ASSOCIATION OF
BC FOREST PROFESSIONALS

2013 RPF Registration Exam
Take-Home Exam

This package contains examples of good answers for questions #1 and #2 that were submitted for the take-home portion of the 2013 RPF registration exam. Although the answers were chosen as the two better answers submitted in 2013, take note of the score each answer received and be advised that answers may contain errors. Please note that the examples were re-formatted for publication and do not conform to the criteria and formatting outlined in the exams procedures.

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1. In August of 2012 the BC government's Special Committee on Timber Supply released its report titled *Growing Fibre, Growing Value*. This report proposes a number of strategies for dealing with the challenges of the timber supply shortages in the mid-term. One of the recommendations of the report deals with increasing the number of and area covered by area-based tenures in the region. Briefly summarize the rationale behind the recommendation, discuss the economic, social and environmental issues that will be raised by this recommendation and the pros and cons of the recommendation. Then make your own recommendations to the government on how this proposal should be implemented.

Answer # 1 (scored 97 marks)

Expanding the pie?

The area-based tenure axiom

"*Essentially expand the pie, and then split it.*" – A witness to the Special Committee on Timber Supply

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1.0 Introduction

The Special Committee on Timber Supply (SCTS) released its report *Growing Fibre, Growing Value* in August 2012 with six recommendations to mitigate the impending central interior midterm timber supply falldown. Amongst other recommendations, the SCTS suggested to incrementally increase the diversity of area-based timber tenures and provide guidance on how existing volume-based forest licences should be converted to area-based ones (SCTS 2012).

The objective of this report is to interpret Recommendation 5.1 of the SCTS broadly and discuss the merits and deficiencies of increasing the diversity and proportion of the allowable annual cut (AAC) in area-based tenures. Although in favour of the recommendation, it is the opinion of this report that tenure reform is just one of several interrelated strategies necessary to mitigate the impacts of the falldown. More area-based tenures will contribute towards better stewardship, but they are not a panacea as so frequently suggested by the political discourse.

2.0 Background

Forest management in British Columbia (BC) is a "special problem" (Pearse 1990). The Crown grants usufructory rights to timber, retaining ownership of the trees, and because of long rotation lengths it takes decades to realize returns on silviculture investment. In a regime dominated by volume-based tenures, licensees have no market incentive to invest beyond harvesting and reforestation; managing for sustained yields is the government's burden. This presents the dilemma of the principal-agent relationship (Bogle 2012): how to get the agents (licensees) to work in the best interests of the principal (government representing society). Privatizing forests is not socially acceptable, and prescriptive management has fallen into disfavour. Accordingly, area-based tenures are one solution to the dilemma. By granting exclusivity and extending the duration of rights, area-based tenures are a means to motivate agents to practice better forest stewardship and invest in future rotations.

BC has been progressing towards a more decentralized, area-based tenure regime for al
seven decades (Peel 1991; Haley 2005), albeit at a very slow pace. Currently there are four forms of area-based tenure: tree farm licences (TFLs), community forest agreements (CFAs), First Nations Woodlot Licences (FNWLs) and woodlots. Yet, less than 6.5% of the central interior AAC is under area-based tenures (MFLNRO 2013a). With new area-based tenures promised for Burns Lake (Thomson 2012) and impending legislation to facilitate the rollover (*i.e.,* conversion) of forest licences to TFLs (MFLNRO 2012c; MFLNRO 2013b), it is apparent the government has chosen a policy successor to its abandoned Working Forest (MSRM 2003) and Commercial Forest Reserve (BC 2009) initiatives.

The tenure system is commonly criticized as an anachronism (Haley 2010), a system that contributes to perennial problems bedeviling the forest industry, making it less resilient to withstand the falldown. Problems such as lack of investment in intensive silviculture (McWilliams & McWilliams 2011), insufficient value-added manufacturing (Kozak 2007), a failure to manage cumulative effects (Parfitt 2011), and corporate consolidation of the timber resource (Nelson *et al*. 2006). It is popularly believed that increasing the percentage of the AAC in area-based tenures will address these deficiencies by growing more volume, using timber more efficiently, enhancing sustainable forest management (SFM), and being more conducive to community and First Nations land-use planning and economic development. In other words, there are *big expectations* for area-based tenures (Ambus et al. 2007).

3.1 Economic issues

The economy of central interior BC is heavily dependent on large commodity mills, which increase revenues by increasing capacity (Woodbridge 2009). Consequently, the AACs in this region are economic bellwethers. The combination of the projected 20% decline in the AAC for

the next 50 to 70 years (MFLNRO 2012b) and the impending "super cycle" will create an imbalance between supply and demand (Woodbridge 2012). It is in the long-term best interest of licensees to secure exclusive timber supplies. Area-based tenures are expected by many to more efficiently manage and use timber, and hence provide a greater degree of stability over the course of the falldown. This may be overly optimistic.

BC has one of the lowest levels of timber productivity in the world compared to other jurisdictions (Woodbridge 2012) and a lack of value-added manufacturing. The SCTS (2012) entitled their report *Growing Fibre, Growing Value*, because it has been suggested that investing in intensive silviculture will improve the economic return on forestland, add value to timber, and guarantee long-term objectives for the timber supply (Binkley 1997; WRF 2009; ABCFP 2012a).

Under volume-based tenures all future benefits go to the government. This creates the *Forest Stewardship Gap* between free-to-grow and the next rotation (Doyle 2012). It has been suggested that by closing this gap, the government could increase growth and yield by 20% (Bogle 2012). Previously, the government has attempted to close the gap through Innovative Forestry Practices Agreements (MoF 2000). In spite of incentives to increase AACs, there was little success encouraging licensees to invest in intensive silvicultural systems (Nelson 2008).

Empirically, silviculture practices and expenditures have been found to be 27% greater on TFLs than volume-based forest licences (Zhang & Pearse 1996). To achieve the recommendations of the SCTS for silviculture, shifting more of the AAC into area-based tenures appears to be a prerequisite. However, most of the reported increases in AACs of 15%-24% on TFLs (Garnder 2012; Lebeck 2012) are due improvements in inventory and analysis (Schuetz 2004; Snetsinger 2012). This *Area-based AAC Effect* is unlikely to significantly improve the midterm timber supply, especially in lodgepole pine dominated areas lacking mature timber

(Kriese 2012). Moreover, intensive silviculture does not realize as many benefits as conventional wisdom suggests (Vyse & Cameron 2012; Farden 2012) and most area-based tenures still exclusively supply commodity mills (MNP 2006; Ambus 2008). The assertion that area-based tenures will grow more fibre, and add more value in the midterm is dubious at best.

The argument that area-based tenures will enhance economic certainty is equally questionable. The scramble by multiple large licensees to secure timber before the super cycle (Pate 2012) may be both disruptive and costly. Hasty allocation of area-based tenures may compromise the ability of mills to receive the correct timber profiles necessary to maintain internal efficiencies (Stewart 2012). A shift to more area-based tenures may also make it more difficult for other firms to access non-sawlog fibre (Bennett 2012b), and hardwood species (Hilbert 2003), thus undoing efforts the past decade to diversify the regional economies away from conventional lumber production (OBAC 2013). As it is predicted that some licensees will be willing to forgo some volume in exchange for enhanced security, this could be addressed with AAC reallocation to smaller licensees and other tenures. Partitioning log grades and the interaction of receiving and supplemental licences (Bell 2010) will all have to be seriously considered when establishing new area-based tenures as well.

Although benefiting from an *AAC Effect*, most TFLs, CFAs and woodlots have not yet demonstrated a significant increase in post free-growing silviculture investments (MFLNRO 2011), nor does the addition of more area-based tenures profoundly address the imminent decline in the timber supply (MFLNRO 2012b). As long as licensees only have to commit to the minimum requirements in operational plans (Bourgeois 2003), and as long as CFAs and woodlots lack economies-of-scale, it is unlikely that the conventional area-based tenures will provide enough inducements for licensees to grow more fibre, and add more value. The rollover

of forest licences to TFLs may also have the undesirable effect of creating additional turmoil preclude the expansion of small area-based tenures. Accordingly, area-based tenures should be considered as enablers, and not guarantors, of better security and investment (Peterson 2012).

