Alternative Hardwood Markets

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Orono, Maine

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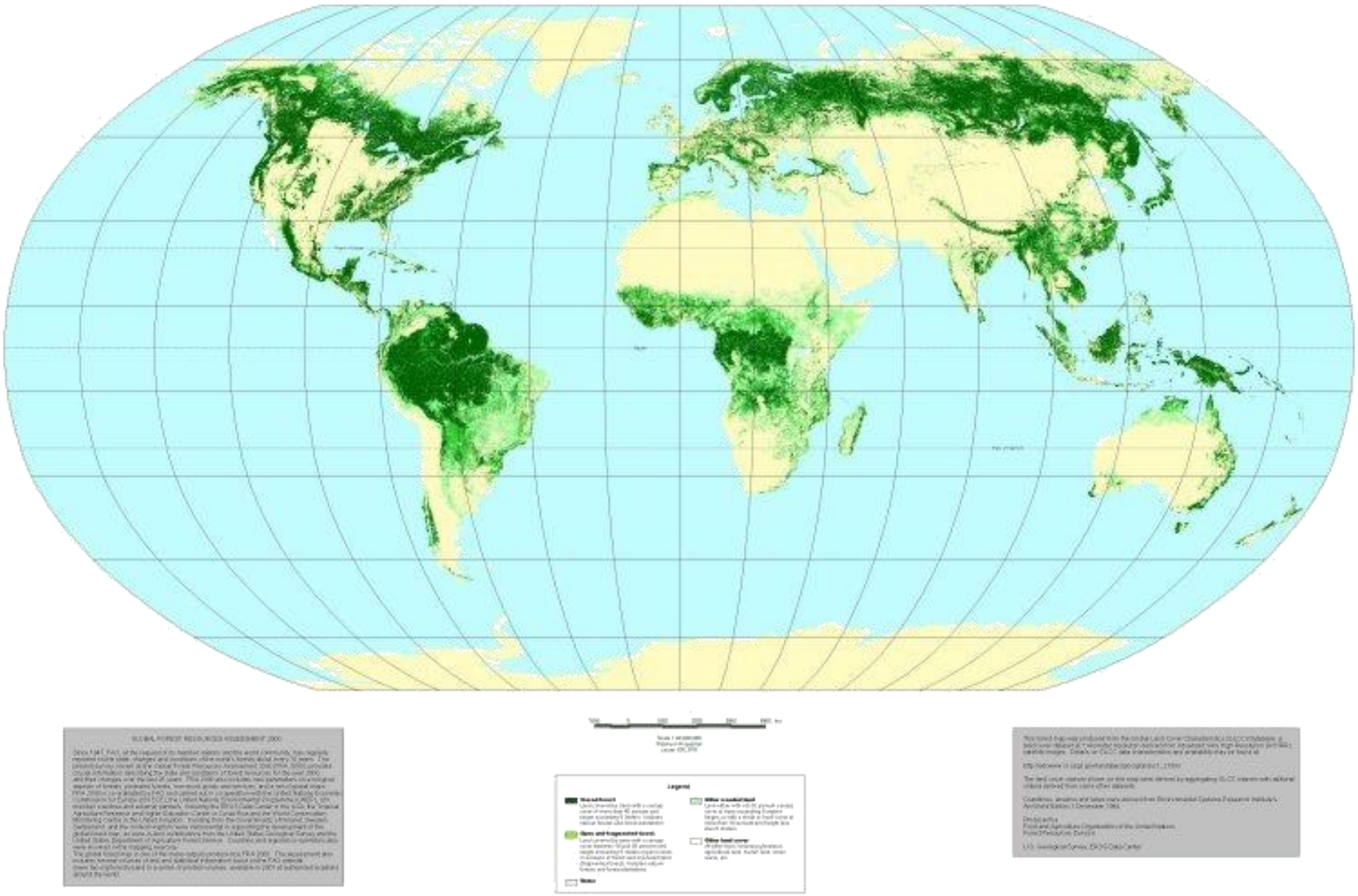
Innovative Natural Resource Solutions LLC

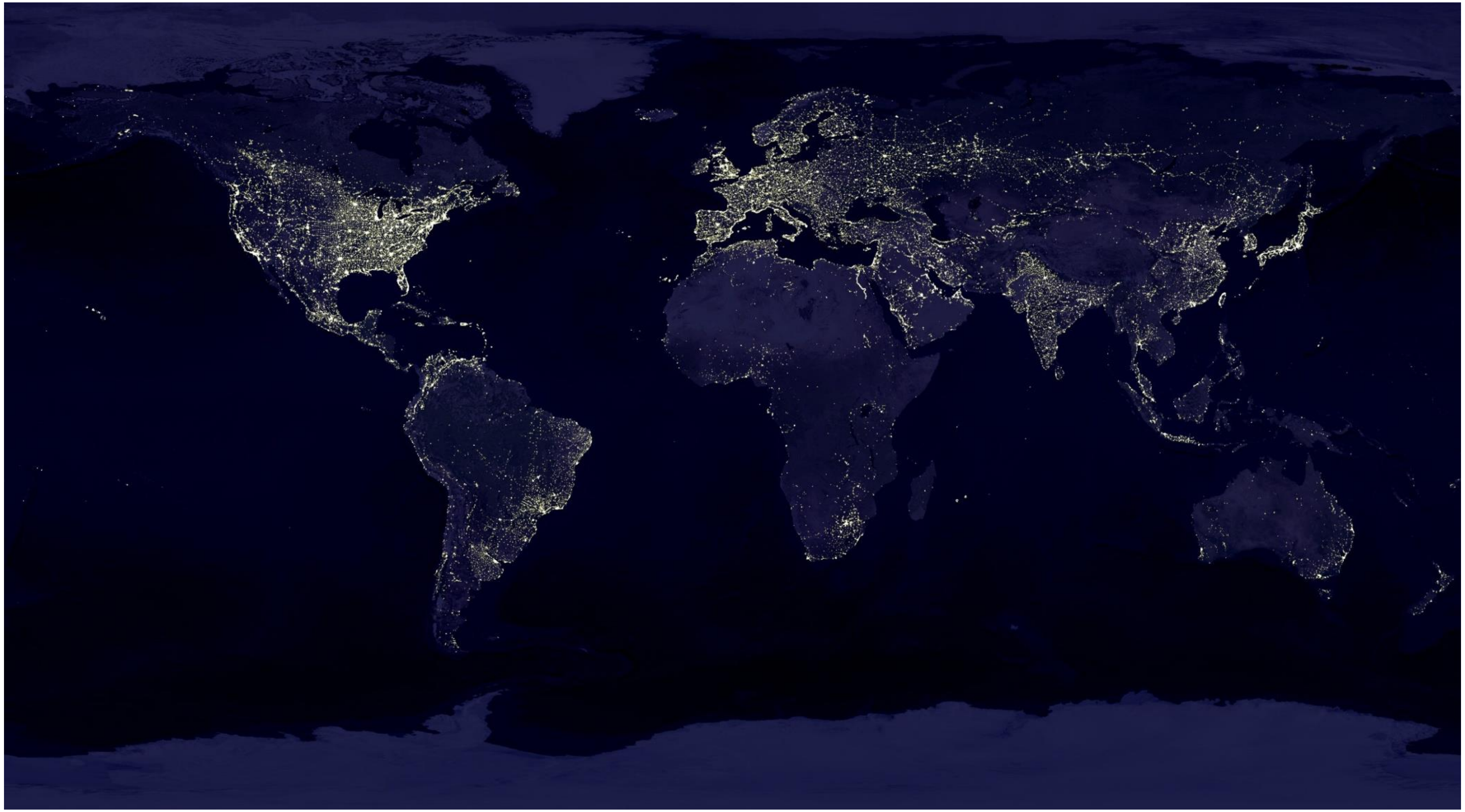
- Founded in 1994
- Offices in New Hampshire and Maine
- Focus at the intersection of forest industry, energy and economic development
- Author of Maine Future Forest Economy Project (2005)
- Services include:
  - consulting in renewable energy
  - advocacy
  - forest management and protection
  - forest certification and sustainability
- Clients from the private, non-profit and government sectors
- Conducted work in all regions of North America
- www.inrsllc.com

