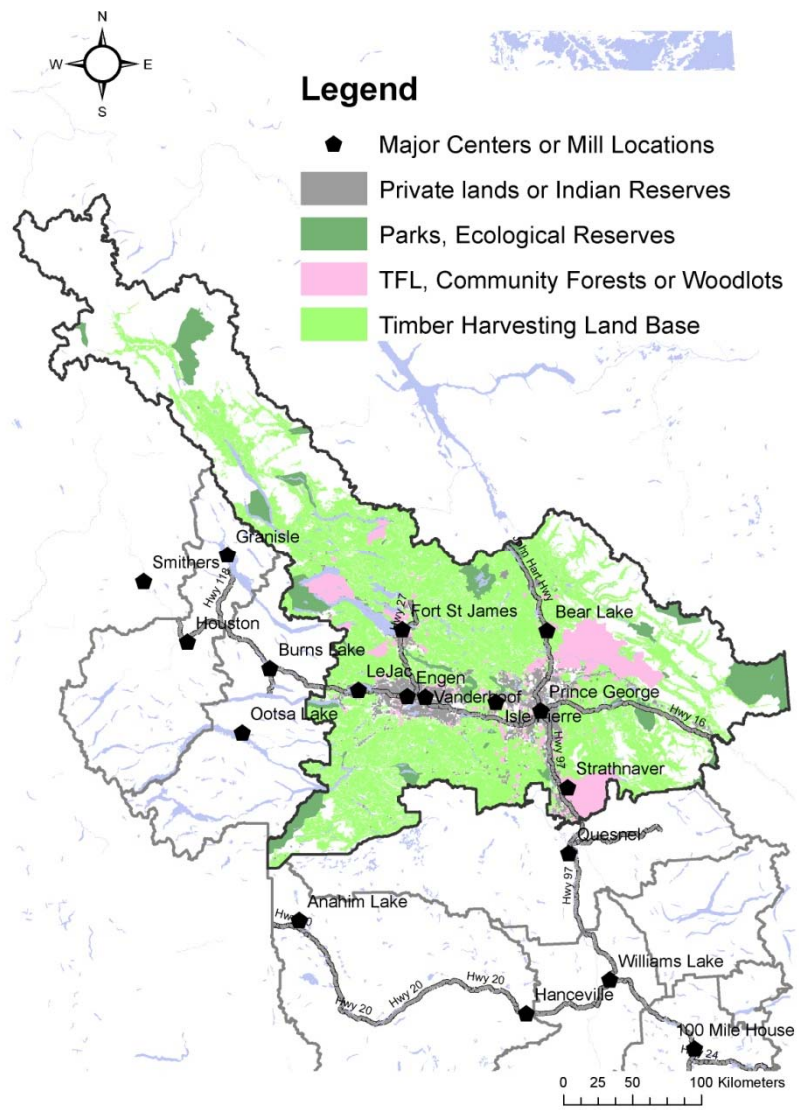




June 8, 2012

Prince George Timber Supply Area

Background



The Prince George Timber Supply Area (TSA) covers almost eight million hectares:

- 66% considered productive forest (outside of Indian Reserves, private lands, woodlots and community forests)
- 23% of productive forest is not available for timber harvesting because it is reserved for biodiversity, fish or wildlife or because the site is too poor to grow trees quickly

- 18% was removed from the timber harvesting land base because it is considered not economic because of low stand volumes or is difficult to access

There are three forest districts within the timber supply area: Fort St. James, Vanderhoof and Prince George:

- Fort St. James District
 - 3.2 million hectares, 2.0 million hectares provincial Crown forest land, 1.0 million hectares available for harvesting
- Vanderhoof District
 - 1.4 million hectares, 1.0 million hectares provincial Crown forest land, 740,000 hectares available for harvesting
- Prince George District
 - 3.4 million hectares, 2.2 million hectares provincial Crown forest land, 1.4 million hectares available for harvesting
- Current timber harvesting land base is 3.1 million hectares; 39% of the timber supply area
- This analysis does not include woodlots, community forests, research forests and Tree Farm Licences 30 and 53, which are located within the timber supply area. The allowable annual cut for these tenures is determined separately.

Communities: Prince George, Fort St. James, Vanderhoof, Fraser Lake, Fort Fraser, Hixon, Bear Lake, McLeod Lake, Strathnaver, Giscome, and Dome Creek

First Nations:

The following First Nations (including tribal councils and associations) have communities in the timber supply area: Carrier Sekani Tribal Council, Lheidli-T'enneh Band, Nak'azdli First Nation, Nadleh Whut'en First Nation, Saikuz First Nation, Stellat'en First Nation, Takla Lake First Nation, Tl'azt'en Nation, Yekooche First Nation.

Bands (including tribal councils and associations) whose territory expands into the PGTSA but do not reside in the PGTSA include: Cheslatta Carrier Nation, Gitksan Hereditary Chiefs, Halfway River First Nation, Kaska Dena Council, Kwadacha, Lake Babine Nation, Lhoosk'uz Dene Nation, Lhtako Dene Nation, McLeod Lake Indian Band, Nazko First Nation, Skin Tye Nation, Tahltan, Tsay Keh Dene Band, Tsilhqot'in Nation, Ulkatcho First Nations, West Moberly First Nations and Carrier Chilcotin Tribal Council.

