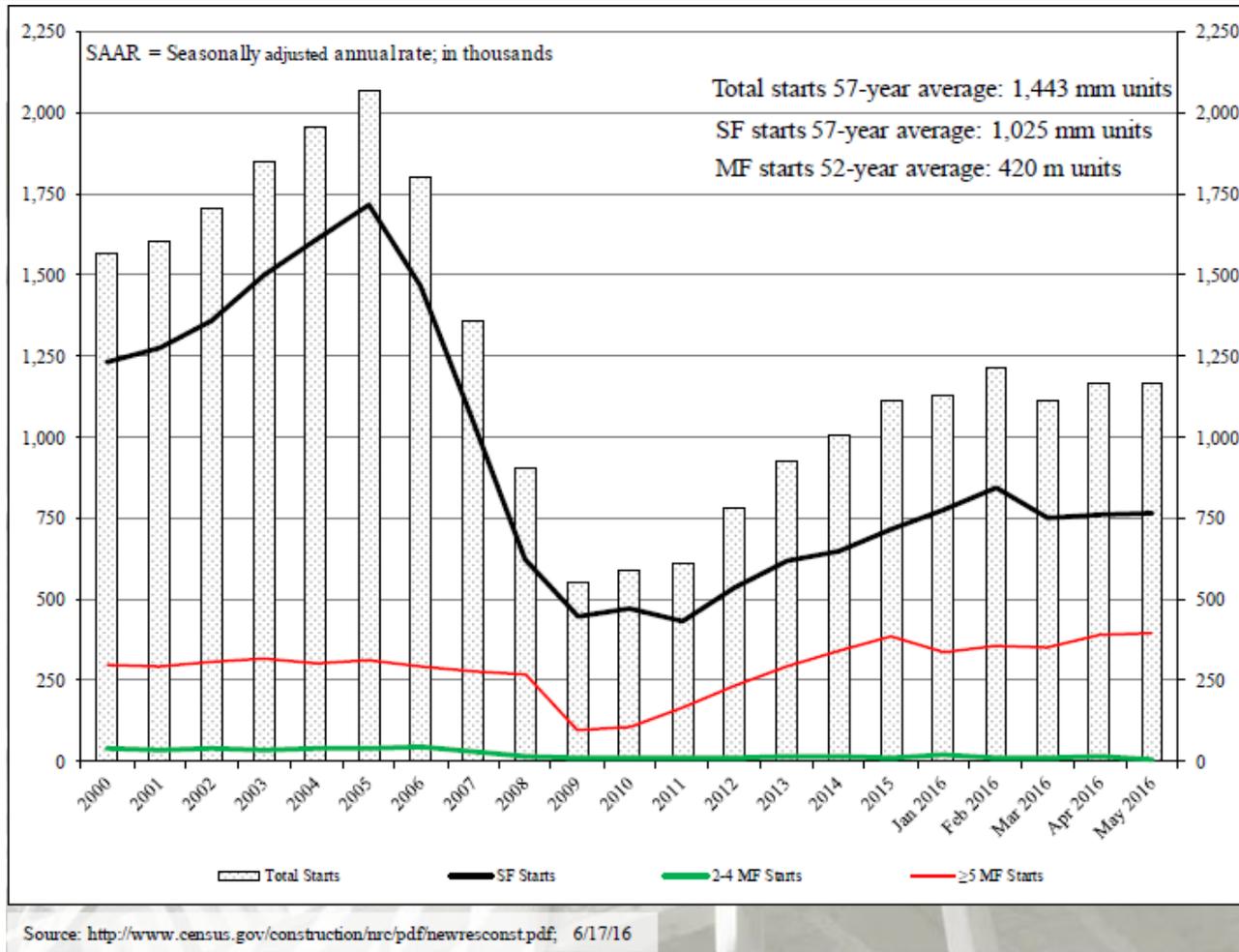


EASTERN HARDWOOD LUMBER PRODUCTION



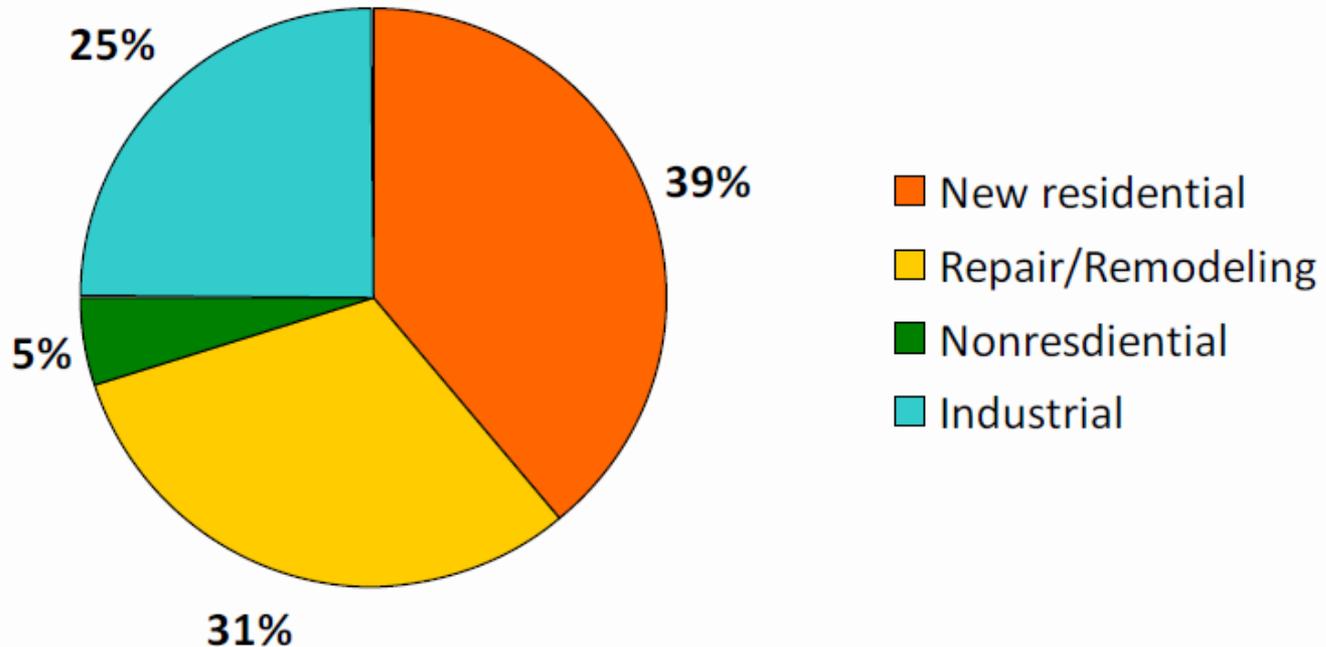
Luppold & Bumgardner; 2016 (in review)

MARKET DRIVERS: TOTAL HOUSING STARTS



SOFTWOOD LUMBER MARKETS

Most softwood lumber goes to residential construction (70%)

