Allowable Annual Cuts in British Columbia

The Agony and the Ecstasy

Address by

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UBC Faculty of Forestry
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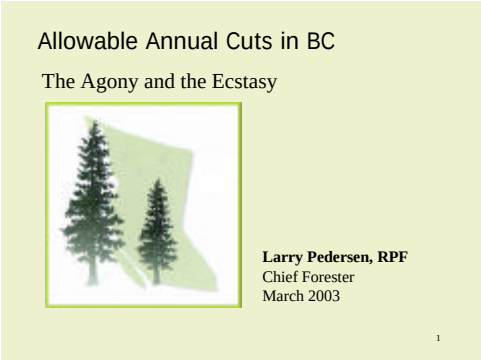

Good evening and thank you for the opportunity to come and speak to you today on the topic of Allowable Annual Cuts in British Columbia.

I am honoured to have been asked to make this presentation in special memory of the late Dr. J. Harry G. Smith, and to read his biography to you:

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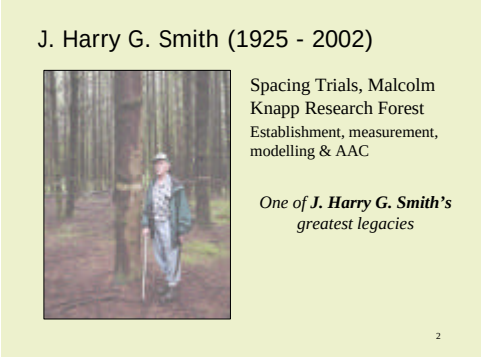

Dr. John "Harry" Gilbert Smith (B.S.F. (Hons) (1949) Brit.Col., M.F. (cum laude) (1950)., PhD (1955) Yale., R.P.F.) was a Professor in the Faculty of Forestry for 40 years, where he made an outstanding contribution to his profession of Forestry.

Harry's parents, Gilbert and Carmen Smith, were pioneers of British Columbia. Harry grew up in the pioneer life-style of the Interior of British Columbia, first in Chinook Cove and Blue River, and later in Kamloops. He lived in a log cabin, was schooled in a two room schoolhouse and later went on to a distinguished career obtaining undergraduate and postgraduate degrees in forestry from the University of British Columbia and Yale University. During his time studying, Harry also received numerous academic awards including the Alaska Pine Scholarship, H.R. MacMillan Fellowship, Canadian Pulp & Paper Association Fellowship, and at Yale, the Sage Fellowship and the Strathcona Scholarship. Harry also served in the RCAF during World War II as a navigator/bombardier. In 1953 he married Helen, and had three children, Craig, Alan and Heather.

Harry was a stimulating educator, an immensely productive researcher, and an administrator and professional forester who gave a great deal to advance his profession. Although he taught courses only in forest management in his later years, in earlier times he taught all or parts of biometrics, mensuration, silviculture, photogrammetry, economics, forest policy and fire control.

Harry's 40 years of service to the Faculty, from 1950 to 1991, was exceeded only by Professor Malcolm Knapp. Harry was the thesis supervisor of 35 Masters and 17 Doctoral candidates (six of the PhDs serve on Canadian university faculties). He was a committee member of many more. In research, Harry was an innovator, always interested in shortening rotations and improving efficiency of land management. He has left a living legacy in the form of growth and yield spacing trials, instituted in the 1950s at the Malcolm Knapp Research Forest. These will continue to offer insights into optimum yields into the future.

Harry chaired several committees within the Association of British Columbia Professional Foresters, and received their Distinguished Forester Award in 1995. He was president of the Canadian Institute of Forestry in 1980, and was editor of the Forestry Chronicle for six years. He was also associate editor of the Canadian Journal of Forest Research for twelve years. When the Faculty was divided into departments in 1983, he was the first head of the Department of Forest Resources Management. He also documented the history of the UBC Faculty of Forestry in the publication *'UBC Forestry 1921 – 1990: An Informal History'*, to mark the 75th anniversary of UBC.

Harry also served as director of Gilbert Smith Forest Products Ltd., Barriere, BC, the family firm founded by his father, and now run by his brothers Ted, and Carmen, and Bob as a director. Harry's non-stop work ethic reflected his pioneer determination. Harry loved the outdoors from his early days of ski racing and ski mountaineering to his later passion for fishing and gardening. Harry was the president of the Varsity Outdoor Club and he and Helen were active members.

Harry contributed so much to his profession, his university and students, and his family. I personally know how much Harry contributed because he was a professor of mine here at UBC, and he has sent me many a submission in my time as Chief Forester, in fact up until very recently.

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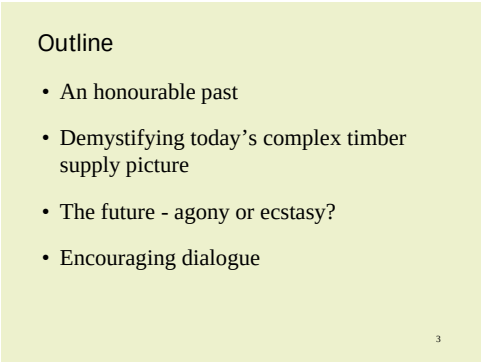

You might wonder why I would choose the title 'The Agony and the Ecstasy'. For those of you who don't know the book or the movie, it's about Michelangelo's struggle with the Pope about the style of painting and sculpture for the Sistine Chapel. The world of AACs is not without its own parallel struggles as you will see through my eyes during this presentation.

This presentation will first trace the history of harvest regulation in the province — an honourable past that continues to influence allowable annual cut (AAC) policy and decisions today. This will be followed by a close look at the timber supply picture today. As the invitation to this presentation indicated, this is a controversial topic, and one that is incredibly complex. So I'm going to try to demystify some of the complexities. Finally I will look to the future and provide

some perspectives from my unique vantage. It is my wish that we end this session with a dialogue about the challenges and controversies surrounding AACs in BC today.