Our Continuing Advantage

The Wood

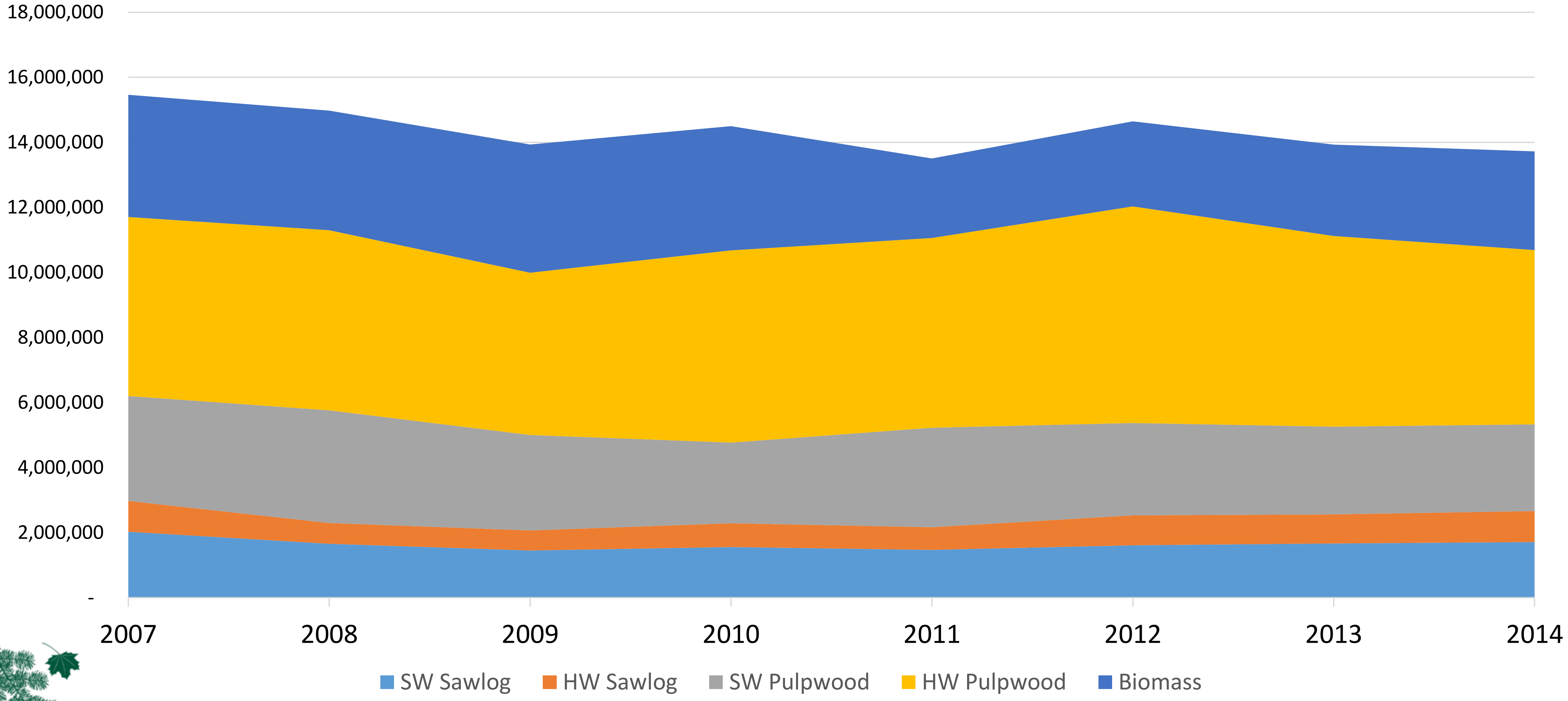


The Markets



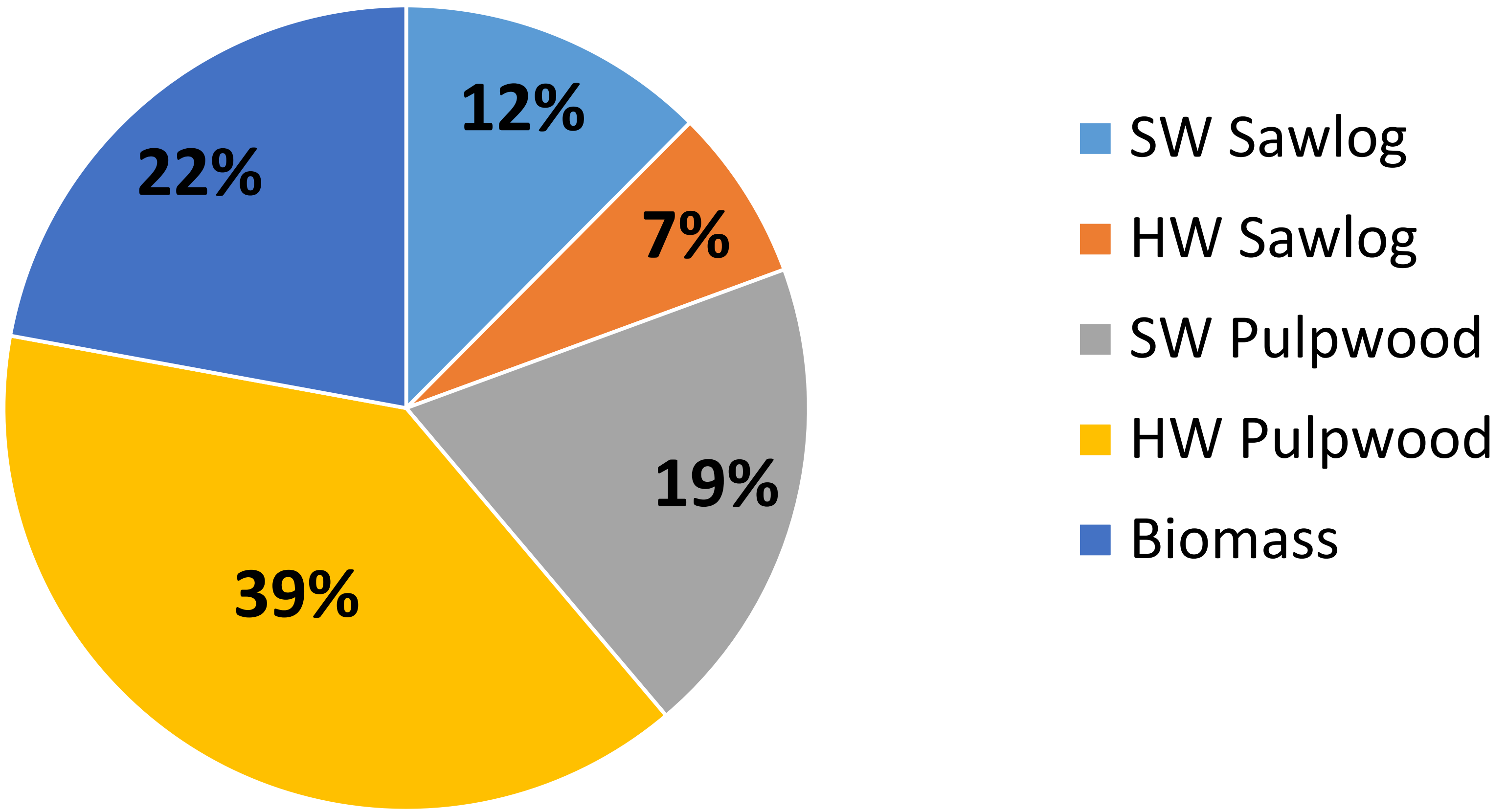
Maine Timber Harvest by Product

Data Source: MFS Timber Processor Report
Data in tons (INRS conversion)



