Estimating Harvesting Costs

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Introduction
The Bureau of Business and Economic Research at the University of Montana-Missoula is conducting an ongoing logging cost study to characterize Montana timber harvest costs.

Objectives
This study characterizes Montana timber harvest costs by:
• Updating stump-to-loaded truck costs estimates for several timber harvest systems using expert opinion derived costs
• Quantifying costs for increases or decreases in fuel, labor, insurance, parts and other cost factors affecting harvest to a 2019 cost basis
• Quantifying the effects of tree size and skidding, yarding, distances with a constant harvest volume per acre

Methods
2019 was the sixth time since 2009 the survey was mailed to over 400 independent logging contractors and timber harvesting companies in Montana and Idaho asking for cost estimates for several timber harvest systems. Contractors responding to the survey were offered continuing education credits through the Montana Logging Association and Idaho Associated Logging Contractors. Three scenarios; whole tree ground based (figure 1), whole tree cable/skyline based (figure 2), cut to length in woods processed (figure 3) were presented.

The Survey participants were presented with a silvicultural/harvest prescription and asked to prepare a cost estimate or bid for each scenario (Table 1)

Table 1. Variables used to determine costs included:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cost Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average skidding distance</td>
<td>600 feet</td>
</tr>
<tr>
<td>Average yarding distance</td>
<td>800 feet</td>
</tr>
<tr>
<td>Average Forwarding distance</td>
<td>1000 feet</td>
</tr>
<tr>
<td>Average DBH removed</td>
<td>13 inches</td>
</tr>
<tr>
<td>Trees per acre removed</td>
<td>42 (partial cut)</td>
</tr>
<tr>
<td>Cubic foot volume of average tree</td>
<td>24</td>
</tr>
<tr>
<td>Volume removed per acre</td>
<td>1,000 ft³ (30 green tons)</td>
</tr>
<tr>
<td>Overall harvest acres treated</td>
<td>40-80 acres</td>
</tr>
</tbody>
</table>

RESULTS
• 2019 reported stump to loaded truck costs ranged from $29.12 per green ton for ground based systems employing whole tree skidding to $36.86 for cut to length and $44.50 for cable systems based on Table 1 harvest characteristics.
• Results indicate that smaller-diameter trees and longer skidding/yarding distances tend to increase costs and that cable systems are more expensive than ground-based systems.
• 2019 reported logging costs were typically higher than 2017 but lower than some previous survey years based costs, despite higher fuel and other operating costs.
• Lower harvesting costs are due primarily to attempts by loggers to continue operating in a competitive economic market. With improving delivered log prices some increases in logging cost are expected.
• Loggers felt “The 2009/2011 rates are not sustainable and contractors were bidding to maintain a viable core business & crew at minimal profit levels.”
• Because of the survey’s simplicity and repeatability, results can be compared with previous (Keegan et al. 1995, 2002) and future cost surveys to examine the impacts through time of changing fuel costs, harvest characteristics, or other items of interest.

SURVEY RESPONSE COMMENTS
•...our costs are way up; payroll and health insurance for our employees, fuel and repairs are taking all we make; can’t afford for any less.
• Overall rates/costs are too low, especially with the cost of fuel and parts going up.
• Changes in fuel costs affect logging costs directly, 10% change in fuel = 2.5% change in logging costs.
• Sometimes there are a number of overlooked conditions that have more effect on expenses vs. production than the obvious ones of TPA/diameter/distance.
• Every job is so different that giving you our cost would be a wild guess.
• There are very few equipment operators left that can do the job right and that care about what they do. So with the cost of fuel, parts, labor, insurance and work comp you barely break even at the current logging prices. If you add in a new equipment payment you would go broke.
• Political policy and federal regulation has sent this industry into a deliberate yet totally unnecessary tailspin-shame-shame-shame!