

# FOREST2MARKET



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# A HISTORY OF POSITIVE CHANGE

- FOREST2MARKET TIMELINE**
- 2001: Stumpage Price Database Reports: US South
  - 2005: Price Forecasts: US South
  - 2006: Wood Raw Material Benchmarks & Supply Chain Analytics: US South
  - 2006: Analytics and Advisement Services for Forest Products Companies & Timberland Investors
  - 2007: Wood Raw Material Benchmarks and Supply Chain Analytics: Western US & Canada
  - 2008: Analytics and Advisement Services for Bioenergy, Biofuels and Biochemical Producers & Investors
  - 2009: Southern Yellow Pine Lumber Market Price Report & Benchmarks
  - 2012: Benchmarks and Supply Chain Analytics: Great Lakes Region of US & Canada
  - 2013: Benchmarks and Supply Chain Analytics: Eastern US & Canada
  - 2013: Benchmarks and Supply Chain Analytics: Forest2Market do Brasil
  - 2016: Benchmarks and Supply Chain Analytics: Scandinavia, Baltic States, Russia & Uruguay

Our customers make better-informed decisions and thrive because they have reliable and consistent measures of their performance compared to the broader market. Our commitment to deliver the most accurate, credible and quantitative market insight to our customers has never wavered.



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# FOREST2MARKET MARKET COVERAGE



The top left of the slide features a background image of a dense forest with tall, thin trees and a green forest floor. Overlaid on this image is the Forest2Market logo, which consists of a white circle containing a stylized green tree, with the text 'FOREST2MARKET' in white capital letters below it.

# FUNDAMENTAL DRIVERS FOR SOUTHEAST US

- Long Fiber (pine/conifer) demand growth
- Growth outside of North America
- Millennial behavior dampening housing demand
- Eroding hardwood fiber markets





**GLOBAL WOOD  
& FIBER SUPPLY  
CHAIN EXPERTS**

# LONG FIBER (PINE/CONIFER) DEMAND GROWTH



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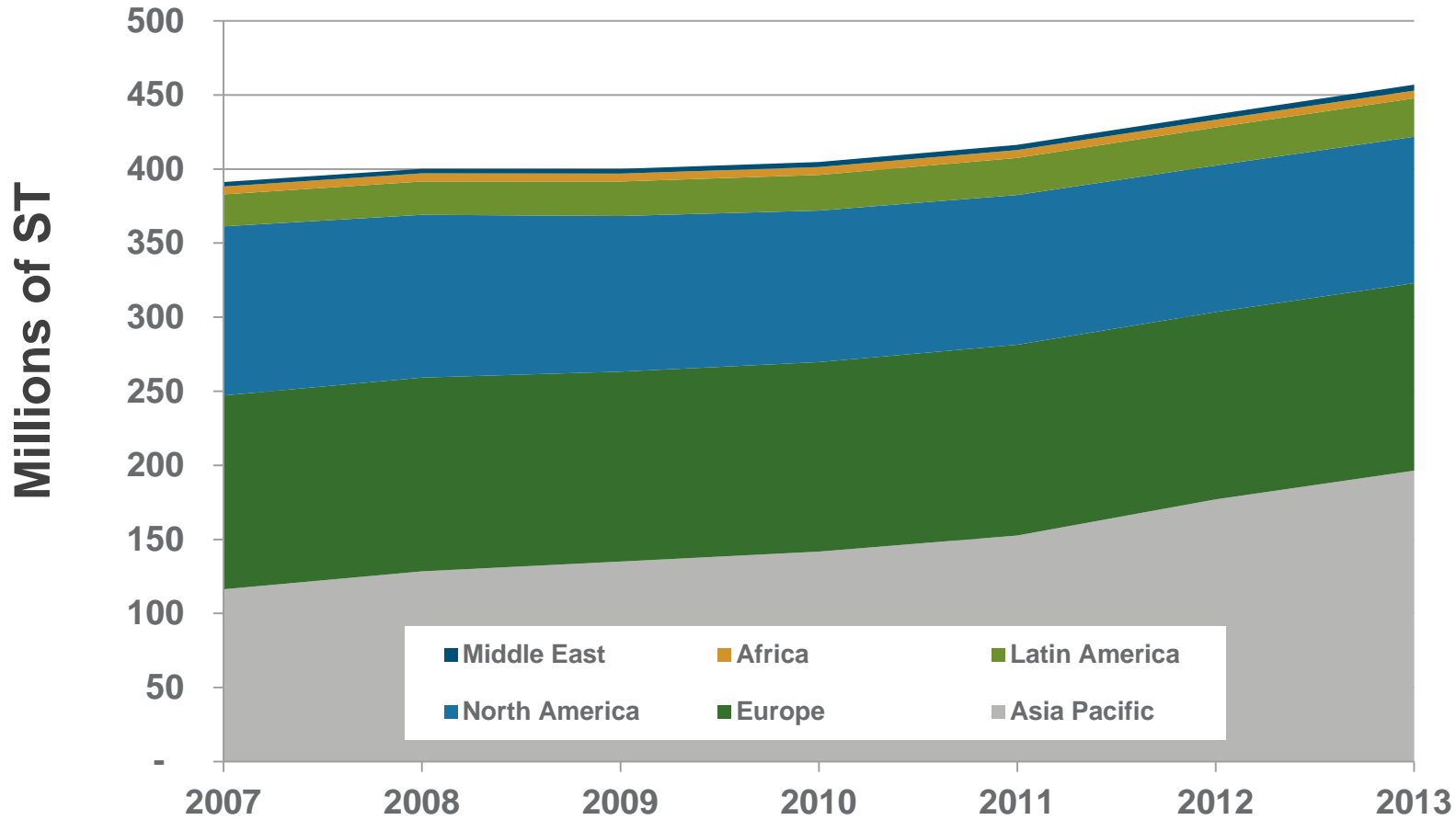


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# PAPER: A GROWING INDUSTRY

2.5% Annual Global  
Demand Growth

Global Paper Production = 450 million tons



*Courtesy of Fisher International*



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# NEW PELLET DEMAND: A SIGNIFICANT INCREASE SOFTWOOD FIBER DEMAND

## Forest2Market Global Pellet Forecast

Region (Type)	Year 2020 Pellet Demand (Million Metric Tons)
Europe (Industrial)	21.9
Europe (Heating)	14.8
Asia (Industrial)	5.6
North America (Heating)	5.3
Other	1.3
<b>Total</b>	<b>48.9</b>

## Forest2Market Pellet Production Allocation Model

Demand/Production (Year 2020)	Million Metric Tons
<b>Global Demand</b>	<b>48.9</b>
Less 80% of Asian Demand (Supplied by Asia and Western North America)	(4.5)
Less 50% of North American Heating Demand (Supplied by Northern US/Canada)	(2.6)
<b>Net Global Demand</b>	<b>41.8</b>
Less South Production (Operating + Construction, Year 2015)	(8.8)
Less Other Global Production (Operating, Current)	(17.9)
<b>Remaining Production Capacity Needed to Meet Global Demand</b>	<b>15.1</b>
Less Assumed Incremental US South Production Capacity (30% of Announced Projects)	(3.1)
Less Assumed Other Incremental Global Production Capacity (30% of Current Other Global Capacity)	(6.0)
<b>Potential Incremental Production Capacity from US South</b>	<b>6.0</b>