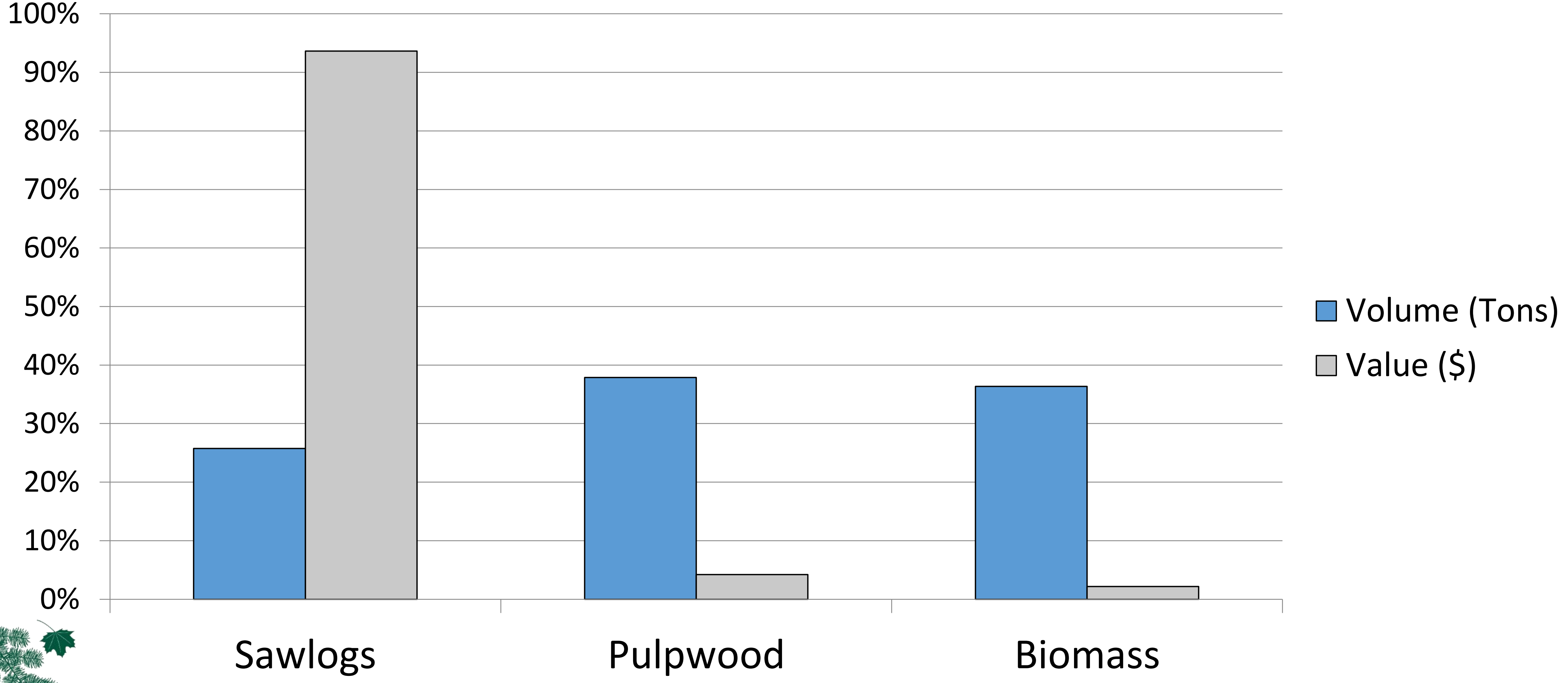
Maine Timber Harvest by Product

Data Source: MFS Wood Processor Report, 2014
All data converted to tons by INRS



Volume and Value to Landowner of Products from a Timber Harvest

North East *State* Foresters 2013



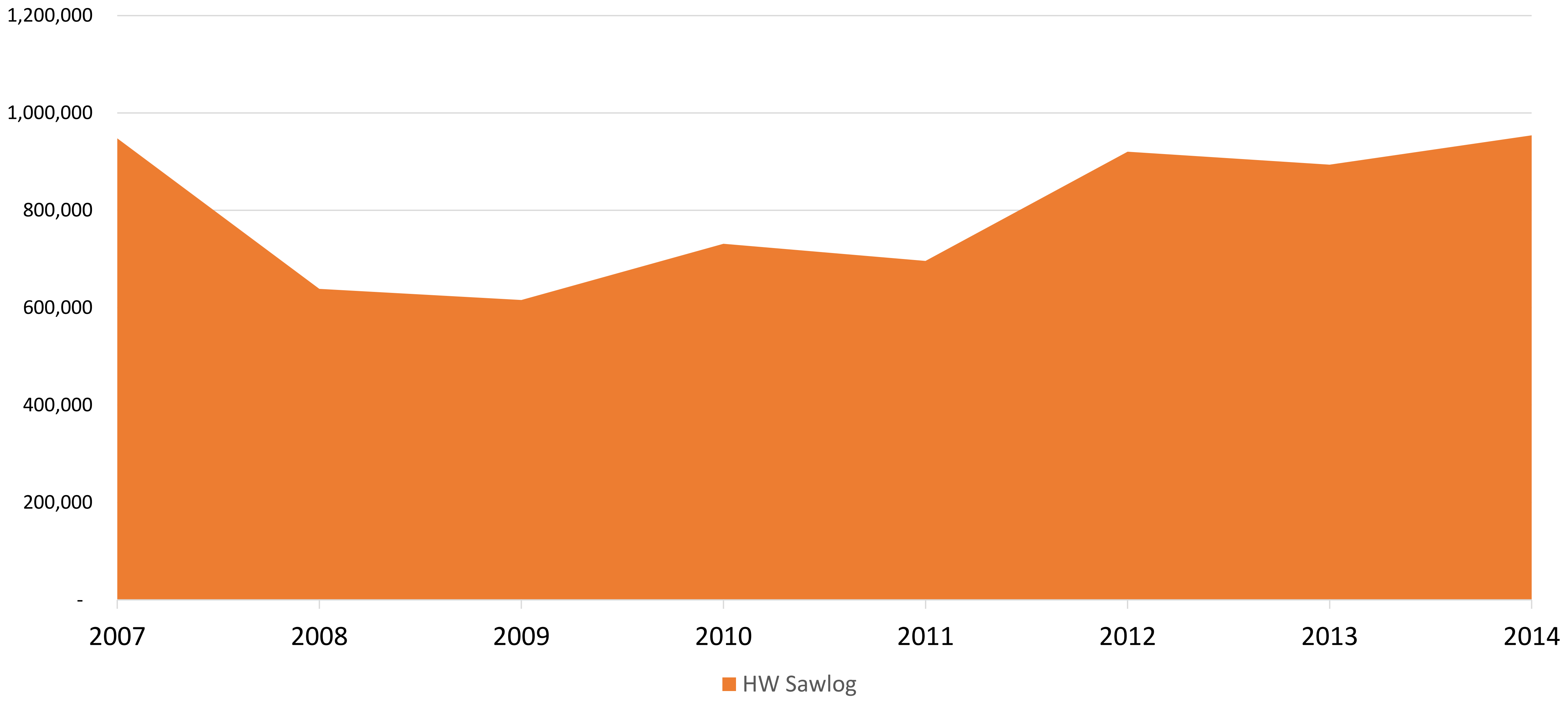
All NH, 2010

Solid Wood

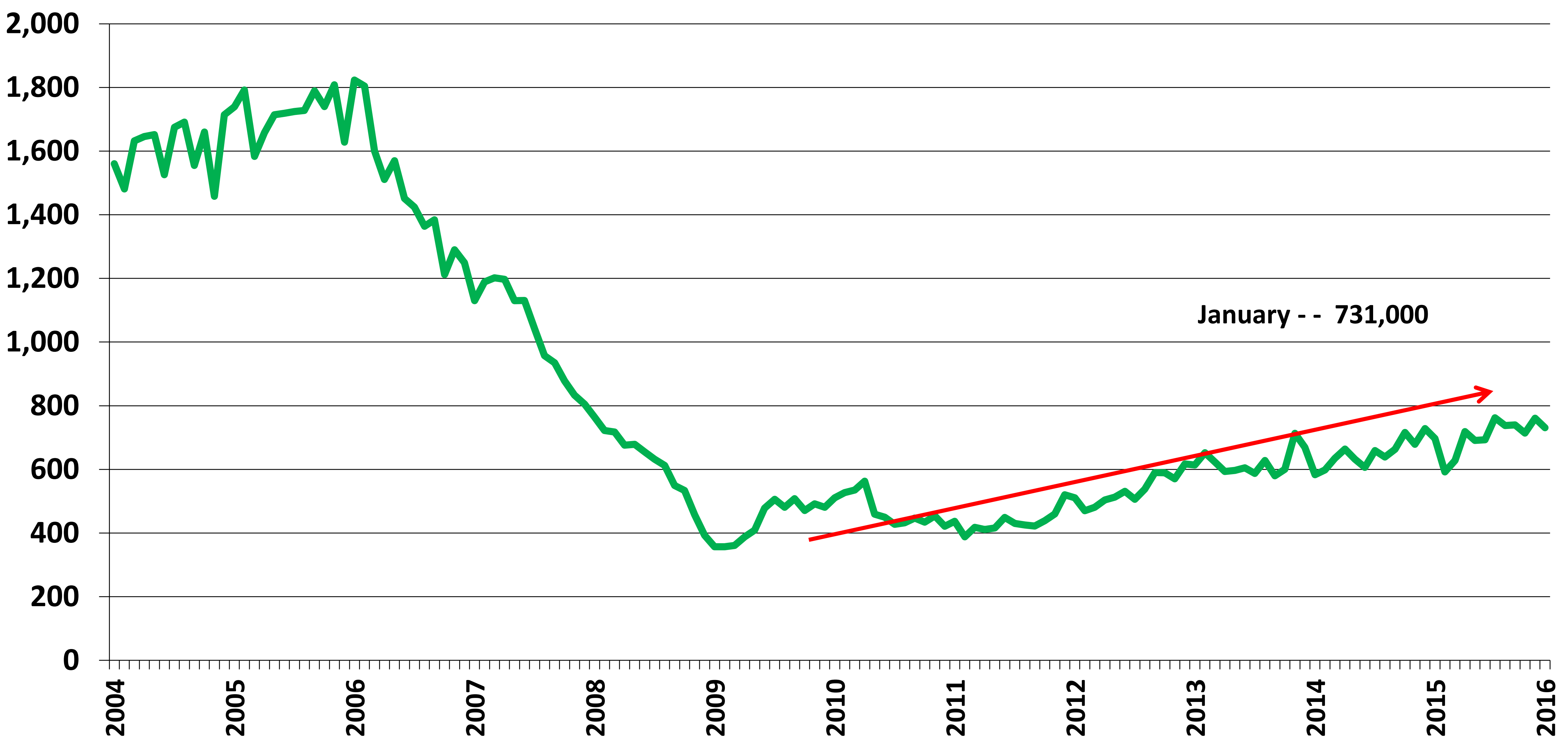
Maine Timber Harvest by Product

Data Source: MFS Timber Processor Report