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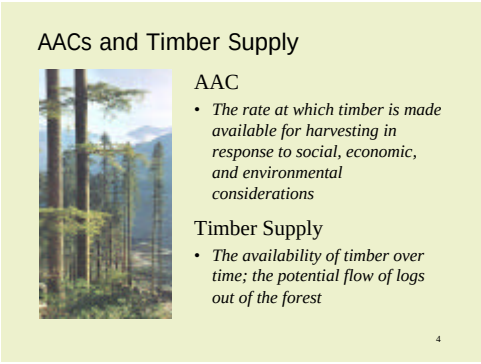

Before we begin to trace the historical background, I need to introduce some of the time worn language and principles of AACs and timber supply. An allowable annual cut is the rate at which timber is made available for harvesting in response to social, economic, and environmental considerations — simply put it is how many trees can be cut in a year. Timber supply refers to the availability of timber over time, often for as long as 200 or 300 years, to account for the long lifecycles of the commercial tree species in this province.

1. An Honourable Past

a) Hanzlik's formula

We need to go a long way back to find the beginnings of the concept of harvest regulation in the province.

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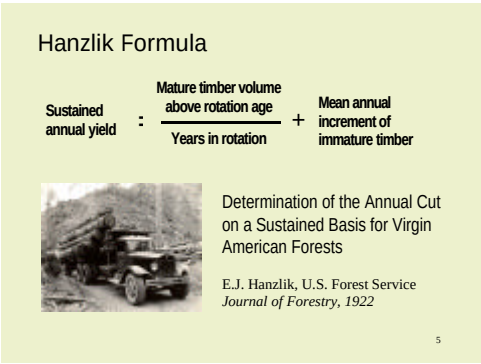

A pivotal paper that influenced BC policy was written in 1922 by E. J. Hanzlik in the *Journal of Forestry*. The harvest regulation method he recommended became known as 'Hanzlik's formula'. An early Chief Forester, Mr. F. D. Mulholland, used this formula in his 1937 survey of British Columbia's forest resources. During these early years, the province was struggling with emerging concepts of sustainability and the need to ensure that it's once seemingly inexhaustible timber supply was harvested at a rate that met the needs of both current and future generations.

Hanzlik's formula evolved from European concepts, and was developed by our southern neighbours before being adopted in BC. The formula was designed to ensure that ongoing

harvest rates resulted in the conversion of forest estates to a 'normal forest', wherein equal volumes of timber became available over time.

Dr. Smith, my forest management professor taught me that this was achieved by essentially creating a balance of age classes in the forest that could each grow to maturity and be harvested. While maturity was a noble goal for the forest, I know that Dr. Smith had even higher hopes that one day, the students of the infamous class of '75 would also mature and grow up, well beyond the state that he found us in, in the early part of our careers.

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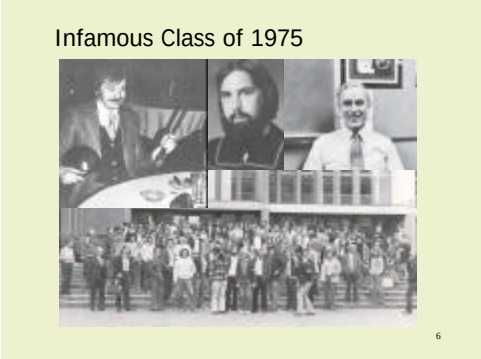

Well Harry, I'm pleased to report…we did grow up….sort of…although we're still capable of the odd high-spirited antic. Thanks to Harry for putting up with us and ensuring that we were well grounded in the complex concepts of forest management.

b) Sloan Royal Commissions

Back to early history — a Royal Commission was established in 1945 to address concerns about the lack of regulation of the expanding timber harvest, principally on the coast. Chief Justice Gordon McGregor Sloan's recommendations contain the origins of the 'sustained yield' policy in the province by identifying the need for harvest regulation that ensures:

'…a perpetual yield of wood of commercially usable quality from regional areas in yearly or periodic quantities of equal or increasing volume' [1]

[1] The Honourable Gordon McGregor Sloan, Chief Justice of British Columbia. 1945. *Report of the Commissioner relating to The Forest Resources of British Columbia,* p. 127.

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1945 Sloan Commission

Origins of sustained yield in BC

'…a perpetual yield of wood of commercially usable quality from regional areas in yearly or periodic quantities of equal or increasing volume'

Anticipating increased yields

'Silviculture can, and will, increase the yield and the optimal yield would result from an intensive use of the productive capacity of an area.'

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The Commission report clearly states the expectation that:

'Silviculture can, and will, increase the yield and the optimal yield would result from an intensive use of the productive capacity of an area.' [2]

Sloan recommended an AAC of 3.5 million board feet for the coast for the ensuing ten year period — this translates to approximately 16.5 million cubic metres, which curiously, is very close to the amount of timber cut on the coast of BC last year. For those of you who don't relate very well to cubic metres — a telephone pole contains approximately one cubic metre of wood. The Commission report was followed by the establishment of sustained yield management units on the coast.

Prior to the Sloan Commission, the timber harvest had risen relatively modestly, with a predictable decline during the war years, to roughly 15 million cubic metres annually, with the bulk of this timber coming from the coast. In the decade following the 1945 Sloan Commission, the volume of timber cut doubled, with the majority of the increase coming from the growing industry in the interior of the province. At the time, this new interior industry was primarily cutting timber for the production of railway ties. Many of the current Tree Farm Licences were also awarded during this time. This rapid increase prompted a second Royal Commission in 1955, again lead by Chief Justice Sloan.

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1955 – Second Sloan Commission

'There is a moral obligation on this generation to leave the forests in a productive state, … not merely that they have been reforested after logging, but that the growing stock is capable of sustaining an annual yield of commercial quality.'

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[2] Sloan 1945 supra, p. 127

Given that silviculture had been identified as a key element of the sustained yield policy in 1945, Judge Sloan was greatly concerned about the lack of reforestation and potential 'overcutting' of old-growth on the coast. After analyzing this situation he admonishes:

'There is a moral obligation on this generation to leave the forests in a productive state, … not merely that they have been reforested after logging, but that the growing stock is capable of sustaining an annual yield of commercial quality.' [3]

Regardless, he reconfirmed the wisdom of the sustained yield policy and the use of Hanzlik's formula, which continued until the late 1970's.

c) Industrial expansion

Over the next two decades, the volume of timber cut provincially doubled again, to nearly 60 million cubic metres per year, with increases in both the coastal and interior harvest.