Status of Land Use Plans

- Prince George and Fort St. James Land and Resource Management Plans approved in 1999.
- Vanderhoof Land and Resource Management Plan approved in 1997.
- Prince George Area Crown Land Plan (1981), Vanderhoof, Fort St. James and a portion of the Robson Valley Crown Land Plan (and subsequent orders establishing agriculture and settlement reserve development areas in 2006).
- Order establishes scenic areas and visual quality objectives across portions of Prince George, Fort St. James and Vanderhoof districts within the TSA (2005, 2006 and 2008); approximately 15% of the TSA.

- *Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* – October 2004 (Prince George Timber Supply Area old growth order) - non-spatial objectives for old growth retention.
- *Orders* for Old Growth Management Area have been established through Sustainable Resource Management Plans in three units in the eastern portion of the TSA (2002, 2003 and 2009) - spatial objectives for old growth retention.
- Mountain Caribou Recovery Implementation Plan; Mountain caribou habitat protection designations make up approximately 7% of the Prince George Timber Supply Area
- Northern caribou winter ranges are designated or proposed to be designated as ungulate winter ranges; current habitat protection designations make up approximately 2.1% of the Prince George TSA.
- In addition to the above Ungulate Winter Range designations for caribou, there are Ungulate Winter Range designations for mule deer and Mountain goat making up approximately 4% of the Prince George TSA.
- One Wildlife Habitat Area established (for a Caribou mineral lick), and more under development.

Past Allowable Annual Cut

- Established at 9.364 million cubic metres in 1996
- Increased to 12.244 million cubic metres in 2002 in response to beetle epidemic (3.0 million cubic metres intended to facilitate harvest of timber damaged by beetles)
- Increased to 14.944 million cubic metres in 2004 to provide additional salvage opportunity
- Reduced to 12.5 million cubic metres in 2011
- Currently the allowable annual cut is 12.5 million cubic metres with the following partitions specified:
 - a maximum of 3.5 million cubic metres attributable to non-pine species, and non-cedar and non-deciduous leading stands
 - a maximum of 23,000 cubic metres attributable to cedar-leading stands
 - a maximum of 160,000 cubic metres attributable to deciduous-leading stands in Prince George and Fort St. James forest districts

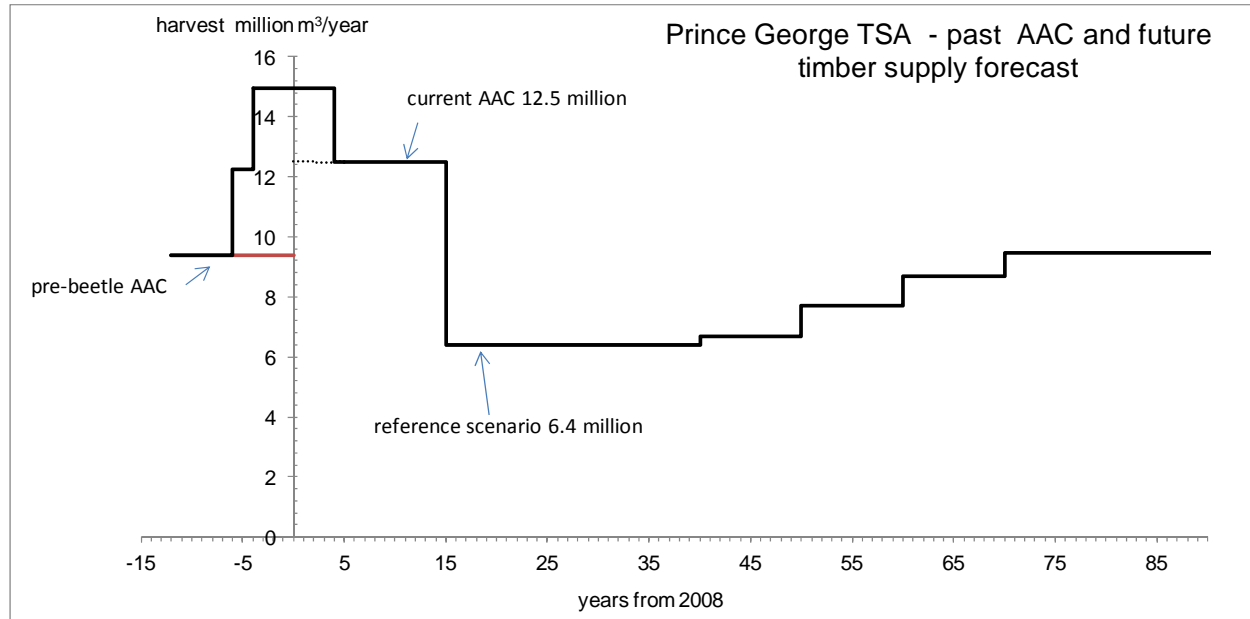
From 2007 to 2011, the actual harvest averaged 9.87 million cubic metres in the Prince George Timber Supply Area. Of that volume, 72% was pine.