= 6.0 remaining  
for US South

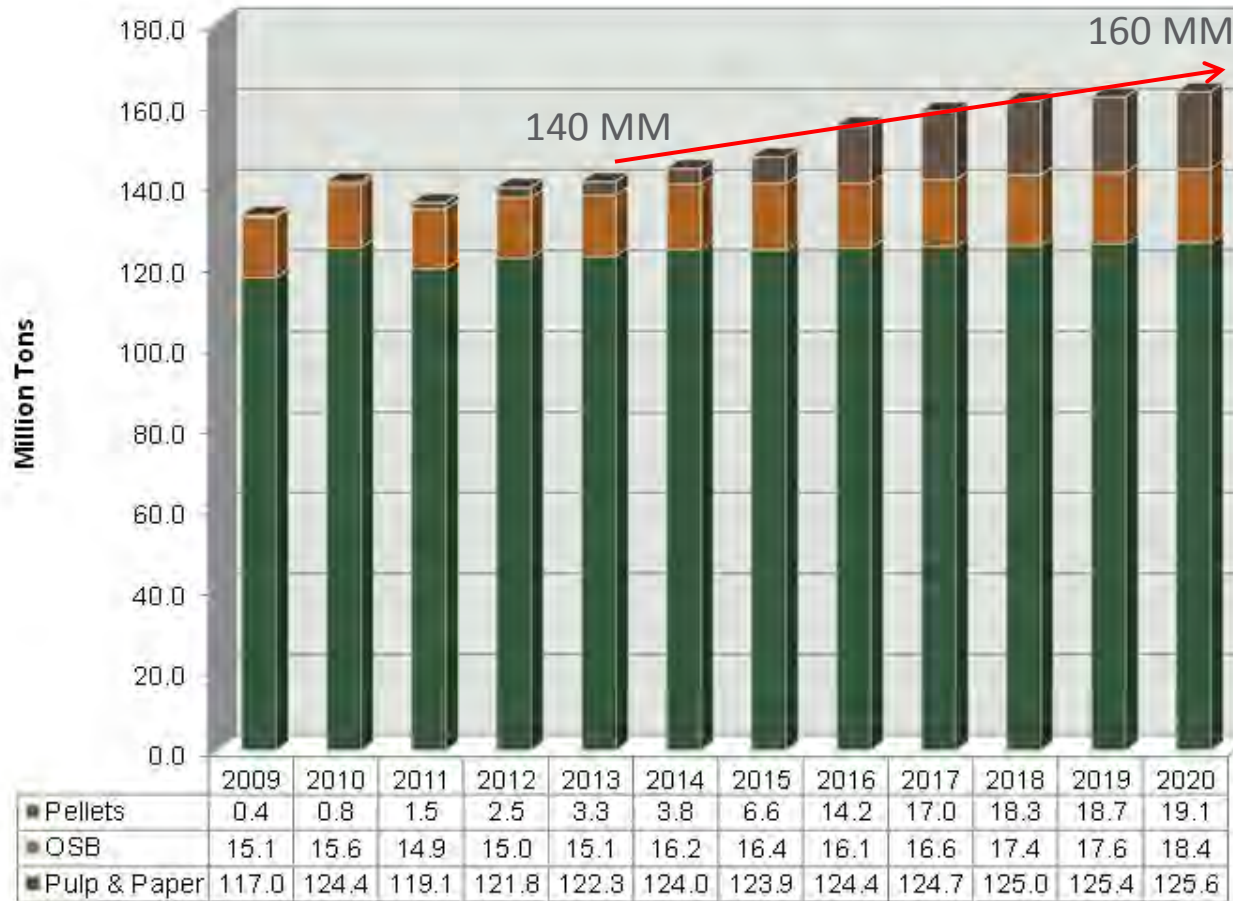
= 12 million tons  
of fiber





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# STRONG PULP DEMAND: PLUS OSB REBOUND COUPLED WITH AGE CLASS SQUEEZE, DRIVES FIBER PRICES HIGHER



Expect pellet demand to add  
another 10-15 million tons of pine  
pulpwood demand by 2020.

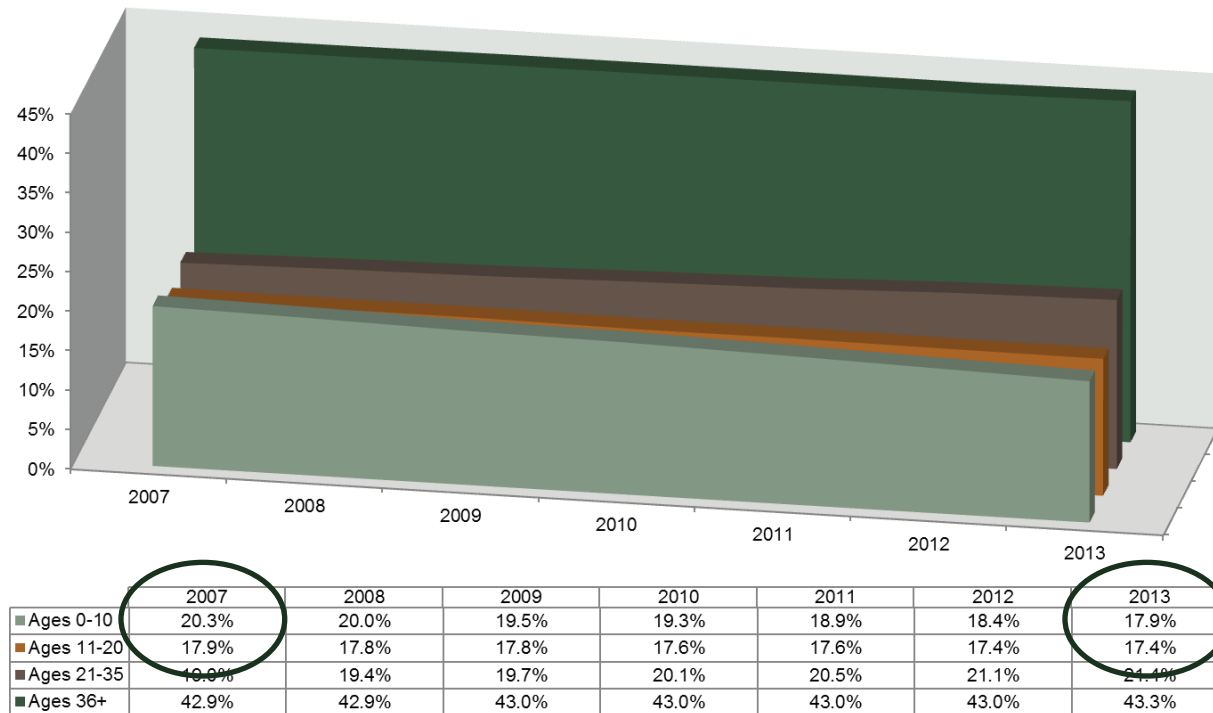




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# STRONG PULP DEMAND: PLUS OSB REBOUND COUPLED WITH AGE CLASS SQUEEZE, DRIVES FIBER PRICES HIGHER