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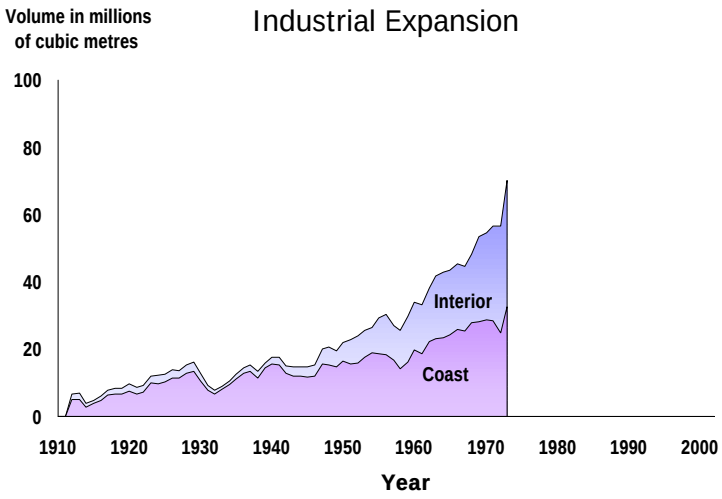

In 1966 the industry shifted from utilizing only large diameter trees to a much higher utilization standard known as 'close utilization' as smaller and smaller pieces became economical to harvest. As well, products from species like lodgepole pine and hemlock had become commercially viable and these species became merchantable. It has always amazed me that, just a few short decades ago, these two species, one that is now the mainstay species of the coastal industry and the other of the interior, were considered to be "weed species" with limited commercial potential. During that era, when they were encountered they were either avoided, or often wasted. These changes were reflected in substantial increases to the overall provincial AAC, which reached a high of almost 85 million cubic metres in 1975, although this AAC was never fully committed in harvesting agreements.

It was during this time that many of the current sawmills and pulp mills were built throughout the province, replacing the hundreds of traditional 'bush mills' with sophisticated industrial complexes. It was a time of significant growth in the province — many of today's transportation networks were created during this time, and many of our smaller communities underwent a

[3] Honourable Gordon McGregor Sloan, Chief Justice of British Columbia, 1956. *Report of the Commissioner on The Forest Resources of British Columbia*, Volume I, p. 236-237

substantial transformation, growing into flourishing economies, with the amenities that local societies enjoy to this very day.

d) Continuing commitment to sustained yield

A continuing commitment to the concept of sustained yield guided forest policy and harvesting during this time. AACs continued to be set for ten year periods using Hanzlik's formula, with the refinements of an 'Area-Volume Check' and an accounting for land alienations, logging roads, regeneration delay and unsalvaged losses, to ensure the calculated timber volumes were likely to be available from each unit over one rotation.

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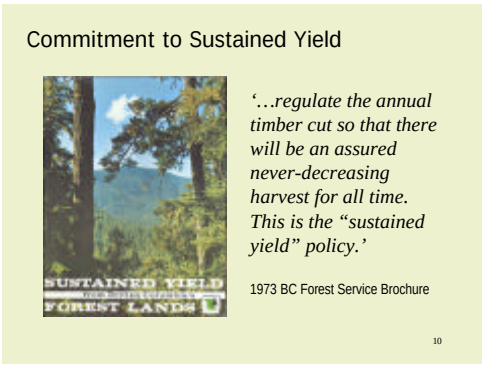

A BC Forest Service pamphlet published in 1973 titled *SUSTAINED YIELD from British Columbia's FOREST LANDS* states the organization's commitment to:

'…regulate the annual timber cut (so) that there will be an assured never-decreasing harvest for all time. This is the "sustained yield" policy.'

It is important to note that during the first thirty years of harvest regulation in the province, there was no intent or expectation that there would be a fall-down in timber supply over the long term, because of increased yields expected from managed forests. You may hear that at the time a fall-down was expected, but the historical record does not support this view. On the other hand, while careful review indicates that the methodology would likely induce a fall-down, learned people were simultaneously optimistic that good forest management would balance it off.

e) Pearse Royal Commission

By the mid-'70s, the dramatic changes in the size, structure and technology of the forest industry, and its impact on forest values led to another Royal Commission. This Commission was tasked with examining forest policy broadly, particularly as policy had remained essentially unchanged for 50 years. One of UBC's esteemed professors, Dr. Peter Pearse, chaired the Commission, which reported out in 1976. Dr. Pearse spent a good amount of time examining the harvest regulation policies of the time, and while he recognized the progress made in achieving regulation, and the contributions of improved inventory information, he noted significant shortcomings.

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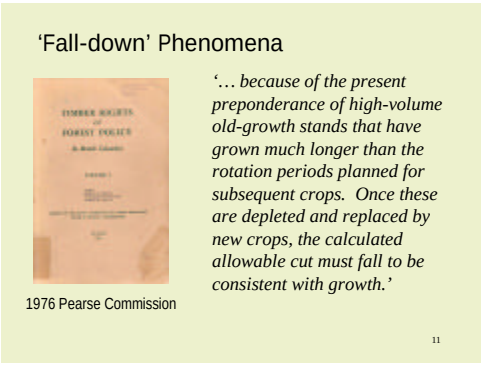

The Pearse Commission report refers for the first time on record to the potential of a 'fall-down' in harvest rates in the transition to harvesting second-growth forests:

'… because of the present preponderance of high-volume old-growth stands that have grown much longer than the rotation periods planned for subsequent crops. Once these are depleted and replaced by new crops, the calculated allowable cut must fall to be consistent with growth.' [4]

He recognized the apparent incongruity of this phenomena and the 'sustained yield' policy. Although the difference between the amount of timber from high-volume old-growth forests and young, managed forests was clear to Dr. Pearse, he was also optimistic about the benefits of good forest management and noted that a fall-down might not occur because:

- new forests would be more productive than old forests;
- logging and sawmill utilization technology would increase merchantable area and volume; and
- the 'allowable annual cut effect' would increase AACs.

The allowable annual cut effect suggests the productivity of new forests shortens rotation ages, making second growth wood available earlier, easing constraints on harvesting currently mature timber, and increasing AACs in the short- and long-term.

Dr. Pearse's conclusions stated that allowable cuts should not be set immediately at long-term sustainable levels, but should take advantage of the higher harvest rates possible in high-volume old-growth forests.

