



**A
preliminary
assessment of the
supply and demand for
forestry residues in the interior
of
British Columbia**

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The context

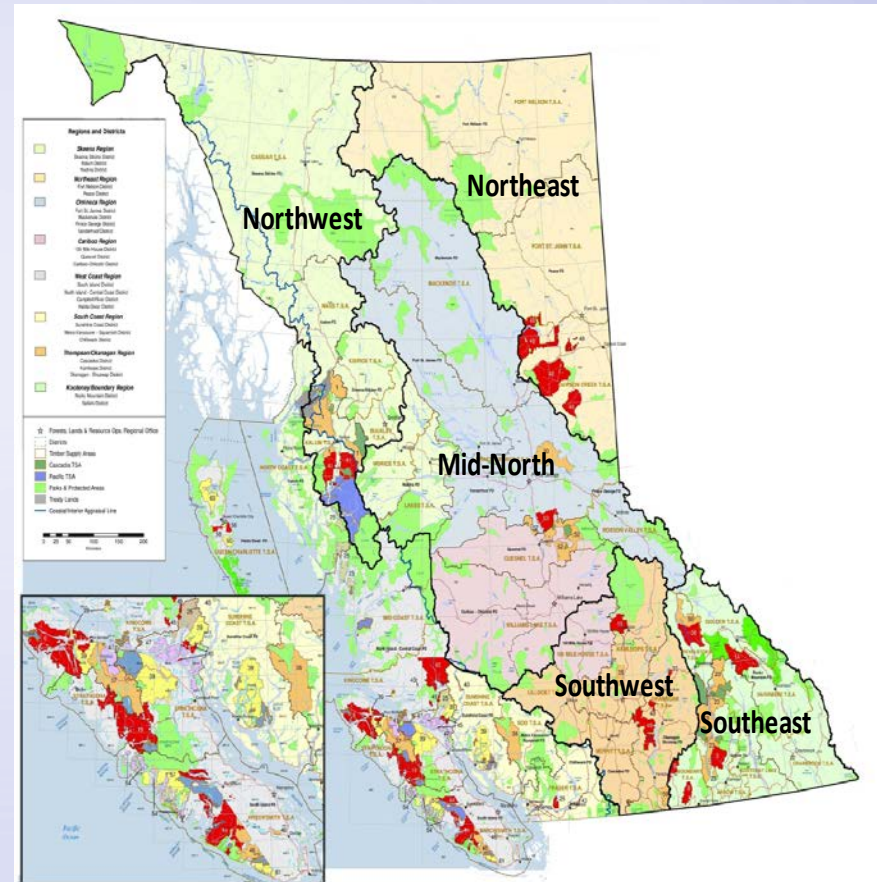
- The bio-economy meets the forest sector
- The push and pull of changing demand
 - Changing preferences
 - Changing expectations
 - Changing institutions
- Does the resource have the capacity to meet this market evolution, now and post beetle?
- Does policy and action align with these changes?



- Methods
 - Brings together four different analyses/data sets, what do we have what may we need?
 1. FLNR annual mill list survey data
 2. FLNR Harvest Billing System data
 3. FLNR timber supply forecasts
 4. FPIinnovations biomass ratios by forest district
 - Objective to combine data sets and develop a time series of supply and demand for logging and processing residues for various sub-regions of the B.C. interior.
 - Focus on the intensive margin; no access to additional marginal stands

Methods

- Focus on the BC interior
- Interior split into five regions
 - Northeast
 - Mid-north
 - Northwest
 - Southwest
 - Southeast





Methods

- Supply
 - Divided into processing and logging residues.
 - Processing residues (chips, sawdust and shavings, hog) based on annual mill survey, 2000-2014.
 - Processing ratios used to estimate future volumes; about 60% of total (P+L) residue supply.
 - Logging residues based on biomass ratios developed by FPInnovations for 6 timber supply areas in the BC interior.
 - Biomass ratios...high and low BR at
 - \$60/ODT (8% - 10%)
 - \$90/ODT (21% - 30%)
 - Future supply (2015-2030) based on timber supply forecasts and P and L ratios (assumes 100% use)



Methods

- Demand – Existing, committed, emerging
 - Existing demand based on data from annual mill survey
 - Existing includes pulp mill, pellet, power, panel. Other unaccounted uses include animal bedding and landscape
 - Committed based on publicly announced developments
 - Committed includes announced, but not yet operational facilities. New pellet mills, and large and small scale power developments.
 - Emerging demand not included
 - Emerging demand -- potential technologies that could be introduced over the next 15 years.