Mid-Term Timber Supply Forecasts

Timber supply forecasts were prepared by a technical working group to examine scenarios for mid-term timber supply mitigation. Mitigation scenarios were compared to a reference forecast, which is based on similar assumptions used for the current performance base case used in the timber supply review process. These assumptions include accounting for all existing land-use decisions and non-timber constraints, focusing harvesting in pine-leading stands and assuming pine will have economic value for 15 years after death. Forest management assumptions are similar to those used to support the 2011 timber supply review.

The timber supply forecasts for the Prince George Timber Supply Area have been revised from those presented in the February 29, 2012, *Mid-Term Timber Supply Project Report for the Minister and Deputy Minister Forests, Lands and Natural Resource Operations*. The revisions were made to correct modelling errors that occurred in the earlier forecasts.

The analysis indicates that, without mitigation, timber supply in the Prince George Timber Supply Area is projected to decline by 32% in the mid-term – from 9.364 million cubic metres a year to 6.4 million cubic metres.



- Maintain current harvest level of 12.5 million cubic metres a year until 2023
- Falls to 6.4 million cubic metres a year for 35 years
- Gradually increases to a long-term level of 9.2 million cubic metres a year

Timber supply forecasts project the physical supply of timber that meets specific criteria (commercial species and merchantability specifications such as sawlog/pulp). However, market forces influence what proportion of the physical supply is economic to access and process in any given period. The reference forecast presented above does not reflect current conditions, which have been seriously affected by the economic downturn since 2008. This makes it uneconomical to harvest dead pine and other components of the timber supply such as hard-to-access stands and small green wood, especially if they are located at long haul distances from the mills. If these conditions persist, licensees have indicated there may be timber supply shortages in mid to late 2017.

During the mid-term, harvesting will depend on existing non-pine stands, second-growth managed stands, and pine stands that survived infestation

Mountain Pine Beetle Forecast

Version 5 of Provincial-Level Mountain Pine Beetle Model was used to predict the current and future pine mortality for the Fort St. James District and Vanderhoof District. This model predicted that 77% of the mature pine in the Fort St. James District and 83% of the mature pine in the Vanderhoof District that was on the timber harvesting land base in 1999 would be killed by 2024. In the Prince George District, the pine beetle model estimates were adjusted upward based on the University of Northern BC Mountain Pine Beetle Mortality Survey to predict that 93% of the mature pine on the harvesting land base would be killed by 2007. However, aerial survey information collected by the Prince George District in 2008, as well as licensee timber cruise data collected between 2006 and 2009, indicated lower mature pine mortality levels of 85% and 88%, respectively. As a result, the mature pine mortality of 93% assumed in the Prince George District is believed by the ministry to be slightly pessimistic.

Current Practices and Silviculture Investments

- Salvage as much beetle-impacted pine as possible while limiting harvest of non-pine.
- Fertilization of second-growth and healthy mature stands has the potential to increase the mid-term timber supply. The fertilization program has ramped up from 1,048 hectares in 2007 to 8,332 hectares in 2011. The total area fertilized over the last five years is 21,494 hectares.
- The total area planned for treatment in 2012/13 includes 7,500 hectares in the Prince George Timber Supply Area and 1,500 hectares in Tree Farm Licence 53.

Economic Profile of Prince George Timber Supply Area

- Based on the report *2006 Economic Dependency Tables for Forest Districts*, the forest sector accounts for 29% of the total basic employment for the three districts – the largest sector.
- The percentage of basic employment by sector for each district is as follows:
 - Fort St. James District: forestry (49%), public sector (36%), mining and mineral production (1%), agriculture and food (3%); tourism (6%); construction (2%) and other (3%)
 - Prince George District: forestry (26%), public sector (38%), mining and mineral production (3%), agriculture and food (2%); tourism (9%); technology (2%); construction (10%) and other (10%).
 - Vanderhoof District: forestry (45%), public sector (27%), mining and mineral production (6%), agriculture and food (7%); tourism (8%); construction (4%) and other (2%).
- The magnitude of the Forest Vulnerability Index (FVI) indicates the vulnerability of each local area to potential downturns in the forest sector.¹ The index for Fort St. James District is 132, indicating a very high vulnerability. Prince George District has a vulnerability index of 39, below average for the province, and Vanderhoof District has a vulnerability index of 79, higher than average for the province. In comparison, the vulnerability index for the Quesnel area is 100 and for the Victoria area is 0.

¹ Forest Vulnerability Index (FVI) was developed using Income Dependency and Economic Diversity – a community is vulnerable if its forest sector dependence is high and its diversity is low. It is worth emphasizing that a high index value does not mean that the wood-based manufacturing facilities in that area are more likely to shut down than in other areas. Rather, a high value means that if forest sector activity in the area declines then the area will experience greater economic difficulties than other areas in the province would under the same circumstances.