[4] Peter H. Pearse, Commissioner. 1976. *Timber Rights and Forest Policy in British Columbia*, Report of the Royal Commission on Forest Resources. Victoria. Volume 1, p. 227.

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Pearse's Conclusions

Allowable cuts should not be set immediately at long-term sustainable levels, but should take advantage of the higher harvest rates possible in high-volume old-growth forests.

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His recommendations called for wide-ranging changes in forest policy. These recommendations were largely adopted by government, resulting in a new *Ministry of Forests Act* and a new *Forest Act* in 1979. Under the new *Act*, the BC Forest Service, which had been established in 1912, became the Ministry of Forests, with responsibility to manage a broad range of forest resources. Indeed, Dr. Pearse's observations, made 27 years ago, are still very much reflected in some of the policies that today's AACs are based upon — these concepts have been prevalent for the entire span of my career.

f) A new process

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A New Policy Framework

- 1979 - New *Ministry of Forests Act* and *Forest Act*
- MOF objectives expanded to include resource values other than timber
- multiple-use planning process established
- new process for determining allowable annual cuts

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The new *Forest Act* outlined a new process for assessing timber supply and determining AACs. In contrast to the previous era of AAC calculations using Hanzlik's formula and area volume allotment checks, AACs were now to be determined by the chief forester after considering a wide range of information. Accompanying policy intended that AACs would be reviewed every five years, not ten years as in the past.

Using new, more sophisticated timber supply analysis and modelling techniques, fall-downs were identified in both the chief forester's AAC determinations and in the 1980 and 1984 *Forest and Range Resource Analysis* reports.

By 1980, Chief Forester Bill Young had adjusted AACs to the level of commitments in existing licences, resulting in a reduction in the total provincial AAC from a high of 82 million, to 68 million cubic metres.

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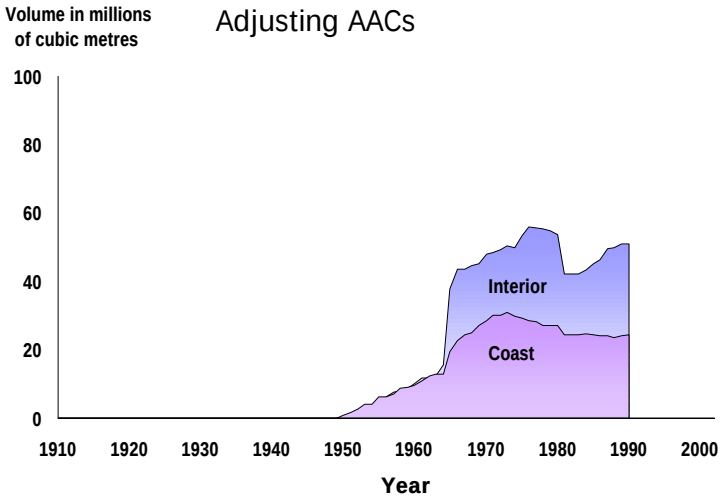

In the 1980s, as the 'war in the woods' escalated, a variety of planning approaches were undertaken in an attempt to implement new multiple use policies. At the same time, analytical techniques were improving to support AAC determinations, and attempts were made to mesh land use planning and AAC determination processes. The outcome was a lot of learning, but few determinations were completed — during eight years, AACs were revisited for only 13 of the 35 Timber Supply Areas (TSAs), indicating it would take up to 24 years to review all the TSAs in the province.

As one of several initiatives undertaken in the early '90s, the Forest Service conducted an internal review of harvest regulation in the province, resulting in what is now referred to as the Errico/Pedersen report, or Pedersen/Errico report, depending on which one of us is present. And since Darrell's not here, we'll refer to it as the Errico/Pedersen report. In an ironic twist of fate, or perhaps a case of walking your talk, I eventually became chief forester and hence became responsible for achieving the changes recommended in our report.

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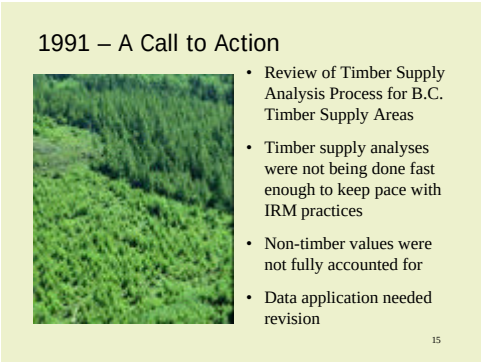

In our review we found that:

- timber supply analyses were not being done fast enough to keep pace with changing integrated forest management objectives and practices;
- non-timber values were not fully accounted for in AACs; and
- data application needed revision.

Legislative, policy, organization and timber supply analysis changes resulted from this review. The *Forest Act* was changed to require AAC determinations every five years for each tree farm licence and timber supply area. A separate branch — the Timber Supply Branch — was created within the Ministry of Forests. A detailed process, known as the Timber Supply Review or the TSR, was established in 1992 to gather the information needed to make timely, defensible AAC determinations. In 1994 I was appointed to the position of Chief Forester. I am extremely proud of the Timber Supply Review, and of the staff who work on the Review.

g) Timber Supply Reviews

The foundation for the Timber Supply Review is Section 8 (8) of the *Forest Act*. This section requires that the potential timber production from a unit, alternative rates of harvest, timber processing requirements, possible losses to natural factors such as fires and pests, and the government's social and economic objectives be considered in AAC determinations.

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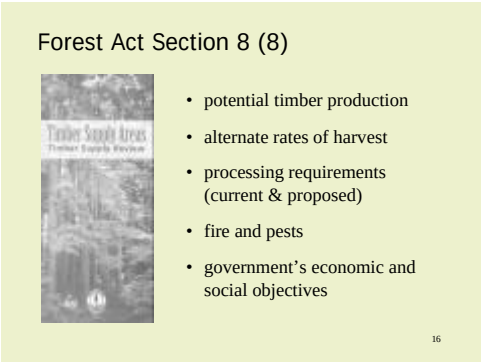

The information that I consider regarding the rate of timber production includes data about the size of the timber harvesting land base, current forest practices for environmental values such as biodiversity and social values such as viewscapes, the age class distribution of the forest, reforestation and silviculture treatments, timber utilization standards, and growth and yield for natural and managed forests.