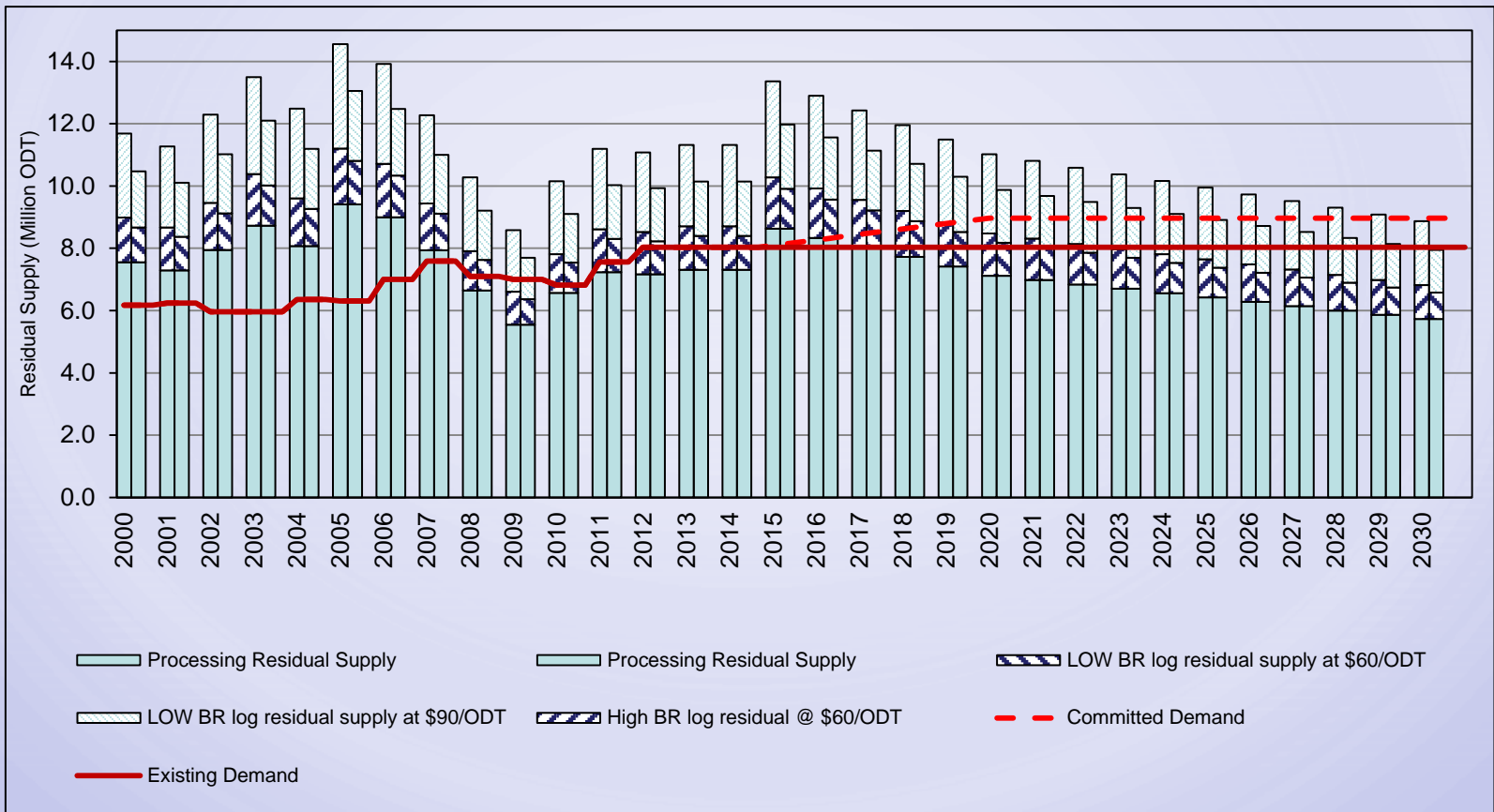
Focus of analysis

- Timing and location of supply demand ‘pinch points’
 - Supply deficit or surplus
 - Implications for pricing and competition for fibre
- Role of government
 - BC landbase 95% public land
 - Most of timber supply from public land under tenure
 - Forest policy response
- Intensive margin and efficiency in the use of timber resource



