Mass Timber and North American Lumber Supply Dynamics

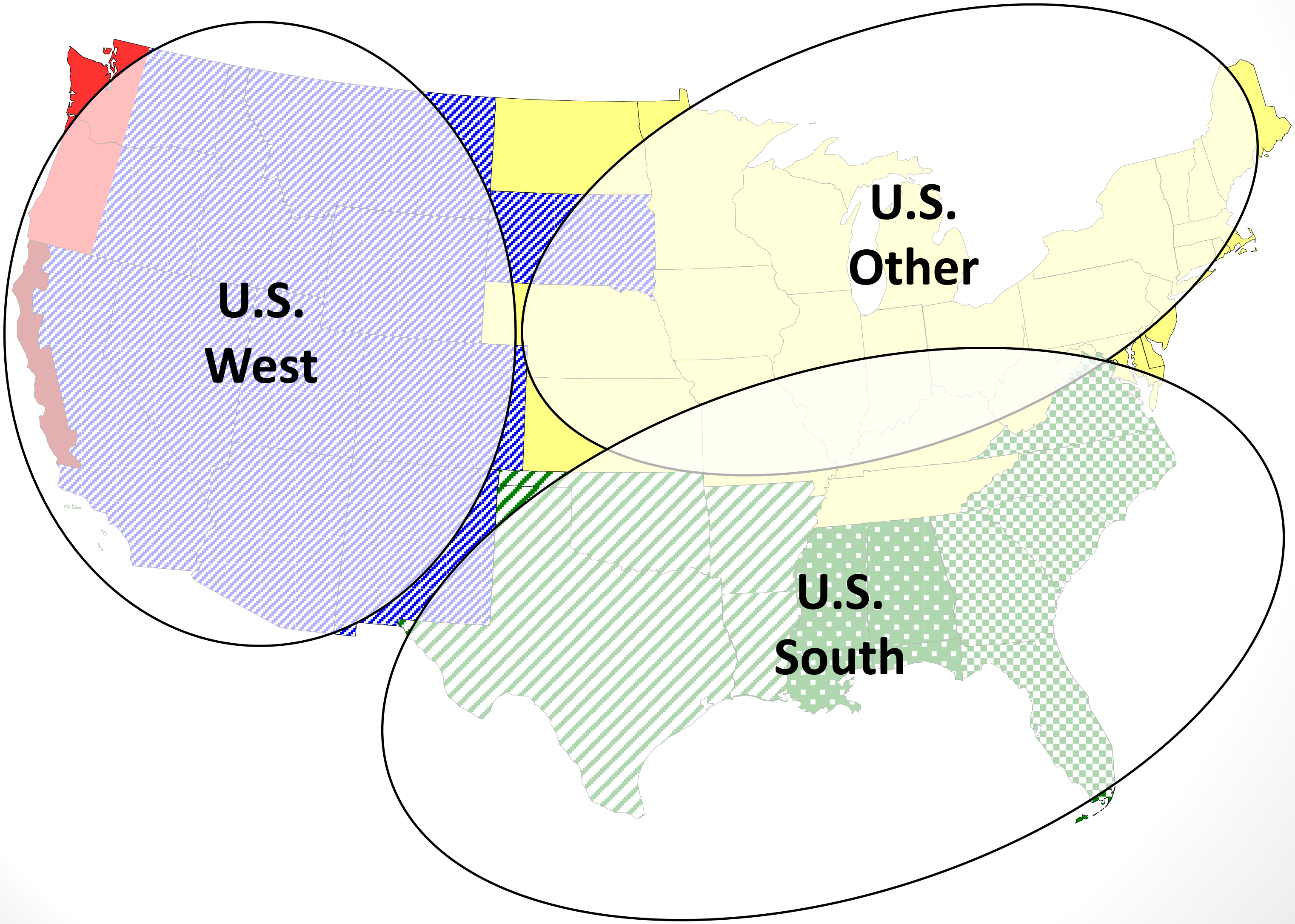
The Beck Group Forest Products Planning & Consulting
www.beckgroupconsulting.com