**US South Acres by Age Class 2007 - 2013**  
(US Forest Service - Forest Inventory Analysis)



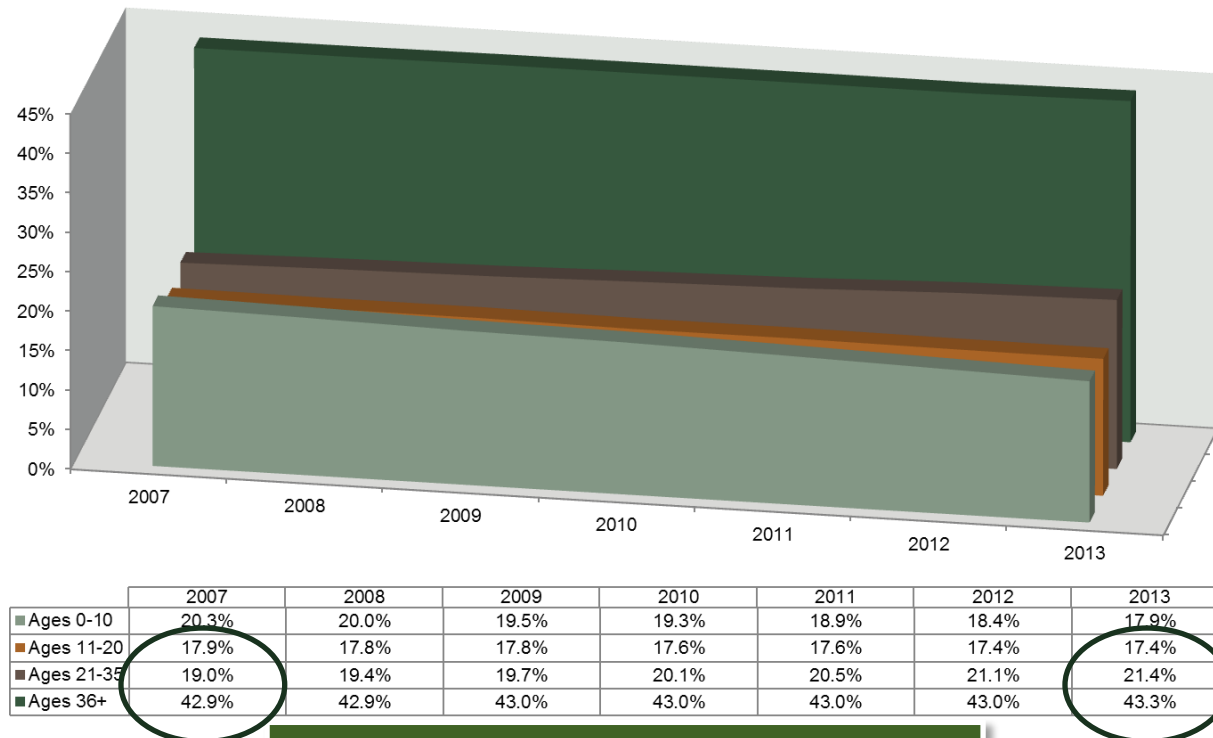
Young pine acres are diminishing,  
driving down effective supply.



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CHAIN EXPERTS**

# GROWTH OUTSIDE OF NORTH AMERICA



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# GROWTH IN DEMAND BY GRADE & MARKET

	Africa	Asia Pacific	Europe	Latin America	Middle East	North America	Global
Market Pulp	1.00%	4.55%	-0.97%	7.80%		-0.48%	2.38%
Newsprint	-8.25%	1.09%	-2.93%	-2.55%	1.18%	-6.49%	-2.99%
Packaging	3.19%	8.50%	1.22%	3.76%	7.73%	-0.26%	4.02%
Printing and Writing	-0.75%	4.95%	-1.45%	0.00%	2.26%	-4.20%	0.13%
Specialties	3.93%	8.93%	-1.47%	-2.47%		0.13%	1.81%
Tissue and Towel	8.34%	12.01%	2.56%	3.92%	9.86%	0.37%	6.18%

Four green arrows point upwards from the top of the table to the Asia Pacific, Latin America, and Middle East columns. Two red arrows point downwards from the bottom of the table to the Europe and North America columns.





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# POPULATION GROWTH IS FAR FROM NORTH AMERICA



+1.2 billion; 4-7% GDP

## BY 2050



+125 million; 2-4% GDP



+400 million; 7% GDP



-34 million; 7% GDP

Increasingly urbanized  
population (1.3 billion)  
will drive consumption.



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& FIBER SUPPLY  
CHAIN EXPERTS**

# MILLENNIAL BEHAVIOR DAMPING HOUSING DEMAND



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# MODEST POPULATION GROWTH AT HOME



BY 2050

+70 million; 2-3% GDP

Theoretically should add 350-450,000 new single family starts annually to baseline, but.....

# MILLENNIALS: 92 MILLION BETWEEN 15-35



- Peak home buying years – 25-45 years
- Marriage
  - 1970 – 23 years old
  - 2010 – 30 years old
- Married and own a home (18-31 years)
  - 1968 – 56%
  - 1981 – 43%
  - 2012 – 23%
- Urban Centric
- 93% want to own their own homes, but the financials may not make sense:
  - 41% work full-time
  - 50% have less than \$5,000 in savings
  - Average student loan debt \$33,000





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# HOUSING MARKET HAS REBALANCED