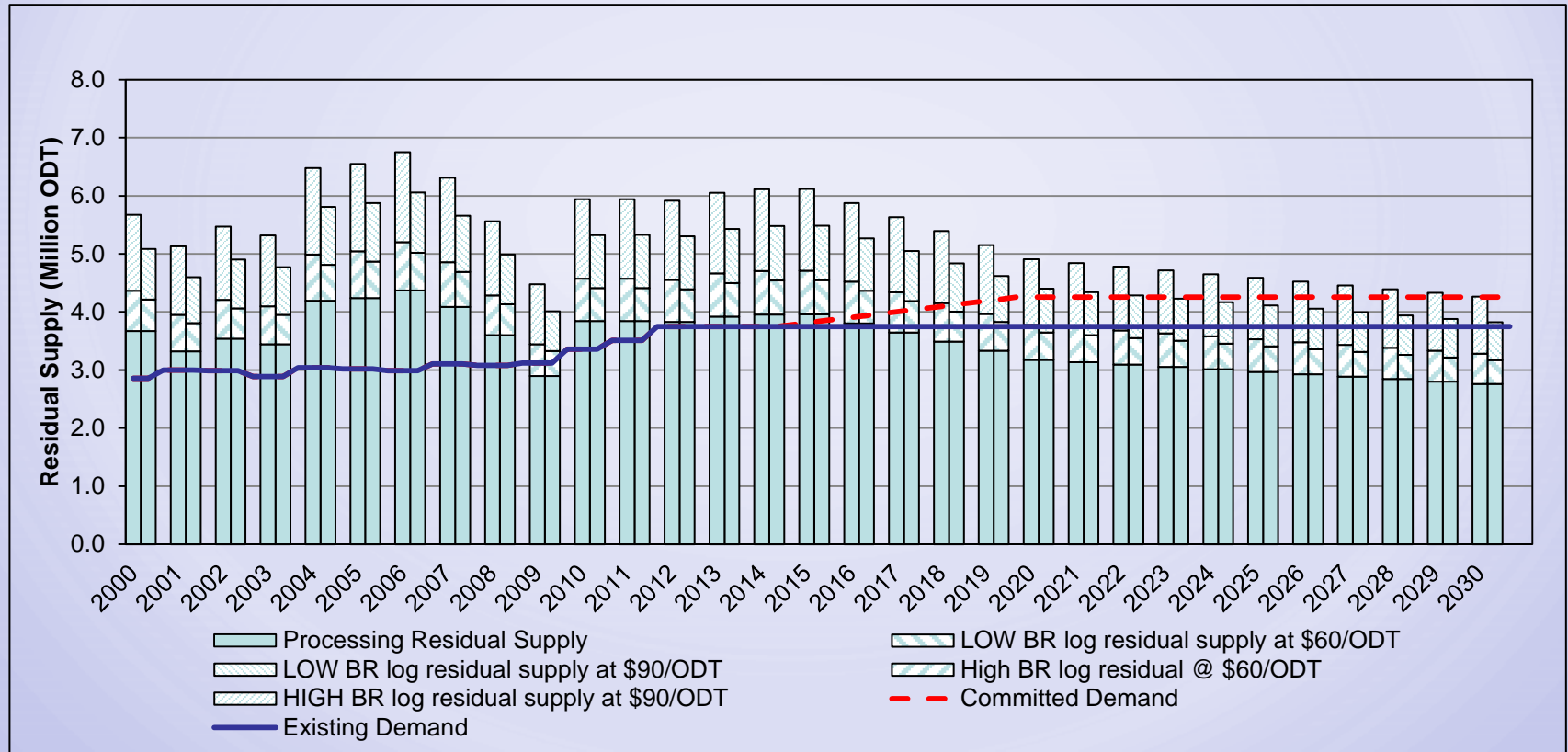
- Results
 - Northern and Southern Interior
 - Mid-north
 - North-east
 - South-west

Northern Interior woody biomass supply and demand forecast, in ODT, 2000-2030.