3.2 Social issues

Professional forestry has a responsibility "to advocate and practice good stewardship" in order to sustain the ability of forests "to provide those values that have been assigned by society" as expressed through legislation and public interest (ABCFP 2003; ABCFP 2009). There is a strong public appetite for tenure reform, but the government's plan to convert forest licences to TFLs may not be in the public's interest (Simpson 2013). Similar legislation proposed in 1988 was strongly opposed by a public adverse to what was perceived as a corporate take-over (Nussbaum 2012). The government will have to proceed with caution, and ensure there is not further corporate consolidation over the timber supply if reform is to have any social licence.

CFAs, FNWLs and woodlots are viewed particularly favourably by the public (Parfitt 2011). Many believe that a diversity of area-based tenures is a catalyst to develop greater value-added production, non-timber forest products and commodify ecological services (Ambus 2008). Area-based forest management is also widely perceived to better reconcile socioeconomic and environmental sustainability through ecosystem-based management paradigms (M'Gonigle 1996). Unlike corporate licensees, communities and First Nations are tied to the forests that they manage. Hence, the theory is that area-based tenures will be more responsive to the *Social Foundation* and *Temporal Options* principles of stewardship, and provide communities with greater decision making authority in the midterm timber supply process (ABCFP 2012c). However, small area-based tenures have been criticized for not delivering on these lofty goals, and defaulting to conventional practices (Ambus 2008).

Legislation to convert forest licences to TFLs is favorable to the two largest licensees in central interior (Kayne 2012; Pate 2012). But, the reallocation of large tracts of forest to corporate area-based tenures will significantly impact the unresolved question of aboriginal land claims. If the government proceeds with the legislation, and there are no contingencies for accommodation or amending revenue sharing agreements, this could be perceived as a provocation to First Nations. The Tsilqot'in Decision reinforced the duty of the Crown to consult and accommodate First Nations when there is a potential to impact aboriginal rights and possible underlying title (SCBC 2007). The question that one day may be before the courts is, *is over-hauling the tenure system something that required prior and meaningful consultation first?*

The BC government has committed to the *New Relationship* with First Nations, a goal of which is to allow First Nations to "[realize] the economic component of aboriginal title, and [exercise] their jurisdiction over the use of the land and resources through their own structures.... laws, knowledge and values" (BC 2004). Historically, many timber allocations to First Nations have been through short-term volume-based licences. The attributes of area-based tenures (M'Gonigle 1996) appear more compatible with the goals of the *New Relationship*. However, First Nations may be precluded from realizing new economic opportunities in the reallocation process. First Nations with ineligible tenure holdings cannot enter into the competitive bid process for new woodlots (RSBC 1996). Effectively this treats First Nation companies differently than other licensees, forcing them to rely on the potentially politically process of direct award for new tenure opportunities (FNFC 2012). Any reallocation of AAC to TFLs for major licensees will have to be consistent with the *New Relationship*, something that is easier said than done.

There are many positive social aspects to tenure reform. However, hasty reform prompted by economic motivations can exclude community and aboriginal rights (FAO 2011). Generally, the public and First Nations tacitly approve of major licensees receiving more area-based tenures as long as the process is deliberate and equitable (Thomas 2012). It is important that tenure reform and AAC reallocation does not entrench existing corporate rights with area-based tenures to the detriment of others. In the past, the high level of corporate control over forests and forest policy has been blamed for working against the public's best interest, including aggravating the mountain pine beetle (MPB) epidemic and precipitating the falldown (Hughes & Drever 2001).

3.3 Stewardship and environmental issues

ABCFP (2012b) Bylaw 12.6.1 states that stewardship is demonstrated "by balancing present and future values against the capacity of the land to provide for those values." Thus, area-based tenures pose a special problem. Licensees with comprehensive property rights can be expected to maximize one value at the expense of others. If timber is elevated above the other 10 Forest and Range Practices Act values (BC Reg. 2004), *can there be good stewardship?*

Area-based tenures are thought to encourage investment in silviculture, fertilization, thinning and partial cutting practices, *i.e.*, intensive management. In some aspects intensive management can be detrimental to resource values such as biodiversity, wildlife, water quality, fish habitat, soils, and even timber (Wilford 1988; Rouvinen *et al.* 2002), and some argue intensive management is ultimately unsustainable (Friedman 2005). But, such criticisms are usually aimed at forest practices in general, whether under volume or area-based tenures. Compliance and enforcement programs prevent wanton forest practices in BC, and research suggests that intensive management can be sustainable, having a limited impact on long-term

productivity (Evans 1999; Fox 2000; Williamson and Neilsen 2000; Mielikainen & Hynynen 2003), especially if part of a triad zonation strategy (Binkley 1997; Sedjo & Botkin 1997).

Area-based tenures are also more complimentary to the principles and practices of SFM. Exclusivity encourages licensees to invest more time and resources into activities such as total inventories and strategic land-use planning (FAO 2011; Lebeck 2012). This creates a defined landbase that can provide benefits for all stakeholders. For instance, although opinion is somewhat mixed (Frederick 2012), area-based licensees will be better able to foster enduring relationships with First Nations and other stakeholders. A streamlined and responsive consultation process will reduce the referral burden, and allow other stakeholders to better allocate their resources and lobby in their own interests (Brooks 2012; Loveless 2012). Achieving SFM certification is also much easier under defined areas (SWP 2011). Especially when area-based tenures conform to natural boundaries, resource and philosophical conflicts are reduced, and monitoring of criteria and indicators enhanced (Bourgeois 2010).

Management regimes significantly influence landscape level productivity and other forest resources (DeLong *et al*. 2004). Volume-based tenures promote short-term and limited total resource and operational planning. For example, volume-based tenures have been cited for discouraging good engineering practices (Van Buskirk *et al*. 2012) and excessive road construction, contributing to net decreases in landscape level productivity (Utzig & Walmsley 1988). Area-based tenures also demonstrate better landscape-level silvicultural strategies, including better management of mixedwood stands (SWP 2005), and greater investment in reforesting not-satisfactorily restocked and post-disturbance sites (Zhang & Pearse 1997). Overall, the effect is a reduction of cumulative effects. However, area-based tenures are less flexible, and may not be suitable for responding to catastrophic events (Watt 2012). For

example, in the Dawson Creek TSA a licensee operating with a forest licence has had more success strategically salvaging MPB-impacted stands per ministerial guidance, than the licensee operating in the adjacent TFL (Mattioli 2013).

Stewardship encompasses the values of society and its place in the natural world, it recognizes trade-offs at various scales of understanding, and incorporates adaptive learning (ABCFP 2012b). In these respects area-based tenures can foster good stewardship, arguably much better than a tenure system dominated by volume-based licences. In short, more area-based tenures will mean better stewardship for more forest resources, but only if areas are thoughtfully established with respect to the land and its people.

4.0 Conclusions & Recommendations

Forestry revitalization by way of area-based tenures has become an axiom. Arguments to mitigate the falldown using tenure reform *to expand the pie, and split it more ways* are often approximate and overly optimistic. No tenure system is going to reverse a falldown effect in the short or midterm. We will have to adapt. Nonetheless, the axiom is a useful starting point to address some of the other perennial problems facing BC forestry. A well-designed and implemented package of tenure reform and allocation will, if nothing else promote a better socio-economic land ethic and provide new opportunities for people and businesses.