**Housing Starts - Actual vs. F2M Predictive Model  
2000-2015**



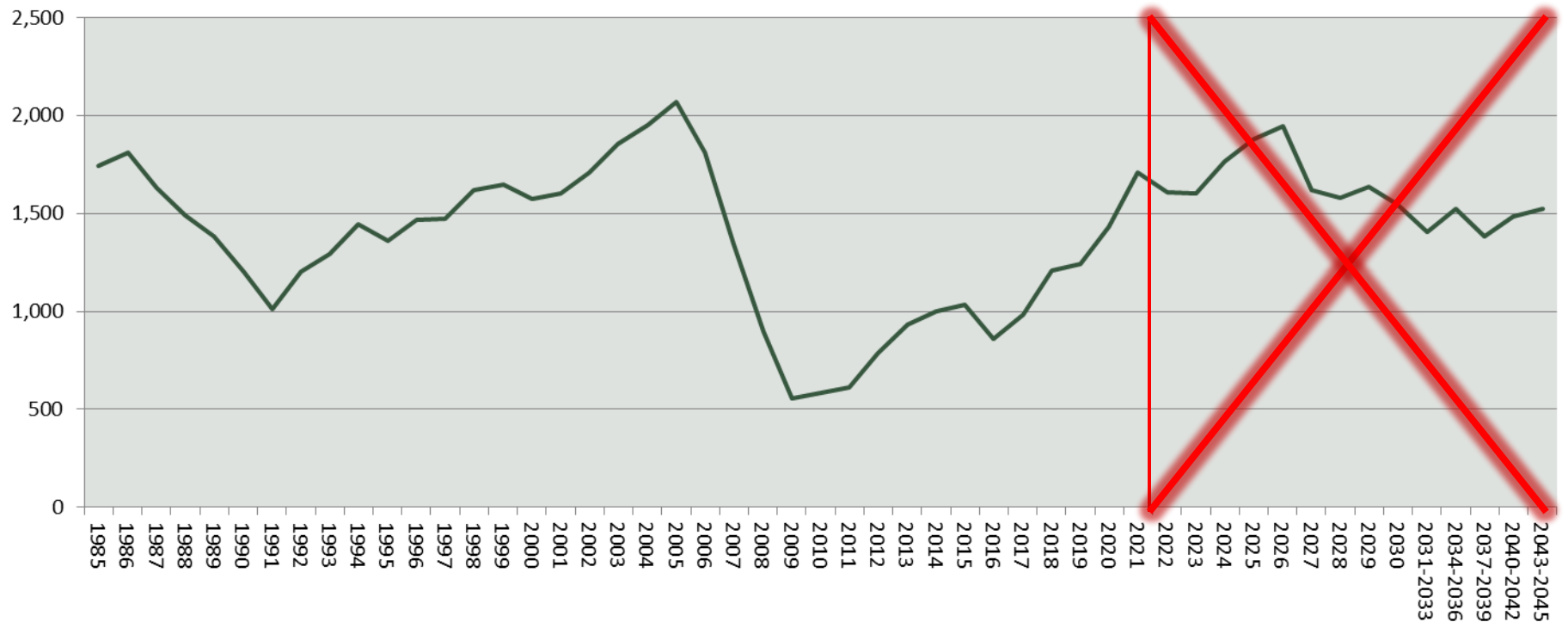
Building about as many houses that can be sold – very healthy market