Workforce Considerations for Prince George Timber Supply Area

- 10,383 person-years direct, indirect and induced employment before the uplift in 2000 (and before the Community Forest Agreement Area was taken out of the timber supply area)
- Decreased to 8,227 person-years based on the average harvest from 2007 to 2011– although harvest levels increased as pine was salvaged, and the decline in jobs was due to efficiency gains by industry
- Current allowable annual cut, if fully utilized, would support 10,419 person-years
- Expected to drop to 5,322 person-years after 2023 without mitigation
- Other area-based tenures (tree farm licences, community forests and woodlots) in the timber supply area are expected to contribute about 0.75 million cubic metres a year in the mid-term and support approximately 625 person-years of employment in addition to jobs supported by the timber supply area
- About 31% of jobs are involved with harvesting and silviculture, 42% in timber processing and 28% are indirect or induced jobs generated by the forest sector

Mills:

- Lakeland Mills Ltd. sawmill destroyed by fire in April 2012. Ten lumber mills (four Canadian Forest Products Ltd., Carrier Lumber Ltd., Dunkley Lumber Ltd., Conifex, L&M Lumber, Apollo Forest Products Ltd, L&M Lumber Ltd., West Fraser Mills Ltd.-Fraser Lake Sawmills), three pulp mills (Canfor Pulp), three pellet plants (Pacific BioEnergy, Pinnacle Renewable Energy Group, Premium Pellet Ltd.), one paper plant (Canfor Pulp) and two finger joint plants (Brink Forest Products Ltd., Tl'oh Forest Products Inc.)
- Chip supplies sourced from broader geographic region so pulp mill employment more stable despite harvest level reductions
- Potential to use roadside wood residue and standing mountain pine beetle killed pine for energy-related projects: Three pellet manufacturers in the timber supply area

Projected Mill Impacts

- Assuming lumber remains the dominant products, reduction in regional milling output from Houston to Williams Lake will likely be proportionate to reduction in log supply. Number of mills operating may be dependent on capacities and efficiencies at individual mills. If larger capacity sawmills were to be the focus of future milling activity, then fewer mills are likely to be in operation than if production were to be spread out over smaller mills.

Opportunities for Diversification

- Construction underway for \$1-billion to \$1.5-billion Mount Milligan copper-gold mine 155 kilometres northwest of Prince George – 700 construction jobs; 400 operating jobs.
- New Gold Blackwater gold mine southeast of Prince George at advanced exploration stage, project description to be submitted in 2012, with construction 2015/2016 – 100 to 120 jobs during exploration; 400 during construction, and 300 to 400 operating, with 800 indirect spin-off jobs; \$800-million impact to local economy.

- Environmental studies and discussions with First Nations underway for Chu Molybdenum project southwest of Vanderhoof – \$750-million to \$1.25-billion investment; 300 to 400 operating jobs.
- Prince George/Bear Lake/McLeod Lake sand quarry to produce sand for oil and gas activity in the northeast – \$500 million, 300 operating positions, expected to begin environmental assessment process soon.
- Kemess underground gold-copper project expected to enter into environmental assessment in 2012 – \$723 million (\$286 million more once operating); 300 to 400 operating jobs.
- \$140-million Fort St. James Green Energy bioenergy project – completing and submitting permits, registrations, etc. Thermal generator – 80 construction jobs; 16 operating and 60 indirect.
- \$40-million West Fraser bioenergy project in Fraser Lake.

Opportunities for Mitigation

The mountain pine beetle epidemic will result in a substantial decrease in timber supply in some areas, which is expected to have significant economic and social ramifications. Analyses were undertaken to explore opportunities for potentially mitigating this decrease in the mid-term timber supply. The following seven mitigation scenarios for the Prince George Timber Supply Area were examined by a technical working group as part of a provincial mid-term timber supply project.