The *Optimal Fragmentation Principle*, states that innovation proceeds most rapidly at some intermediate degree of fragmentation (Diamond 2003), tenure reform should thus continue in the direction of decentralization (Haley & Nelson 2006). Successful tenure reform must be an incremental, diverse and adaptive process, with social legitimacy (FAO 2011). In light of these considerations, the government's rollover legislation is inconsistent with the judicious counsel of the SCTS's Recommendation 5.1. The following supplemental recommendations are provided:

(1). The consultation and decision-making process in the government's rollover legislation social legitimacy. Instead, revitalize the Land and Resource Management Plan (LRMP) monitoring and amendment process in TSAs where major licensees are proposing to convert from forest licences to TFLs. Input received from the LRMP process will be used to inform the Minister to wisely and equitably allocate new and expanded area-based tenures.

(2). Conversion of forest licences to TFLs will be proponent-based and TSA specific using the Partial Timber Supply Area Model. Portions of the AAC from a surrendered forest licence will go to creating new TFLs for the proponent, another portion will be reallocated to community and small tenure holders, and the final portion will be retained for volume-based licences in the remainder of the TSA (ABCFP 2012a). The percentage of the take-back must be determined in conjunction with other stakeholders through the LRMP process.

(3). New area-based tenures in excess of 10,000 hectares should be non-contiguous, consisting of well and equitably distributed operating compartments, a percentage of which should be smaller cells located on productive sites conducive to intensive silviculture.

(4). So that sawlog licences do not prevent other companies from acquiring fibre, all area-based tenures should include AAC partitions that reflect the diversity of products flowing from forests. Consider mechanisms to allow licensee consortiums (*e.g.*, a softwood sawmill, a pellet plant, and a hardwood value-added manufacturer) to collectively enter into new TFL agreements.

(5). Create small area-based silviculture tenures for suitable free growing stands approaching rotation. Replace stumpage with a land rent so that increases in yield accrue directly to licensees.

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Answer #2 (scored 97 marks)

Increasing the diversity and area of area-based tenures: discussion and recommendations on implementation

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Introduction

The current mountain pine beetle (MPB) epidemic in British Columbia (B.C.) is the largest in North America's recorded history (Committee, 2012). Since the infestation began in the 1990's, 18.1 million hectares have been impacted including roughly 10 million hectares in the timber harvesting land base (THLB) (Committee, 2012). In an effort to utilize the damaged wood, the allowable annual cut (AAC) in the impacted areas has been increased by 23% (Pederson, 2003). As a result of this uplift, there will be a corresponding reduction in the AAC, below pre-MPB levels, in the next 10 – 15 years. This reduction is expected to last for 50 years and be roughly 20% lower than the pre-infestation AAC (Committee, 2012). The falldown in AAC will have drastic social and economic impacts in forestry-dependent communities across the province. Increasing the midterm timber supply (i.e. the timber available for harvesting in 20 – 60 years) could play a significant role in mitigating those impacts.

On August 15, 2012 the Special Committee on Timber Supply (the Committee) released their report, *Growing Fiber, Growing Value*. The Committee was tasked with considering recommendations: "that could increase timber supply, including direction on the potential scale of changes to land use objectives, the rate of allowable annual cut and the conversion of volume-based to area-based tenures; and areas requiring change to legislation and/or key implementation tools" (Committee, 2012). The above considerations were to occur with due regard for: "fiscal commitment of the province to balance the budget and maintain competitive electricity rates; maintaining high environmental standards and protection of critical habitat for species and key environmental values; optimal health of communities and as orderly a transition as possible to post beetle cut levels; maintaining a competitive forest industry; the existence of First Nations rights and claims of title; and the Softwood Lumber Agreements and other trade agreements"

(Committee, 2012). The Committee gathered information through a combination of technic briefings from the Ministry of Forests, Lands and Natural Resources Operations (the Ministry), First Nations meetings, local government meetings, public hearings, written submissions and site visits. Through this process, the committee heard considerable interest in increasing the type, form, and area of area-based tenures. Given this interest, recommendation 5.1 from the committee's report was to "[g]radually increase the diversity of area-based tenures […]. The committee also offered several considerations regarding implementation, if desirable.

This paper will discuss the committee's rational behind recommendation 5.1, the social, economic, and environmental issues raised by the recommendation as well as the pros and cons of the recommendation. This paper will also provide recommendations on how the proposal should be implemented.

Background

Forest Tenures in BC

"The *Forest Act* establishes timber tenure agreements and outlines the broad context of each agreement, including duration, holder rights and obligations, and how the agreement will be administered" (ABCFP, 2011). Section 12 of the *Forest Act* provides 11 forms of tenure agreements that grant rights on behalf of the government to harvest timber in BC (ABCFP, 2011). Tenures in B.C. usually fall into two types: volume-based and area-based. Volume-based tenures provide rights to an annual volume of timber within a non-exclusive area, where other licences may operate. Area-based tenures provide virtually exclusive rights to harvest timber within a specified area. Some area-based tenures, including community forests and First Nations woodland licences, allow for the harvesting of non-timber forest products as well. Area-based

tenures include tree farm licences (TFL), timber licences (TL), community forest agreements (CFA), woodlot licences (WL), First Nations woodland licences (FNWL), and the newly created fiber supply licence to cut (FSLTC). Roughly 80% of the B.C.'s forests are managed under volume-based tenures, leaving the remaining 20% to be managed under area-based tenures. The differences in tenure duration and holder rights and obligations between area-based and volume-based tenures can have significant social, economic and environmental impacts.

Rational Behind the Recommendation

The social, economic, and environmental benefits of area-based tenures as well as the recommendation to increase the number and area of area-based tenures in B.C. is not new. The fourth Royal Commission of Inquiry (Pearse Commission) in 1975 was struck to reconcile industrial forestry with competing forest and social values as well as environmental issues (ABCFP, 2011). Pearse (1976) found that TFLs produced "the highest standard of forest management in the province" as well as promoted private sector investment and increased productivity of the land base (Pearse, 1976). Despite challenges with TFLs, Pearse (1976) also found that "the public interest can be well served by [TFLs] continued use and development. In 2009 the Working Roundtable on Forestry (Roundtable) report, *Moving Toward a High Value, Globally Competitive, Sustainable Forest Industry*, contained two recommendations (23 and 25), that advocated for increased area and number of area-based tenures; specifically community forests and First Nations tenures.

Given the history of area-based tenures in B.C., there are four key reasons for the rational to increase the type, form, and area of area-based tenures. Area-based tenures in B.C. have the potential to increase forest stewardship, increase private sector investment in the forests, and increase economic diversification of forest and forest related products. Because of these reasons,

area-based tenures have the potential to help mitigate the mid-term timber supply by increas the productivity of the land base. Another important reason behind the rationale to increase type, form and area, of area-based tenures is due to increasing public demand for such tenures as evidenced by feedback from consultation through both the Roundtable as well as the Special Committee on Timber Supply. The supporting evidence for the reasons listed above will be discussed in the pros and cons section of this paper.

Issues Raised by the Recommendation

The Committee`s recommendation to increase the type, form and area of area-based tenures raises important social, economic and environmental issues. The issues being raised are considered issues because implementation of the recommendation has the potential to have serious impacts on current, or future, social, economic, or environmental sustainability in forestry dependent communities in B.C.

One of the key social issues raised by the recommendation is the impact of area-based tenures on First Nations land claims as well as the challenge of obtaining First Nations support for the recommendation. Unresolved land claims in B.C. are a primary source of uncertainty surrounding land and resource management (Paulson, 2004). Interestingly, the Committee has already heard from multiple First Nation people who opposed any transition to area-based tenures for major licensees due to ongoing land claims. (Committee, 2012). With recent court rulings moving in favour of increased First Nations rights and title, and the potential cost of large scale tenure reform, First Nations land claim issues or lack of First Nations support could be a significant issue to implementing the recommendation (Supreme Court of British Columbia, 2007).

