

***Sacramento Mountain Wood Industry
Summit March 2016***

Logging Utilization in New Mexico



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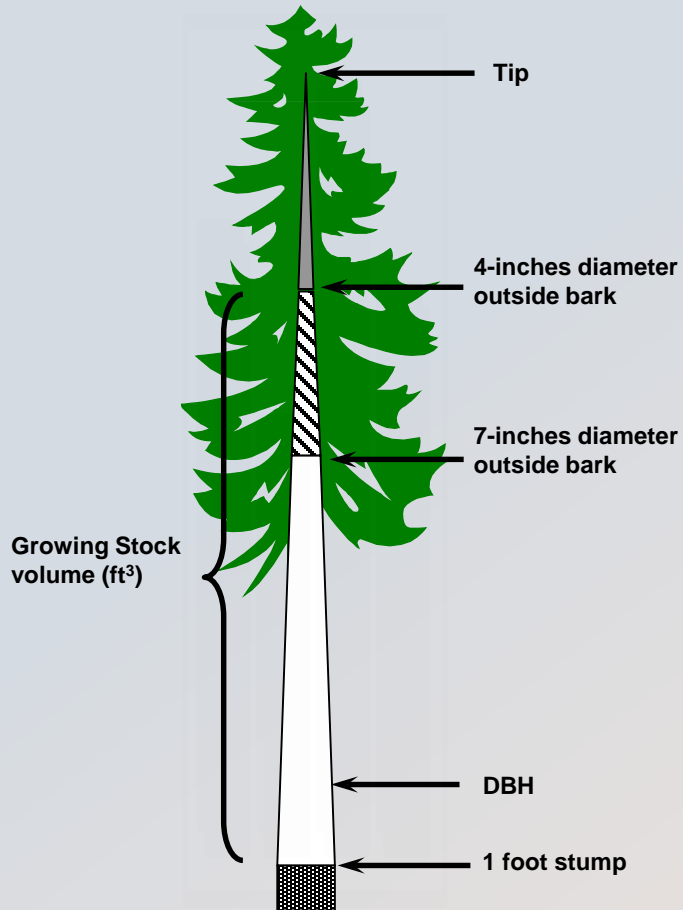
State Level Logging Utilization Objectives

The goal is to update logging residue data for New Mexico. The study is designed to provide factors that are scalable to commercial timber harvesting operations at the state level.

- Characterize harvest operations
- Profile harvest by tree dbh
- Develop residue ratios for calculating residue quantities based on harvest volume



Terminology



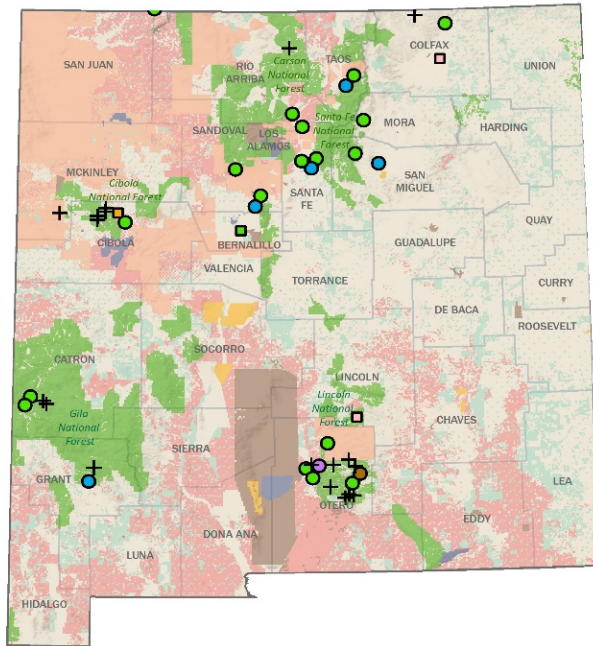
Growing stock vs. non-growing stock

Removals = volume cut

- **Timber products** = logs to mills
- **Logging residue** = left in woods, component of “slash”

Site selection

- Based on recent county level harvest volumes
- Measurable felled trees & stumps
- Commercial products
- Not salvage
- Safe!