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# HOUSING MARKET FORECAST

**Forest2Market Housing Starts Forecast**

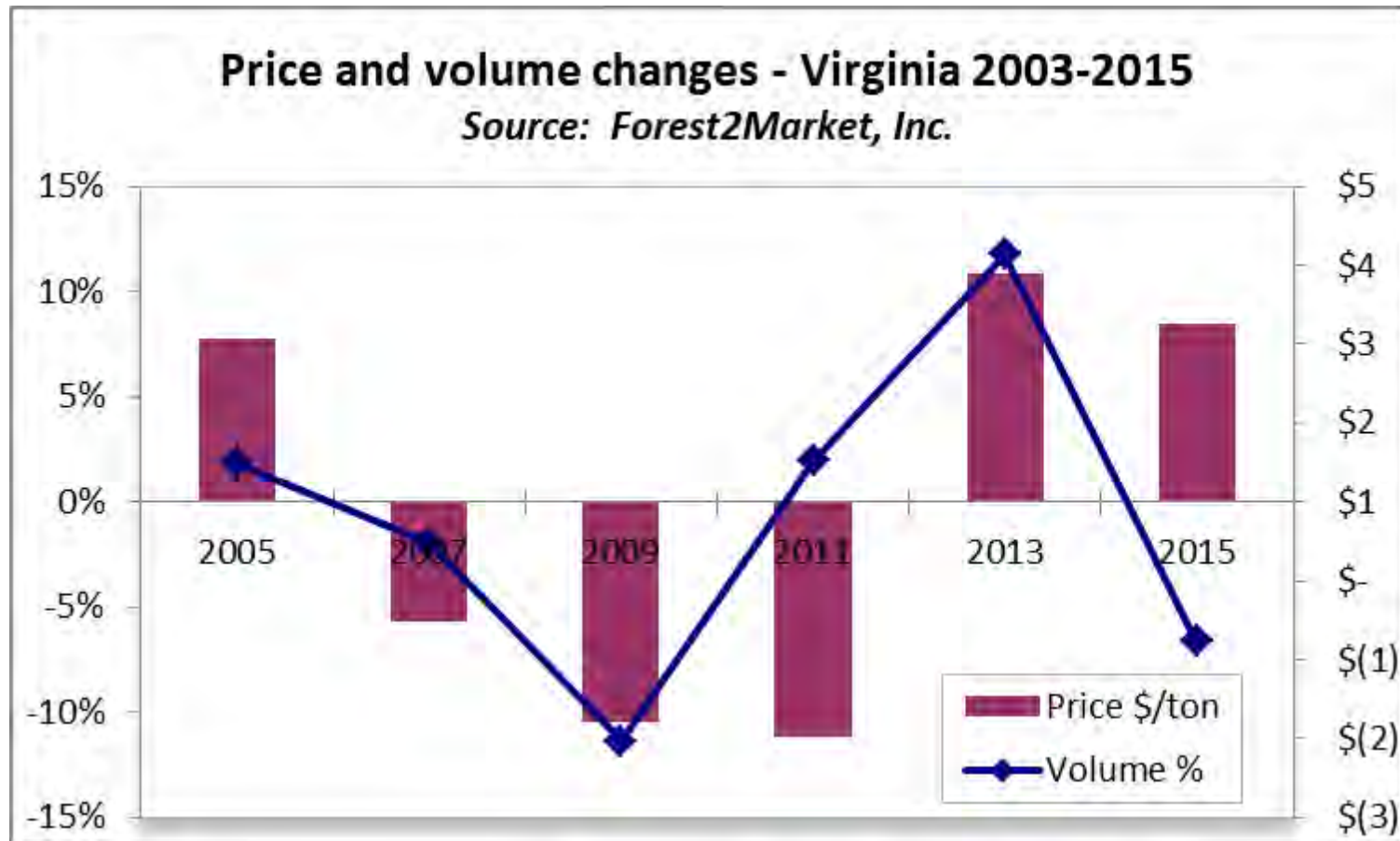






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# VIRGINIA HAS RECOVERED

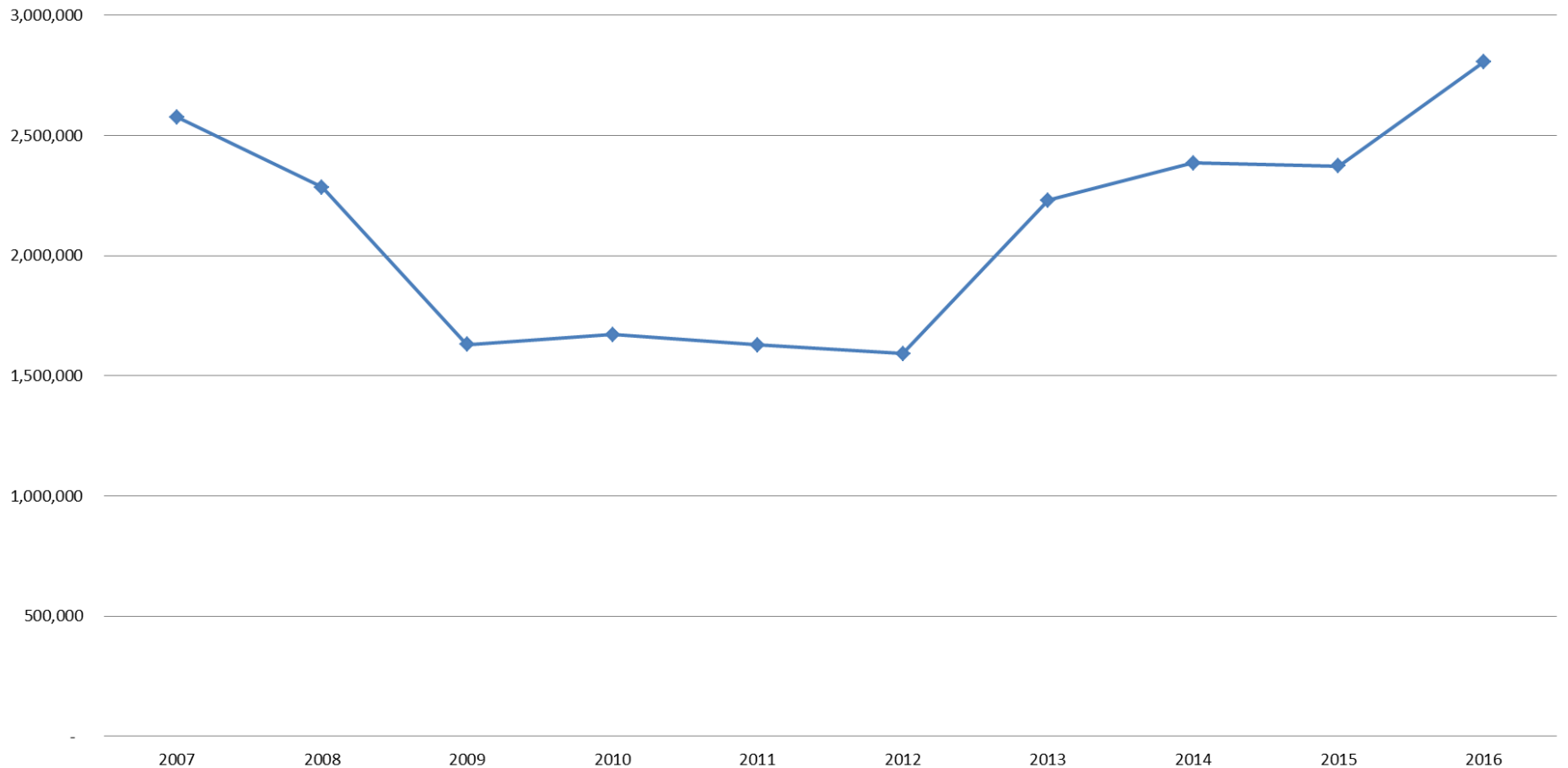




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# PRODUCTION HAS RETURNED