A second issue raised by the recommendation is whether or not the government has social licence and support to implement the recommendation. When Bill 28 was proposed by the 1988 Social Credit Party to allow for the conversion of volume-based tenures to area-based tenures, the idea was stopped by widespread opposition from environmentalists, small operators, and the public at large (Simpson, 2013). As a result of the Committee's report and recommendation 5.1, the government released their report *Beyond the Beetle a Mid-Term Supply Action Plan* (2012) to address how they will implement the Committee's recommendations. In their report, the government plans to propose legislation to allow for the conversion of volume-based to area-based tenures (MFLNRO, 2012). In order for this legislation to be successful there must be support from the public including communities, First Nations and stakeholders at both the local and regional level.

Another issue raised will be whether or not implementing the recommendation has the ability to attract private sector investments in forest management (improved silviculture, inventory and growth and yield data etc.) and forestry infrastructure (mill upgrades, roads, equipment etc.), one of the key rationales behind the recommendation. As previously discussed, area-based tenures have the ability to attract private sector investment and increase the productivity of the land base. Depending on how the recommendation is implemented, however, private sector investment could potentially remain at the status quo or even decrease. In order to secure future area-based tenures, existing tenure holders could be required to surrender some of their current tenure as there are no reasonable opportunities within the current structure and legislative regime (TLA, 2008). Given the 20% take back of tenure from major licensees in 2003 (ABCFP, 2011), further take backs could lead to even greater uncertainty and a reluctance to invest if tenure certainty is perceived to be changeable. Where area for new area-based

tenures comes from and how they are implemented will be an important issue to address as it could have significant influence on future investment. Also related to this issue is the potential cost to the public of compensating tenure holders under sections 60.6 and 60.7 of the *Forest Act* if removal of area from tenures is required. Adequate compensation could be much greater for area-based tenures if significant investments have been made.

A fourth issue that will be raised by increasing the number of small- and medium- sized tenures is that of fragmentation of land management. Having a large number of small and medium sized operators, each with their own management plans and objectives, will make it difficult to plan land use at local and regional levels (Cathro & Walsh, 2000). Planning both provincial cut levels and forecasting government stumpage revenue would be impacted (Cathro & Walsh, 2000).

Pros and Cons of the Recommendation

While many issues will be raised by the recommendation to increase the type, form, and area of area-based tenures there are also many pros and cons of the recommendation. The pros of the recommendation are directly related to the four key reasons previously given behind the recommendation.

Increasing the area of area-based tenures in BC has the potential to increase the level of investment and forest stewardship. Increasing private sector investment in advanced silviculture (fertilization, planting genetically enhanced stock, site preparation, brushing and thinning, etc.) and increased inventory and growth and yield data is beneficial insofar as it can increase the productivity of the THLB and allow for greater volumes and quality of wood to be harvested. Increased investments could play an important role in mitigating the mid-term timber supply in

beetle impacted areas by increasing the AAC due to greater productivity of the land base. Innovative Forestry Practices Agreements (IFPAs) were implemented in 1996 to provide investment incentive to volume-based tenure holders, these investments focused primarily on improving inventory and growth and yield data and not on advanced silviculture (Nelson, 2008). The lack of advanced silviculture investment may be due to the lack of long-term tenure security ensuring the benefits of their investment are realized.

Forest professionals in B.C. are required to practice good stewardship of forest land (Bylaw 11.3.1) which requires "balancing present and future values against the capacity of the land" (ABCFP, 2009). Next to private land, area-based tenures in B.C. have been found to provide the best incentive to practice good forest stewardship and maximize the capacity of the land base. Zhang and Pearse (1996) found that investments in regeneration, surveys, site preparation, and stand tending where on average 24% greater for TFLs with private land compared to volume-based Forest Licences. It was also found that area-based tenures (TFLs and TLs), were planted quicker and had a lower percentage of not satisfactorily restocked (NSR) than volume-based Forest Licences (Zhang & Pearse, 1997). Both studies found a strong correlation between the tenure duration (security) and level of investment.

Another pro of the recommendation is the increased economic diversification of forest and forest-related products that could result from diverse tenures and tenure sizes. By reducing a major barrier to new entrants (i.e. access to timber) and increasing the number and size of area-based tenures, the potential exists to create a diverse manufacturing sector that would be able to provide a range of products; greater tenure diversity could also lead to more open log markets and greater competition. Some forms of area based tenures including CFAs and FNWLs already allow for the harvesting and management of NTFPs as well as timber. In 1997 the NTFP sector

in B.C. was valued at over $600 million with over 30,000 British Columbian's earning part of their income from the sector (MFLNRO, 2009). Greater tenure diversity that allows for the management of NTFPs will likely encourage further development of this sector due to increased security which, ultimately, may attract more investment. Additional area-based tenures including the newly created FSLTC could lead to further economic diversification through utilization of harvesting residues. Increased economic diversification for communities could play a significant role in mitigating the effects of a reduced mid-term timber supply by reducing the dependence of communities on strictly commodity wood products.

Another pro of the recommendation is the greater public involvement and local management of resources through CFAs, FNWLs, and WLs. Because CFAs are managed locally they can be a good way for communities to see additional benefits from the forest beyond strictly employment. The increased community participation can result in educational opportunities, research projects, and skill development and capacity building which will inevitably lead to greater community understanding of forestry and forest management.

Another benefit of the recommendation is the incentive for area-based tenures to include private land. Increasing the amount of private land managed as part of the THLB will allow for increases in the AAC. Given the challenges posed by the mid-term supply, any opportunities to increase the AAC are welcomed.

Increasing the diversity and area of area-based tenures in BC also has disadvantages, or cons. Many of the cons of the recommendation will be overcoming the issues posed by implementation that were previously discussed including: First Nations and public support, ability to attract investment and management fragmentation of the land base. Further to these

issues is the challenge associated with finding unallocated tenure to be able to implement th recommendation. According to Nelson (2008), "there are few areas of forest land in close proximity to communities that have not already been allocated to other tenures".

Another con is the concerns over the sustainability of small tenures; "The economic reality of small tenures remains a key challenge" (Nelson, 2008). The economies of scale of managing a small forest operation do not weigh in small tenures favour (Nelson, 2008). Small and medium tenures may also be more susceptible to catastrophic loss from fires, pests, or climate change in that they do not have the flexibility to absorb these losses as it may impact an entire tenure.

Recommendations and Conclusion

The Committee's recommendation to "gradually increase the diversity of area-based tenures" (Committee, 2012) raises valid issues and concerns. The issues of First Nations rights, public support, private sector investments, landscape fragmentation, and economic viability are not insurmountable. Acknowledging these issues and addressing them will help to ensure that the implementation of the recommendation, if desirable, is done in a way that maximizes the public good. Increasing the diversity and area of area-based tenures can help to mitigate the mid-term timber supply and foster better forest management by increasing the productivity of the land base, encouraging better forest stewardship, diversifying the economies of forest dependent communities, and encouraging better community involvement and understanding of forestry. Preliminary public consultation through the Committee as well as the roundtable has been conducted throughout the province and shown support for the recommendation. While small- and medium- sized tenures have already been increasing in recent years, it is time to move

forward with larger scale implementation. To move forward with increasing the diversity a area covered by area-based tenures the following is recommended:

1. Amend the *Forest Act* and pass enabling legislation to allow for the potential conversion of large volume-based tenures to area-based tenures.
2. Launch a large scale, province-wide educational campaign on the benefits of area-based tenures, the rationale behind the implementation, and what will be done to address the issues and concerns of a conversion.
3. Create a process to work with First Nations, the public, and all stakeholders on the details and structure of a conversion, similar to that of the Land and Resource Management Plans.
4. Develop a mechanism to regulate NTFPs, including carbon on all area-based tenures.
5. Commission a study to determine the feasibility and optimal tenure duration to stimulate private sector investment and implement their recommendation.
6. Government should work with large tenure holders wishing to convert to area-based tenures to release a small amount of higher value lands back to the crown for redistribution as small tenures in exchange for compensation and more secure area-based tenures.
7. Move forward with conversions if public and private sector support exists after recommendation 3 and 4 have been implemented.