Roy Anderson PhD, Vice President
roya@beckgroupconsulting.com
503-684-3406

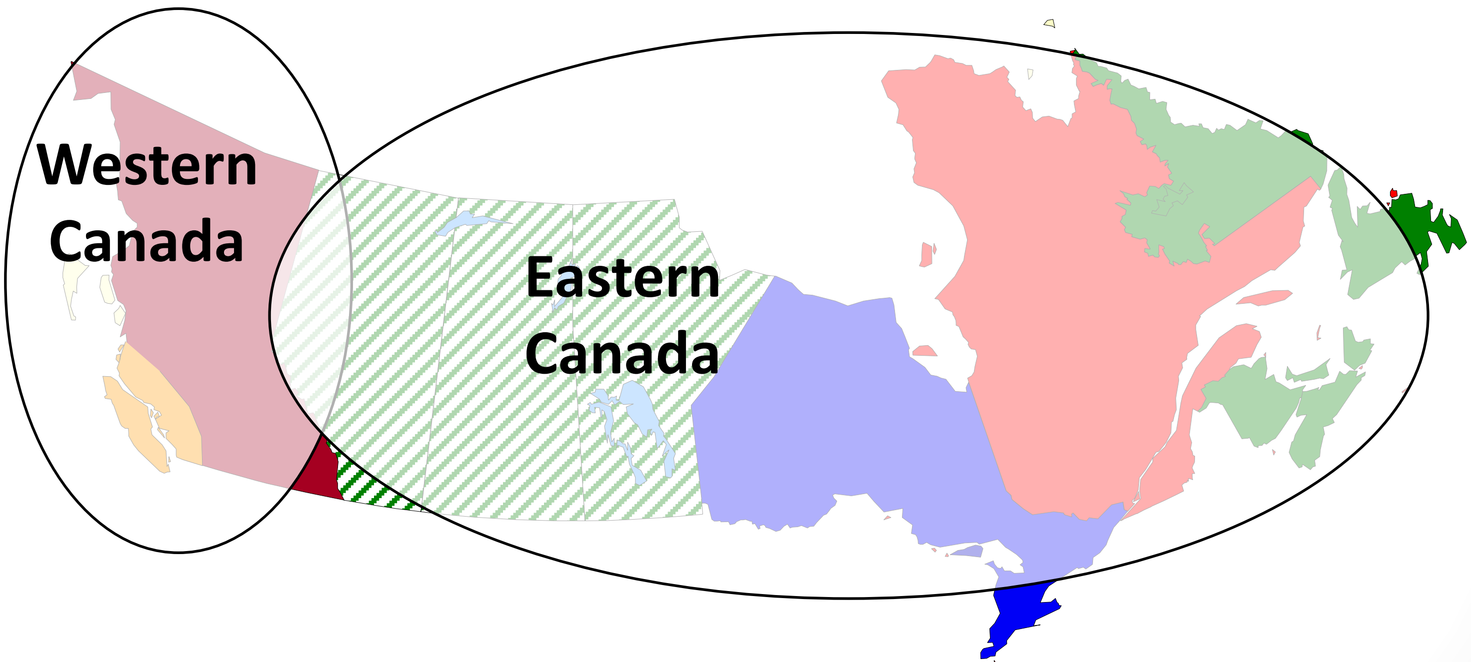
The Beck Group

- In Business Since 1981
- Consulting & Planning Services for the Forest Products Industry
  - Lumber; Plywood; OSB; CLT; Non-structural Panels; Engineered wood; Pellets; Biomass energy
  - Benchmarking
  - Saw timber and Mill residual Supply and Demand
- Broad geographic experience
  - U.S. West, U.S. South, Lake States, Alaska
  - Canada
  - Overseas
- Portland, Oregon
  - www.beckgroupconsulting.com
  - roya@beckgroupconsulting.com
  - 503-684-3406