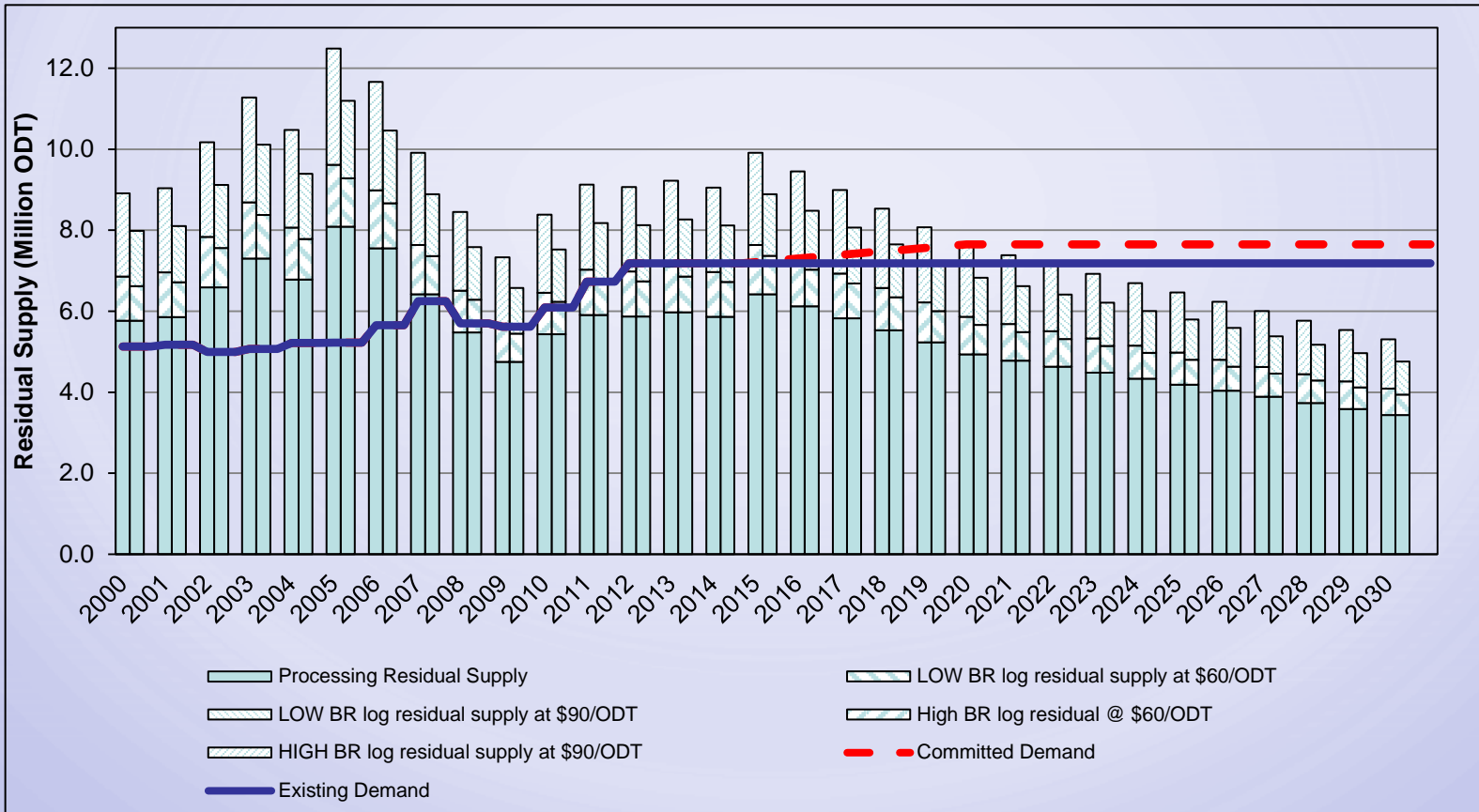


Southern Interior woody biomass supply and demand forecast, in ODT, 2000-2030.