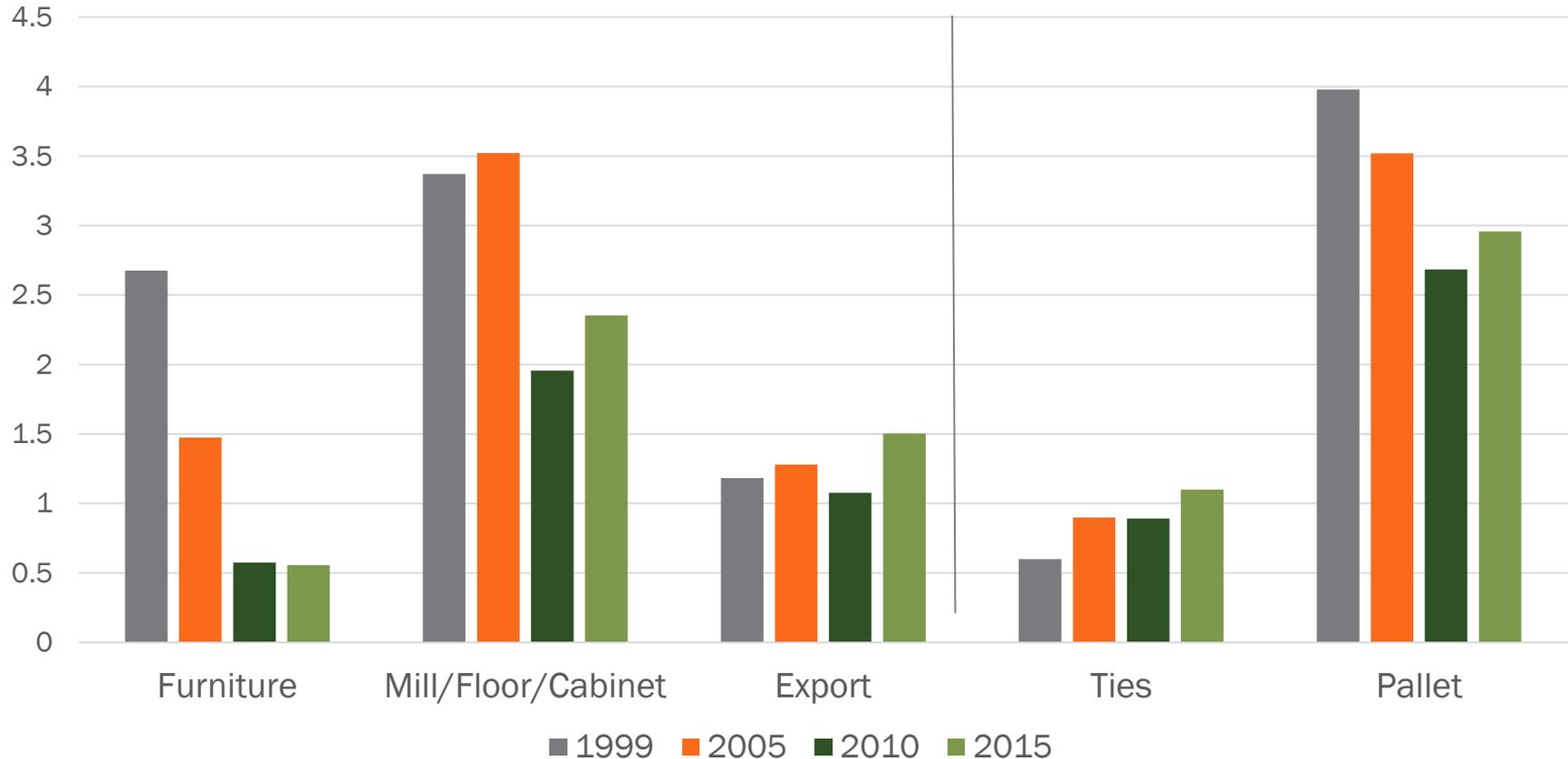


A. Schuler, USDA Forest Service



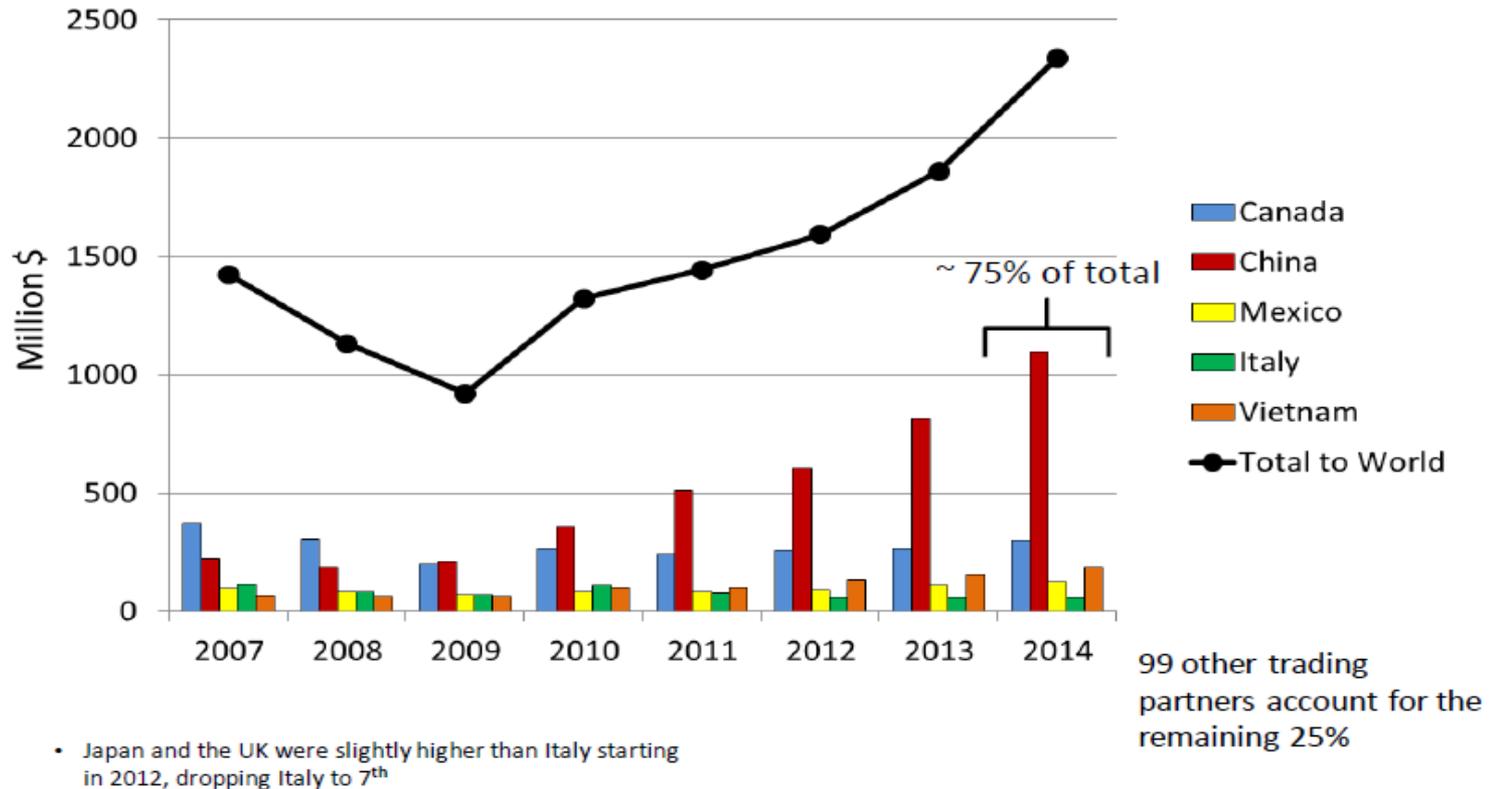