U.S. Lumber Producing Regions



Canadian Lumber Producing Regions

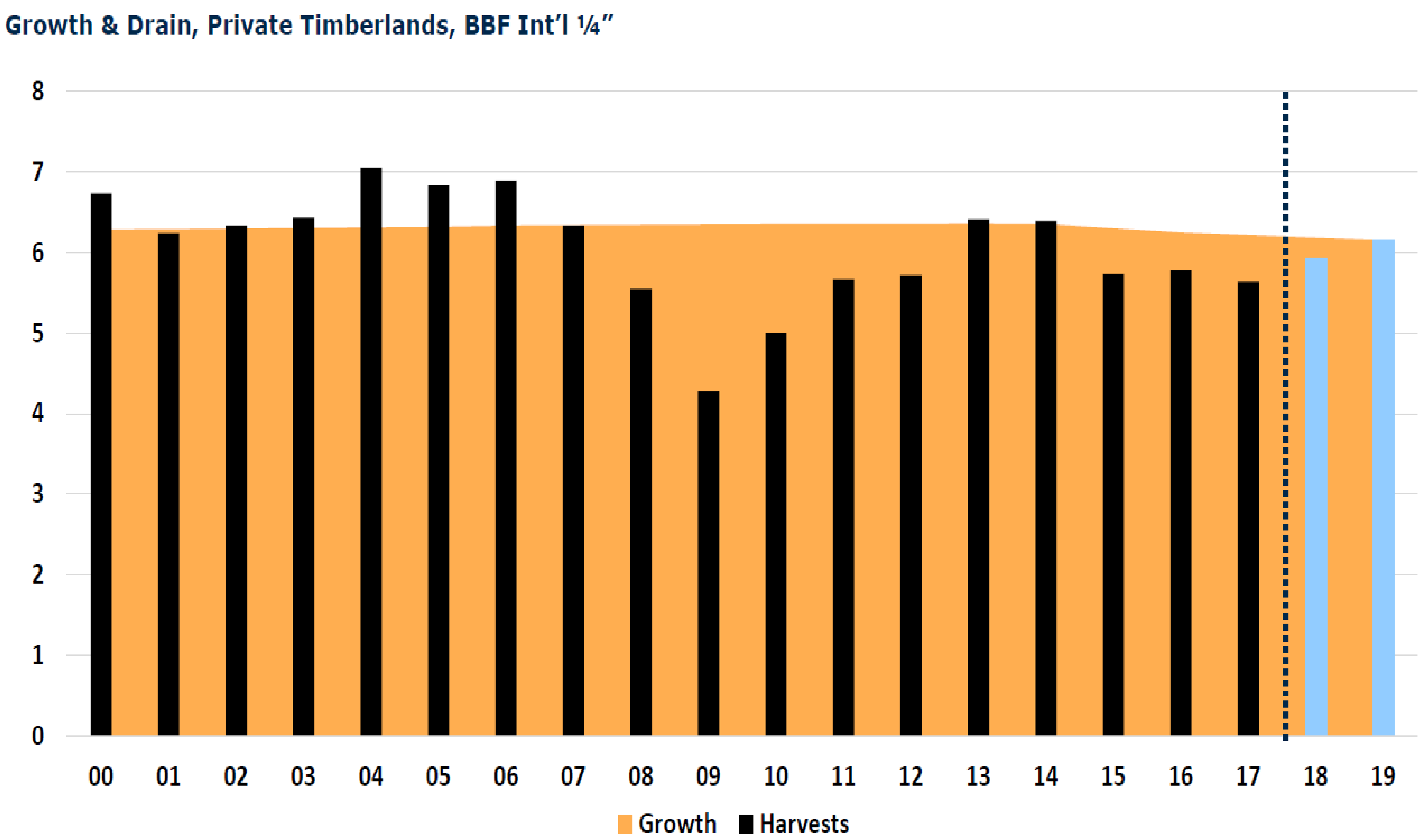


North American Softwood Lumber Production (Billion Board Feet)