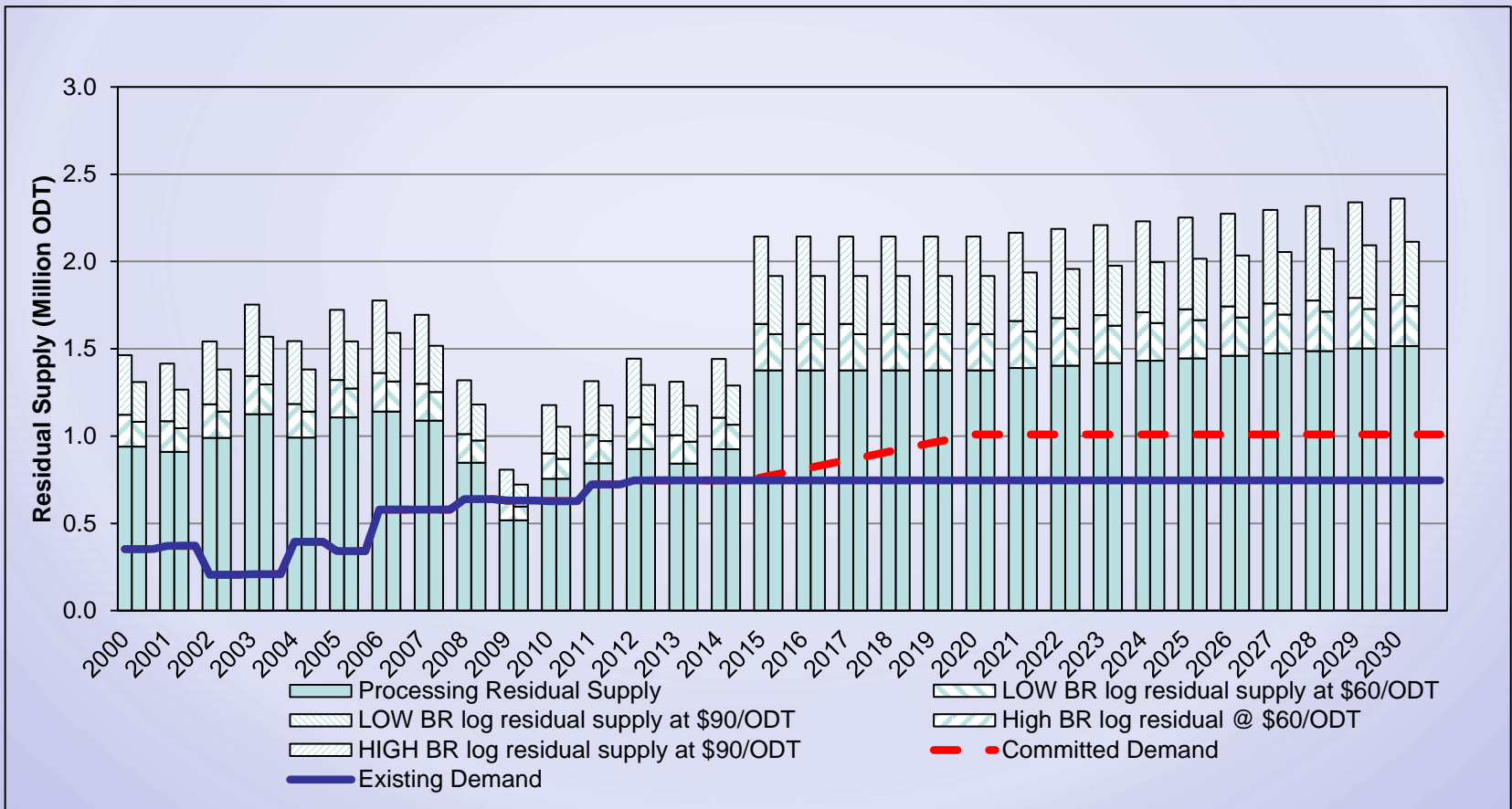


Mid-north residue supply and demand forecast, in ODT, 2000-2030

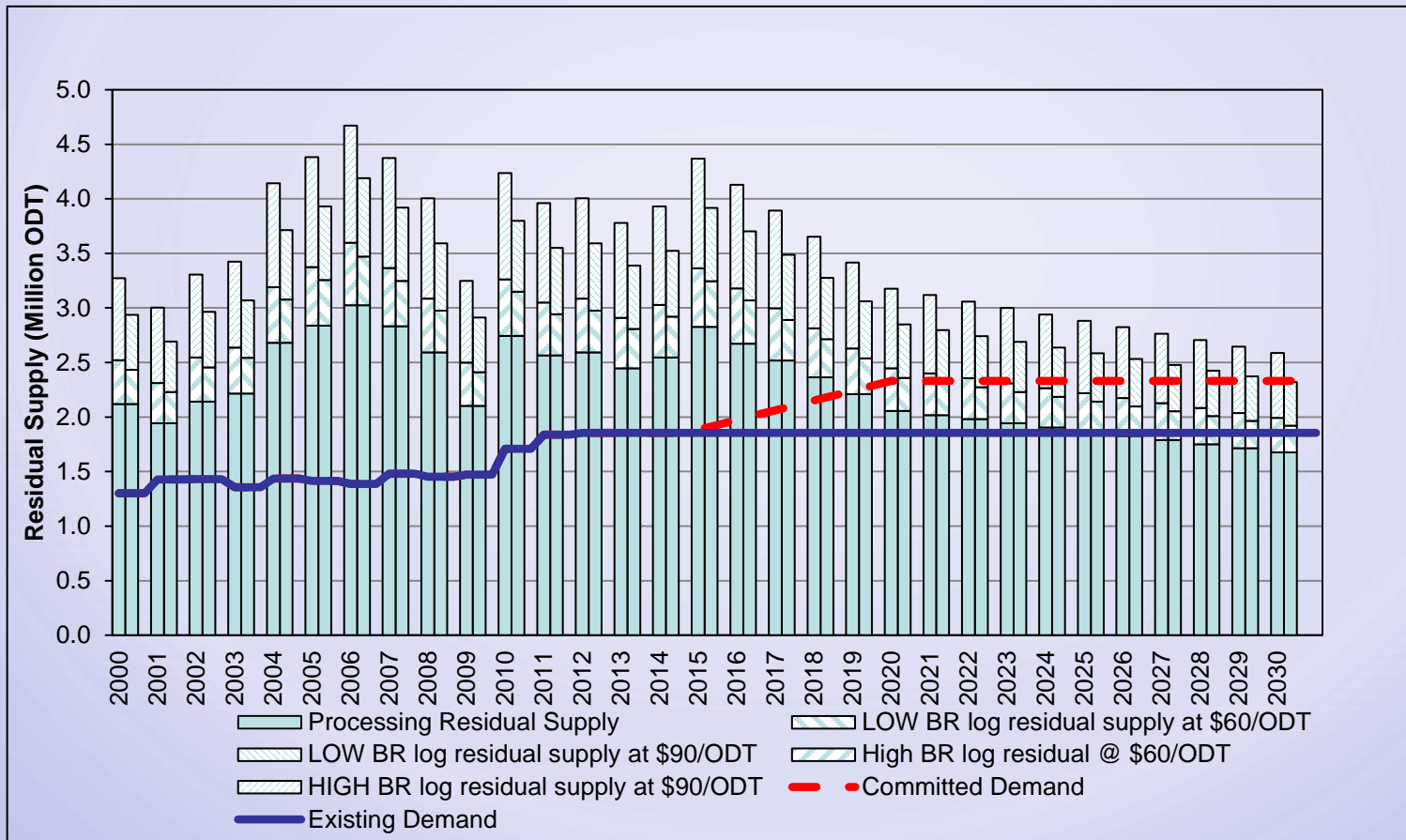




Northeast residue supply and demand forecast, in ODT, 2000-2030



Southwest residue supply and demand forecast, in ODT, 2000-2030





- Uncertainty...analysis
 - Accuracy of supply estimates, flows across districts
 - Usable biomass in slash piles – research underway
 - Supply depends on strong lumber market to drive harvest
 - Is ‘super-cycle’ real – price / quantity ?
 - Certainty of supply an issue – merchantability varies
- Uncertainty...response
 - How will users react to shrinking supply? Who will emerge as competitors for residues?
 - Price up, competitor exit, long term contracts
 - The extensive margin – accessing more marginal timber stands – brings potential for more saw timber, what is available, quality, volumes?



Conclusions – ponderings?