Through implementation of the Committee's recommendation as well as those provided in this paper, B.C. can work towards mitigating not only the mid-term timber supply but towards creating a more socially, economically, and environmentally sustainable forest industry.

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2. The stumpage rates for Crown timber on most large forest tenures in BC are determined by the market pricing system (MPS). Discuss whether this system is working in terms of determining the appropriate value of the public timber resource in BC. Assess what is working and why, what is not working and why not, and make recommendations for improvements to this system to allow it to provide a better estimate of the value of crown timber.

Answer # 1 (scored 78 marks)

Drinking from the cup:

A critique of British Columbia's Market Pricing System for Crown timber

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1.0 Introduction

The forest industry is important to the public of British Columbia (BC). 94% of the forest land base is owned by the provincial government, with rights to harvest trees allocated through a number of tenure systems (Luckert *et al.* 2011). With the resources provided by the mostly public land base, the BC logging and timber industry employed 53,300 people in 2011 and generated exports of 9.9 billion in 2010 (Canadian Forest Service 2012).

Given the sheer size of the industry and public land base, it is essential that stumpage fees – the amount charged by the BC government to those that cut down trees on Crown lands – be set in the correct way. The "correct" way in this sense is making sure that stumpage is not too high or low. If stumpage is too high, fewer trees are harvested and businesses may be at risk of shutting down. If stumpage is too low, the BC public will not receive the appropriate value for the resource (Grafton *et al.* 1998). In addition, if stumpage is set too low, the United States (US) may further accuse Canada of forest industry subsidization. This is why the issue of timber pricing is central in the softwood lumber trade dispute between Canada and the US.

In 2004, as a result of BC addressing issues raised by the US – that is the US opinion that "timber sales by auction specifically and the market generally are unquestionably appropriate and optimal for Canadian jurisdictions" (Kant 2010 p.581) – the Market Pricing System (MPS) was established for setting stumpage fees for timber harvested under long term tenures.
As stated by the provincial revenue branch (BCMFR 2006):
"The central concept which underlies the MPS is that auctions of standing timber establish the market value of the timber, and those market values can then be used to determine the stumpage price for the timber harvested under long term tenure."

The purpose of this paper is to critique the MPS and present recommendations to ensure that appropriate value of the public timber resource is determined in BC. The conclusions will make recommendations to government for improvements to the MPS.

2.0 Background

A brief history of the stumpage fee collection systems that led to the MPS will be presented, but first the concept of economic rent should be discussed as it is fundamental to determining if the public (the owner of the resource) is collecting the appropriate value.

2.1 Economic rent

In economic theory, economic rent can be seen as surplus value associated with a factor of production, above all costs (including normal profits) of production (Parkin and Bade 2010). Rents in forestry are often calculated based on the benefits (value) that standing trees can produce as value-added products (e.g. logs) minus all costs (e.g. harvest, transport, and normal profits) (Luckert 2007). This rent is generated from the productive nature of the forest land and belongs to the owners of the land (BC public). Essential to the MPS is the amount of rent to be collected from standing timber which is also determined by the price received for the logs, regardless of how productive the land may be. Under optimal conditions, if the price of a log rises, any increases in rent will go to the owner (Grafton et al. 1998). As long as the landowner captures the optimal rent, actions of the timber industry will not be affected because normal profits are accounted for. Rent capture has been the foundation of government charged stumpages fees and in theory determines whether the government, and therefore the public, are receiving the appropriate value for the timber resource.

2.2 MPS evolution

A variety of stumpage collection practices have been used in BC leading up to the MPS. The intent of these pricing regimes was not necessarily geared toward achieving economic efficiency, but rather to achieve a number of socio-economic and political objectives. The pricing of stumpage aimed to achieve financial funding for the BC government and to promote employment in one of the provinces largest industries (Luckert *et al.*2011). The result was that economic efficient pricing systems were not entirely used – the timber market was not "free", but subject to government interventions. In the early 1980s, the US began protesting that the appraisal system used since the 1950s undervalued the resource by not capturing enough economic rent and considered this a form of government subsidy. As a result of the neo-classical free market demands of the Coalition for Fair Lumber Imports of Canadian timber into the United States, the BC government introduced the Comparative Value Pricing (CPV) in 1987.

Since 1999, BC used a transaction evidence appraisal framework to establish reservation prices on a small portion of annual harvest auctioned under its Small Business Program (SBP). In response US proposals, the SBP evolved into BC Timber Sales (BCTS) in 2004 and increased the provincial volume to be competitively bid on at auction to 23% (Roise 2005). In 2006, the MPS was implemented in the interior. The MPS is a transaction evidence pricing system that uses evidence from the results of auction sales (transactions) to determine the price of other tracts of standing timber under long term tenures. With simple concepts of economic rent and a brief history of MPS in tow, the question of whether the MPS is determining the appropriate value of the public timber resource in BC can be asked.

3.0 Discussion

The focus of this discussion will be on what is working and what is not working with the MPS in regards to public resource value rather than focusing on more technical MPS details such as tenure obligation adjustments. The finer details are not unimportant and still require the utmost professionalism when calculated, as manipulation can influence the stumpage fee paid to the crown. Three components of MPS will be assessed: market value, competition and sustainable forest management.

3.1 Does a market generate more value?

The MPS is intrinsically connected to free market and economic efficiency principals. Efficiency (in economic terms) is defined as the amount of wealth generated in society and available value to the public is part of this wealth (Parkin and Bade 2010). It is widely believed that competitive market forces can allocate resources in an economically efficient manner and are paramount to the acceptance of the MPS. Due to the regional nature and spatial scale (e.g high transportation costs) of the BC forest industry, a true provincial market will never materialize. Competitive auctions are seen as capable of generating timber prices that would prevail under market conditions (Roise 2005). There is little evidence to show that auctions operate in this way.

According to Kant (2010), US lumber lobby claims that 90% of US lumber is sold at auction is very misleading. Kant (2010) argues that only 10% of the total timber harvest is sold at auction. Kant (2010) also argues that the US Forest Service does not provide any evidence that an auction system is capable of getting timber prices that would be generated in a competitive free market. A study between the Ontario and Minnesota border provided evidence that the auction system is no better than government based administrative pricing (as used in Ontario) in

market prices for timber, just different (Leefers and Potter-Witter 2006). Furthermore, many academics (Luckert 2007; Kant 2010; Grafton *et al.*1998) believe that the pressure from the US for Canada to move to a MPS is politically motivated and not based on economic logic. Regardless of a lack of evidence for auctions generating free market prices, and as long as the MPS is used, auctions are an integral part of the system. According to the limited available research, timber auctions in BC are working at creating characteristics of a competitive market (Roise 2005; Niquidet and van Kooten 2006). According to the MPS logic, these market characteristics will allow the capture of the available economic rent for the public timber resource.

In studies of sales of timber auction in BC, Roise (2005) concluded that although large and diverse, timber markets in BC have characteristics of a competitive market. Roise (2005) also found that tenure holders in BC may pay more than the market rates 50% of the time and pay less than the market rates 50% of the time in the long run. This implies that a market price is more or less being achieved.

The Report of the Working Roundtable on Forestry (WRF) accepts a free market based philosophy and makes some interesting recommendations for improvements to the transaction-based pricing system that would allow for potentially more revenue to be generated from timber and therefore increase the amount of available economic rent (MOFR 2009). The WRF noted that an auction system will be inherently complex. Kant (2010) has also noted that an auction-based system is more complex and more difficult to implement than some forms of administrative pricing. The WRF (2009) claims that area-based (vs. volume) competitive bid sales can simplify the process. Area-based sales can even further promote market principles and allow even more of the economic rent to be captured.