Source: WWPA

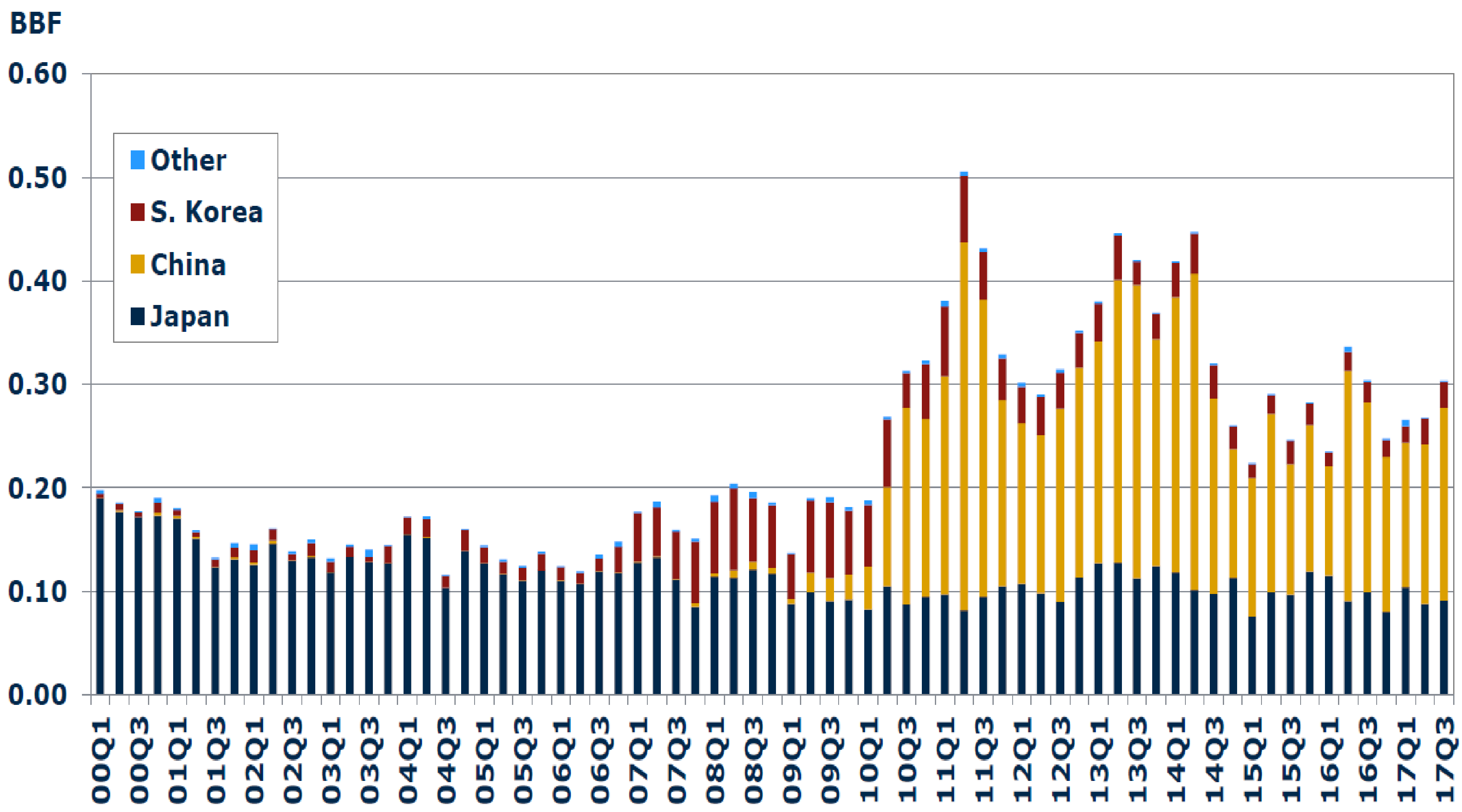
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
US West Prod.	18.8	19.3	18.0	16.3	13.0	10.4	11.1	11.6	12.6	13.5	14.1	13.5	13.9	14.1
US South Prod.	18.0	19.0	18.7	17.0	14.6	11.8	12.4	13.5	14.3	16.7	16.1	16.7	17.3	18.2
US Other Prod.	2.3	2.1	2.0	1.9	1.5	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.6
US Total Prod.	**39.1**	**40.4**	**38.7**	**35.2**	**29.1**	**23.5**	**24.8**	**26.5**	**28.3**	**31.7**	**31.7**	**31.7**	**32.7**	**33.9**
+ US Imports	23.5	24.7	22.8	18.4	12.7	8.9	9.5	9.3	9.9	11.4	12.6	13.9	16.0	17.6
- US Exports	0.8	0.9	0.9	1.0	1.0	1.0	1.3	1.7	1.6	1.8	1.7	1.6	1.6	1.8
= US Net Demand	**61.8**	**64.2**	**60.6**	**52.6**	**40.8**	**31.4**	**33.0**	**34.1**	**36.6**	**41.3**	**42.6**	**44.0**	**47.1**	**49.7**
CA West Prod.	16.9	17.4	17.4	15.5	11.9	9.7	11.4	12.0	12.3	12.7	12.6	13.2	13.6	13.0
CA East Prod.	18.2	17.0	16.2	14.4	11.7	9.1	10.6	10.0	10.9	11.7	12.0	13.5	14.8	15.4
CA Total Prod.	**35.1**	**34.4**	**33.6**	**29.9**	**23.6**	**18.8**	**22.0**	**22.0**	**23.2**	**24.4**	**24.6**	**26.7**	**28.4**	**28.4**
+ CA Imports	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.6
- CA Exports	23.6	23.6	22.4	19.2	14.0	11.0	12.8	14.1	14.8	16.4	17.0	18.0	19.3	20.5
= CA Net Demand	**11.7**	**11.1**	**11.5**	**11.0**	**9.9**	**8.1**	**9.6**	**8.3**	**8.8**	**8.4**	**8.0**	**9.1**	**9.5**	**8.5**
Total NA Demand	**73.5**	**75.3**	**72.1**	**63.6**	**50.7**	**39.5**	**42.6**	**42.4**	**45.4**	**49.7**	**50.6**	**53.1**	**56.6**	**58.2**