Virginia - Pine Sawtimber



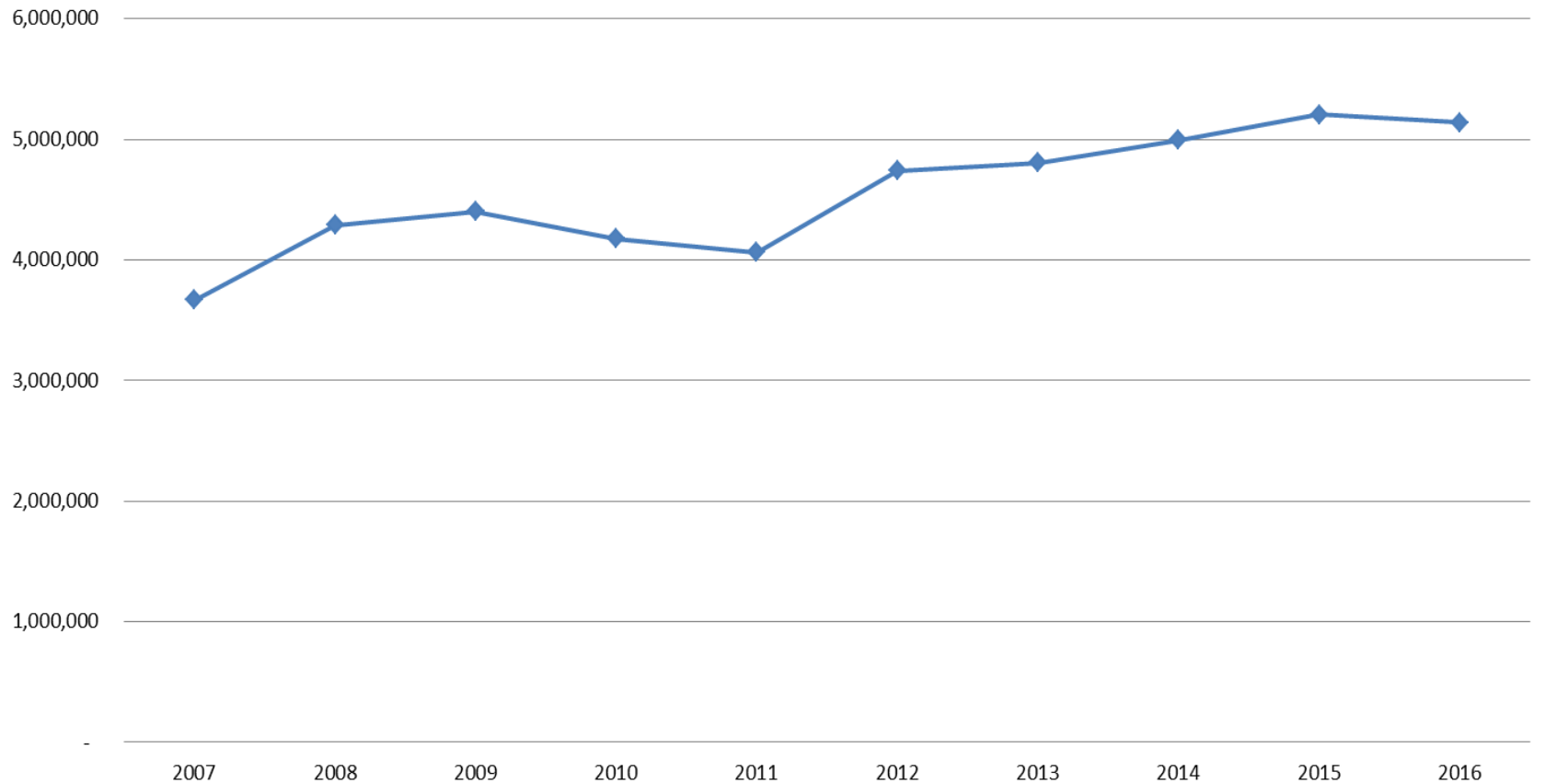




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# STRONG LINERBOARD AND FLUFF PULP PRODUCTION

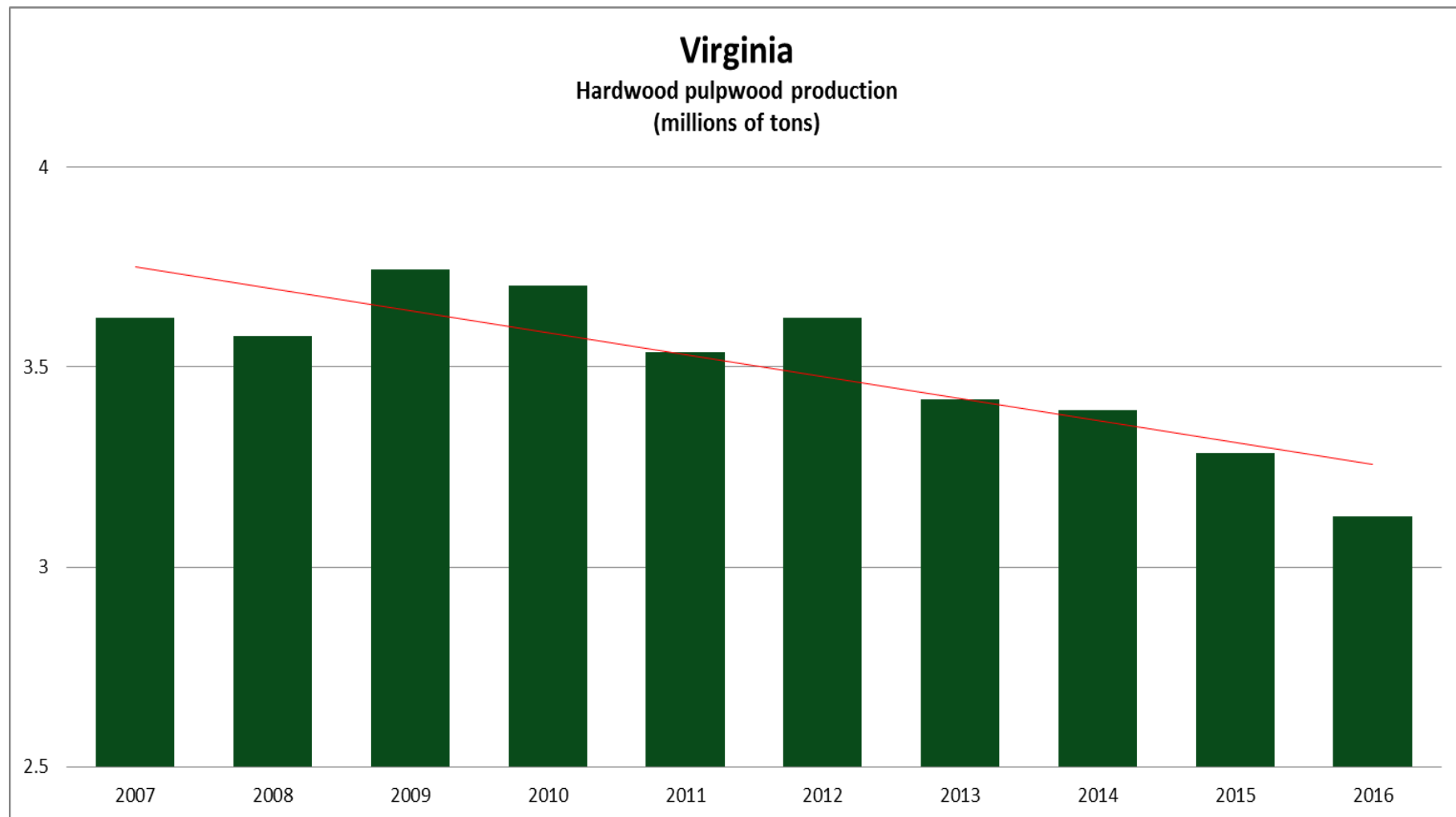
**Virginia - Pine Pulpwood Production**





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# HARDWOOD PULPWOOD PRODUCTION IS DOWN