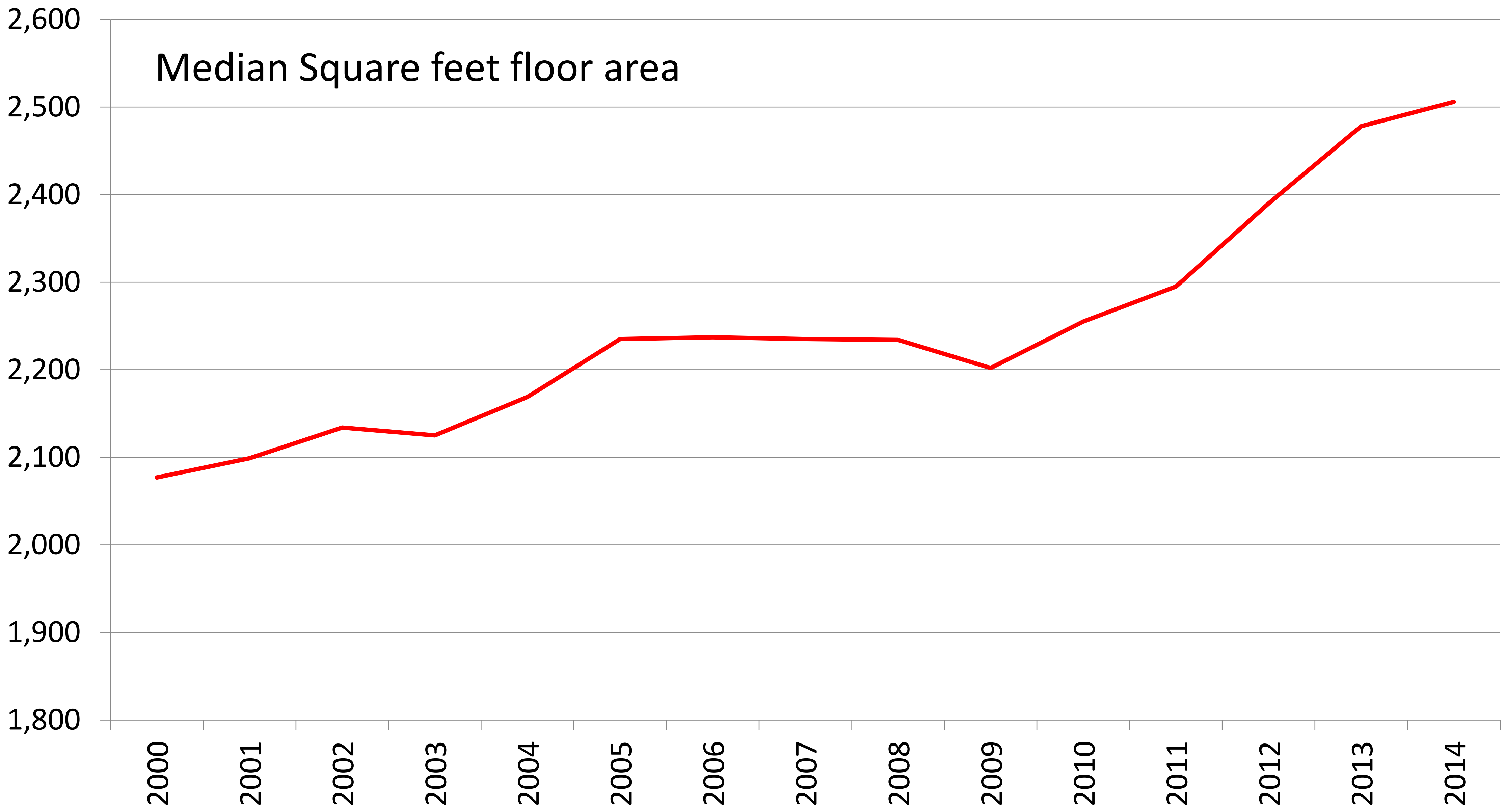
Data in tons



Single Family Housing Starts, 000 Units



http://www.census.gov/const/www/newresconstindex.html

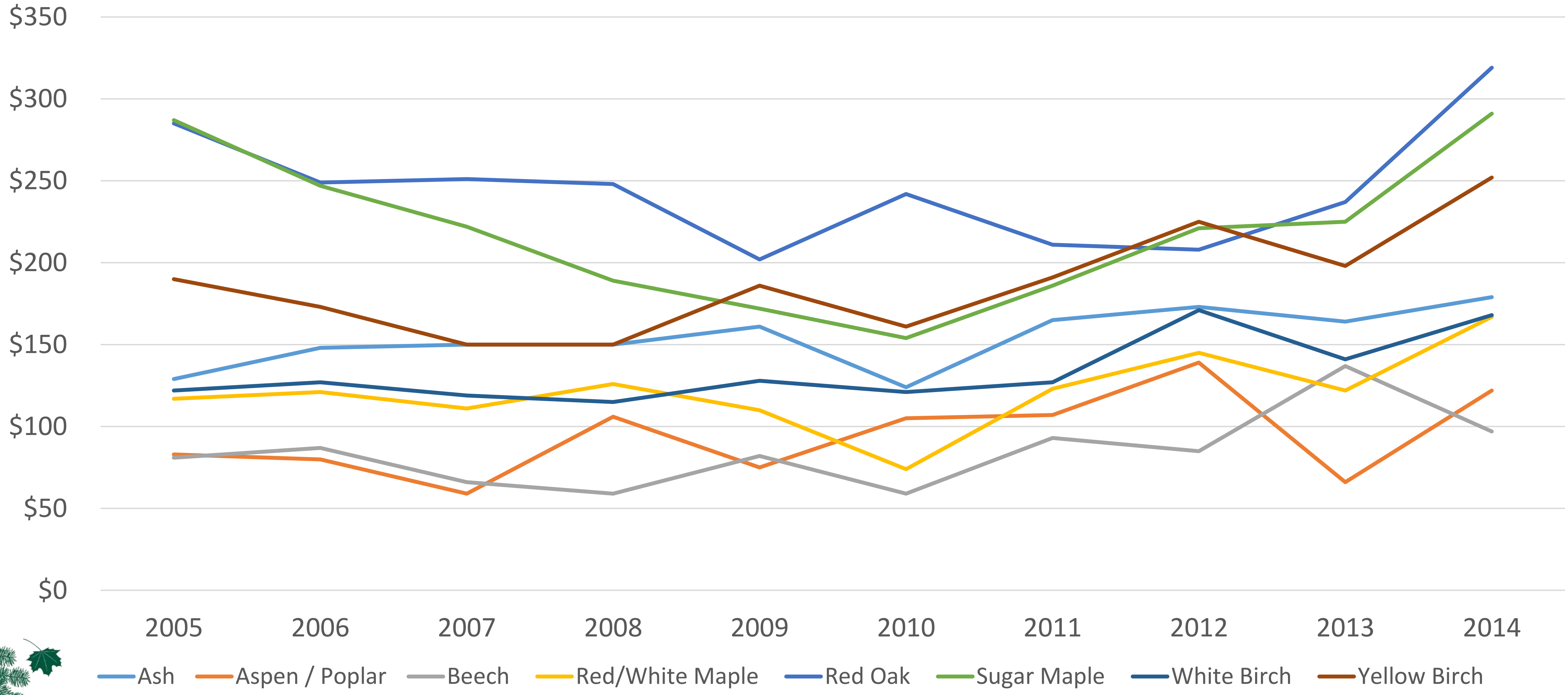


https://www.census.gov/construction/chars/sold.html

Maine Hardwood Stumpage Prices

Data Source: Maine Forest Service, Stumpage Reports

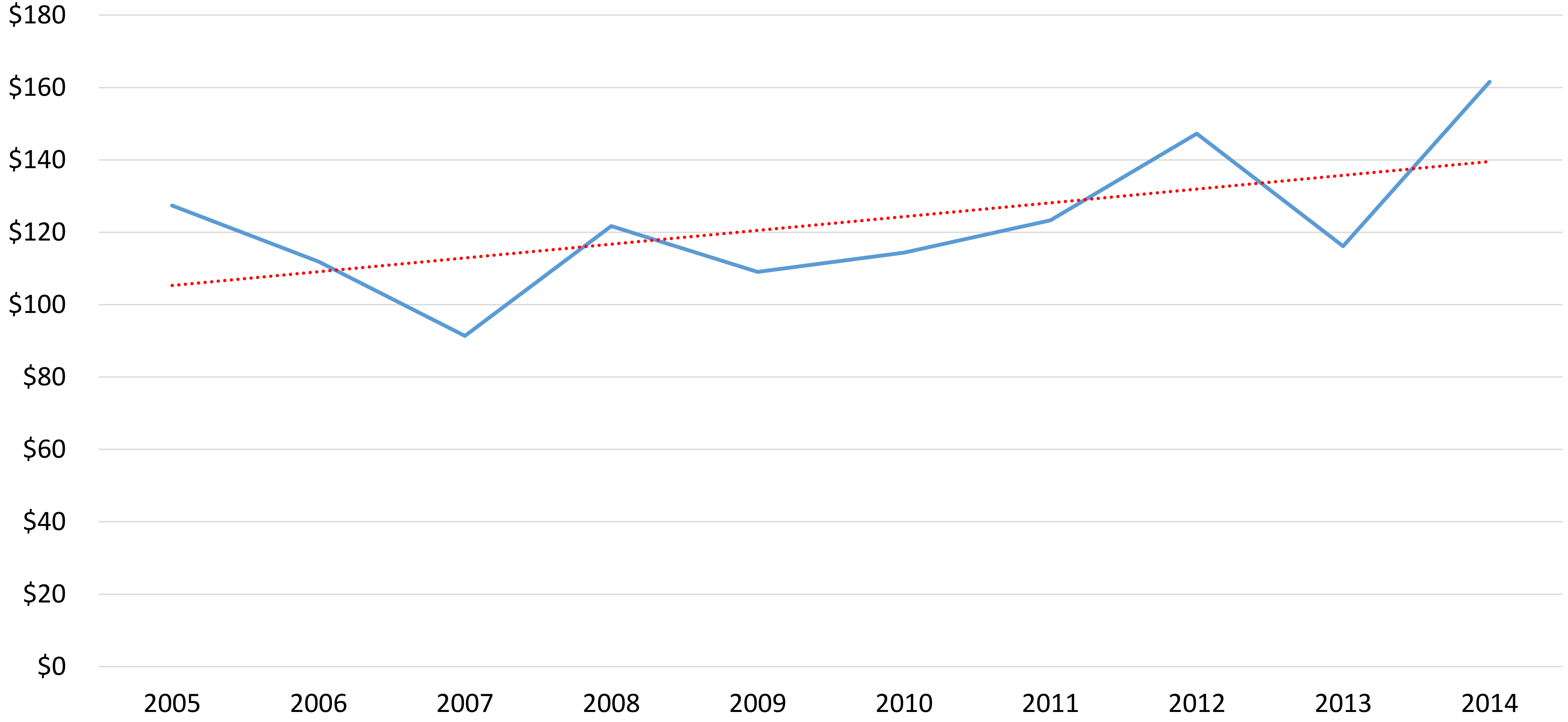
$ per MBF



Maine Hardwood Stumpage Composite Price

Weighted Composite Price, $/MBF