North American Softwood Lumber Production:
U.S. West – Log Supply Constrained



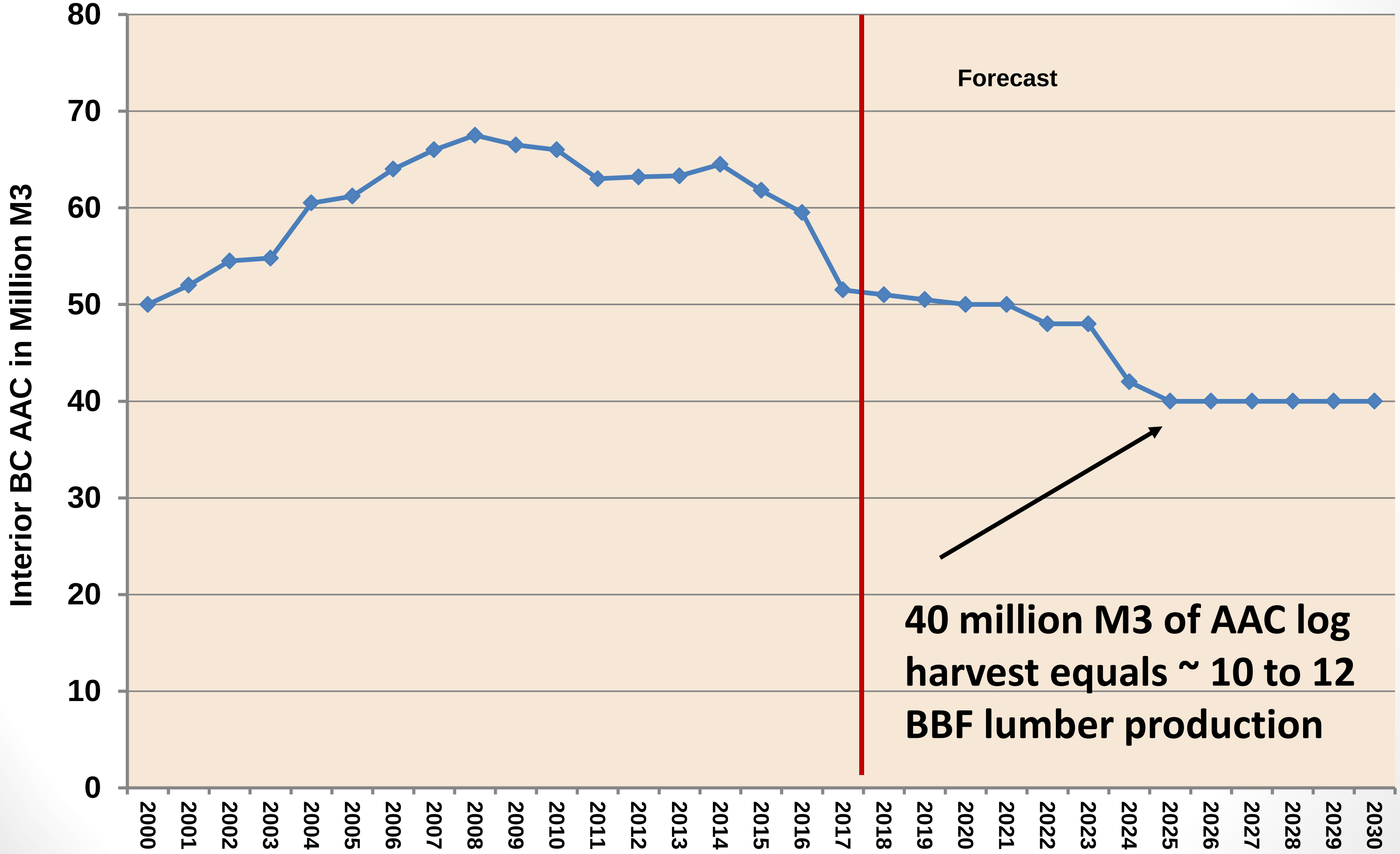
Source: Forest Economic Advisors

North American Softwood Lumber Production:
U.S. West – Log Export Effect



Source: Forest Economic Advisors

