

Forest Economics

Aligning industry needs and restoration needs

Goals

- Provide the group with a general sense of what the forest products industry's needs are
- Provide a sense of what it costs to deliver a log to a mill
- Provide a sense of what it costs to complete common forest service work items
- Illustrate how these costs affect the \$\$ value returned to the Forest Service on a given project
- Illustrate how this \$\$ value returned affects the feasibility of restoration projects

Current industry needs

- Sawlogs, sawlogs, and more sawlogs
 - Softwood lumber: dimensional, beams, studs, etc.
 - Oregon & Washington have led the nation in softwood lumber production for many years: nearly 30% of the nation's production last year.
 - Veneer
 - Oregon leads the nation in plywood production. Nearly 30% of the nation's plywood last year.
 - Engineered wood: Laminated veneer lumber (LVL), Glued laminated timber (Glulam), Cross laminated timber (CLT)
- Pulp/biomass
 - Non-sawlog material is typically only economical if it's attached to a sawlog

Value vs. Cost

- Delivered log value vs. stumpage
 - Delivered log value—value of a log delivered at a mill
 - Stumpage—value of a log on the stump
- Pond value fluctuates with market conditions
 - Some averages: Douglas-fir--\$500/MBF
White fir--\$400/MBF
Ponderosa Pine--\$300/MBF
- Stumpage fluctuates with the costs necessary to deliver a log from its stump to the mill.

Stumpage = Delivered log value – logging/trucking costs & service items

Value vs. Cost cont.

- Delivered log value is out of the control of the Forest Service & its stakeholders
- The costs associated with delivering logs to a mill, and thus stumpage value, is to some degree within the control of the Forest Service & its stakeholders
- In the context of stewardship projects where retained receipts are used to do additional work, the scale of restoration projects feasible is a function of stumpage value

Typical costs

- Falling & yarding (bringing a log from the woods to the landing)
 - Ground based: \$125/MBF
 - Cable: \$225/MBF
 - Helicopter: \$475/MBF
- Trucking
- Roadwork – construction, maintenance

Additional costs of service work

- Fuels—Hand pile: \$575/acre
Broadcast burning: \$100/acre
- Fire line construction: \$1/foot—A 100-acre square unit has a circumference of 8,358 feet....\$8,358
- Snag creation—Tree topping: \$90/tree
Girdling/fall & leave: \$10/tree
- Pre-commercial thin—\$500/acre
- Pre-commercial thin with hand piling—\$1000/acre

Non-Sawlog removal cost

- Pulp/biomass is valued at about \$25/ton delivered to the mill
- On average, it costs about \$50/ton to deliver
- So....it costs about \$25/ton to remove and deliver non-saw material to a milling facility

Intangibles

- Predictability
- Seasonal restrictions
 - Wet weather
 - IFPL
- Workforce: Local vs. non-local

Reconciling these costs with value

- Assuming the only funding source available is that which the timber provides, then the amount of service work (work that comes at a cost) feasible is contingent on stumpage.
 - The higher the stumpage value, the more service work can be attached to that project.

Note While stumpage decreases with increasing logging costs and service work, it increases with increased volume per acre. The higher the volume per acre being removed, the lower the logging costs.

Project A

- Thin a 100-acre unit
- Yield 20 MBF/acre for a total of 2.0 MMBF
- Yield 2.0 MMBF of DF @ \$500/MBF for \$1 million

\$1 million equates to delivered log value for the project

Project A costs

- Cable yards 50 acres/tractor yards 50 acres
- Tractor yarding @ \$125/MBF = \$125,000
- Cable yarding @ \$225/MBF = \$225,000
- Transportation @ \$50/MBF = \$100,000
 - \$1 Million - \$450,000 = \$550,000 (stumpage)

*assumes no road maintenance costs

Highest stumpage I've ever seen on a USFS sale was about \$350/MBF

Project B

- Thin a 100-acre unit
- Yield 20 MBF/acre for a total of 2.0 MMBF
- Yield 2.0 MMBF of DF @ \$500/MBF for \$1 million

Project B costs

- Cable yards 50 acres/tractor yards 50 acres
- Tractor yarding @ \$125/MBF = \$125,000
- Cable yarding @ \$225/MBF = \$225,000
- Transportation @ \$50/MBF = \$100,000
- Hand pile & cover @ \$575/acre = \$57,500
- Fall & leave 5 TPA: \$10/tree @ 500 trees = \$5,000
- Top 5 TPA: \$90/tree @ 500 trees = \$45,000
- PCT & hand pile a 100 acre unit @ \$1000/acre = \$100,000
- Required removal of 1,000 tons of pulp/biomass @\$25/ton = \$25,000
 - \$1 Million - \$632,500 = \$317,500 (stumpage)

*Project A's stumpage was \$550,000

Project C

- Thin a 100-acre unit
- Yield 10 MBF/acre for a total of 1.0 MMBF
- Yield 500 MBF of DF @ \$500/MBF for \$250,000
- Yield 500 MBF of PP @ \$300/MBF for \$150,000
- Total value of \$400,000

Project C costs

- Helicopter yards 50 acres/tractor yards 50 acres
- Tractor yarding @ \$125/MBF = \$62,500
- Heli yarding @ 450/MBF = \$225,000
- Transportation @ \$50/MBF = \$50,000
 - \$400,000 - \$337,500 = \$62,500 (stumpage)