When a harvester has to bid on an area, rather than a volume, there is incentive to minimize waste and get as much value out of the forest as possible (WRF 2009; Paarsch 1993). This would allow the harvester to be motivated to generate or enter log markets. This could also reduce government waste monitoring and lower administrative costs for government and industry (Paarsch 1993). Given the increase in demand for small diameter, low quality bio-energy fibre; area-based sales could create incentive for log markets or trading between long term tenure holders allowing the right log to find the right mill. Failure to allocate logs optimally, in the long run, will result in reduced returns on timber. This means profit to the private sector and stumpage to the government (Crowe 2008).

Logs leaving one region to go to another may be viewed poorly by the public and may be seen to be a form of "log export". There is little evidence to support regional log exports lead to job losses (Niquidet and van Kooten 2006). Log markets could also provide fibre security which could provide the capital necessary for investments that add more value to the timber, therefore increasing the value of the public resource. Foresters may face challenges from the public when embracing a competitive log market, but it is the responsibility of the professional forester "to work to extend public knowledge of forestry" (ABCFP 2003).

3.2 Competition

One of the biggest challenges BC is facing with the MPS is dealing with the different levels of competition throughout the province. This should be addressed or it will significantly hinder the success of an auction-based timber pricing system (Kant 2010; Niquidet and van Kooten 2006). In economic terms, a successful auction, as defined in terms of getting fair market price, requires a strict set of requirements for success (Parkin and Bade 2010). Much of economic auction theory is beyond the scope of this paper, but for competitive auctions to work

buyers and sellers must have access to adequate information about the market and the numb
buyers and sellers must be sufficient to ensure neither can influence market and ensure efficient (optimally allocated) competition. (Haley and Nelson 2007)

Niquidet and van Kooten (2006) studied the impact of competition on the effectiveness of using auctions to determine the stumpage fees on BC public timberland and found that a lack of competition in several northern zones of BC caused bids to be lower than their true market values. The MPS must address this issue, as any bid that is deemed to be below the market price is not allowing the full economic rent of the public resource to be realized. Several studies have made proposals to deal with regions that have low competition.

Yang and Kant (2008) observed that in areas of low competition a government administered residual valued based pricing system may generate a higher stumpage rate. Niquidet and van Kooten (2006) took a different approach and examined the upset stumpage rate. With BCTS auctions under the MPS, the final estimated bid (calculated from transaction evidence) is rolled back by 30% as a starting point for the auction. Bidders bid on top of the upset rate and the final market stumpage rate is the upset rate plus the bid (called bonus bid). The rollback of 30% came from US Forest Service practice, but is no longer in use (Niquidet and van Kooten 2006). The US Forest Service recommends changing the rollback according to regional competition levels ranging from 10% to 20% in competitive areas and 0 to 5% in non-competitive areas (Niquidet and van Kooten 2006). An appropriate and competitive upset rate would increase the available rent and could be adjusted based on regional competition levels. In the case of the MPS, changing the upset rate is much more practical and less onerous then developing a new pricing system to use in less competitive areas, but a new paradigm is lurking.

3.3 The MPS and forest management

Professional foresters must follow a code of ethics governed by the Association of BC Forest Professionals, and according to Bylaw 11.3.1, must "...advocate and practice good stewardship of forest land based on sound ecological principles to sustain its ability to provide those values that have been assigned by society" (ABCFP 2003). According to the theory that if these values are balanced, good forest stewardship can be achieved, if one value is over emphasized, forests may risk being managed at the expenses of other values. The government, on behalf of the public of BC have demanded that professional foresters uphold and balance these values and have defined them under the Forest Range and Practices Act. The values assigned by FRPA can be difficult to manage under the philosophies of MPS.

The major problem with trying to manage for the values assigned by society under the MPS is that only the value of timber is determined through market processes. No markets exist for the other 10 values. Although a market for standing timber has been created through the MPS, timber grows along with non-market values which are affected by the harvest of trees. For example, harvesting timber in one area may affect wildlife in another. With MPS philosophies ignoring non-market values, the appropriate value for the public resource may not be fully realized.

Constraints placed on the forest land base by government regulations may achieve some of the values assigned by society, but the constraints put timber out of the market and affects prices. This distorts the value of the public resource within the MPS and needs to be accounted for. If stumpage fees are not reduced to reflect the value of the constrained timber that professional foresters are obligated to manage, industries may lose some of their normal profits

and begin to look for ways to reduce costs. If stumpage fees are reduced, the public receives rent; this is not optimal.

Under the paradigm of sustainable forest management that is embraced by the province of BC, economic problems become complex. Kant (2010) argues that the principle of sustainable forest management is much beyond our current understanding of economics. There is just too much going on.

It is not hard to understand why dissident economists are challenging the current economic paradigm in relation to sustainable forest management and demanding that forest economists be reminded that economics is the study of the socially optimal allocation of resources and not just limited to market allocation. All resources, market and non-market need to be studied along with all mechanisms including social, legal, political, and ecological as part of a socially optimal agenda to value the public timber resource (Kant 2007). The BC government and forest industry pride themselves on being global leaders in sustainable forest management but, in the long run, the 11 resource values in FRPA cannot be achieved by a narrow focus on the free market.

4.0 Conclusion and recommendations

Determining if the MPS is capturing the appropriate value of the public resource is a very challenging and demanding question which raises important philosophical questions for professional foresters. An experiment has begun with a timber pricing system that is largely based on a political and academic theory that has little evidence to show it is suited to the complex and integrated values associated with forest management. Some aspects, such as log markets, may increase timber prices and based on rent theory increase the rent available to the public; however it will take time to review and determine if this is indeed the case. Before a new

forestry economic paradigm emerges, some steps can be taken to improve the efficiency of the MPS.

The government should adopt the US Forest Service approach to adjusting the upset bid rate based on levels of competition. This could raise stumpage rates to market levels, and increase the rent to the government. Although competitive auctions have created a market price, government should run a full analysis to determine what rent is available and who it is going to. The government should also implement recommendations made by the WRF to offer competitive timber sales as area-based as opposed to volume based to increase timber utilization that further increases log market activities.

Ultimately, BC should work towards implementing a timber pricing system that uses a mix of free market and government controlled mechanisms to achieve a socially optimal allocation of public resource values. This will allow the province to resist the urge to further chase a dogmatic market philosophy for timber price determination that cannot address the fundamentals of sustainable forest management.

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Answer # 2 (scored 75 marks)

The Market Pricing System in BC: Issues and Recommendations for Improvement

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1.0 INTRODUCTION

The Province has been granting timber rights since 1865, receiving payments in the form of royalties (ABCFP, 2012). Over the past century, these basic fee simple royalties have evolved into more complex payments, commonly called stumpage. The term stumpage originated in the 19th century when a seller would walk around and count the stumps to determine payment, hence the term 'stumpage' (UBC, 2011). Stumpage is not considered a tax, but a fee that individuals and firms pay to the government for the utilization of the crown timber resource.

Since stumpage plays such a major role in the economy, it is imperative that stumpage levels are set appropriately. If too high, fewer trees will be harvested and job losses will incur and if too low, the public will not receive adequate compensation (Grafton et al., 1998). The most significant economical factor when stumpage is set to low is that Canada becomes vulnerable to accusations of subsidization from the United States (US) (Grafton et al., 1998).

These accusations have led to four lumber trade disputes between Canada and the US since 1982, which ended with the Softwood Lumber Agreement (SLA) in October of 2006 (ABCFP, 2012). The main criticism from the US was that BC's timber pricing system at the time, the Comparative Value Pricing (CVP) system, did not accurately reflect the market conditions and undervalued the timber which subsidized the industry. One of the conditions of the SLA was that BC implemented and maintained the Market Pricing System (MPS), which has been in effect since February 2004 (coast) and July 2006 (interior). The SLA was set to expire in October 2013, however in January 2012, Canada and the US agreed to an extension to October 2015 under the same terms and conditions (Province of BC, 2012b).