North American Softwood Lumber Production:
CA West – Log Supply Constrained



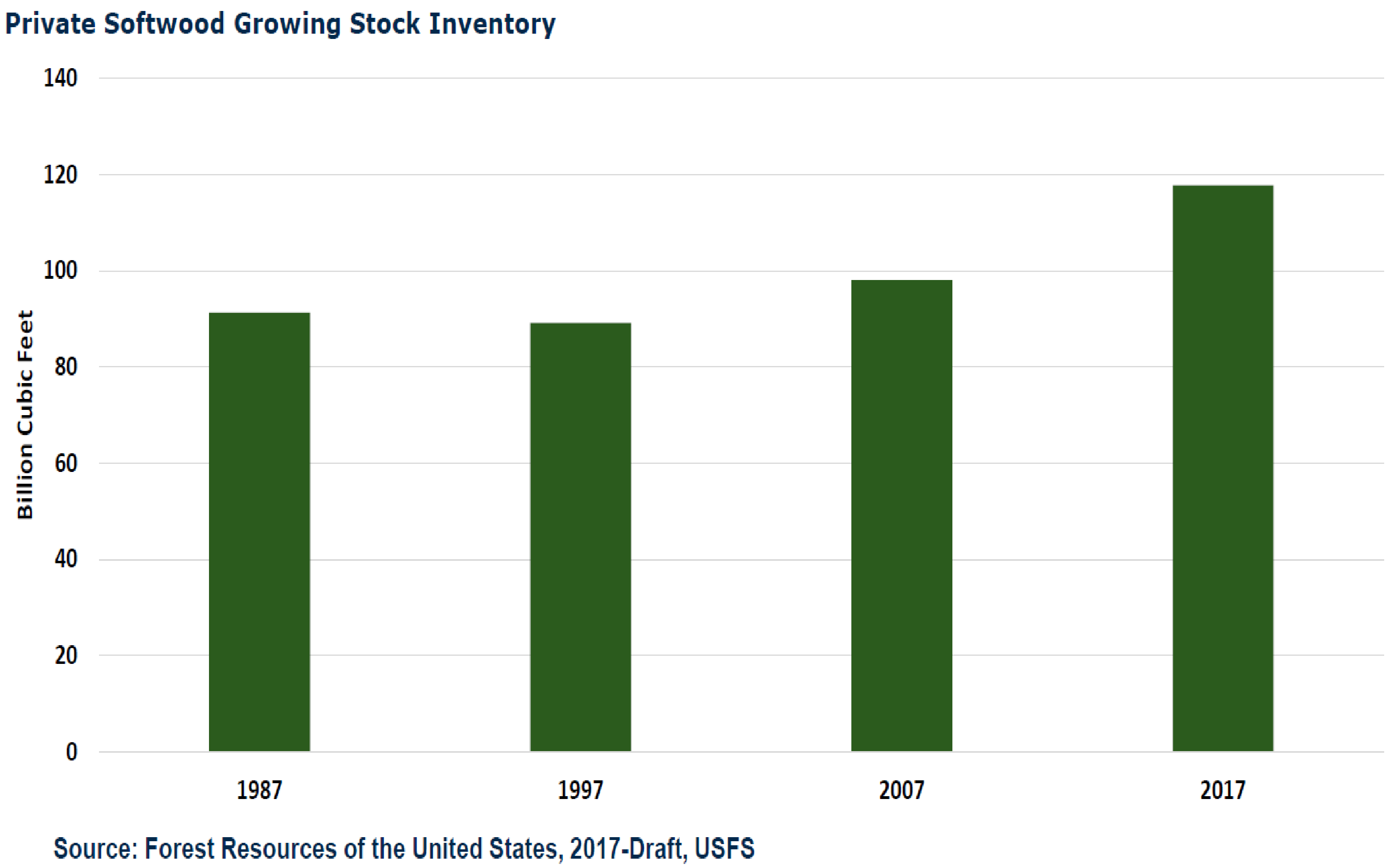
Source: Forest Economic Advisors

North American Softwood Lumber Production:
CA East – 4.4 BBF increase over 2016 possible