Data Source: MFS Stumpage and Processor Reports



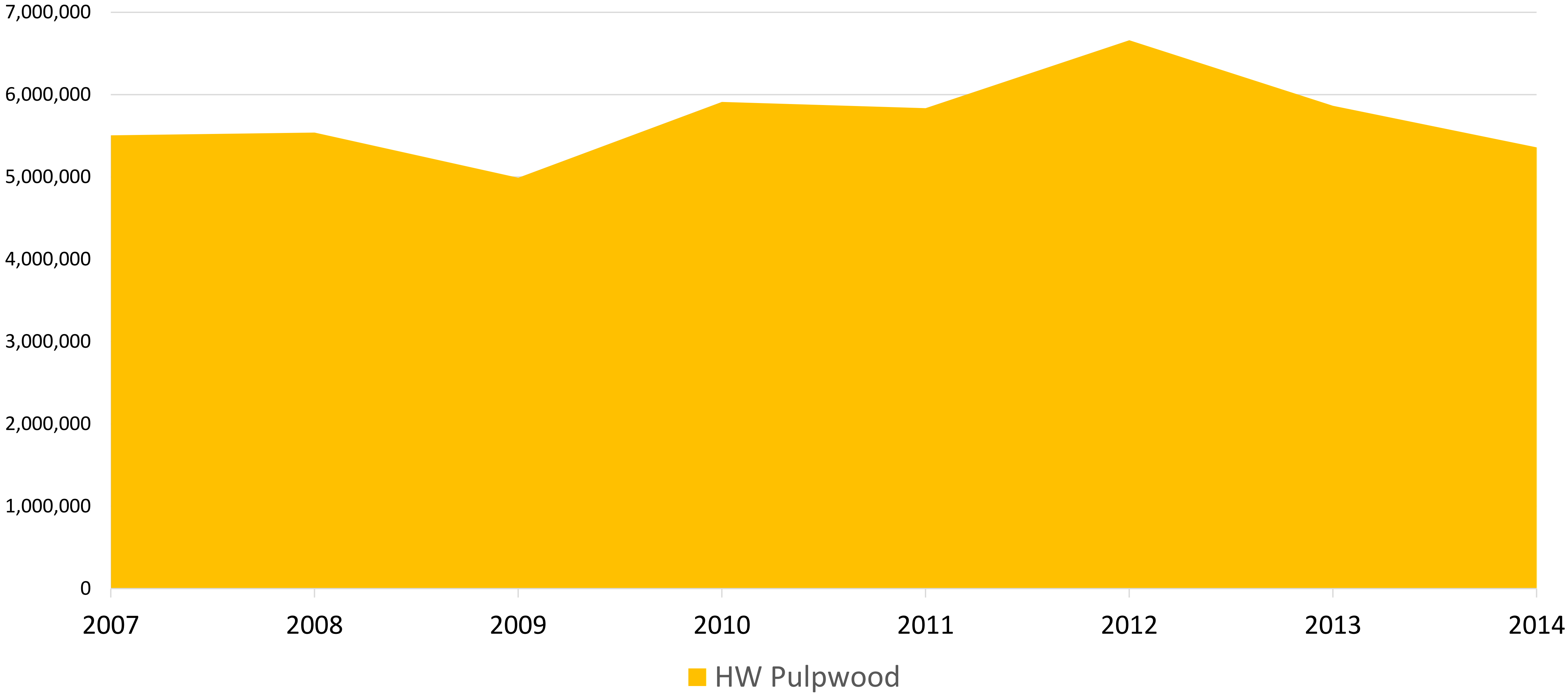
Markets for Low-Grade

Pulp and Paper

Maine Timber Harvest by Product

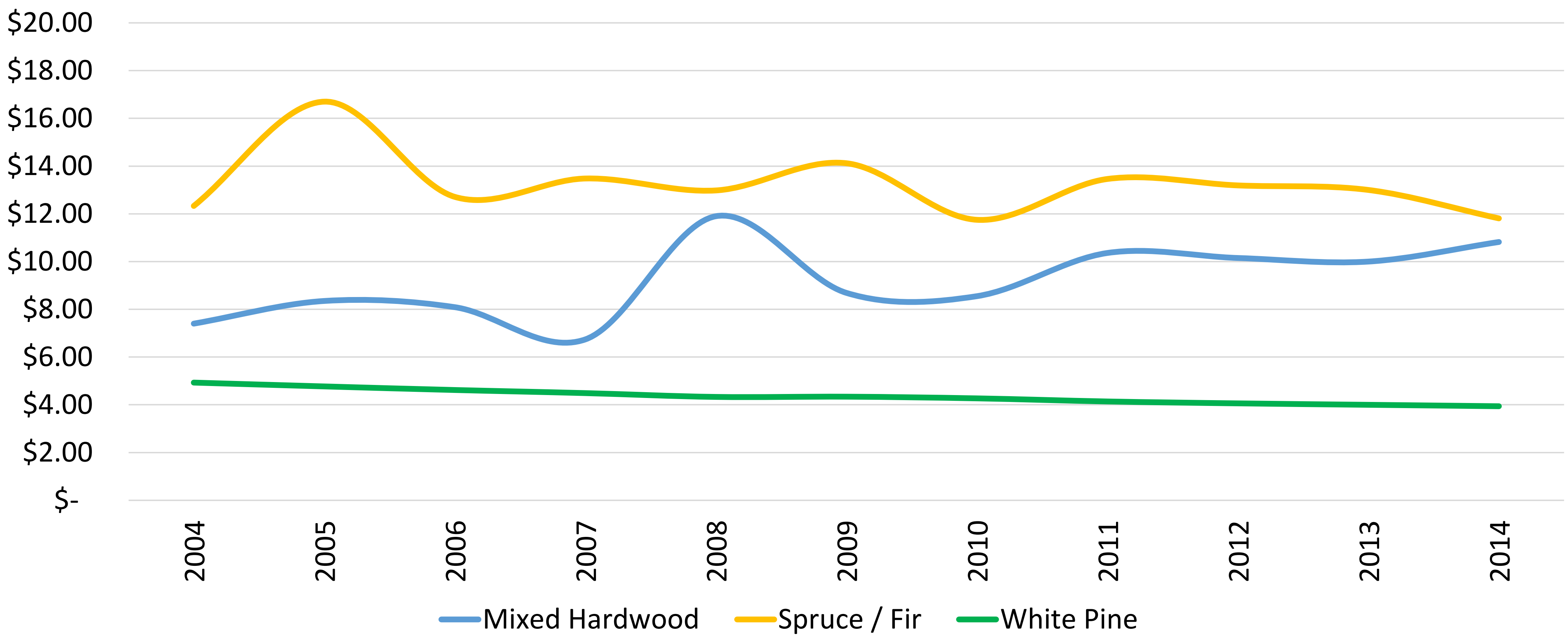
Data Source: MFS Timber Processor Report

Data in tons



Stumpage Price for Selected Pulpwood Species, 2004 - 2014

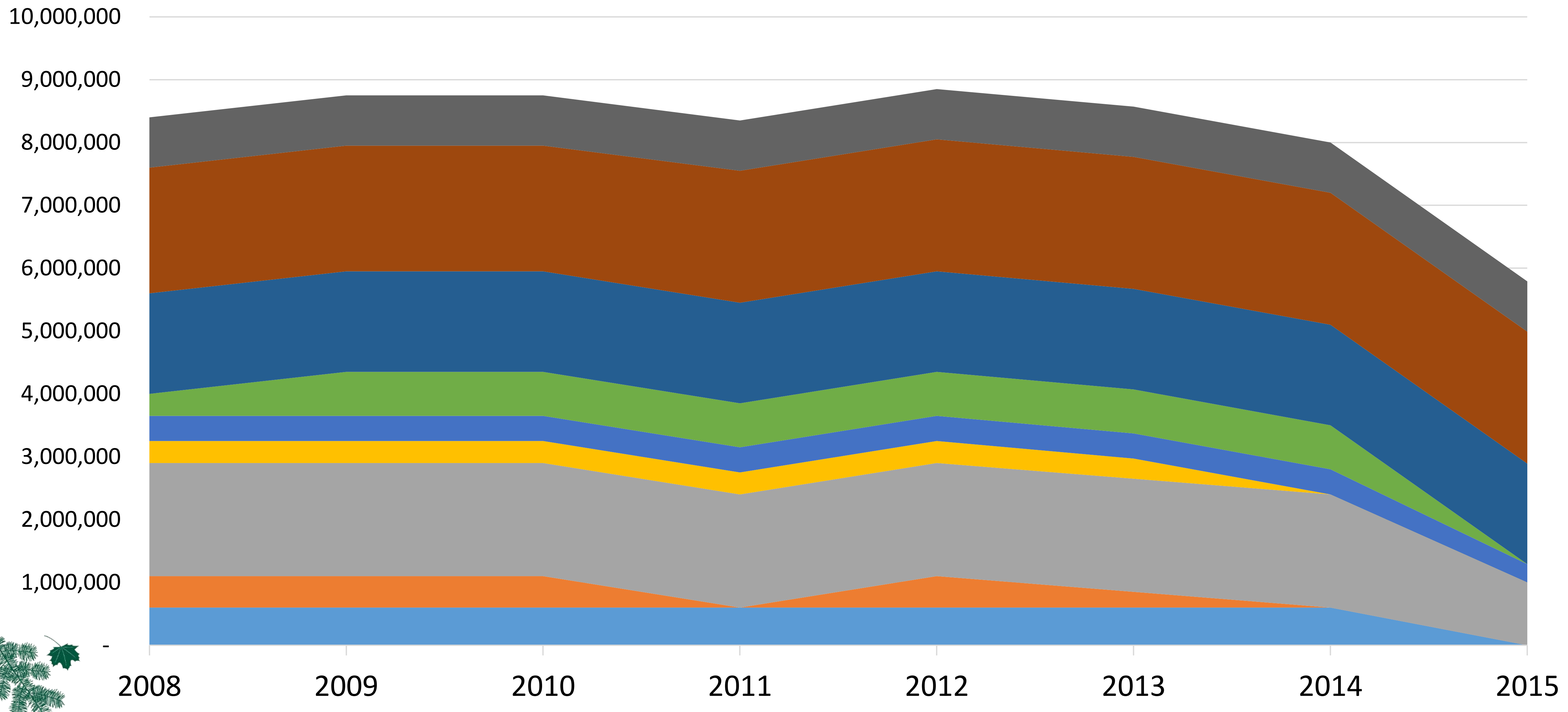
Statewide Average from Maine Forest Service - Stumpage Price Reports