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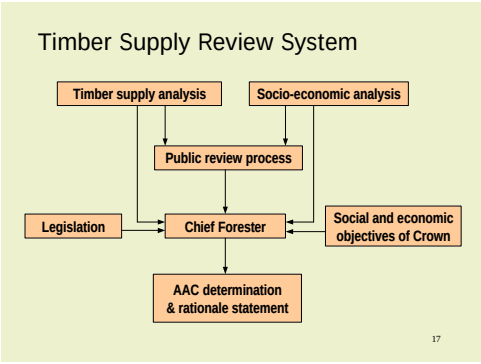

The Timber Supply Review for each Timber Supply Area includes the preparation of an analysis report, which is reviewed by the public. The analysis report, a summary of public input, government's social and economic objectives and further information on key factors affecting timber supply are then considered by me for each AAC determination. Once each determination has been made, it is reported in a detailed written rationale that explains how the factors were

considered. These rationales have become an important public record of these decisions. AAC determinations for Tree Farm Licences follow a similar path as part of the development and approval of the management plan for each licence.

Reaching an AAC determination is one of the most agonizing, and yet fascinating decisions that anyone could be asked to make – and sometimes I have to go off to the 'quarry' as Michelangelo did to clear my head and find inspiration. This independent judgement is perhaps the most important responsibility of the Chief Forester, and one that my predecessors and I have taken very seriously.

At the end of the first Timber Supply Review, the total provincial AAC had been reduced by less than one per cent to 71 million cubic metres. While this doesn't sound like much of a change, the devil, and the agony or ecstasy is in the details — AACs were reduced in thirty-two units, in twenty they were unchanged, and in nineteen AACs were increased. The results varied greatly around the province — the declines occurred primarily in the Vancouver and Nelson Forest Regions, with the Kamloops and Prince George Regions seeing increases.

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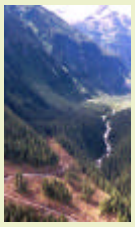
TSR 1 - Provincial Results



- Reductions in 32 units
- Increases in 19 units
- 20 units unchanged
- Overall reduction of less than one percent to 71 million cubic metres
- Declines primarily in the Vancouver and Nelson Forest Regions
- Increases in Kamloops and Prince George Forest Regions

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We have now completed the second Timber Supply Review. In fact, I am pleased to tell you that I have just recently completed my 100th AAC determination — and people tell me I don't look a day over 50. In recent years I have had the assistance of the Deputy Chief Forester, who now routinely decides the AAC determinations for Tree Farm Licences — together we have made 125 determinations in the past 9 years.

Before we examine the provincial timber supply forecast today, let's revisit the historical AAC and actual harvest levels, taking a close look at the recent past.

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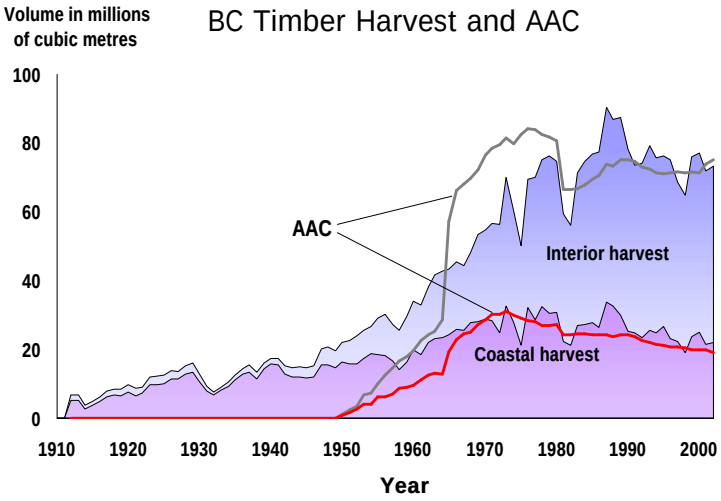

As this figure illustrates, harvest rates have fluctuated significantly since 1980 — as shown by the purple area for the coast and the blue area for the interior, while AACs have remained relatively stable between 70 and 75 million cubic metres per year — the coast component is shown by the solid red line and the total AAC — coast plus interior — is indicated by the solid black line.

2. Demystifying Today's Complex Timber Supply Picture

Having taken a look at the history of harvest regulation in the province, let's now look at the provincial timber supply picture today.

The current AAC is 75 million cubic metres, including the temporary increases totalling about 5.5 million cubic metres that are in place for salvaging timber attacked by mountain pine beetle in the interior of the province. As this generalized picture of timber supply in BC indicates, if current management approaches were to continue, and there were no changes in the land base or information used in the analyses, projections indicate that this level could be maintained for 30 years. Timber supply is then expected to decline over a decade to 60 to 65 million cubic metres, staying at this level for roughly 50 years before returning to approximately the current AAC.

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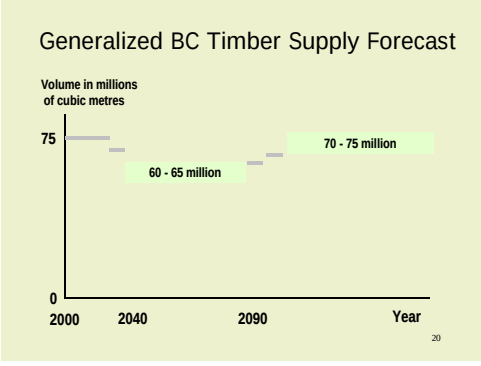

This provincial-level schematic looks promising when compared to the more drastic short- and long-term declines projected early in the first timber supply review. However, the actual forecasts for individual tree farm licences and timber supply areas vary greatly, with the most

substantial reductions continuing to be forecast in the coastal and Kootenay regions of the province, and for units where mountain pine beetle outbreaks are occurring in the central interior.

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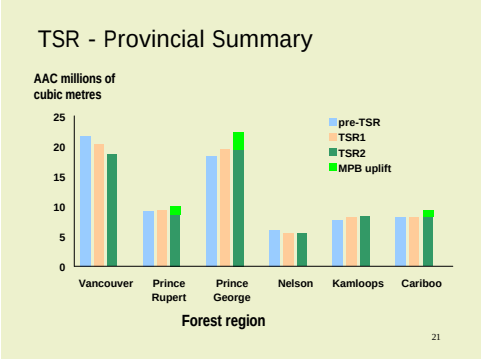

The bright green indicates where the AAC increases have occurred for mountain pine beetle salvage. Detailed analyses completed for the pine beetle units indicate a 10 to 15 percent decline in mid-term timber supply will be necessary to offset the current increases for salvaging beetle-damaged timber.