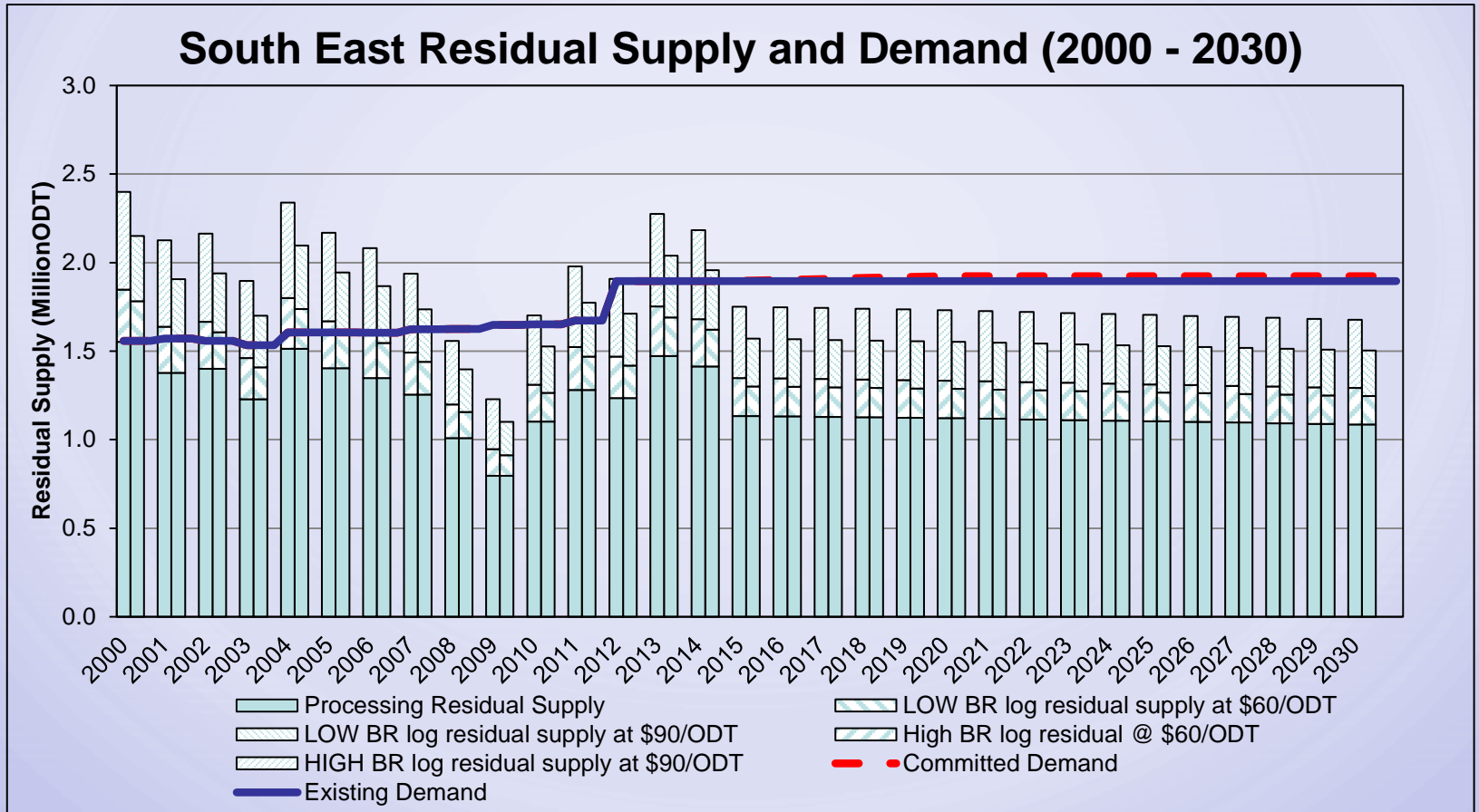
- Our intent was to try to understand the capacity of BC's interior forest resource to support both existing and emerging users of residue biomass.
- Do we have the information? What are our knowledge gaps?
- Our analysis indicates that in some regions of the interior demand will exceed supply well before 2020/2025.
- These supply-demand 'pinch points' raise policy and operational issues.
- Seek greater efficiencies in the utilization of supply within the intensive margin.
- Provide comprehensive solutions to increase the merchantability of fibre in the extensive margin.