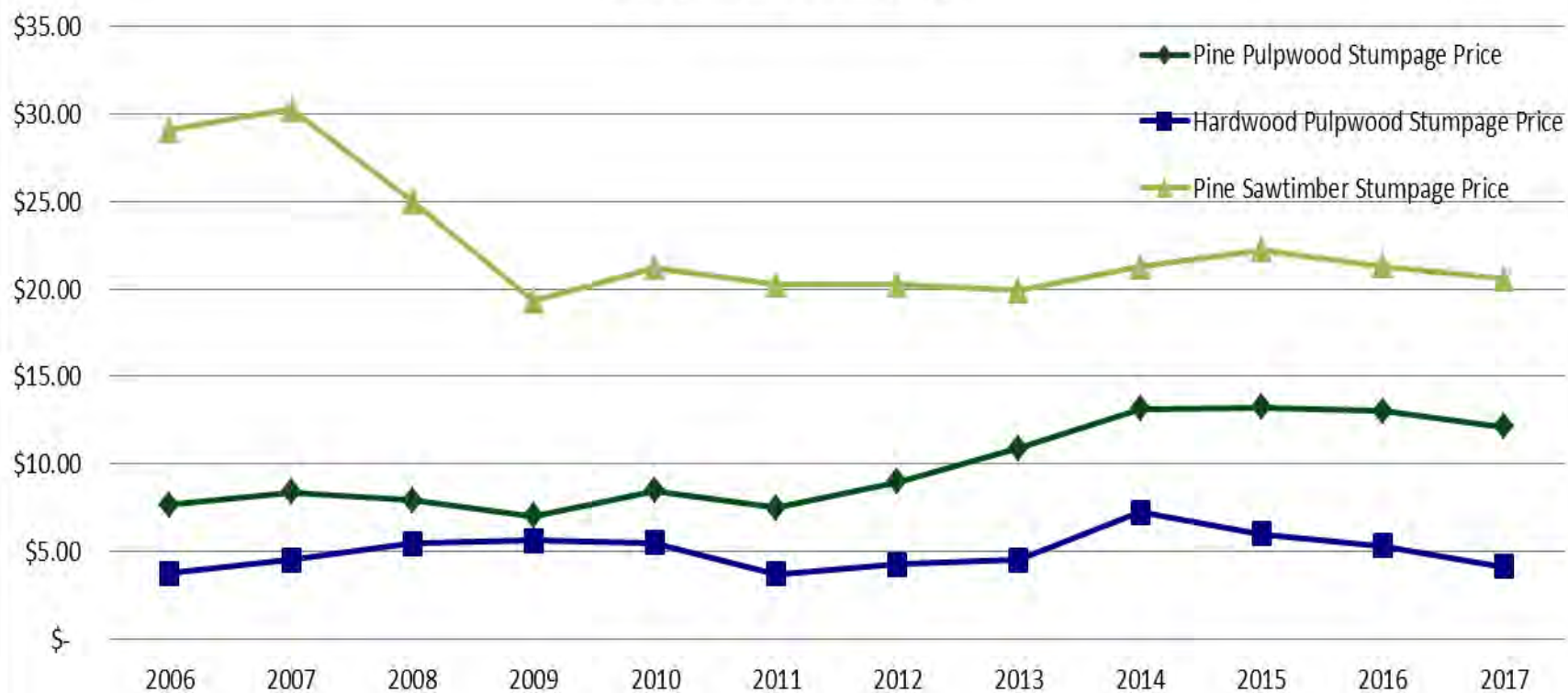




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# STUMPAGE PRICES

## Virginia - Stumpage

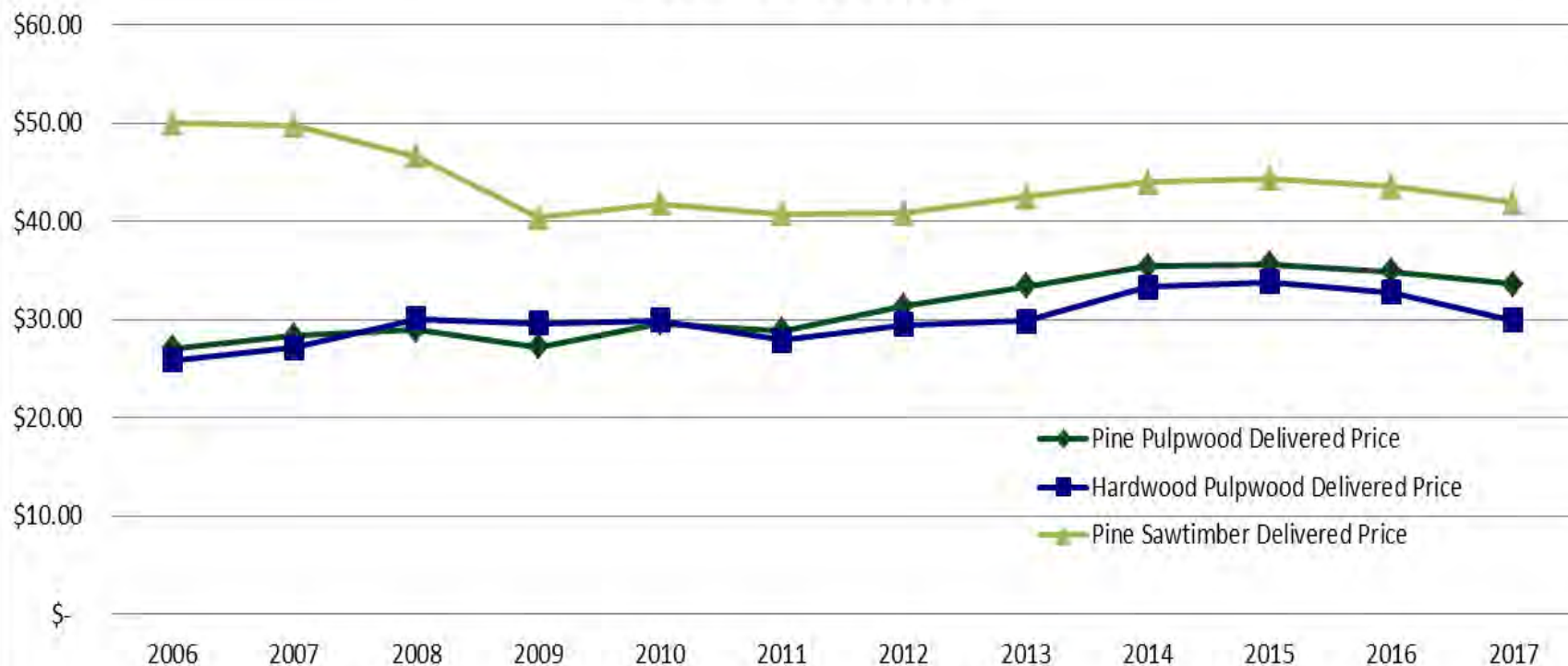




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# DELIVERED COST

## Virginia - Delivered



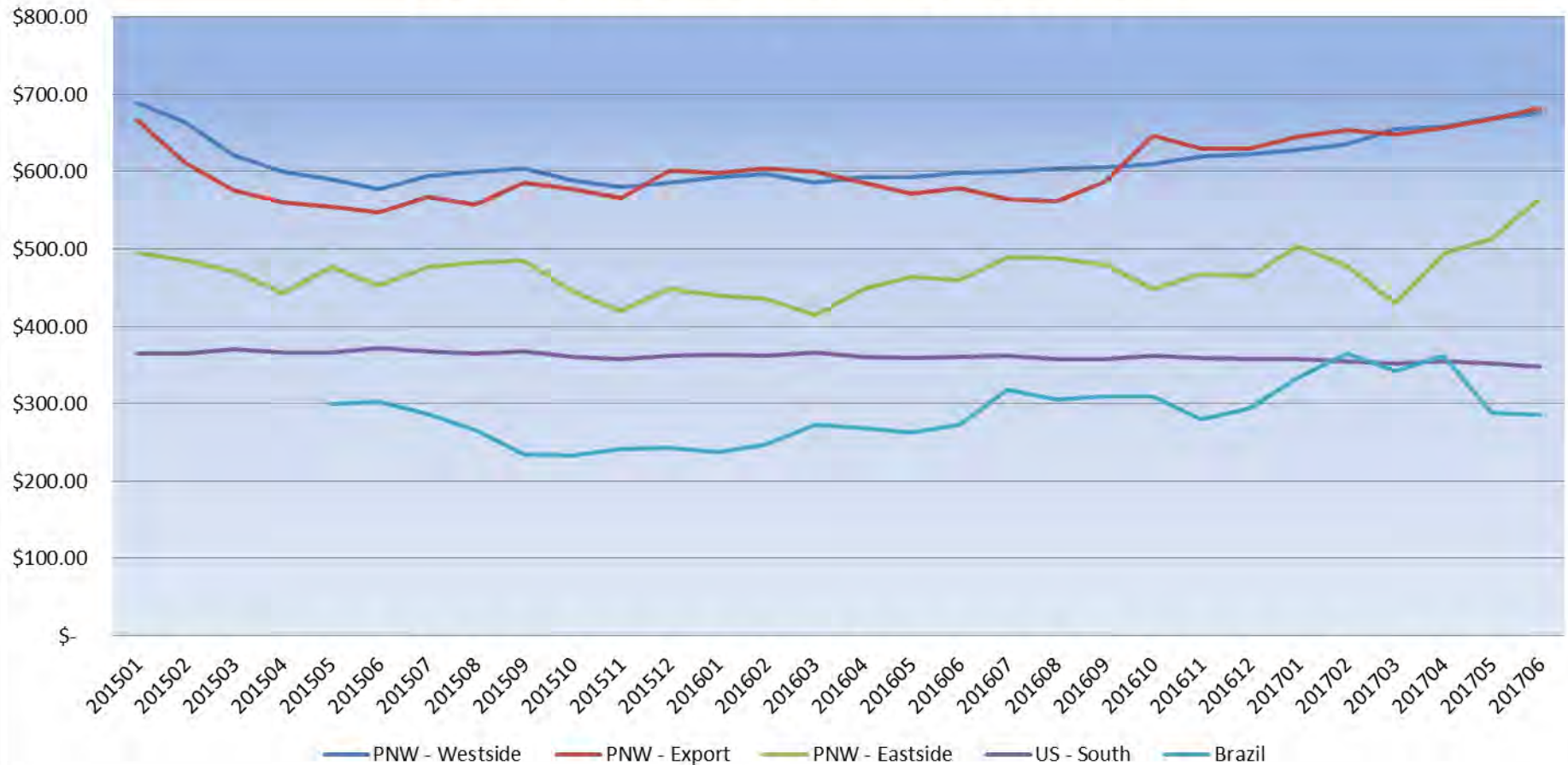




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# US SOUTH GLOBALLY COMPETITIVE