I've been accused of conjuring up AAC determinations from a black box or a crystal ball, without defensible reasoning. Without risking my job security by sharing my conjuring chants, I want to attempt to demystify how we've reached the current picture, as I'm sensitive to whether the process and the decisions are understood.

a) Accounting for social expectations

As I mentioned, before the Timber Supply Review, AACs were calculated using Hanzlik's formula and area-volume allotment checks. In this era it was assumed that most, if not all, the forest land in a unit would be available for timber harvesting, and timber supply was calculated over one rotation only. Such recent notions as protected areas, biodiversity, riparian areas, and wildlife habitats were not factored into these AACs.

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Then, in the 1980s and 1990s, to address concerns about management for environmental values, governments made substantial decisions about protected areas and forest practices that reduced the land and timber that is now available for timber harvesting. From a timber supply perspective, these choices removed some of the mature timber that had been expected to be

available for harvesting until the immature forests became mature. Consequently, the AACs calculated in the early days were higher than could be achieved over the long term.

b) Relationship between forest management and AACs

There are substantial myths about the relationship between forest management decisions and AAC determinations in BC. It is contended by some people that AACs drive forest management in this province. However, current land use and practices are 'inputs' to the timber supply review. AACs are outcomes that are decided using the best available information about our forests, current land use and forest management.

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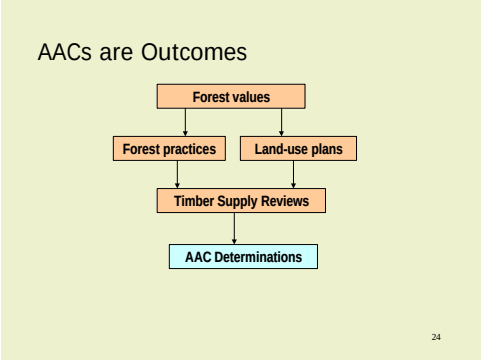

In some units, land use, practices, or First Nations treaties remain unresolved when AAC determinations are due. The *Forest Act* does not permit me to anticipate government decisions. I realize that my failure to speculate is disappointing to some — however these are social choices that are best and rightly placed with elected governments, not statutory decision makers like me.

Another question related to AACs and forest management often elicits the most heated discussion — are we overcutting?? Before engaging in this discussion, we first need to understand what is meant by 'overcutting' — is it about how much timber is being harvested, or is it about where it is harvested, or is it about how and with what type of practices that is the root of the concern? Or is it how much timber is being removed from the forest versus how much is left?

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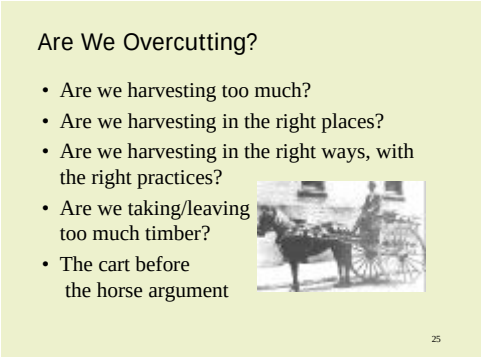

I suggest that it is usually whether we are harvesting in the right way, in the right places at the right times — which are land use and forest practices questions. I contend that the 'right' AAC will not ensure the 'right' forest practices. And while I'm not intending to pass the buck, because at least the practices topic eventually lands in my lap too, I strongly encourage that these

important questions be appropriately directed to the best forum for addressing the concerns — which is most often in land use plans and forest practices debates. Simply put — if land use or practices change, timber supply will usually change, but the opposite is not true. Viewed as a cart or a horse argument — AAC's are the cart being pulled by the land use and forest practices horses.

c) Facing uncertainties

Where forest practices, land use or First Nations treaties are uncertain, this reality is not ignored. If decisions might be made by government that affect short-term timber supply in a given unit, the AAC rationale makes it clear that I am willing to reconsider the AAC before the legislated 5 year time frame.

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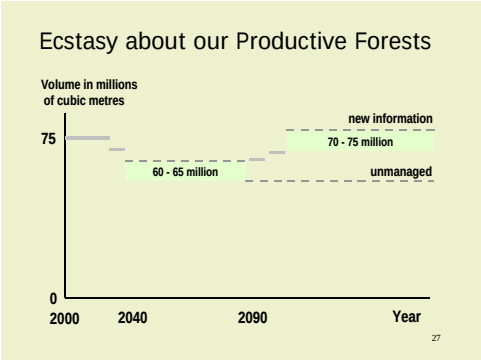
In addition to uncertainties about the outcomes of social and economic decisions, in the short- and the long-term, there are also uncertainties about the accuracy of the technical information, such as inventories or growth and yield data, and about unpredictable natural disturbances. Again these uncertainties are not ignored — the analysis report includes sensitivity tests for key factors to evaluate the impacts of different information. In some cases, where uncertainties become evident just before the AAC determination, I have additional analysis completed to address specific concerns. The challenge in a determination is to consider and weigh these sensitivities to reach a defensible decision.

d) Ecstasy and agony about our productive forests

One of the most debated topics in the timber supply reviews has been the expected yields from managed forests — the timber volumes that will grow and be available to cut from regenerated forests. Remember that the sustained yield concept advocated by Hanzlik, Mulholland and Sloan, and supported by Pearse, was dependent on increased timber yields from these new forests — you can expect that would be a critical element of timber supply in the province.

At the beginning of the first timber supply review, in the absence of better information, the timber volumes expected from new or managed forests, where silviculture treatments have influenced tree species and spacing, were forecast to be the same as for unmanaged forests. Substantial fall-downs were forecast in some units, as Pearse had warned, and as shown on this graphic by the straight dotted line from the mid- to the long-term labelled 'unmanaged'.