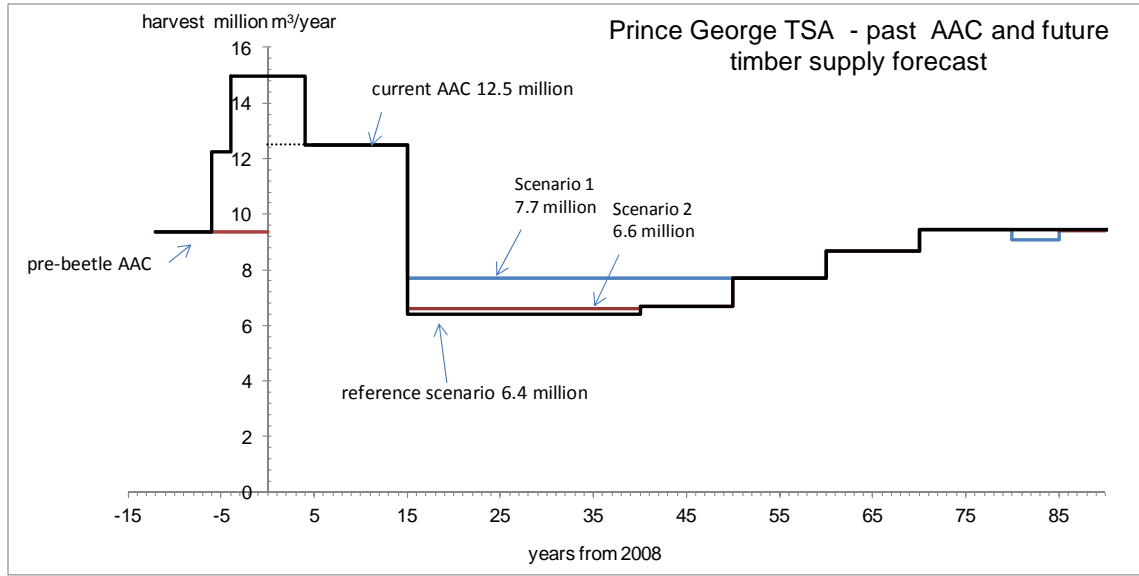
These scenarios were designed to illustrate the potential magnitude of timber supply affected by these objectives. This information is intended to inform the discussion on whether to initiate a process to review and/or amend objectives. It is anticipated that any decision to revise the objectives will need to be supported by transparent public dialogue and by consideration of the full spectrum of social, economic and environmental values and other effects.

Scenario 1 – Eliminate the Prince George Old Growth Order

This scenario examined the potential timber supply gain from not applying the old growth representation targets in the Prince George Old Growth Order. The mid-term timber supply was increased by 20 per cent to 7.7 million cubic metres. Relative to the reference case, this scenario has the potential of supporting an additional 1,085 person-years of employment.

Scenario 2 – Eliminate Visual Quality Objectives

This scenario examined the potential timber supply gain from not applying constraints for visual quality objectives. The mid-term timber supply was increased by 3 per cent to 6.6 million cubic metres. Relative to the reference case, this scenario has the potential of supporting an additional 167 person-years of employment.

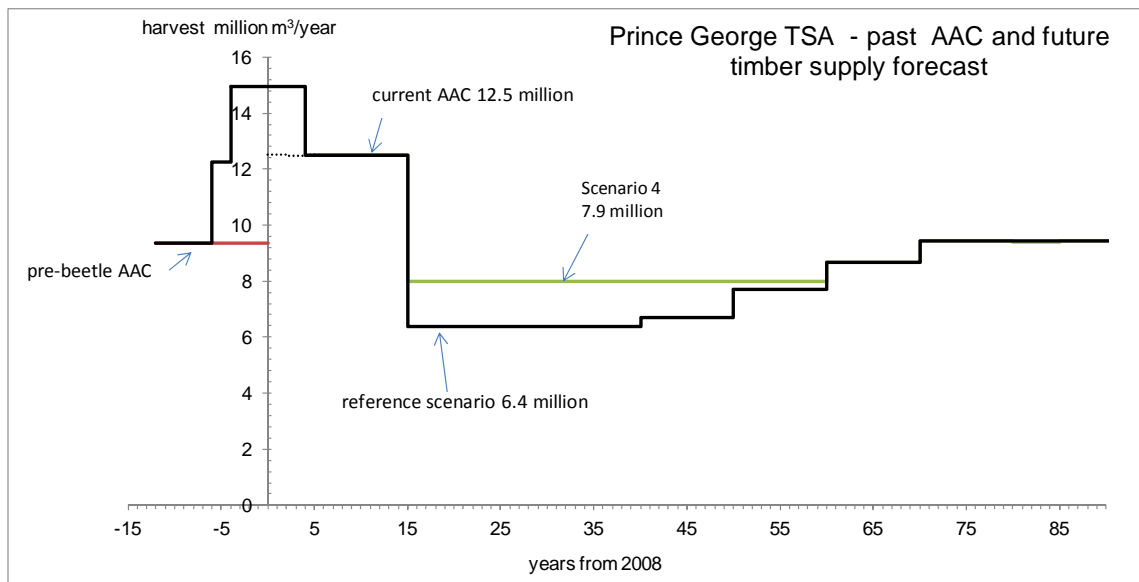


Scenario 3 – Eliminate Ungulate Winter Range

This scenario examined the potential timber supply gain from not applying constraints for ungulate winter ranges. It yielded a negligible increase in the mid-term timber supply.