## Forest2Market Sawlog Comparison by Region





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# US SOUTH COMPETITIVE

**Global Conifer Wood Fiber Prices  
Western Hemisphere - Quarterly**







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# CAPITAL FLOWS TO THE SOUTH

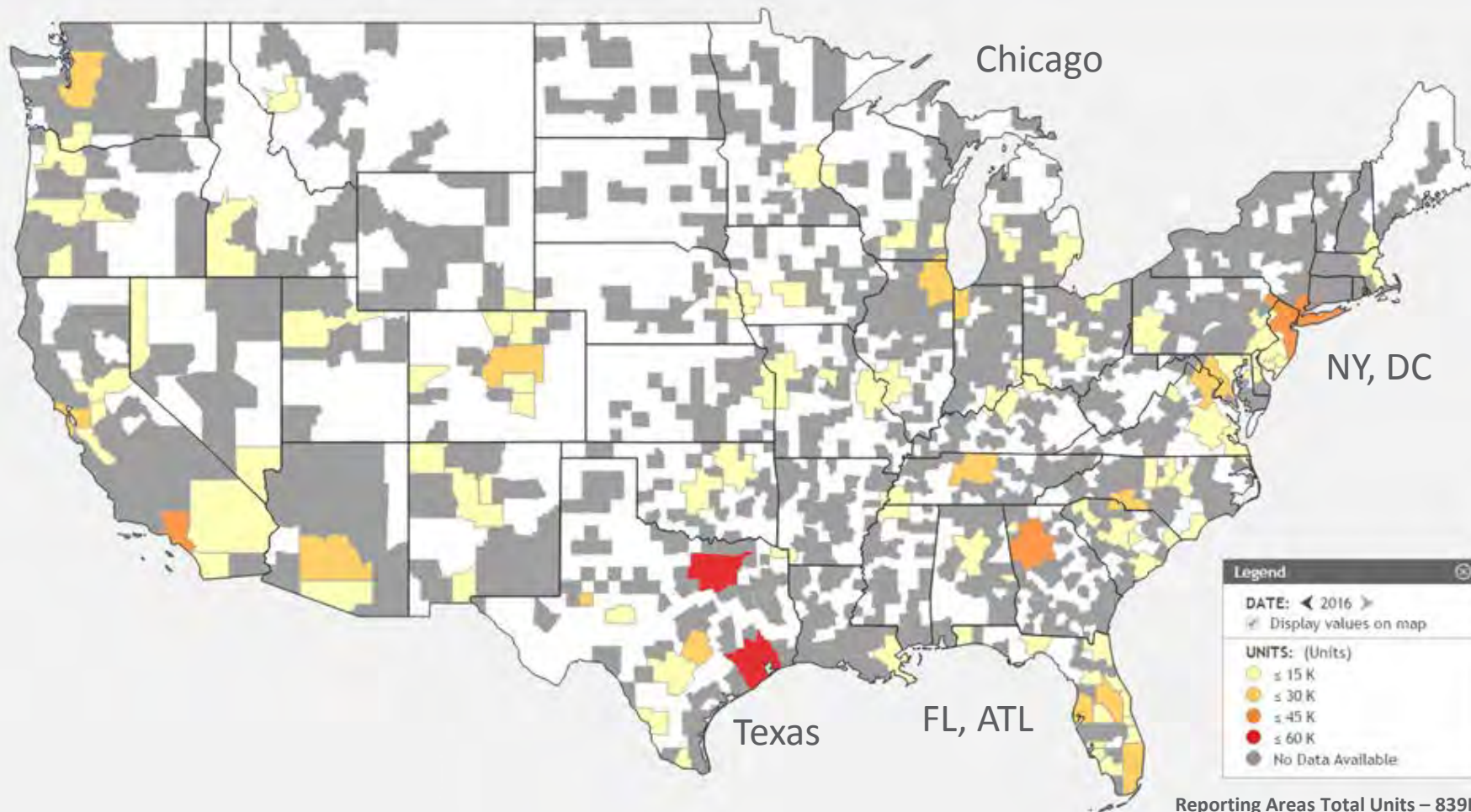
Lumber	US South Pacific NW	
Product Revenue	\$368	\$313
Residuals Revenue	\$53	\$72
Total Revenue	\$420	\$385
Log Cost (\$/ton)	\$41	\$76
(\$/mbf)	\$312	\$505
Recovery (MBF/ton)	4.3	4.1
(MBF/MBF)	1.8	2.3
Log Cost-Lumber Basis (\$/mbf)	\$175	\$223
Mfg Cost	\$135	\$135
Gross Margin	\$110	\$26
Sales, G&A	\$12	\$12
Operating Margin	\$98	\$14
(percent)	27%	5%



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# 2016 METROPOLITAN AREA HOUSING STARTS

2016 New Private Housing Units Authorized by Building Permits by Metropolitan Statistical Area (units)



Reporting Areas Total Units – 839K





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# SLA AND CONSOLIDATION

- Softwood lumber (dis)agreement will
  - Spark imports from Europe – appropriate SFP replacement
  - Some upward price pressure on SYP which in turn incent more sawmill investment
  - Attract foreign capital into South
- Consolidation will continue
  - Canada and Europe will play part
  - Supply chain last to consolidate



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# TRUMP-ENOMICS

- Promise of less regulation and lower taxes – positive for all industries
- Marginal effect on imports
  - Softwood Lumber Agreement
  - Brazilian plywood
  - Hardwood market kraft – BR and Chile
- Better economy means more immigration, not less and higher labor cost
- Higher GDP, the better
  - Promise of 4% is unrealistic given labor pool and productivity
  - 2-3% - we are walking on water



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## OUTLOOK FOR SOUTH

- Ample supply of pine pulpwood and sawtimber will keep stumpage prices dampened
- Housing demand that disappoints
- Healthy and profitable solid wood industry (production and consumption match)
- New sawmill capacity (700 MMBF) may dampen lumber prices, but not move sawtimber prices – only 50MMBF in VA
- Eroding hardwood fiber markets put pressure on landowners and suppliers alike





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