"DOMESTIC" HARDWOOD LUMBER MARKETS

Hardwood Lumber Consumption in Billions of Board Feet



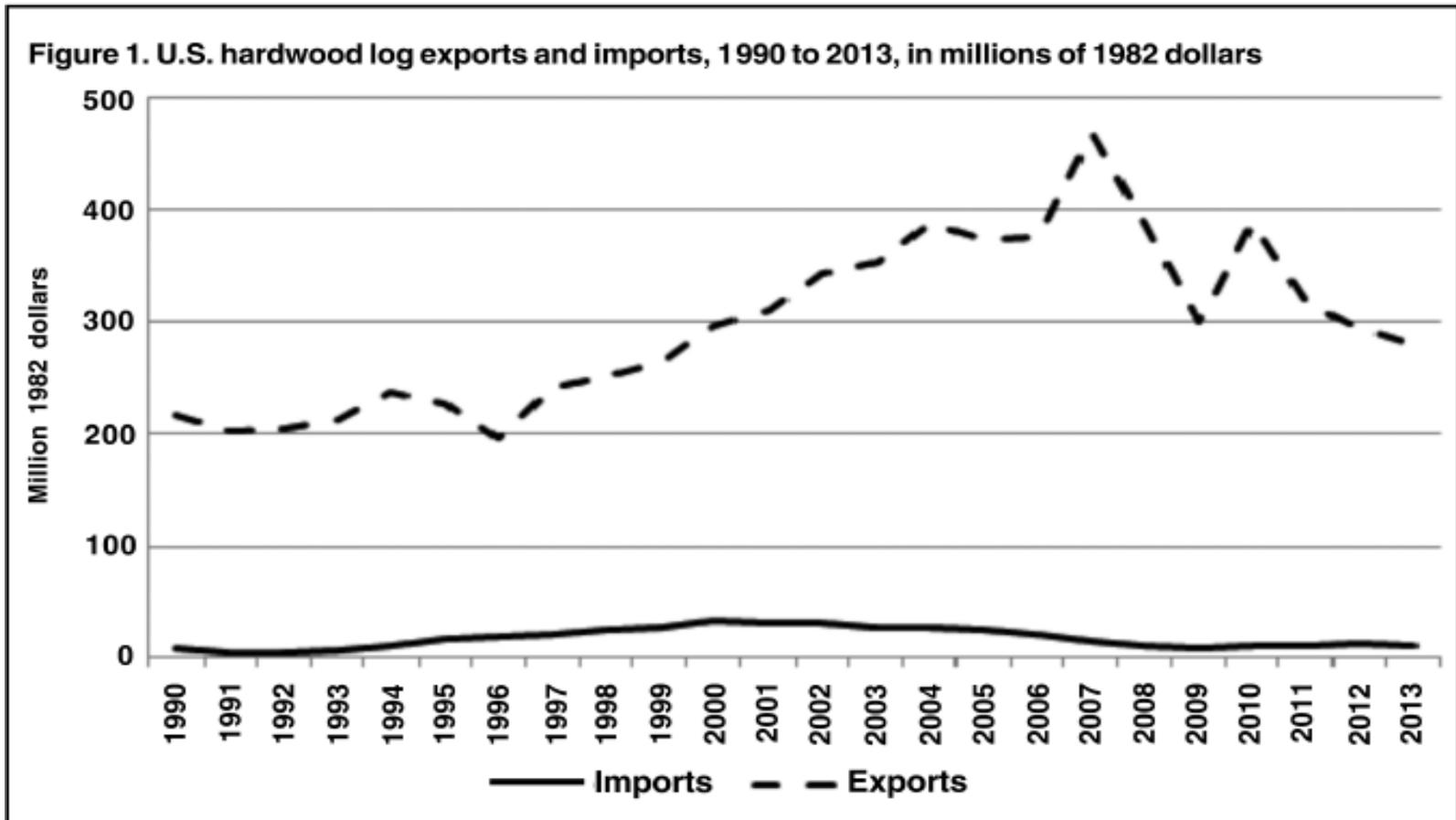
HARDWOOD LUMBER EXPORT TRENDS

U.S. hardwood lumber exports (Top 5 destinations)