Mill Types

Roundwood Users

- Sawmill
- House log
- Firewood
- Vigas/lattilas

+ Logging Utilization Sites

Residue Users

- Bark products
- Fuel pellets/energy logs
- Shavings

Selected Ownerships

- Tribal
- State/Local
- National Park Service
- Bureau of Land Management
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- Other Federal

Map courtesy of Chelsea McIver, Research Specialist in our program

Logging Utilization Methods

Site information from loggers & foresters

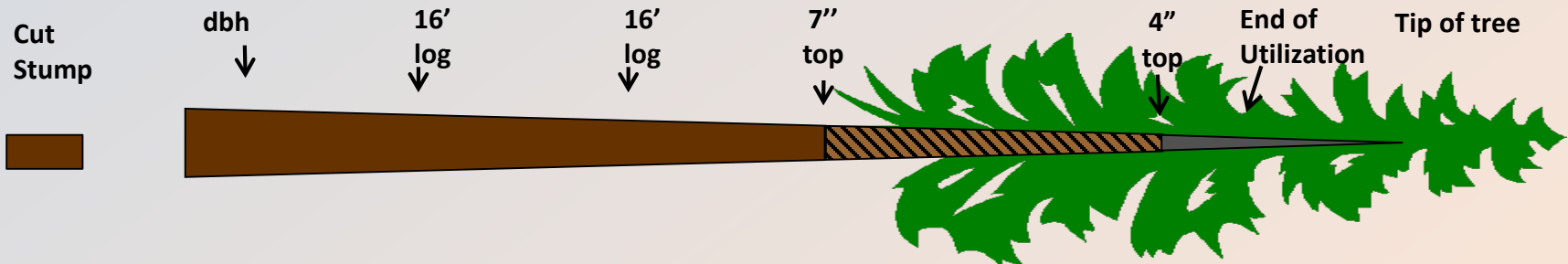
- equipment & methods used
- products & receiving mill(s)
- log lengths & small-end diameters
- cutting card was a utilization guide!
- checked log decks and residue piles for top diameters.



Logging Utilization Methods

Felled-tree measurements:

- Species & cut stump height
- diameters along bole at key points & sections $\leq 16'$ from ground to tip of main stem
- Identify each bole section as used (product) or not (residue)





Preliminary Results

- 55% of sites were mechanically felled and merchandised
- All 20 sites employed ground based skidding
- On 70% of sites trees were skidded tree length & merchandised at landings