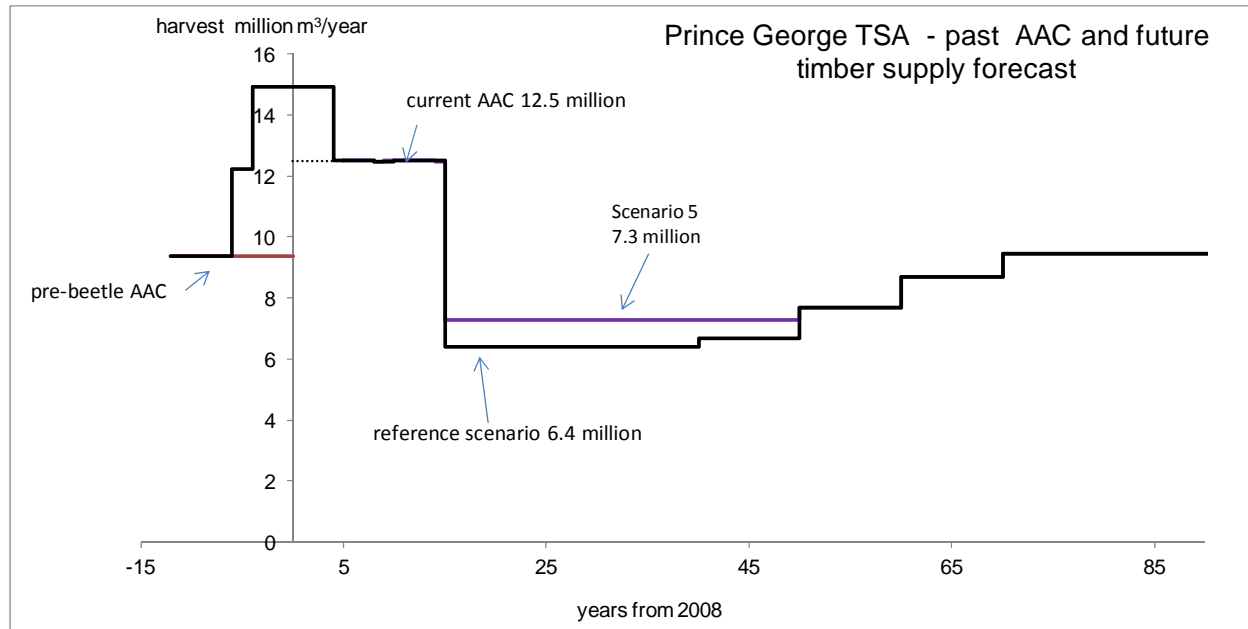
Scenario 4 – Eliminate Prince George Old Growth Order, Visual Quality Objectives and Ungulate Winter Range

This scenario examined the potential timber supply gain from not applying the old growth representation targets in the Prince George Old Growth Order and not applying constraints for visual quality objectives and ungulate winter range. The mid-term timber supply was increased by 25 percent to 7.9 million cubic metres. Relative to the reference case, this scenario has the potential of supporting an additional 1,334 person-years of employment



Scenario 5 – Replace the Prince George Old Growth Order with the Provincial Old Growth Order

This scenario examined the potential timber supply gain from replacing the Prince George Old Growth Order with the Provincial Old Growth Order. A comparison of the two orders indicates that the provincial order requires less old growth retention. In addition, the provincial order allows for old growth retention targets to be reduced by up to two-thirds in landscape units with a low biodiversity emphasis assignment. The mid-term timber supply was increased by 14 per cent to 7.3 million cubic metres. Relative to the reference case, this scenario has the potential of supporting an additional 750 person-years of employment.



Harvest Economics

Over the past 15 years licensees have demonstrated that they can afford to harvest stands with volumes as low as 182 m³/ha in the portion of the TSA where road hauling is used and 246 m³/ha where a portion of the log hauling is rail (Takla-Sustut area). They have also shown that for the road hauling area the maximum affordable cycle time (round trip transport time) is approximately 7.7 hours. For the portion that also uses rail, licensees can afford hauling 2.9 hours cycle time to the rail loadout. Two scenarios demonstrate how much more additional volume would be available if licensees could afford to harvest lower volume stands and have longer cycle times.

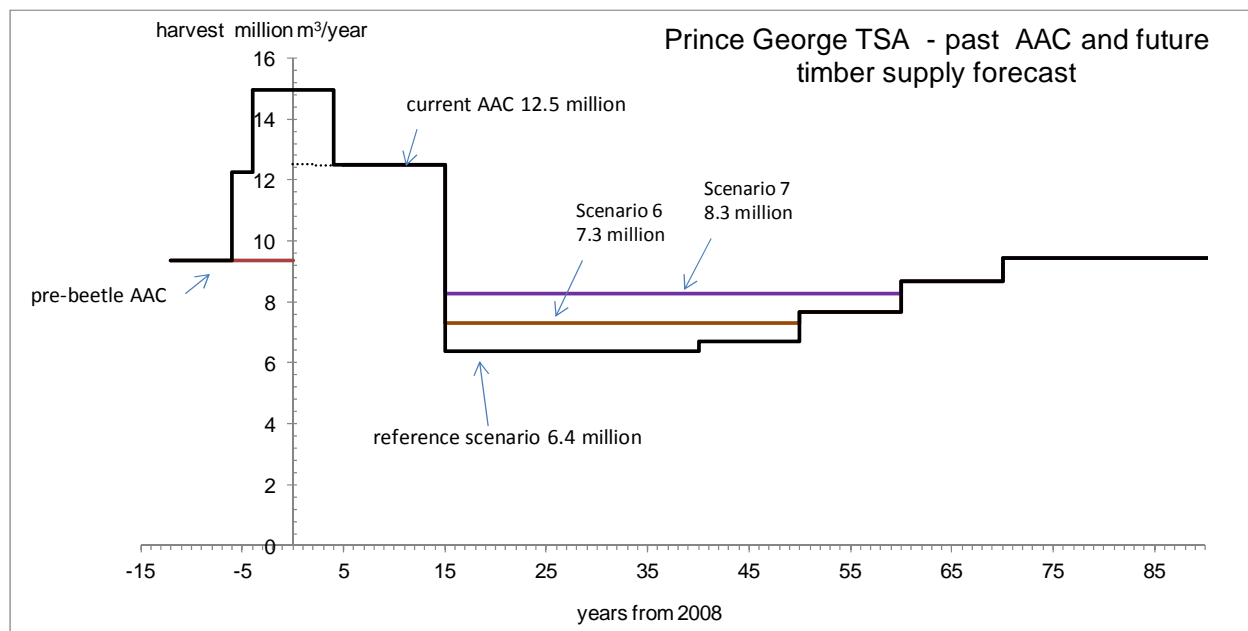
Scenario 6 – Reduce harvest threshold from 182 m³/ha to 140 m³/ha