Slide 26



During the two rounds of the timber supply reviews, two types of new information changed the growth and yield we expect from managed forests. The compilation of new growth and yield data for managed forests, based on sample plots throughout the province, became available during the first review. During the second review, research was completed that confirmed that in addition to our new forests growing faster, the productivity of our forest lands was much higher than we had anticipated. Based on this new information, on average, the projected volumes from new, managed forests are 20 to 30 percent higher than for unmanaged forests. Hanzlik, Mulholland, Judge Sloan and Dr. Pearse had anticipated this outcome, and many field foresters had advocated this for years — now we finally have the data to prove it.

This controversy has been an interesting feature of AACs in BC — part ecstasy and part agony. While we are now using the best science available regarding how BC trees are performing on BC's ecosystems — the ecstasy, we have been criticized for manipulating the data to keep AACs high — which has caused agony. I invite the critics to review the science, which is available on the Forest Service Research Branch website (www.for.gov.bc.ca/research).

Applying this new information resulted in increased projections of long-term timber supply and, in some cases, shortened rotation ages increased the available timber supply in the short term — the allowable cut effect Dr. Pearse had predicted. As shown in the generalized provincial timber supply picture we discussed earlier, the increase brings the long-term timber supply to roughly the same level as the current AAC. However, a 'trough' exists between the current AAC and the long-term level, reflecting the transition when harvesting shifts from the existing mature forests to second growth forests. When defining a harvest flow pattern, we do not allow this 'trough' to drop below the long-term level that would result from the growth and yield projections for unmanaged forests.

This trough doesn't mean that our forest practices are unsustainable. Remember that these forecasts incorporate management practices for the full range of forest values, such as riparian areas, biodiversity, old growth, specific wildlife habitat, viewscapes and drinking water, and these practices are projected to continue over the long term. Second, this trough occurs not because we're running out of trees in the province — it happens because we expect managed forests to grow more timber than unmanaged forests.

e) Political or technical?

This is a good time to talk about another myth about AAC determinations — that they are political, not technical decisions, and that I am simply the delivery agent for elected officials. This is far from the case. Section 8 of the *Forest Act* requires that I consider the Minister of

Forests statement of government's social and economic objectives, just as I must consider the other factors specified in the Act.

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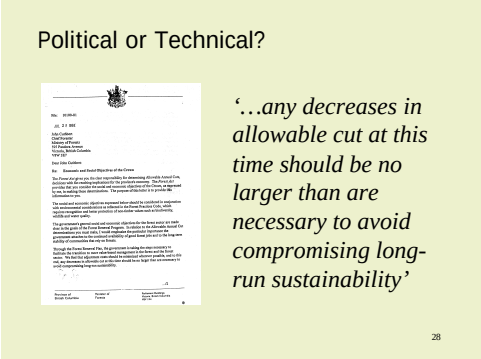

Currently the Minister's expression of social and economic objectives has been provided in a series of letters. The Minister has asked that I consider that 'decreases in allowable cut at this time be no larger than are necessary to avoid compromising long-run sustainability.' My job is to consider all of the factors specified in the legislation, including the social and economic objectives of the crown, and make a judgement on the appropriate AAC. The Ministers' advice is factored into the consideration of alternative rates of harvest flow, perhaps one of the most mysterious aspects of AAC determinations, which I will turn to next.

f) Alternative harvest flows

'Harvest flow' refers to the continuity of timber supply, which depends on how fast you cut and grow trees over time. The large volume of mature timber in the province makes a wide range of harvest flows possible.

The current provincial timber supply picture is one possible alternative. It is the one that I believe best reflects the several factors that I have to consider under the *Forest Act*.

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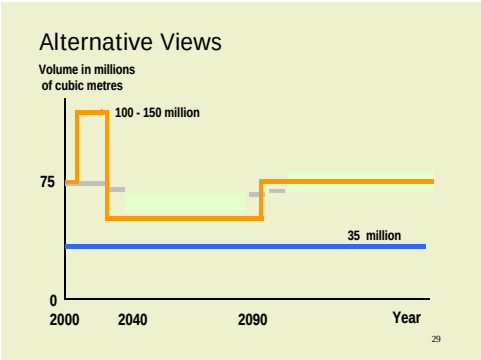

However, the alternatives are almost endless, and different interests advocate different alternatives. The simplest approach might be to identify what is known as the even-flow level — the maximum amount of timber that can be harvested at all times with no decline. Some environmentalists are advocates for this alternative — shown as the blue line on the graph. They contend the appropriate rate of cut now and in the future is between 20 and 50 million cubic metres, with 35 million being a recently quoted figure.

On the other end of the scale, another alternative might be to harvest at the highest level possible until the mature timber is exhausted, and then drop down to the level supported by managed forests. This approach — shown as the orange line — is in fact advocated by some industry officials who contend the AAC should be 'grown' as soon as possible to 100 or 150 million cubic metres. Given current land use and forest practices, and today's economic and market conditions, this could be expected to result in a drastic reduction in approximately 30 years to a cut of approximately half that level, which would continue for about 60 years, when supply could increase to the long term level of 70 to 75 million cubic metres. Neither of these alternatives would be consistent with the government's social and economic objectives.

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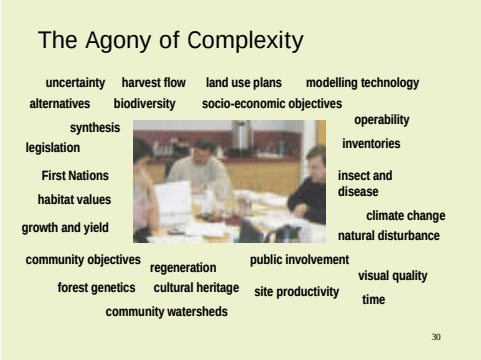

The appropriate harvest flow is an agonizing choice in many units, particularly for units with large differences between the current AAC and the long-term level, or where these levels are similar but there isn't enough mature timber to maintain harvesting at this level through the transition — these are the ones I go off to the quarry to find answers for. Each determination is unique and requires exhaustive and usually agonizing weighing of the technical information on the environmental, social and economic values outlined in Section 8 of the *Forest Act*.

While this task might remain mystifying, I assure you that no matter how much I consider and weigh and agonize over the information, what is decided is rarely popular!