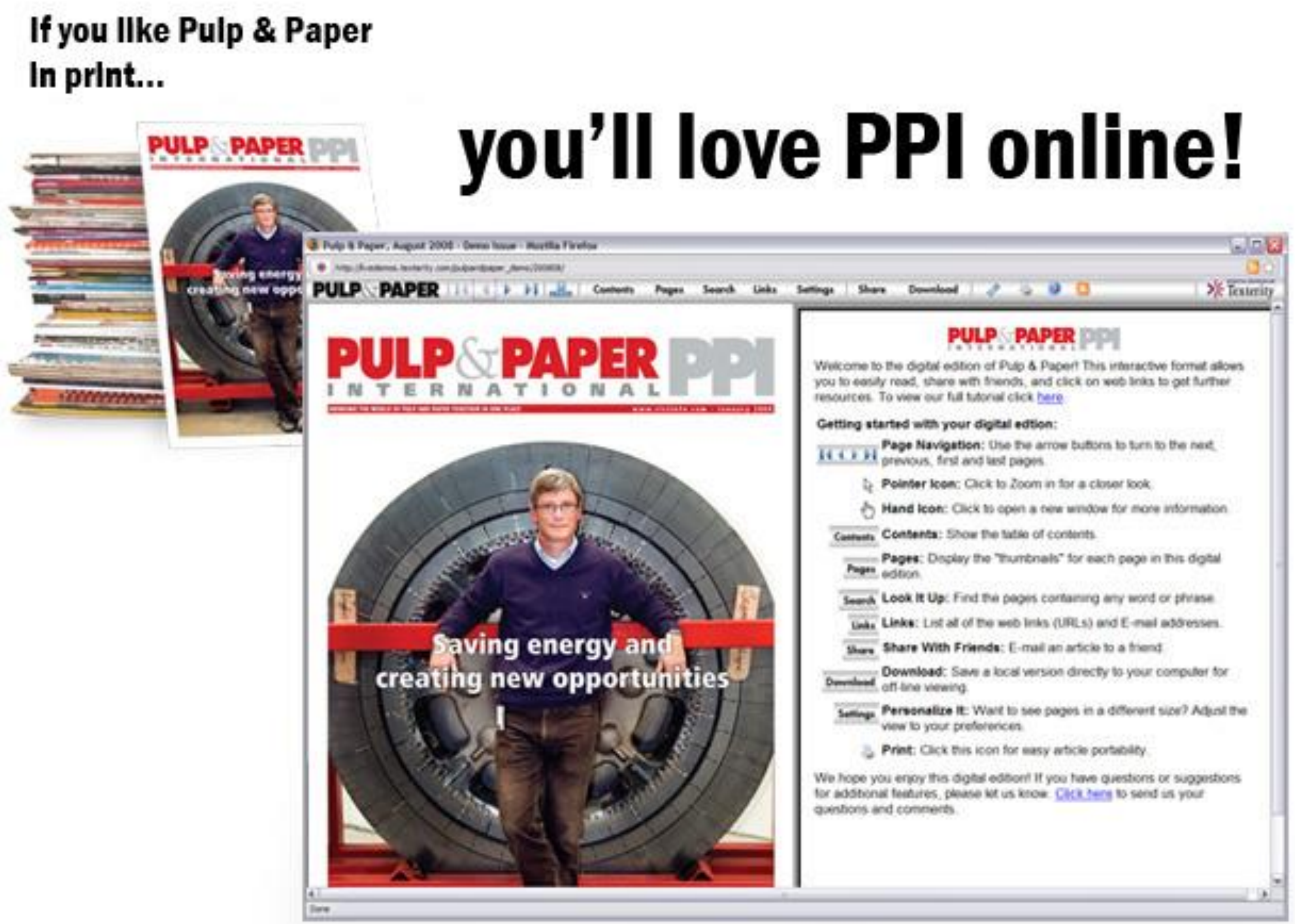
All figures in 2013 dollars, using the US Bureau of Labor Statistics CPI Inflation Calculator, http://www.bls.gov/data/inflation_calculator.htm

Estimated Pulpwood Consumption by Maine Pulp Mills

Estimates Based Upon INRS Data



Emails you never expected…



Key items from Verso bankruptcy filing

- Androscoggin Mill
  - Established 1965, about 500 employees (post-2015 layoffs)
  - Shut down one paper machine and one pulp dryer to deal with high operating costs (particularly winter costs)
  - Total *paper* capacity 470k tons (15% of Verso total)
  - Cost of Paper to Chicago (benchmarked)
    - Coated freesheet
      - Androscoggin 3rd lowest of 10 North American mills
      - Cost ~$600 / ton, Global average $879 / ton
    - Coated groundwood
      - Middle of the pack for North American mills
      - Cost ~$600 / ton, Global average $474 / ton

Key Items from Verso bankruptcy filing

Coated paper market

- Traditional markets face decline in key Verso grades
- "The coated paper industry faces long-term, structural decline"
- Driven by a move to digital in key markets (magazines, catalogues)

Total NA coated paper market decline 16% between 2010 - 2014

- A strong US dollar has increased imports
- Reduced market size and increased imports led to available market decrease of 8% between 2014 – 2015
- Total US paper demand (coated and uncoated) predicted to shrink by 3% 2015 – 2016
- Capacity reductions expected to continue (not specific to Verso or any company)

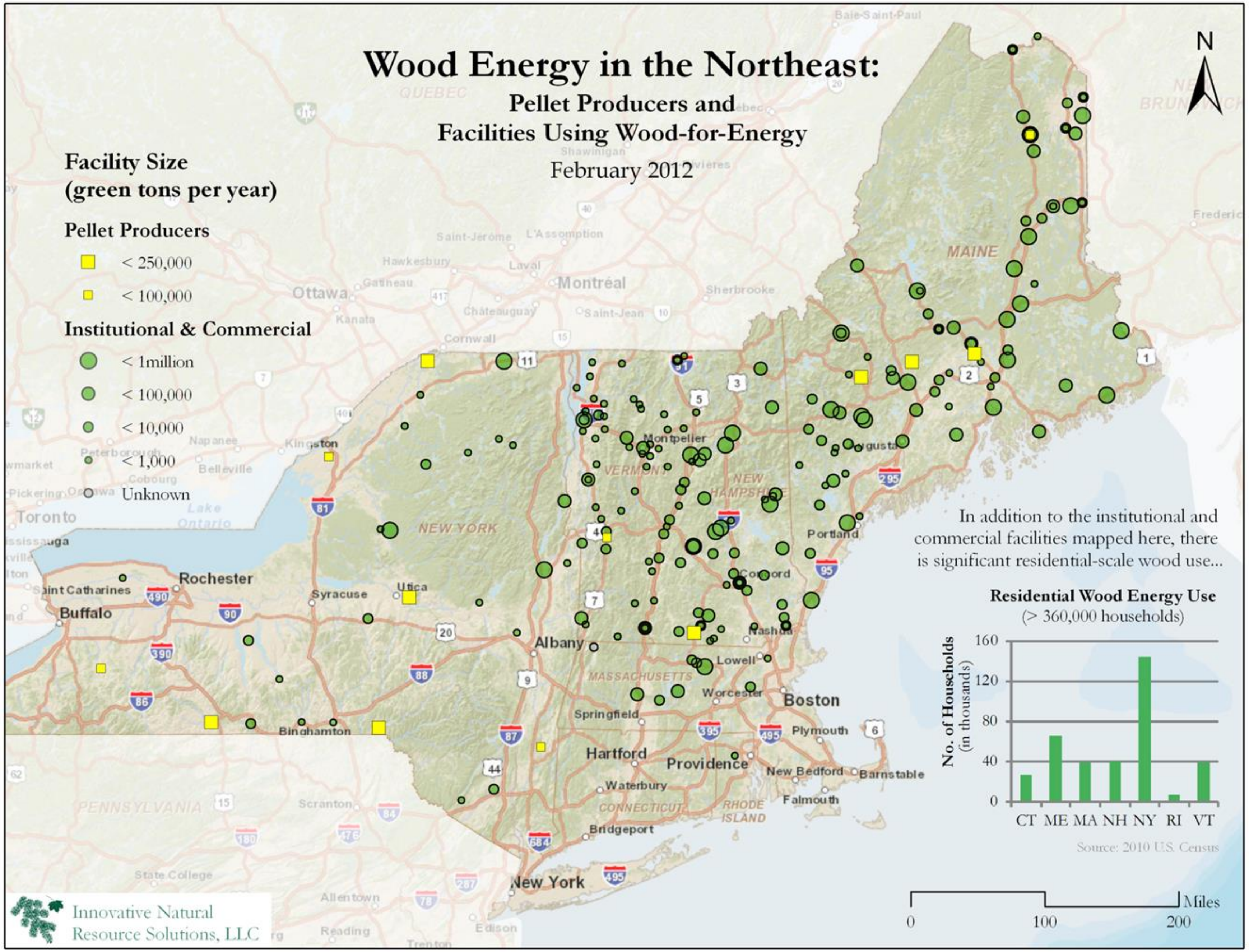
Pulp and Paper

- Pulp and paper mills remain Maine’s largest consumer of wood products, and represent significant fixed infrastructure.
- Mills produce a variety of products, including market pulp, dissolving pulp, communication papers (coated and uncoated), and tissue. Each of these markets is unique.
- The Northern American paper industry has been shrinking, both in output and capacity. Individual mills often do well, but new investment in production is extremely limited in the U.S.
- More turmoil to come, but Maine will remain a paper producing state for well into the future
- I expect reduced pulpwood consumption, and reduced prices for pulpwood (a bunch of factors in this one, not just demand).