This scenario examined the potential timber supply gain if licensees could afford to harvest stands as low as 140 m³/ha for all areas in the Timber Supply Area. The mid-term timber supply was increased by 14 per cent to 7.3 million cubic metres. Relative to the reference case, this scenario has the potential of supporting an additional 750 person-years of employment.

Scenario 7 – Reduce harvest threshold from 182 m³/ha to 140 m³/ha and increase cycle time out to the fringes of the Timber Supply Area

This scenario examined the potential timber supply gain if licensees could afford to harvest stands as low as 140 m³/ha and had no restrictions on cycle time. The mid-term timber supply was increased by 30 percent to 8.3 million cubic metres. Relative to the reference case, this scenario has the potential of supporting an additional 1,585 person-years of employment.

For both of these scenarios the additional mid-term volume is gained from harvesting poorer quality older stands as well as very young faster growing second growth managed stands. For Scenario 7 harvest is also obtained from isolated and more difficult terrain including supply block 'A', located in the northwest portion of the Fort St. James District.



Administrative considerations

- Amending the Prince 2004 George Old Growth Order would involve a process requiring significant time and resources.
- *Government Actions Regulation* process would be needed to change visual quality objectives and possibly general wildlife measures for ungulate winter range.
- All of these changes would require public and First Nations consultation, and would take at least a year to complete once started.

Resource Value Implications

Visual Quality - Scenic Areas and Visual Quality Objectives (VQO) are established on the landscape in response to public input and land use plans. Harvesting is allowed but the VQO classes provide direction with respect to size and scale. Removal or relaxation of VQOs may decrease public acceptance of forest harvesting, and could significantly impact tourism and outdoor recreation opportunities.

Further details – Resource Values Assessment: Visual Quality

Water – Loss of forest cover allows more precipitation to reach the ground, reduces evaporative losses, increases soil moisture and, when forest cover loss is extensive, results in more water leaving the watershed. This can lead to more flooding and erosion, deterioration of aquatic habitat and water quality, changes to plant communities and ecosystems, and risks to community safety, infrastructure and property, fish and fisheries.

Further details – Resource Values Assessment: Water

Riparian Management Areas: Riparian areas – lands next to wetlands or bodies of water such as swamps, streams, rivers or lakes – frequently contain the highest number of plant and animal species found in forest, and provide critical habitats, home ranges, and travel corridors for wildlife. Streamside vegetation protects water quality, stabilizes streambanks, regulates stream temperatures, and provides a continual source of woody debris to the stream channel. Reducing the size of riparian management areas can affect ecosystem resilience, lead to habitat fragmentation and reduce connectivity. Potential deterioration of terrestrial and aquatic habitat and water quality could increase risk to fish, fish habitat and listed species, and increase the instability of streams, putting infrastructure and productivity of forests at risk.

Further details: Resource Values Assessment: Riparian Management Areas; Resource Values Assessment: Water; Resource Values Assessment: Biodiversity

Old Growth – Old growth management areas retain/recruit the old-growth structure needed to conserve ecosystems and species biodiversity. They are difficult to reproduce once lost. Old growth enhances ecosystem resilience, which means it is better able to respond to changing environmental conditions, e.g. climate change, wildfire, pests. Old growth management areas provide habitat and connectivity; some species depend on old growth for survival.

Further details – Resource Values Assessment: Old Growth

Non-Spatial Old Growth Retention – The *Order Establishing Landscape Biodiversity Objectives for the Prince George Timber Supply Area* sets out a target percentage for old growth retention in the management unit. A government-industry technical group is currently exploring ways to improve the Order to increase timber supply without risking landscape-level biodiversity.