Pricing systems like the MPS are common, the U.S. Forest Service and many states use similar approaches (MFLNRO, 2004; MFLNRO, 2006). The MPS uses auctions to establish the

true market value of standing timber to then set the stumpage price for timber harvested on long-term tenures (MFLNRO, 2004; MFLNRO, 2006). Auction sales are developed and administered by BC Timber Sales (BCTS), an independent government entity that works in close proximity to the Ministry of Forests, Lands and Natural Resources (MFLNRO).

The MPS has faced criticism regarding whether or not it accurately determines the appropriate value of the public's timber resource. More specifically on the BC Coast, it may set stumpage levels too high when considering access to timber and the available market data. In the interior, particularly in areas most impacted by the Mountain Pine Beetle (MPB), it may not consider the potential value of the entire stand. Also, considering the public's value shift towards sustainability and stewardship, the MPS may actually discourage investments and management practices that support these values. This paper will discuss these issues and make recommendations for improvements to the system so it can provide a better estimate of the value of crown timber, while balancing the needs of the public and the industry.

2.0 BACKGROUND INFORMATION

In March of 2003 the *Forestry Revitalization Act* was brought into force providing the legal framework to reallocate 20% of the AAC from large replaceable tenures to First Nations, woodlots, community forests and BCTS (ABCFP, 2012). Termed the "take-back", it facilitated the development of a reliable timber auction base for the MPS system and aided smaller tenures.

BCTS, a conversion of the former Small Business Forest Enterprise Program, was given the mandate to sell 20% of the Crown AAC by auction, currently auctioning 11 to 12 mil. m3 /yr. (ABCFP, 2012; MFLNRO, 2011b). BCTS fully develops and prepares settings then auctions the rights to harvest those settings, under the *Forest Act*, to Timber Sale Licencees (TSL's) using a highest-bid system. They then assume the tenure obligations (i.e., silviculture and road

maintenance) after the harvesting is complete. In return TSL's pay the their bid price, co waste assessments and take on limited forest management activities, adhering to contractual and legal obligations and the Forest Stewardship Plan (FSP) (ABCFP, 2012).

The actual amount of stumpage that is paid by any licencee is calculated through a complex set of equations. First an Estimated Winning Bid (EWB) is calculated using detailed stand data collected through the cruise and appraisal processes, described in the Cruise and Appraisal Manuals, and market value prices. These market values are adjusted quarterly and are based on complicated calculations and statistical analysis from a database maintained by the Timber Pricing Branch (MFLNRO, 2012a; MFLNRO, 2012d). The Final Estimated Winning Bid (FEWB) is then calculated by subtracting the estimated cost of any specified operations (costs typically not represented in the auction datasets, such as tree crown modification, destumping, ecosystem based management etc.) from the EWB (MFLNRO, 2012a; MFLNRO, 2012d). If the FEWB is less than the minimum set by the *Forest Act Minimum Stumpage Rate Regulation* ($0.25/m3) then the minimum applies. The EWB for BCTS auction sales is at 70 percent of the FEWB to establish a starting point for the bidding process, termed the upset rate, whereby the TSL's then place an additional bonus bid to win the sale (MFLNRO, 2012a; MFLNRO, 2012d).

For cutting authorities other than BCTS TSL's, the stumpage rate includes a Tenure Obligation Adjustment (TOA) that is deducted from the FEWB (ABCFP, 2012). The TOA accounts for the additional obligations that a long-term tenure holder is responsible for, such as costs for forest planning and administration, road construction, road maintenance and silviculture (ABFCP, 2012; MFLNRO, 2012b). TOA values are based on cost data from BC Timber Sales and the forest industry (MFLNRO, 2012b). The costs derived from the development and auction of BCTS settings and the revenue from the payment of stumpage is used to support the MPS in

setting the stumpage rates for the majority of the Crown timber (ABCFP, 2012). Stumpage may be based on either pre-harvest cruise data (cruise-based) or post-harvest scale data (scale-based).

3.0 DISCUSSION AND ARGUMENT

3.1 Benefits of the Market Pricing System

There are several advantages to the MPS system primarily being that it satisfies the requirements for the SLA and has ended, with the recent exception that sided in Canada's favor, the long standing costly legal battles between Canada and the US (Province of BC, 2012b). Although perceived that BCTS was created primarily for this purpose, it is important to note that not all Crown timber is priced according to the MPS (ABCFP, 2012). The MPS system also makes allowances for block blending enabling licencees to harvest otherwise uneconomic stands.

Another strength is the ability for continual improvement to the market sensitivity of MPS, one of the goals of the Forest Sector Strategy for BC (MFLNRO, 2011b). The Timber Pricing Branch maintains several standing advisory committees with representation from industry, independent contractors and ministry staff from whom they solicit advice on timber pricing (including cruising, appraisal, scaling, and waste) policies to achieve this goal (ABCFP, 2012).

3.2 Drawbacks of the Market Pricing System

Not Adaptive to Changing Market Conditions – Although improved from the CVP system, the MPS still does not keep up with rapidly changing market conditions. The MPS equations are refined and adjusted annually, with the most recent updates using data from 277 coastal sales and 1199 interior sales over a 5 year period (MFLNRO, 2012c; MFLNRO 2012e). However, annual updates to the equations (based on the dated 5 previous years information) and quarterly updates to the market stumpage rates will not capture any sudden spikes or falls in the market conditions. In rising market conditions the government will not realize the increase in potential revenue and

in a falling market the industry may struggle.

Complex **–** Ideal stumpage systems should be transparent and easily understood by all the involved parties (UBC, 2011). In contrast to this principle, the MPS equations and procedures are detailed and complex. For example, there are 21 and 29 variables in the EWB equation for the coast and interior, respectively (MFLNRO, 2012a; MFLRNO, 2012d). Many licencees do not understand what is included in the EWB or have a clear understanding of how BCTS auction data generates the EWB equation (Gordon, 2010). This misunderstanding may lead to inaccurate bids for BCTS TSL's and difficulties for other tenure holders to estimate their stumpage rate.

Reasonable Return on Investment and Expectation of Profit **–** The MPS is based on a concept of economic rent where the desired stumpage rate captures the entire average profit margin. A pricing system should allow a tenure holder to share in the profits from business efficiencies and market improvements (McGourlick, 2010). Tenure holders point to an inability to compete due to the lack of sustained profitability and an inability to generate the capital required to remain competitive (McGourlick, 2010). In order to maintain a viable forest industry, companies need to be able to achieve an acceptable return on investment, or expectation of profit (Craven, 2012).

3.3 Issues with BCTS Setting the Market Price

Not Independent – BCTS forestry operational costs are considered comparable when used to determine the MPS variables, however they share resources with the MFLNRO. They share facilities, vehicles, and provide the TSL's with instantaneous permit access (Pers. Obs.). This may artificially inflate the stumpage as BCTS administration costs are lower and TSL's can then increase bids knowing permitting costs are reduced. As a counter argument, BCTS is more top heavy with management, unions and corporate structure and has to do their own First Nations consulting (others submit to MFLNRO), increasing administration costs (Pers. Comm. BCTS).

Not Comparable – The MPS may not be accurately determining market prices due to the ne and location of the BCTS sales. The intent of the take-back was to allocate BCTS area that is a true representation of the TSA timber profile. This is not the case on the coast where BCTS seems to be struggling to find suitable auction timber (Pers. Obs.), with similar concerns in the interior, specifically zone 25 (Gordon, 2010). MFLNRO is currently exploring ways to ensure the entire timber profile on the coast is harvested more consistently (Province of BC, 2013).

