Economic Impacts of RMAPs and Required Road Upgrades on Small Forest Landowners in Western Washington

By Kevin Zobrist

Washington's Forests and Fish Rules include significant new requirements for forest roads. Forest landowners, regardless of size, are required to prepare a Road Maintenance and Abandonment Plan (RMAP) that outlines how their forest roads will be brought into compliance with the new regulations. Landowners must submit an RMAP before harvesting timber, and all landowners must submit an RMAP by 2005. Any road upgrades prescribed by the RMAP must be completed by 2015. Road upgrade cost estimates from the Small Business Economic Impact Statement (summarized in RTI Fact Sheet #4) indicate that compliance with the new requirements could be expensive. This fact sheet demonstrates the potential economic hardship of road upgrade costs for individual small forest landowners in Western Washington.

Road upgrade costs can cause economic hardship in two ways. The road upgrade costs may significantly reduce a landowner's return on his or her forestry investment. This is reflected by a reduced net present value (NPV) for the rotation impacted by the upgrade costs. The road upgrade requirements also pose a cash flow problem. Forestry is a unique enterprise because of periodic and long-term nature of the income it yields. Because of this, landowners may not have adequate cash available at the time of the road upgrades. This may force some landowners to harvest their forests sooner than they otherwise would. Other landowners may have to harvest more than they otherwise would. Landowners without sufficient timber liquidity to raise the cash necessary for the road upgrades may have to borrow money and pay back the costs of the upgrades plus interest out of future timber revenues.

The extent of economic hardship depends on several factors, such as the size of the property, the cost of the road upgrades, and when in the rotation these costs are incurred. Several examples are presented below of how these factors influence the economic impacts of road upgrade requirements on small landowners. Economic impacts are illustrated both as a percentage loss in future timber revenue from the compounded cost of the road upgrades and as a percentage reduction in the NPV of the impacted rotation.

The examples are for a theoretical western Washington landowner on site 120. The analysis was done using a real interest rate of 5%. Other assumptions include a $239/acre planting cost at the beginning of the rotation, a $75/acre pre-commercial thin cost at year 15, $1000/acre of net commercial thin revenue at year 35, $14,000/acre of net revenue from final harvest at year 50, and $12/acre/year of annual administrative costs. All figures are pre-tax and assume no land rent costs.

Note that the Forestry Riparian Easement Program attempts to mitigate riparian buffer costs greater than the 11% industry average but did not consider road upgrade costs. The charts below suggest many situations will greatly exceed this threshold.

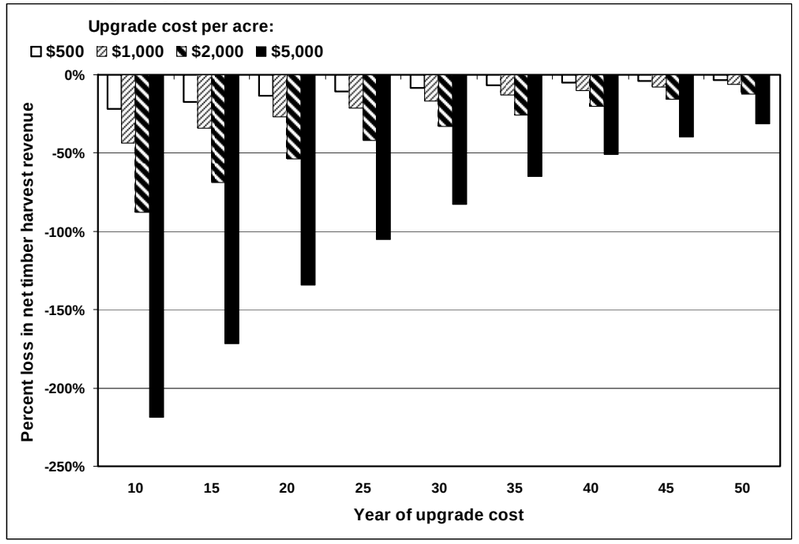

Figure 1: Impact of compounded road upgrade costs on net timber harvest revenue. This shows the percentage of net future timber revenues that would be lost to pay off money borrowed for road upgrades. Because of high carrying costs, road upgrades done earlier in the rotation will have a greater impact. Losses greater than 100% reflect a scenario in which the road upgrades cost more than the timber on the property is worth.

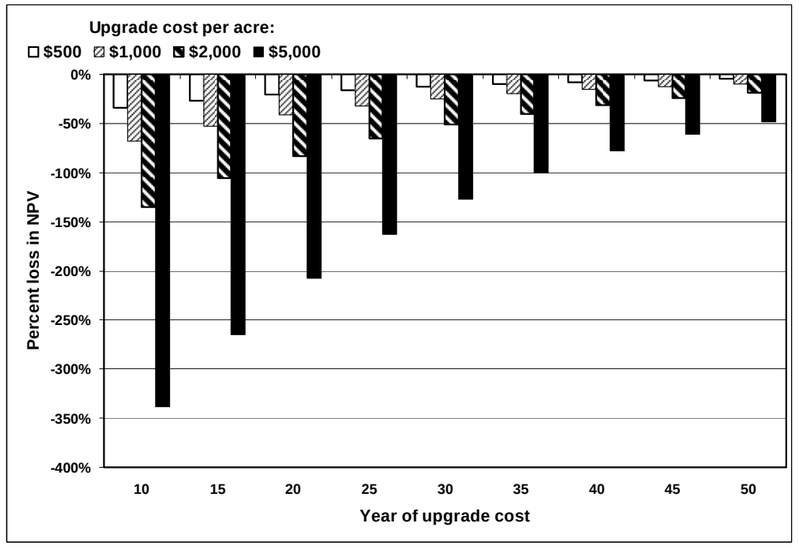

Figure 2: Impact of road upgrade costs on NPV of timber investment. This shows the percentage loss in NPV for the timber rotation in which the road upgrade costs are incurred. This reflects the decrease in performance of the landowner's investment in forestry. Because of high carrying costs, road upgrades done earlier in the rotation will have

a greater impact. Depending on the cost of the impact, though, even upgrades done at the very end of the rotation can have a high impact on NPV. Losses over 100% reflect a scenario in which the landowner's forestry investment no longer achieves a 5% rate of return.