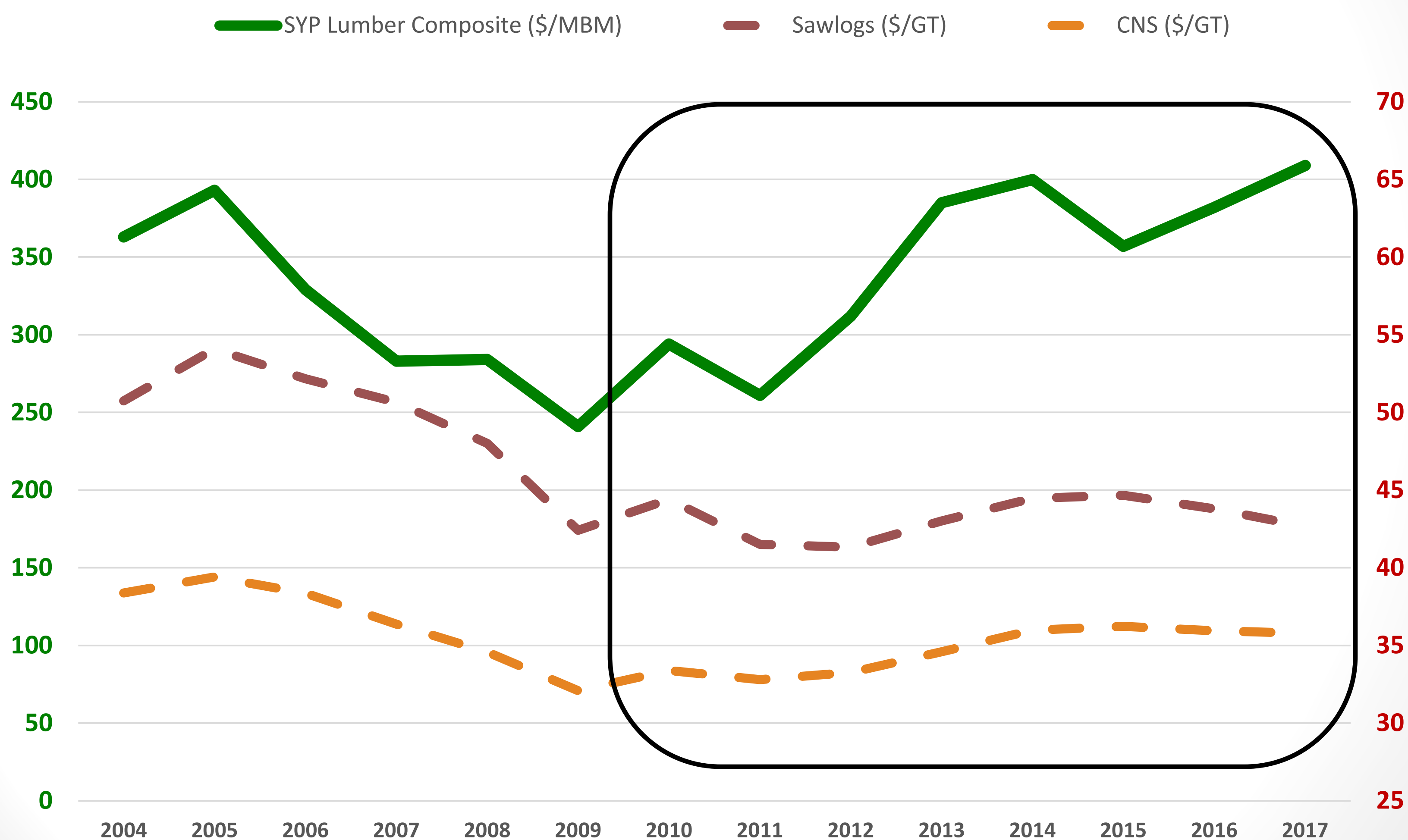
Province	AAC (M3 million)	2016 Harvest (M3 million)	Increase/ Decrease to Meet AAC (M3 million)	Increase/ Decrease (BBF Lumber)
Quebec	28	24	4	0.8
Ontario	19.7	12	7.7	1.6
Alberta	19.5	18	1.5	0.3
New Brunswick	6	7.5	- 1.5	- 0.3
Nova Scotia	6	3.5	2.5	0.5
Manitoba	5.5	1.5	4	0.8
Saskatchewan	5	2.3	2.7	0.6
Newfoundland	2.5	2	0.5	0.1
Prince Edward	0.5	0.5	0	0
Total	**92.7**	**71.3**	**21.4**	**4.4**

Source: Forest Economic Advisors

North American Softwood Lumber Production:
U.S. South – Ample Log Supply



North American Softwood Lumber Production:
U.S. South – Stable Log $ & Rising Lumber $