Not True Market – Auctions only comprise a small portion of the province's timber market. For example, on the Coast, BCTS has only 11% of the AAC apportionment (MFLNRO, 2013). Many of the auctions receive no bids due to operational cost constraints (e.g., steep terrain requiring heli operations on western Vancouver Island) or low timber values (e.g., white wood with no blended cedar blocks on Haida Gwaii) (Pers. Obs.). These no-bid sales are not entered in the database and are usually re-auctioned at a reduced upset rate (Marshall, 2013). There is also a significant issue with auctions sold with high bids that get entered into the database but are subsequently not logged, defaulting on the TSL (pers. comm. BCTS). With this small sample size and negating to factor in the low value timber that other licencees are obliged to harvest to meet their AAC's, the MPS system artificially inflates the stumpage rates. BCTS has entered into two co-operative management agreements with First Nations and is pursuing other partnerships to increase the number of auctioned sales (MFLNRO, 2011a).

4.0 COMPROMISING SUSTAINABILITY AND STEWARDSHIP

The stumpage system promotes cost minimization as stumpage rates are based on the average operating costs with no reasonable expectation of profit. This limits investment in activities such as reforestation or wildfire abatement and does not always promote the best stewardship (ABCFP, 2009; McWilliams & McWilliams, 2012; Hobby, 2009). For example, a recent Forest

Practices Board (FPB) report found that there has been an increase in tenure holders who a[illegible] to be cutting back on road and bridge maintenance work and culvert use (FPB, 2012b). Another example is reforestation, which is being treated as a cost not an investment, with tenure holders steering away from high cost, high liability options (e.g., excessive avoidance of western red cedar regeneration on the coast) in favor of low cost, low liability options (e.g., over-planting of lodgepole pine in the interior) (Farnden, 2009; ABCFP, 2009).

The BCTS profit directed mandate may also compromise stewardship and artificially inflate bid prices. BCTS is bound to accept the highest bid and operators with previous poor performances are rarely disqualified, which may result in poor or minimal work being completed (Marshall, 2013; Pers. Obs.). For instance, the FPB 2010 compliance audit of the BCTS TSL's in the Campbell River area identified an unprecedented number of noncompliance findings and noted numerous unsound and unsafe forest practices (i.e., not maintaining natural drainage patterns or protecting fish habitat)(FPB, 2012a). The report also noted several instances where professionally prepared site plans and road designs were changed by the TSL's without involvement of a qualified professional (a non-compliance with FRPA and a practice prohibited under the *Forester's Act*) (FPB, 2012a). This was particularity shocking given that they are third party certified by the Sustainable Forest Initiative (SFI). The recent introduction of a graduated deposit system and performance evaluation criteria (i.e., level 1, level 2, or level 3) in the *BCTS Regulation* should help secure performance of obligations of TSL's, though its success will depend upon the ability of BCTS to consistently apply the specified criteria (Waatainen, 2012).

BCTS is responsible for providing technical support and expert information to the TSL's, however they cannot direct or restrain any site level decisions (ABCFP, 2012). They can only enforce the conditions of the TSL and report any non-compliances, or potentials, to Compliance

and Enforcement (C&E). Although C&E is obligated to be fair and consistent, they consider BCTS TSL's a low risk, supervised by BCTS in same office, and may be less inclined to carry out inspections (Pers. Obs.). This is consistent with the FPB report that questioned why the non-conformances and practice issues in the Campbell River area were not identified through BCTS inspections or by C&E. (FPB, 2012a). Since BCTS TSL's are less scrutinized by C&E, and perhaps BCTS, and some may not adhere to professionally prepared plans they can increase their bids accordingly. Long term tenure holders do not have the luxury to cut costs at the risk of compromising the environment and are penalized with higher stumpage prices as a result.

4.1 Variations to the Standard MPS Procedures

Cruising procedures are specific to typical market uses of timber and do not take into account other potential products such as bioenergy, hence the market price may not reflect the maximum value of the stands potential. Thus in 2008, BCTS offered an innovative timber sale licence (lump-sum) in the interior to encourage increased utilization of beetle-attacked timber (Bell, 2009). Building on this success, and in an effort to make the stumpage system simpler and more transparent, the province introduced stand as a whole pricing in 2010 with cruise based billing, for cutblocks with 35% or more volume MPB lodgepole pine (ABCFP, 2012). With lump sum/cruise based sales there is one stumpage rate based on the market value of the entire stand rather than by the m3. Cruise-based sales eliminate the need for scaling, grading, post-harvest waste assessments and minimizes waste in the harvest area (Bell, 2010).

Another option to better predict the variables in the appraisal and MPS calculations is to create an all-inclusive, multi-phase bid sale. For example, an alder opportunity bid was just put out to tender by Taan Limited Partnership (Taan). The bid is for 25,000m3 (minimum 50% alder) within a 50 ha area, Louise Island (Taan, 2013). The TSL's will be responsible for all

phases of development and harvest (e.g., layout, assessments, site plans, road building and maintenance etc.) until completion (Taan, 2013).

5.0 CONCLUSIONS AND RECOMMENDATIONS

A common theme emerging from the Special Committee on Timber Supply was the importance to industry to protect the internationally recognized BC reputation for sustainable forestry, paralleling public values (Province of BC, 2012a). The MPS does not lend itself well to this reputation. It promotes cost minimization, discouraging long-term investment and management strategies. Although constrained by the SLA, the following recommendations would improve the system and provide a better estimate of the value of crown timber:

Frequent Updates and Factoring in No-bid Sales –Updates need to be more frequent with potential bi-annual reviews of the MPS equations and monthly updates the market stumpage rates. There also needs to be a mechanism developed to ensure that the dataset accounts for no-bid sales and is adjusted for sales that are bid on and are never harvested.

Reasonable Expectation of Profit or Incentives – In order to discourage cost minimization tenure holders need a reasonable expectation of profit. However, any profit built into the system would face accusations of subsidization from the US. A solution would be to provide stumpage incentives for investments and activities above those set by legal or regulatory requirements (WSCA, 2008). An example would be reducing the stumpage for "stocking standards plus" treatments (MFLRNO 2012a). There could also be additional TOA's for initiatives such wildfire urban interface fuel treatments or a specified operation cost for areas experiencing severe regeneration issues from government elk relocation initiatives (Hobby, 2009; CRIT, 2011).

BCTS and Auction Changes: Large scale changes to BCTS structure and procedures are required to ensure that BCTS accurately reflects the costs that other licencees incur and ensure

that their timber sales are managed in a sustainable manner. These changes would include:

- Operating as an entirely different entity then MLFNRO (i.e., separate offices and vehicles) and provide TSL's with the same level of service that a regular licencee would expect.
- Ensuring the full timber profile is harvested consistently and continue to pursue partnerships.
- Government direction to have their primary goal to be to ensure excellence in resource stewardship (Marshall, 2013). Given the public's values and that their certification is based on principles and measures that promote sustainable forest management, this should be inherent.
- Having more flexibility to choose auction winners based on past performance and banning poor performing contractors from bidding for a time period. The new deposit system should help, however BCTS must be diligent and withhold deposits when appropriate.
- Ensuring TLS's adhere to professionally prepared plans or notify BCTS of changes, providing an alternate professionally prepared plan, being diligent to withhold deposits if not the case.
- Giving BCTS more ability to direct TSL's and increasing BCTS inspections and C&E visits.

Exports – Although not previously discussed due to the infeasibility with BC's political climate, a potential solution would be to lift export restrictions. This would settle the dispute with the US, allow tenure holders to maximize profit, encourage investment, and increase stumpage revenue. This requires the public and the labor force to understand the basic principles of free markets, competition and the US dispute (Innes, 2012).

Given the impact stumpage rates have on the economy, any MPS changes must reflect the multiple objectives of the public and the industry. The province is progressing by introducing cruise based billing and developing partnerships in order to increase the auctioned fibre on the market. Lastly, to make the MPS more transparent and get true development costs the government should consider the feasibility of implementing all-inclusive, multi-phase bid sales.

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