Data: USDA Foreign Agricultural Service

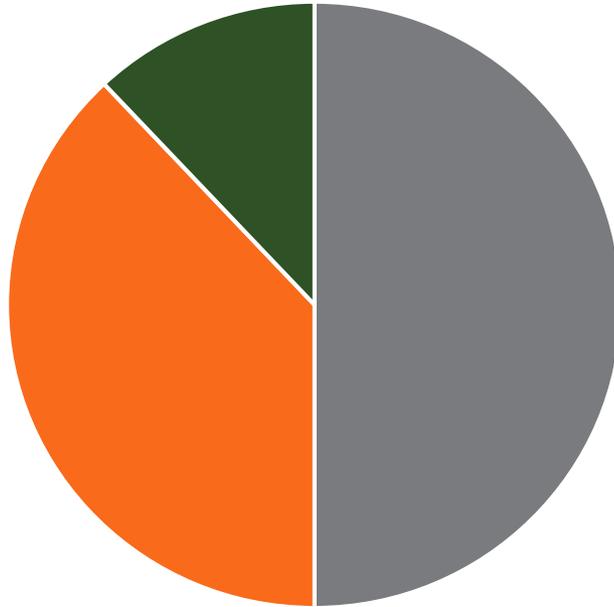
HARDWOOD LOG EXPORT TRENDS



Hardwood Market Report; July 4, 2014

INDUSTRIAL VS. NON-INDUSTRIAL HARDWOOD LUMBER USE

1999

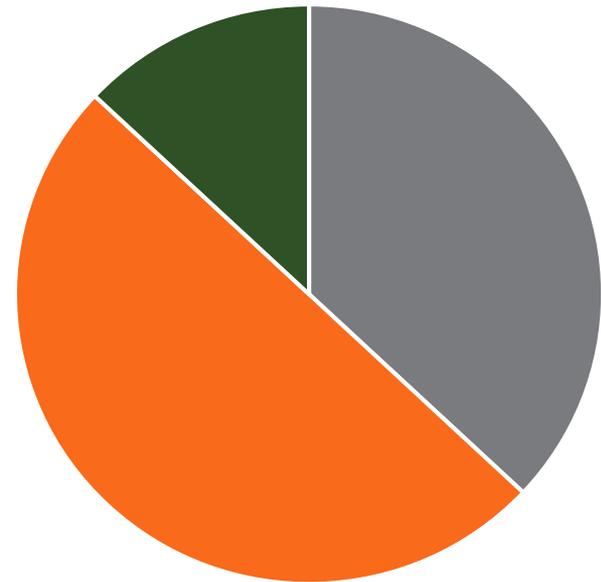


■ Appearance/ Grade Use ■ Industrial ■ Other

Total Consumption 1999 = 12.04 B Bd. Ft.

Total Consumption 2015 = 8.10 B Bd. Ft.

2015



■ Appearance/Grade Use ■ Industrial ■ Other

LOW-GRADE MARKETS

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PULP & PAPER



Since 1999, the Northern Forest region has lost 11 pulp mills

New York

- Deferiet

- Lyons Falls

New Hampshire

- Groveton

- Berlin

Maine

- Westbrook

- Bucksport

- Old Town

- Lincoln

- Millinocket

- East Millinocket

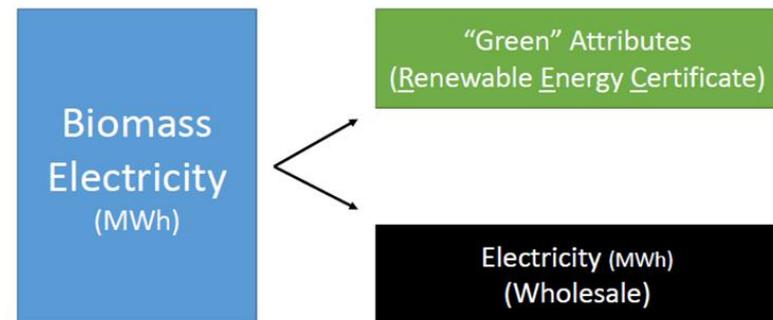
- Madison (May 2016)

PULP AND PAPER MARKETS

- NE mills produce a variety of products each with its own market characteristics.
- Total demand for paper in the US expected to drop 3% between 2015 and 2016.
- Declines are driven by:
 - Moves to digital, on-line media in key some markets: magazines and catalogues.
 - Strong US dollar has increased imports.
 - Competition from overseas... modern, efficient mills.
- Overall, capacity reductions are expected to continue and species demand is likely to shift.
- Some mills will do well while others face challenges.

WOOD TO ELECTRICITY

- Income to most biomass electric plants = Wholesale electric price + Renewable Energy Credits
- Market power generators need both income streams to operate economically
- Wholesale electric prices are low due overall demand and inexpensive natural gas (55% of generation for ISO NE on 10/3/2016).
- MA & CT are main REC markets in NE and prices are down: supply & demand?