3. The Future: Agony or Ecstasy?

Now that the mystery has been taken from my job, and you are all Chief Foresters-in-Training, you can see that the task is mind numbing, headache inducing, but still fascinating. Allow me to share my views on the future with regards to harvest regulation and AAC's in British Columbia — perhaps there is more mystery here than you might have anticipated.

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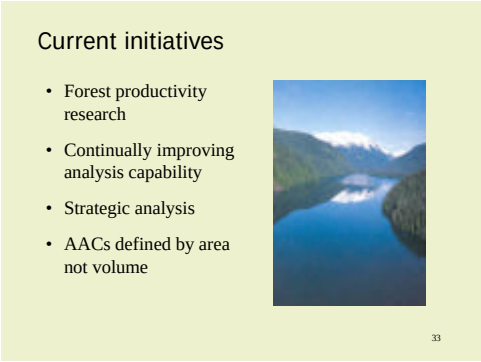
First, I think we will be challenged with many of the same issues we have faced in the past decade. Let me outline the highlights of what I see coming at us:

- **The humbling force of Mother Nature and the mountain pine beetle outbreak** — We will require every ounce of ingenuity to see our way through this epidemic with a minimum of economic and social upset, and without environmental impacts.
- **Resolution of First Nations treaties, continued land use planning and managing for a broad range of forest values** — I expect these initiatives will change which lands are included in the timber harvesting land base, and how these lands are managed, which in turn will affect AACs.
- **Expanding our knowledge of our diverse ecosystems, managing for species at risk and understanding the role of our forests in carbon sequestering** — I have no reason to believe that we won't continue to refine our environmental management practices, which could affect timber supply and AACs.
- **Forest product certification** — The world marketplace may prompt voluntary changes in forest industry management that ripple through to AACs.
- **Forest industry innovation** — Which forests and species are considered merchantable, and the role of intensive silviculture will continue to shift as the industry innovates.

Then there will be challenges resulting from initiatives we have not even dreamed of. Change will continue to be the norm, and we will continue to adapt.

Looking now at the Ministry of Forests, while the timber supply review process is as thorough and comprehensive as any in the country, and elsewhere in the world for that matter, we will continue to be challenged to learn — and improve.

Slide 31



Current initiatives that I see making contributions in the future are:

- **Forest productivity research** — I believe there is more ecstasy to be had over the productive capacity of our forests. Watch for our report on the Site Index/Biogeoclimatic Ecosystem Classification Project — the SIBEC project — which is to be released soon.
- **Continually improving analysis capability** — Increased spatial resolution, wildlife habitat supply modelling and economic analysis will be added to the toolkit of timber supply analysts.
- **Strategic analysis** — The expertise that has been developed for the Timber Supply Review can now be applied to more strategic questions.
- **AACs defined by hectares not volume** — I am encouraged by the woodlot trial program we have initiated, and by the eagerness of some industry leaders to test using area rather than volume to define AACs.

As more information can be packed onto smaller and smaller computer chips, the analyses we are able to do efficiently become more and more complex, though we must remember that the certainty of any analysis is largely influenced by the quality of the information going in — and we are close to the exceeding the limits of our current 'extensive' inventory and resource information now.

As the timber supply analysis and inventory responsibilities shift to industry as seems likely with the current results-based, professional accountability focus, I am confident that my colleagues in industry will uphold, and improve upon the high standards we have set over the past decade.

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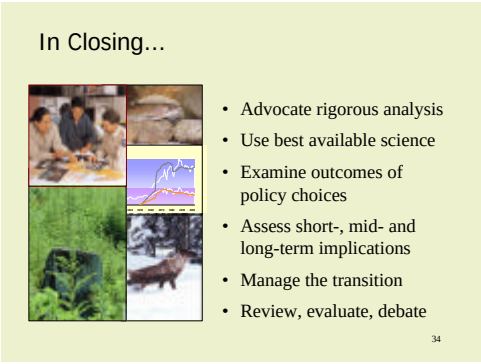

I don't think AAC determinations are going to get any easier. The combined implications of the changes outlined above will require a continuation of the delicate balance between the short-, mid- and long-term timber supply. While there are plenty of assertions about our future timber supply, I have yet to be presented with any comprehensive analysis indicating that radical changes from the current approach are justified. However, I have also introduced you to expectations that range from dramatic increases to dramatic decreases in how much timber either can or should be cut in the future in BC. Undoubtedly, coming to personal conclusions about what it all means is a challenge. And depending on your personal perspectives, any of the possible outcomes will likely represent agony for some and ecstasy for others.

The view that I have tried to bring to the debate is to advocate rigorous analysis and best science. I encourage each of you to do the same. With the stakes as high as they are in BC, it would be a shame to have outcomes driven by either rhetoric or opinion. There's more than enough information available to develop a well-informed, analytic assessment of the outcomes of any number of possible policy choices about how to manage and allocate resources in the province. From my perspective what is most important is that we continue to focus on thorough analysis and consideration of the short-, mid- and long-term, with thoughtful evaluation of opportunities to reduce the fall-down and the 'trough'.

It has been interesting for me to have played a role in recent times in the world of AAC determinations and forest policy. I have run into well-intended arguments from all sides of the debate and while I don't agree with everything that I hear, I also accept that not everyone accepts that what I have to say is the gospel either. We all need to be open to emerging concepts of forest management that will challenge the way that we view and manage the resource. How many trees to cut is a complex dimension of forest management in our province that deserves our collective attention.

Generally I am optimistic that we will experience improved stability in timber supply in many units over time. However, managing our way through the transition from the preponderance of mature, naturally grown forests to the managed forests of the future will be a continuing challenge. How our society chooses to use or allocate its valuable forest resources is likely to be reviewed, evaluated and debated in each successive future generation. While our current approach to sustainability attempts to meet obligations to future generations, the one thing that we cannot do today with any certainty is predict what the preferences of future generations will be, given the ever changing context of local and global affairs.

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Thank you to the faculty for the opportunity to make this presentation and for your kind patience as I've wandered through history, to today, and then into the future. I invite you to visit the Timber Supply Branch website (www.for.gov.bc.ca/tsb/) to learn more about what I've outlined.

Now for the most interesting part of this event — our chance to talk. I have looked forward to this opportunity for some time and encourage us to probe and question in this dialogue. I hope that I've stimulated some questions so that we can have a lively discussion.