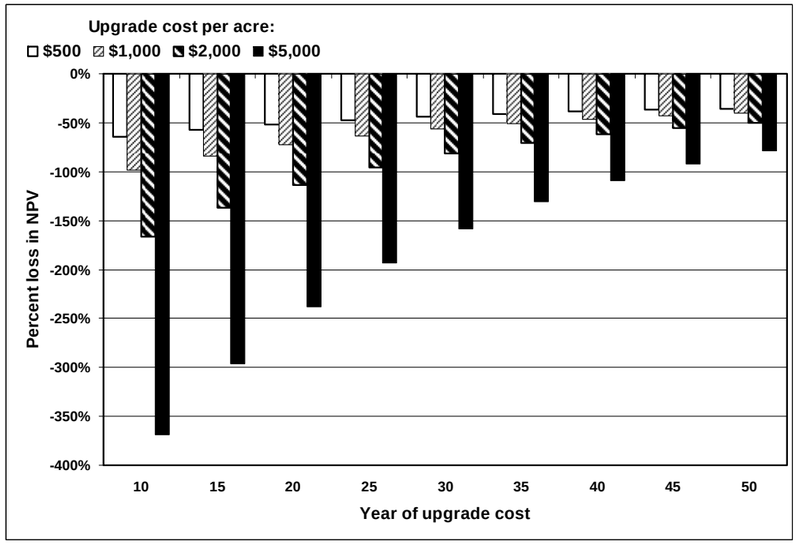

Figure 3: The combined impacts on NPV of road upgrade costs and a 20% harvest revenue reduction due to riparian buffers. A 20% harvest reduction from riparian buffers (roughly the average impact on small landowners on the Westside) would reduce NPV by an additional 30%. A high buffer impact combined with high road upgrade costs could be economically devastating to a small landowner.

Discussion:

The impact of road upgrade costs depends heavily on how much the upgrade cost is per forested acre. The *Small Business Economic Impact Statement* estimates the cost of a single crossing over a fish-bearing stream to be $40,000 (Perez-Garcia, *et al.*, 2000). Thus, one crossing alone on a 20-acre property would represent an upgrade cost of $2,000/acre. For a very small landowner with several significant upgrades, the total cost per acre could be very high. Larger landowners will tend to have more road miles and stream crossings, and thus they will have higher upgrade costs. However, larger landowners can average these costs over a larger acreage base. Some small landowners can be expected to have much higher per-acre costs resulting in disproportionate impacts across all owners.

The economic impacts also depend on the timing of the road upgrades. Because of carrying costs, if road upgrades have to be done early in the rotation, the NPV of that rotation will be significantly diminished. If a landowner has to borrow money to upgrade roads early in the rotation, the compounded cost may significantly diminish future revenues. If upgrade costs are high, the compounded costs will likely exceed future timber revenues, indicating that some landowners will face upgrade costs that are greater than the value of their timber assets.

The worst-case scenario is a landowner who has high upgrade costs, small acreage, and has to do the upgrades early in the rotation. In the above example, a $5,000/acre upgrade in year 10 of the rotation would cause a 338% reduction in the NPV of that rotation, making forestry a poor investment for that landowner. The costs of that upgrade carried to the end of the rotation would be almost four times greater than the total net timber revenue produced. In contrast, a low per-acre upgrade cost incurred late in the rotation would have much smaller economic impacts. There will likely be a broad disparity of impacts across different landowners.

It is important to note that the above examples represent a Westside landowner managing even-aged timber on a relatively high site. A companion fact sheet (FS#12) examines the potential economic impacts of RMAPs and associated road upgrade costs on Eastside landowners. Also note that the economic impacts of road upgrade requirements are compounded by riparian buffers. As shown in *Figure 3*, buffer impacts combined with road upgrade costs can be a serious economic blow to a small landowner. RTI has two fact sheets (FS#2 and FS#3) available from www.ruraltech.org that discuss riparian buffer impacts in more detail for both Western and Eastern Washington.

Depending on the cost of road upgrades, the timing of road upgrades, and other combined impacts from the Forests and Fish Rules, it may be difficult for many small forest landowners to remain economically viable. In some cases, road upgrade costs may exceed the combined value of both land and timber. If non-timber values exist, landowners may find it more attractive to liquidate their timber and convert the land to other uses to minimize their losses. This is significant given current concerns about the rate of non-industrial private forestland conversion in Washington, which the Department of Natural Resources estimates to be 100 acres/day (*Our Changing Nature*, 1999).

Contacts: For more information visit the RTI website at **www.ruraltech.org** or contact Kevin Zobrist, Rural Technology Initiative, University of Washington (206) 543-0827 kzobr@u.washington.edu

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