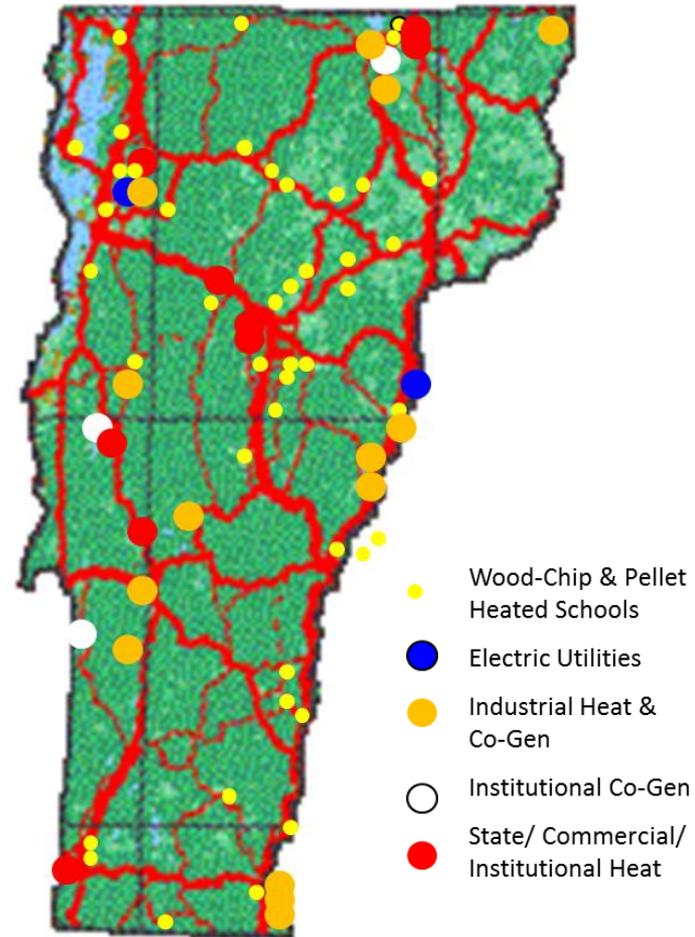


Courtesy of Eric Kingsley, INRS

WOOD HEAT USERS (CHIP & PELLET): 2016

Current Users:

- **Electric Power:**
 - 2 Plants, 70 MW
- **Industrial Heat & Steam**
 - 15 Businesses
- **Combined Heat and Power**
 - 6 Facilities
- **School, College & Office Heating**
 - 100+ Facilities (including chip & pellet using schools & multi-family housing)
- **Residential Firewood**
 - +/- 94,000 VT Households



RESIDENTIAL HEATING: FIREWOOD & PELLETS



- Vermont households burned an estimated 347,530 cords of wood in 2014-2015
- 38% of Vermont households (96,951 households) burned wood for at least some space heating
- 12% of households (31,051) burned at least some wood pellets for space heating

WHAT WILL THE FUTURE HOLD???



- Housing starts are likely to remain flat for the foreseeable future
- Strength of the dollar will continue to impact log and lumber exports
- Softwood Lumber Agreement?
- Predicted growth in manufacturing will lead to continued demand for pallets
- Domestic furniture manufacturing is expected to increase somewhat as firms “reshore” manufacturing.

WHAT WILL THE FUTURE HOLD???

- Use of engineered, cross laminated and heavy timber construction in non-residential and multi-story building is growing in NA now...



WHAT WILL THE FUTURE HOLD???

- Nanotechnology is producing products from cellulose fiber that is stronger than wood and can be used in products in the lab from food to cosmetics to foam insulation... commercial in 2-5 years?



WHAT WILL THE FUTURE HOLD???



- Cellulose based plastics may be 10 years away from commercialization but they can be used in products from food packaging to electronics, medicine delivery systems, adhesives, and vehicles.

Many thanks to the individuals who shared their insights and information for this presentation:

Eric Kingsley, INRS

Bill Luppold, USDA Forest Service

Scott Bowe, University of Wisconsin

Al Schuler, USDA Forest Service

Urs Buehlmann, Virginia Tech