Challenges to the Pulp & Paper Industry

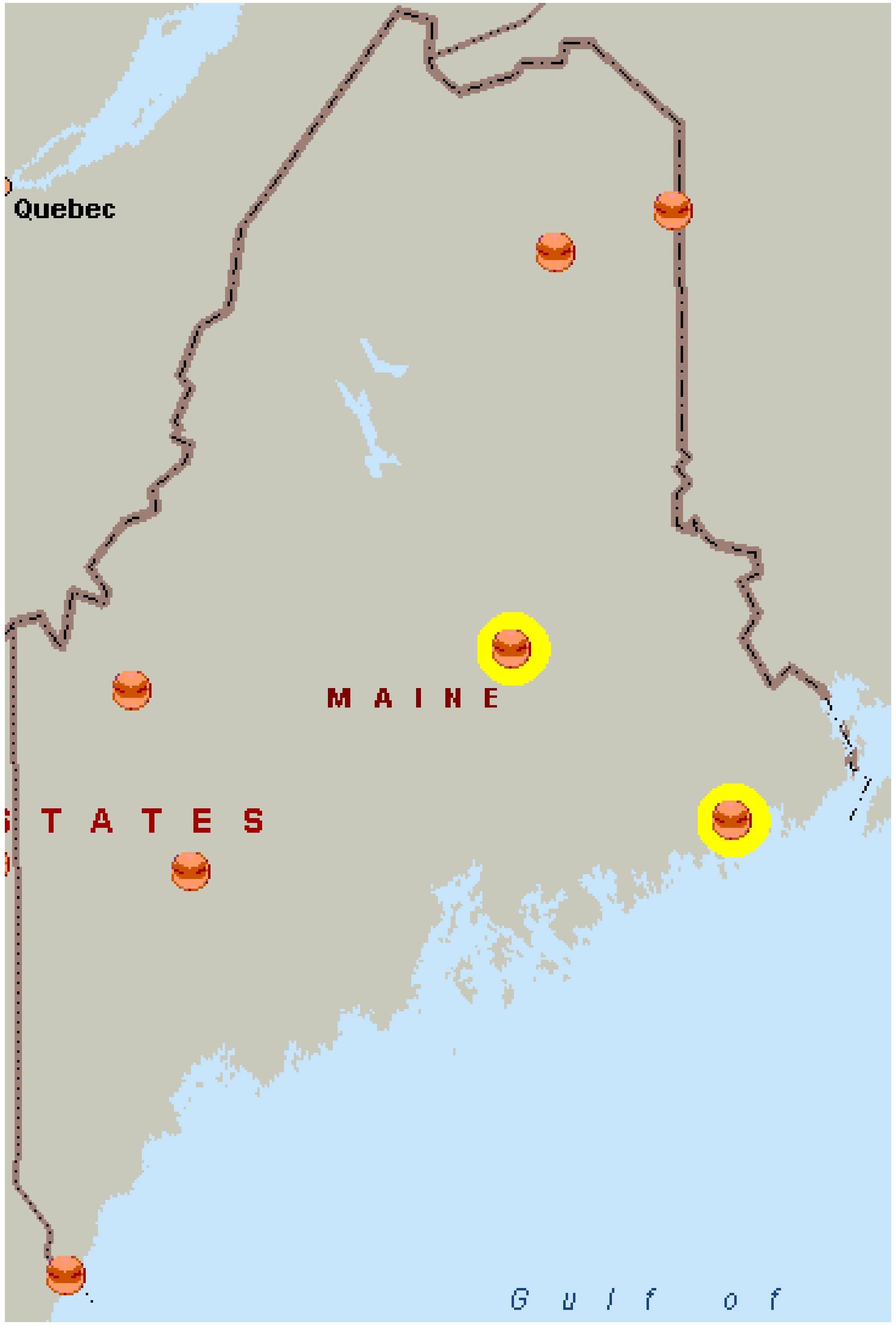
- You will hear
  - High taxes
  - High energy costs
  - High wood costs
  - And so on
- There are all very real, and present real challenges to the industry
  - Mills and regions now fighting over a shrinking pie
- They aren’t the fundamental issue, which is change in the marketplace, and a capital intensive industry that is hard to change with any reasonable speed

Biomass


Wood Energy in the Northeast:
Pellet Producers and
Facilities Using Wood-for-Energy
February 2012
Facility Size
(green tons per year)
Pellet Producers
< 250,000
< 100,000
Institutional & Commercial
< 1million
< 100,000
< 10,000
< 1,000
Unknown
In addition to the institutional and commercial facilities mapped here, there is significant residential-scale wood use...
Residential Wood Energy Use
(> 360,000 households)
No. of Households (in thousands)
160
120
80
40
0
CT ME MA NH NY RI VT
Source: 2010 U.S. Census
Miles
0 100 200
MAINE
NEW YORK
VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
CONNECTICUT
RHODE ISLAND
Boston
Albany
New York
Hartford
Providence
Portland
Innovative Natural Resource Solutions, LLC

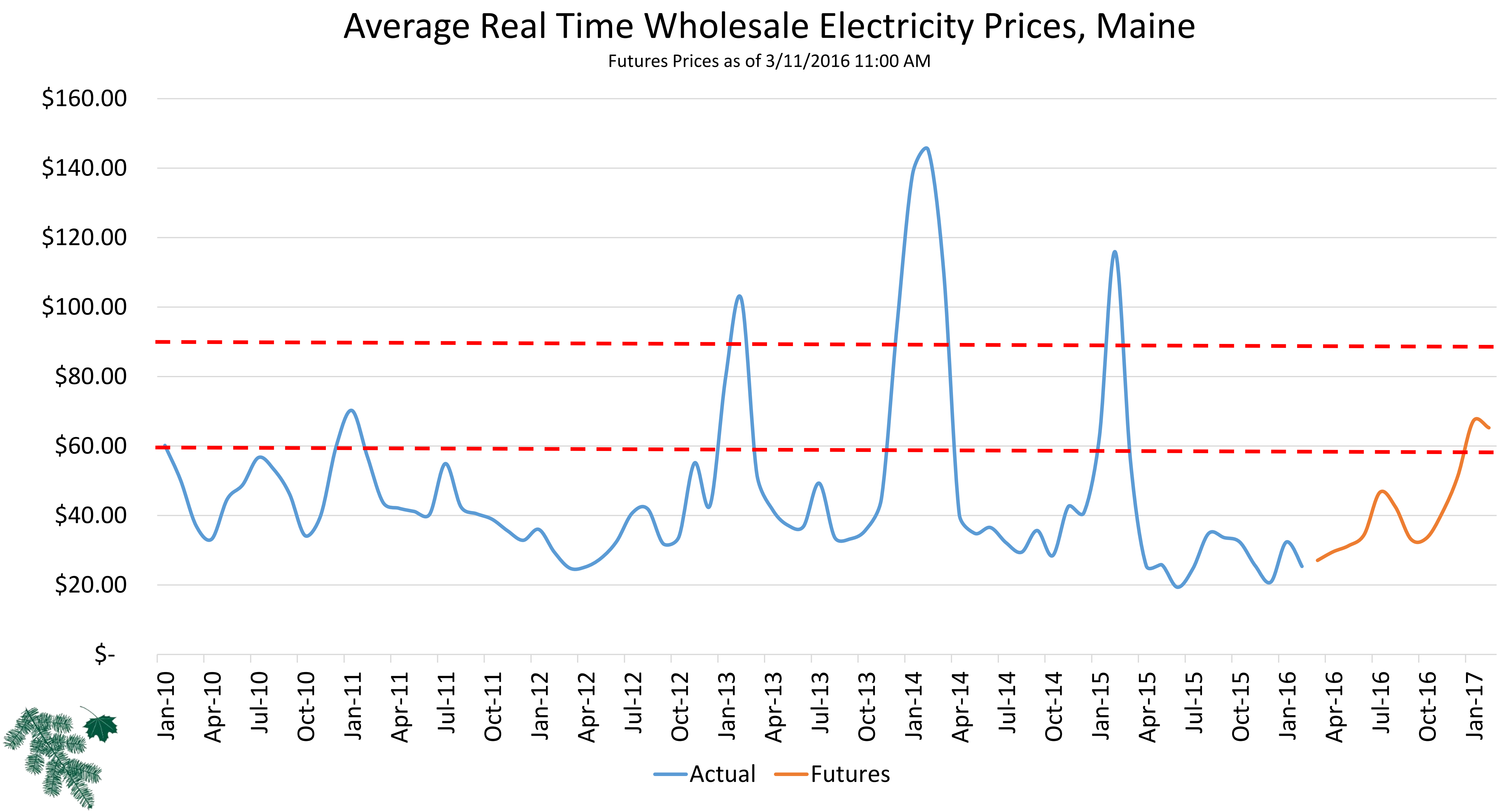
Biomass Electric Plants

- 4 plants owned by ReEnergy Holdings
  - Participate in CT REC market
- 2 plants owned by Covanta
  - Participate in MA REC market
  - Now disqualified from participation
  - (3-year phase-in to an unattainable standard)
- Plants in Portsmouth and Berlin, NH
  - Other places in NH as well, but these are the close facilities.