Thank you

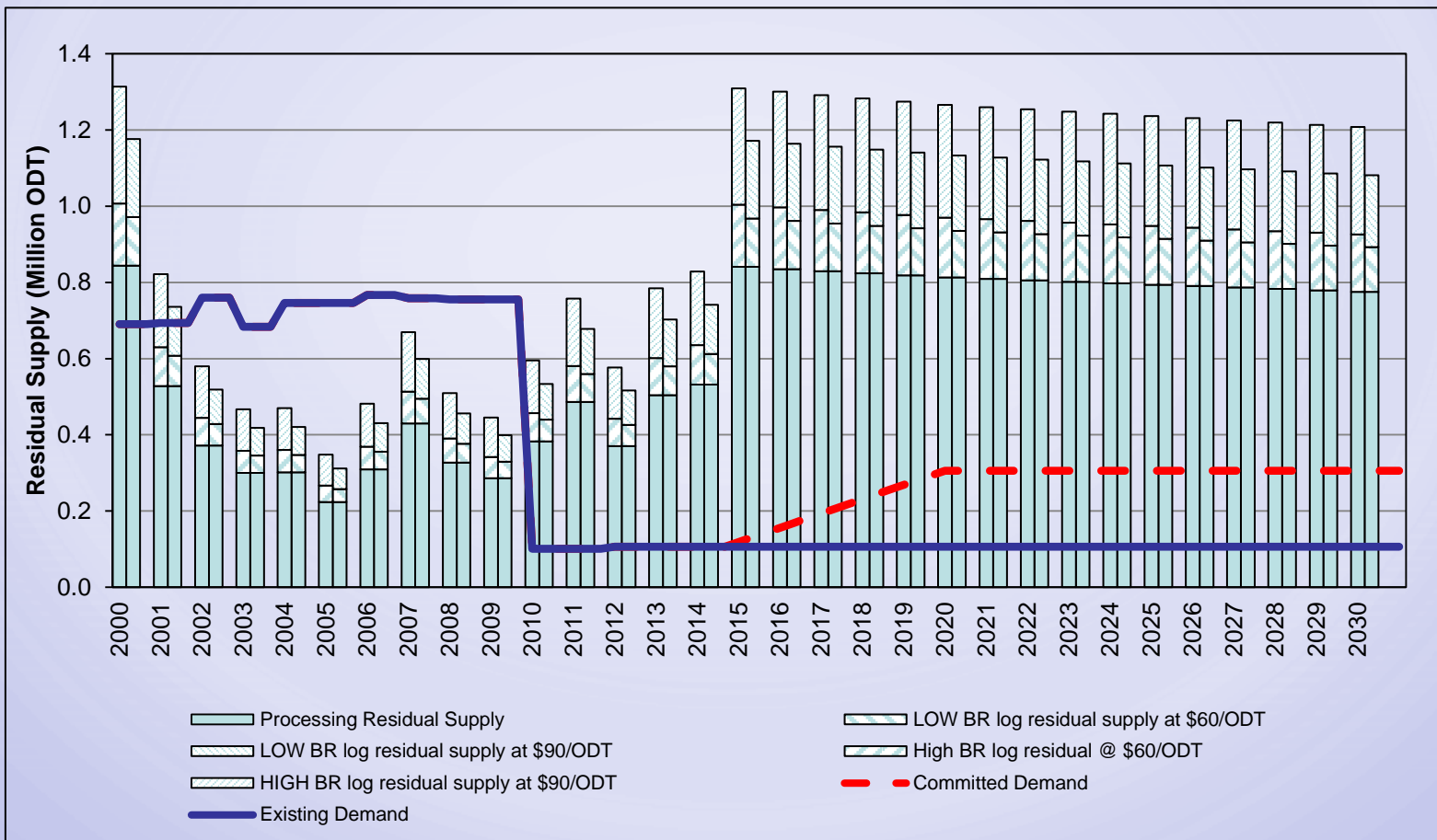


Southeast residue supply and demand forecast, in ODT, 2000-2030





Northwest residue supply and demand forecast, in ODT, 2000-2030





Stats

- Interior landbase 65 million ha
- Interior forest landbase34.4 million ha
- Interior AAC59.2 million m³
- Interior AAC post MPB ~40.0 million m³

Average supply and demand 2000-2014

Region	Current Demand	Committed Demand	Total Demand	%
Northeast	746	263	1,009	8%
Mid-north	7,183	469	7,652	58%
Northwest	106	200	306	2%
Southeast	1,895	28	1,923	14%
Southwest	1,854	476	2,330	18%
Interior	11,784	1,436	13,220	

Region	Process resids	Logging resids	Total Resids	%
Northeast	930	460 - 794	1,390 – 1,724	8%
Mid-north	6,265	3,024 - 5,220	9,289 – 11,485	55%
Northwest	404	200 - 345	604 - 749	4%
Southeast	1,284	620 - 1,069	1,904 – 2,353	11%
Southwest	2,490	1,202 - 2,074	3,692 – 4,564	22%
Interior	11,373	5,505 - 9,503	16,878 – 20,876	



- Committed demand
 - Mid-north: Power projects, Burns Lake, Fraser Lake, Conifex Mackenzie, Telkwa and Fort St. James.
 - Northeast: Chetwynd and Fort St. John pellet
 - Northwest: Pinnacle Terrace
 - Southeast: Canfor Radium power; St. Mary's power
 - Southwest: Pinnacle Lavington; Anahim Lake, Merritt Green Energy power



- Residue prices
 - US PNW
 - Forestry biomass price range US\$40-50/ODT, 2008-15
 - Processing sawdust/shavings price range US\$50/ODT, 2010-15, down from a peak of US\$60-70, 2009, and avg. US\$30/ODT, 2002-06Q1
 - Chip prices US\$100-120/BDU, 2013-15, upward trend
 - B.C.
 - Interior chip prices Cdn\$ 70-95/BDU, 2012-2015, upward trend, higher in north