Source: Random Lengths, Timber Mart South

North American Softwood Lumber Production:
U.S. South – 4.3 BBF of New Capacity

source: CIBC

Company	Location	Start Up Date	Capacity (MMBM/Year)	Type
Klausner	Live Oak, FL	Q1 2015	350	Greenfield
Biewer	Newton, MS	17-Jan	250	Greenfield
Two Rivers	Demopolis, AR	17-Sep	200	Greenfield
Total Recently Built			***800***	
Conifex	El Dorado, AR	18-Jan	180	Brownfield
Weyerhaeuser	Dierks, AR	Summer 2018	80	Rebuild
GP	Talladega, AL	18-Sep	230	Greenfield
West Fraser	Opelika, AL	Q3 2018	75	Replacement
Klausner	Enfield, NC	2nd half 2018	350	Greenfield
Canfor	US South	2018-2019	350	Debottlenecking
Rex Lumber	Southeast	1st half 2019	350	Greenfield
Interfor	US South	2018 to 2020	225	Debottlenecking
Hunt/Tolko JV	Urania, LA	Jan-19	200	Greenfield
Weyerhaeuser	Millport, AL	Q1 2019	215	Brownfield
GP 2	Warrenton, GA	Spring 2019	350	Greenfield
GP	Warrenton, GA	Spring 2019	-100	Closure
Interfor	US South Central	2020	250	Greenfield
Canfor	US Southeast	2019	275	Greenfield
Private	US South	2020	250	Greenfield
Private	Southeast	2020	350	Greenfield
Private	Southeast	2020	350	Greenfield
GP 3	US South	2020	350	Greenfield
Total Upcoming New Capacity			***4,330***	

North American Softwood Lumber Production: Summary

- NA lumber demand peaked in 2005 at 75.3 BBF @ 2.07 million housing starts; 2017 NA lumber demand was 58.2 BBF @ 1.2 million housing starts; <u>difference of 17.1 BBF</u>

- NA lumber production in 2017 was 62.3 BBF; NA 2017 lumber production 4.1 BBF greater than demand; excess exported to China/Japan

- Limited capacity to increase production in US West and CA West because of:
  - Limited log supply in CA West due to MPB and wildfire
  - Limited log supply in US West due to high log exports
  - High lumber prices could pull back some US West log exports and yield about 1 BBF of extra lumber production; however, high log costs have had limited impact on reducing log exports so far

North American Softwood Lumber Production: Summary (continued)

- About 4.3 BBF of new capacity coming online in US South
- About 4.4 BBF of capacity increase possible in CA East (over 2016)
  - Associated increase in harvest maybe constrained by pressures from environmental groups and aboriginal claims
- Total of about 9.0 BBF to 10.0 BBF of possible increased lumber production in near term (3 to 5 years)
  - 4.3 BBF in US South
  - 4.4 BBF in CA East
  - 1.0 BBF in US West

Lumber Supply Implications for Mass Timber

- Global demand from CLT still very small; increased lumber demand from Mass Timber can be met

Year	Global MBM Lumber Used in CLT
2008	127,000
2010	222,000
2012	286,000
2014	350,000
2016	413,000

Source: FAO 2017 Mass Timber Conference

Lumber Supply Implications for Mass Timber (continued)

- Long-term projection is that Mass Timber (CLT, GLT, NLT) will increase NA lumber demand by 6.1 BBF over 2016 levels
- In the future, a combination of high CLT demand and high housing starts could create lumber supply issues, but could be mitigated by:
  - If economic structure of Mass Timber is better than other uses; lumber will flow to Mass Timber usage; other current lumber use applications will be displaced
  - Lumber currently exported to Asia could stay in NA
  - Lumber from off shore (most likely Europe) could be exported to NA
  - Federal timber harvest increase
- Technical issues: lumber width/grade mix; lumber drying; integrating sawmill with CLT plant to produce custom size lumber

Bonus Slides

Perspective on CLT Manufacturing Costs

Cost Category	Sawmill	CLT	Ply	OSB	PB	MDF
Wood	66	52	45	30	21	16
Glue	0	11	7	20	24	24
Labor	9	8	23	8	12	8
Supplies	7	4	7	9	8	9
Repairs & Maintenance	4	2	4	4	5	4
Utilities	3	3	5	6	10	17
Management Salaries	3	5	2	7	6	5
SG&A	7	16	7	17	14	17
Total	**100**	**100**	**100**	**100**	**100**	**100**

***Percent of total manufacturing cost by natural expense cost classification**

Source: Beck Group – Forest Products Industry Benchmarking Studies and Feasibility Studies

CLT Manufacturing: Lumber Specifications

- **Species** - Specific Gravity > 0.35
- **Grades** - #2 & BTR parallel; # 3 & BTR perpendicular
- **Size** - width – no 2”,3”, or 4” widths in perpendicular
- **Moisture Content** - 12% +/- 3%; current standard is 19%

Roy Anderson, The Beck Group
Mass Timber Conference
Portland, OR, March 2018

THE BECK GROUP