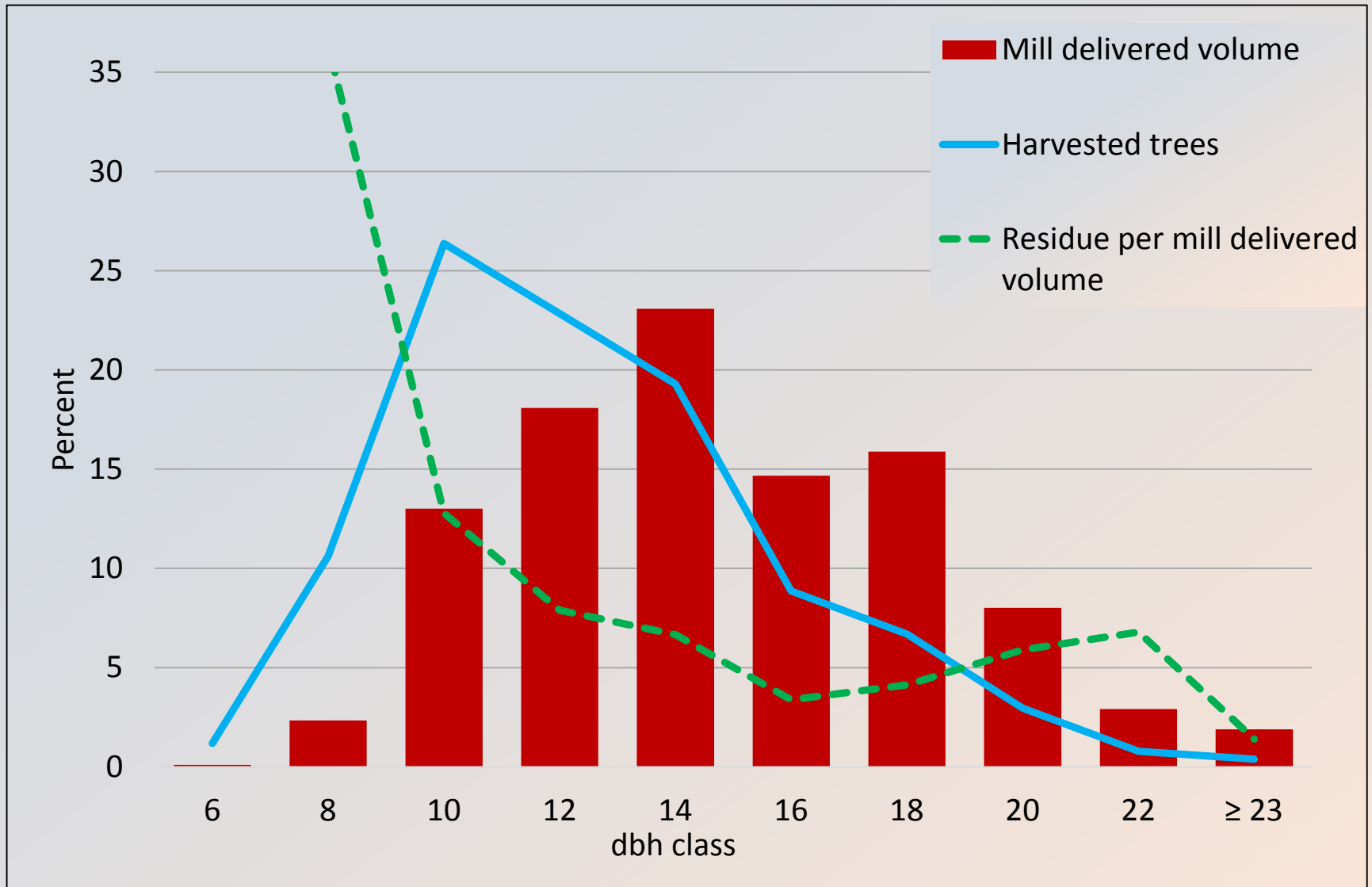
Trees by diameter

- 50% of trees were ≤ 12 inches dbh, provided 40% of volume & created 55% of the total logging residue.
- 50% of volume came from trees ≤ 14.5 inches dbh & created 72% of the total logging residue
- Generally speaking, smaller diameter trees produce proportionally more logging residue than larger diameter trees

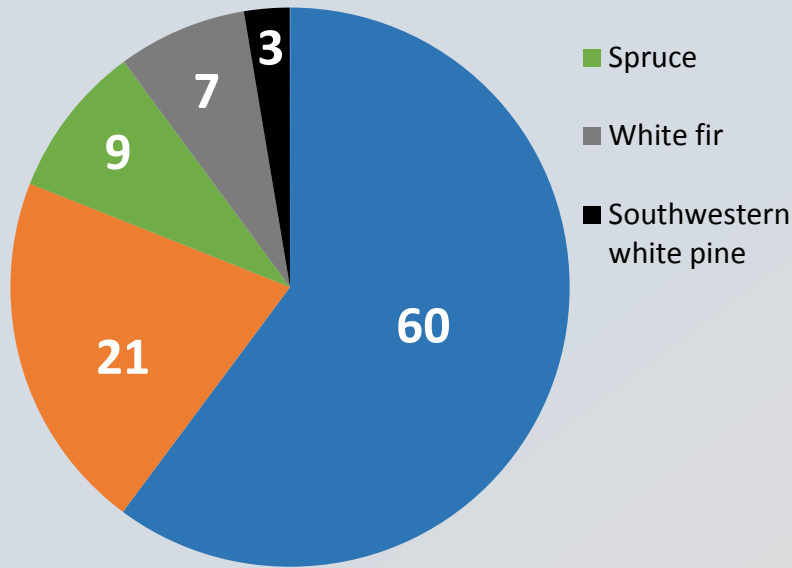




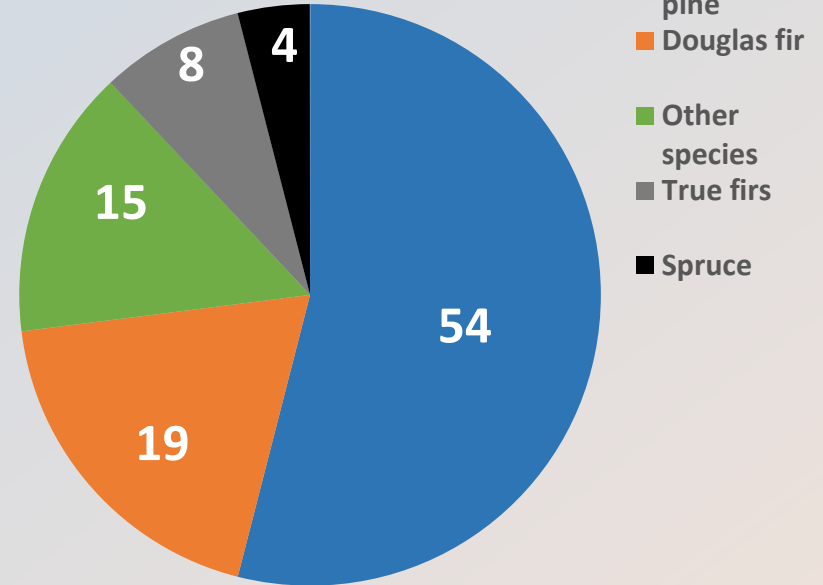
Proportions of mill delivered volume, harvested trees, and residue per mill delivered volume by tree dbh, New Mexico.