Further details – Resource Values Assessment: Non-Spatial Landscape Biodiversity Objectives for the Prince George Timber Supply Area and Resource Values Assessment: Old Growth

Biodiversity – Measures to conserve biodiversity include coarse filter and fine filter approaches, and both are important to maintain ecosystem resilience and increase options to respond to changing environmental conditions. Coarse filter approaches, such as old growth management areas, preserve ecosystems within

their native composition, structure, and function so they can better retain most of the species that evolved within them. Fine filter approaches, such as ungulate winter ranges, meet the needs of a specific species or ecosystem.

Further details – Resource Values Assessment: Biodiversity and Resource Values Assessment: Old Growth

Landscape Biodiversity – Current forest management is based on the premise that managed disturbances should be designed to emulate natural disturbance regimes, leaving mature forest structure across the landscape to maintain wildlife habitat, biodiversity, and hydrological and ecosystem function. The current pattern of large-scale salvage and large openings diverges from the natural landscape patterns and openings, resulting in reduced species richness and abundance, changes in watershed hydrology and increased risk of catastrophic forest health challenges.

Further details – Resource Values Assessment: Landscape Biodiversity – Large Openings

Species at Risk – B.C. is Canada's most biologically diverse province. Species at risk are provincially and/or federally designated Red and Blue species, populations and ecological communities classified by the Conservation Data Centre as Endangered, Threatened or of Special Concern. These designations use science parameters to determine potential extinction or extirpation risks, and whether special attention is needed. Accelerated harvest, excessively large young openings, high road densities, reduced forest stand retention, and increased human access can all exacerbate the threat to species at risk.

Further details – Resource Values Assessment: Species at Risk

Wildlife – Conservation strategies aim to maintain the mix of landscape conditions necessary to sustain all species. Management tools include protected areas and old-growth management, wildlife habitat areas and ungulate winter ranges, wildlife tree patches, and landscape seral-stage targets. A full range of ecosystems is needed because many potential impacts are poorly understood, such as changes in predator/prey dynamics or effects of invasive species and climate change. Simplifying ecosystems can reduce resilience; leading to greater risk of future catastrophic pest infestations, susceptibility to climate change and trend towards species generalists.

Further details – Resource Values Assessment: Wildlife

Ungulate Winter Range – Ungulate winter range is designated under the *Forest and Range Practices Act* as an area necessary for the winter survival of an ungulate species such as moose, deer, and caribou. Designations are based on best available science, local knowledge and other expertise, and supported by extensive consultation. A reduced area of suitable winter habitat would impact the abundance and distribution of ungulate species.

Further details – Resource Values Assessment: Ungulate Winter Range

Wildlife Habitat Areas – A wildlife habitat area is designated under the *Forest and Range Practices Act* as an area that identifies necessary habitat for the survival of a species at risk. The largest wildlife habitat areas manage and protect woodland caribou habitat. Reductions in wildlife habitat areas are likely to result in negative population implications for species at risk, possibly resulting in locally and regionally depressed populations. In the worst case scenario, it could lead to compromised population status and possibly extirpation (long-term loss of the species from the area).

Further Details – Resource Values Assessment: Wildlife Habitat Areas; Resource Values Assessment: Species at Risk; Resource Values Assessment: Mountain Caribou; Resource Values Assessment: Northern Caribou

Resource Roads – Resource roads needed for timber harvesting provide access for backcountry recreation and fire management but can have negative terrestrial and aquatic environmental impacts such as dispersion of invasive plant and animal species that can put biodiversity and native species at risk; loss of habitat or habitat fragmentation; injury or death from vehicle collisions; modified animal behavior; more sediment in streams; increased predator effectiveness; and increased pressure on previously unmanaged fish and wildlife populations.

Further details – Resource Values Assessment: Access Management – Resource Roads

Recreation Sites and Trails – The provincial network of 1,319 recreation sites and 818 recreation trails on Crown lands outside parks and municipalities involve integrated management, with timber harvesting, range, commercial recreation, mining and other activities and uses. Overall, timber supply impacts are negligible because these represent a small part of the operable timber supply area. The public expects mature forest cover to be sustained in the few recreation sites and trails not affected by beetles, and there is greater demand for sites with forest cover.

Further details – Resource Values Assessment: Recreation

More information:

Mid-Term Timber Supply Project

www.for.gov.bc.ca/hfp/mountain_pine_beetle/#whatsnew

Prince George Timber Supply Area Technical Working Group Report (November 2011)

www.for.gov.bc.ca/hfp/mountain_pine_beetle/Mid-Term-Timber-Supply-Report_Appendix-5.pdf

Forest Analysis: Prince George Timber Supply Area

www.for.gov.bc.ca/hts/tsa/tsa24/index.htm

Land-Based Investment Strategy (Prince George Timber Supply Area)

<http://lbis.forestpracticesbranch.com/LBIS/node/49>

Fort St. James Land and Resource Management Plan

www.ilmb.gov.bc.ca/slrp/lrmp/princegeorge/fort_stjames/index.html

Prince George Land and Resource Management Plan

www.ilmb.gov.bc.ca/slrp/lrmp/princegeorge/pgeorge/index.html

Vanderhoof Land and Resource Management Plan

www.ilmb.gov.bc.ca/slrp/lrmp/princegeorge/vanderhf/index.html