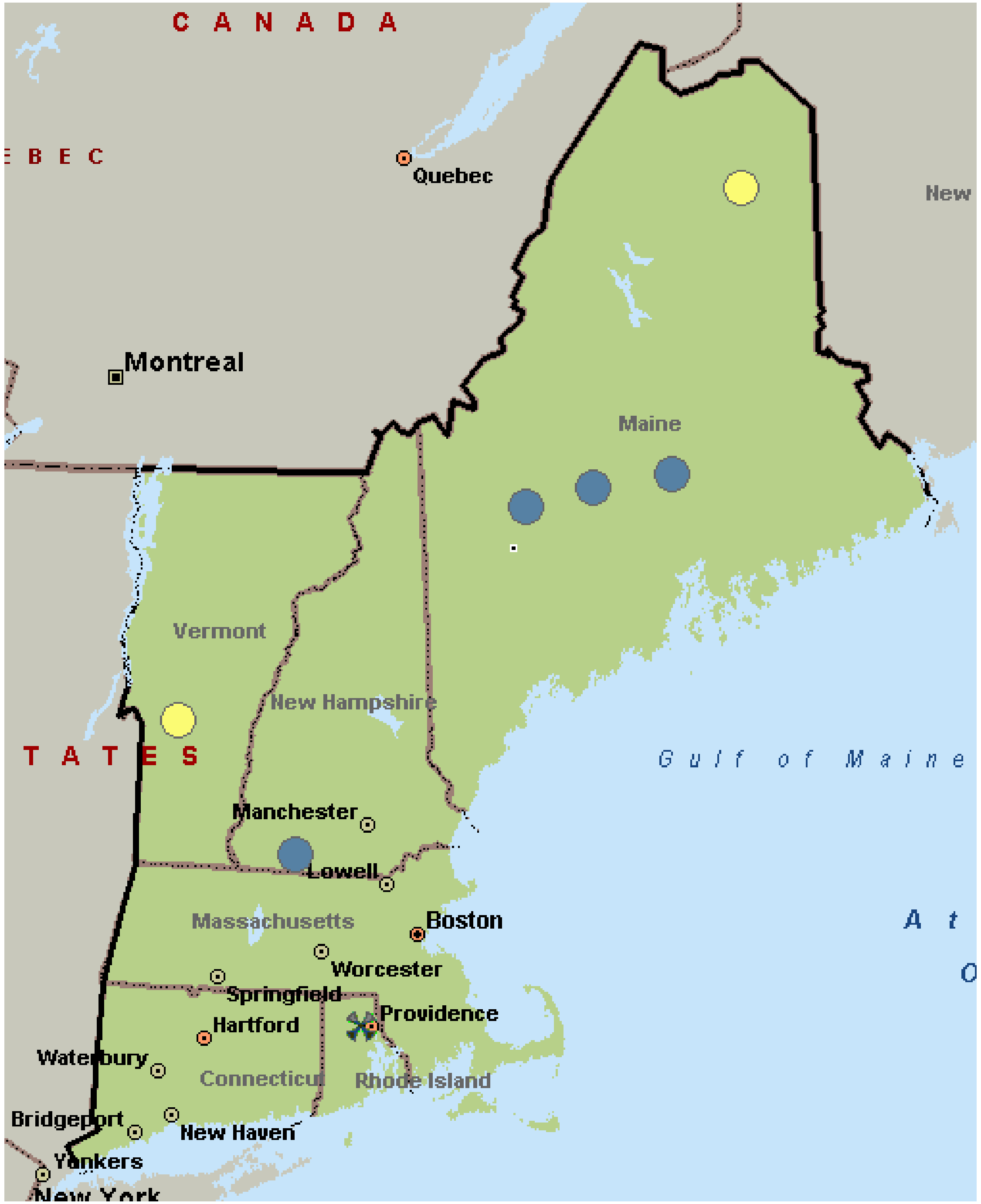
Biomass Electricity – Needs Support in Current Market

- ~1.7 green tons of fuel per MWh
  - That means if biomass fuel is $35 / tons, fuel cost is $59.50 per MWh
  - Add is staffing, consumables (emissions control), debt service, etc.
- Cost of generation (*absent profit*) is somewhere around $90 per MWh
- Plants need Renewable Energy Certificates (RECs) to operate economically
  - MA has effectively excluded stand-alone biomass (also a forestry standard)
  - CT has a phase-down for biomass beginning in 2018(?)
  - Biomass a huge economic boost to local regions, forestry
  - Only renewable with ongoing economic benefits
  - Apparently not as important to Southern New England as we would hope…


Average Real Time Wholesale Electricity Prices, Maine
Futures Prices as of 3/11/2016 11:00 AM
$160.00
$140.00
$120.00
$100.00
$80.00
$60.00
$40.00
$20.00
$-
Jan-10
Apr-10
Jul-10
Oct-10
Jan-11
Apr-11
Jul-11
Oct-11
Jan-12
Apr-12
Jul-12
Oct-12
Jan-13
Apr-13
Jul-13
Oct-13
Jan-14
Apr-14
Jul-14
Oct-14
Jan-15
Apr-15
Jul-15
Oct-15
Jan-16
Apr-16
Jul-16
Oct-16
Jan-17
Actual
Futures

Wood Pellets for Thermal Use

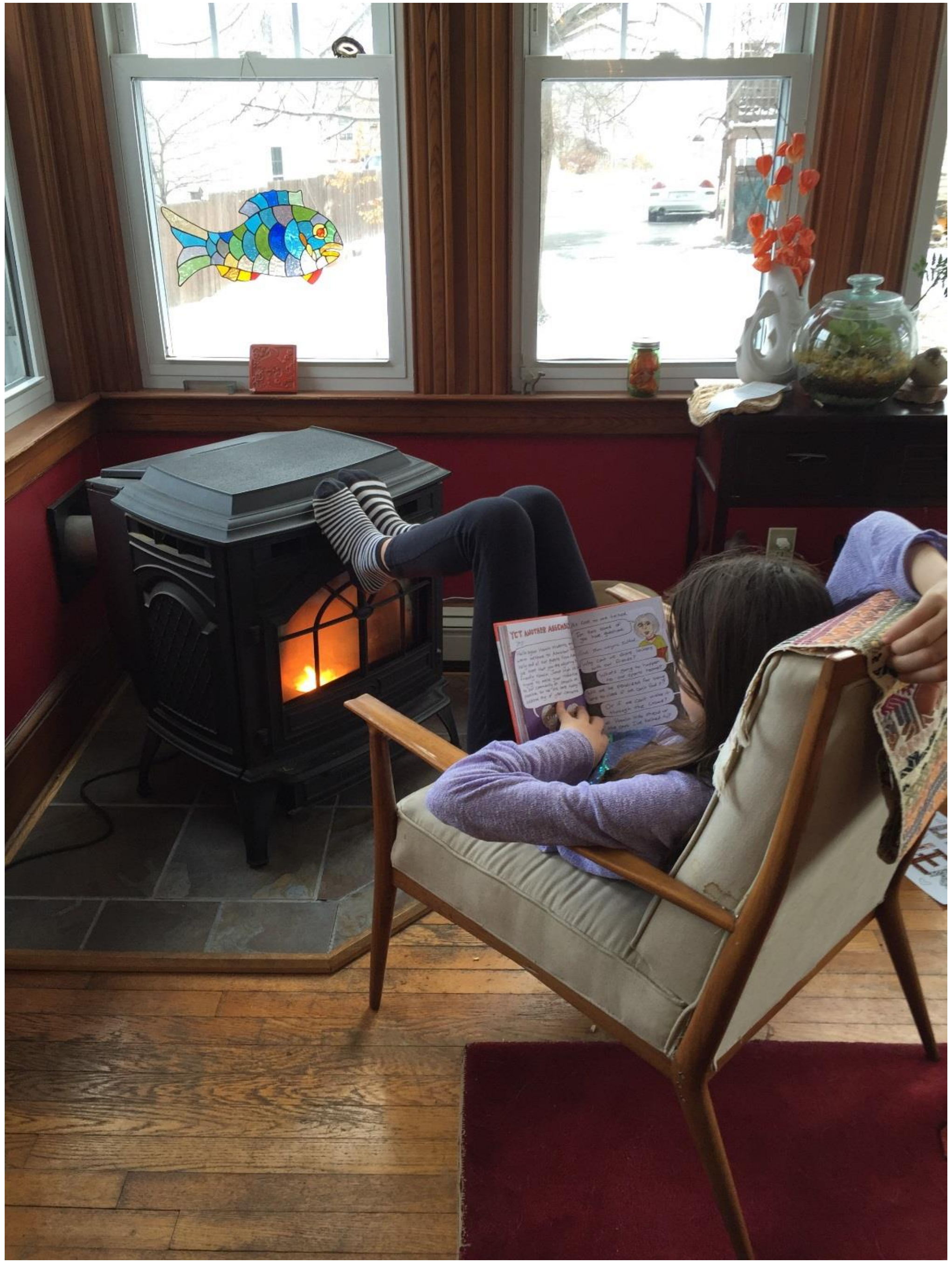
- Wood pellets used in thermal (heating) applications for homes and small businesses
- Can be as primary (boiler) or supplemental (stove) heat source in a home
- Cost competitive with oil (on a BTU basis)
  - Maine and Northeast highly dependent upon oil
  - *At this moment, not true* – pellets and oil about the same on a $ per MMBTU basis
- A primary issue in industry is developing downstream market (boilers, stoves) and encouraging customer adoption
- Development of projects at a near stand-still in the Northeast due to low price of oil



New England Pellet Mills

Capacity:

- 60,000 – 110,000 tons
- <30,000 tons



Wood Pellets Now Seeing Large-Scale Users
Jackson Laboratory, Bar Harbor, Maine

Maine's Forest Industry

- Incredibly diverse
- Well positioned for access to consumers
- Facing challenges and opportunities
- Enjoys broad support as an economic engine
- Will see mill closures, will see new industries
- Massive opportunity for energy products, if we can figure out how to capture and properly value (oil prices not helping)
- My crystal ball – more small / mid-sized facilities, reduction in large facilities
  - Big, capital-intensive projects are hard everywhere, very hard in Maine

My Crystal Ball (which can be very cloudy)

- A forest industry that is:
  - A little smaller
  - Working hard to hold on
  - New opportunities for small and mid-scale businesses
  - Innovating at the edges, and experiencing failures as part of the process

My Crystal Ball (which can be very cloudy)

- A public that:
  - Believes that the industry is dying
  - Wants to support the industry that remains
  - Views private land as something they have a right to access
  - Thinks that landowners should be incredibly generous and provide lots of services for free

My Crystal Ball (which can be very cloudy)

- A government that
  - Is reactive
  - Has a better rear view mirror than windshield
  - Would invent a time machine if it could
  - Is focused on protecting a mill or a sector, instead of industry health
  - *There is nothing unique to Maine about this – this is how the world works ("the future" is a very nebulous constituency)*

Forest Resources Association

- Promote the interests of forest products industry members in the economical, efficient, and sustainable use of forest resources to meet the needs of the wood fiber supply chain through private enterprise.
- Join me for dinner on the 1st Thursday of the month – *give me your email.*

About My Woods

Available on the iPhone
App Store

Available on the Android
App Store

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www.AboutMyWoods.org