Percent of sampled tree volume by species



Percent of harvest volume by species 2012



Trees by species

Sample from logging study

- Ponderosa pine 60%
- Douglas-fir 21%

Harvest based on mill survey

- Ponderosa pine 54%
- Douglas-fir 19%



New Mexico removals factors

For every 1,000 cubic ft. (cf) of volume delivered to the mill:

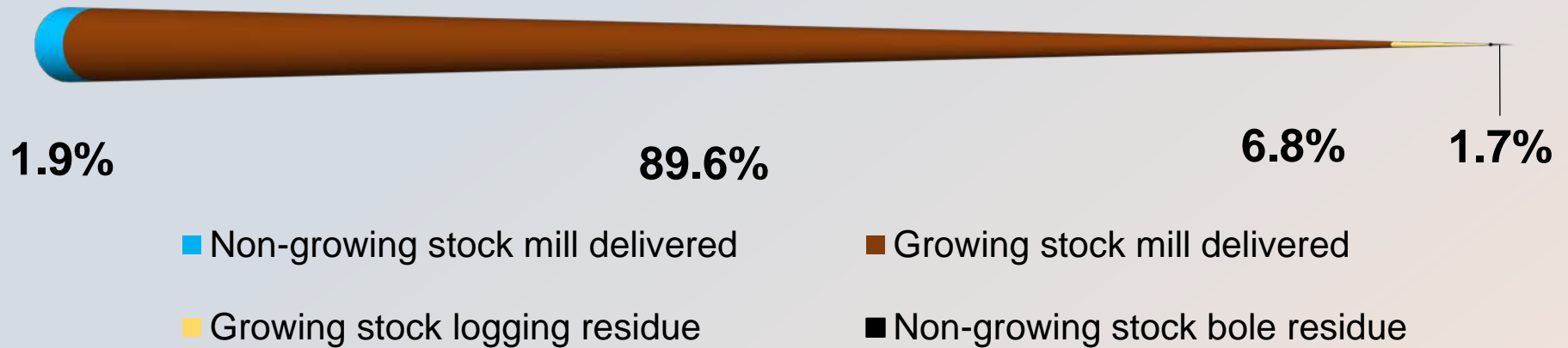
- 1,053 cf of growing stock (GS) is removed
- 979 cf of GS is delivered to the mill
- 74 cf of GS logging residue is created
- An additional 21 cf of non-GS (stumps and tops) is delivered to the mill





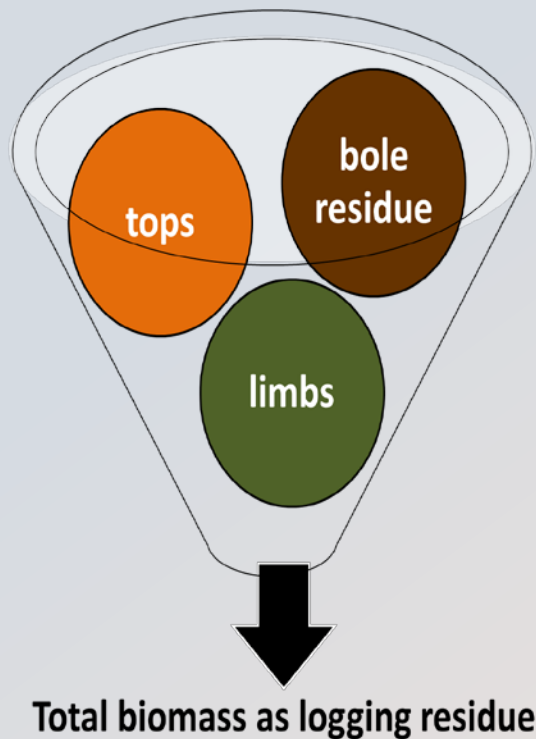
New Mexico harvested tree bole utilization

Harvested tree bole
(portions of main stem from cut stump to tip of tree excluding limbs)



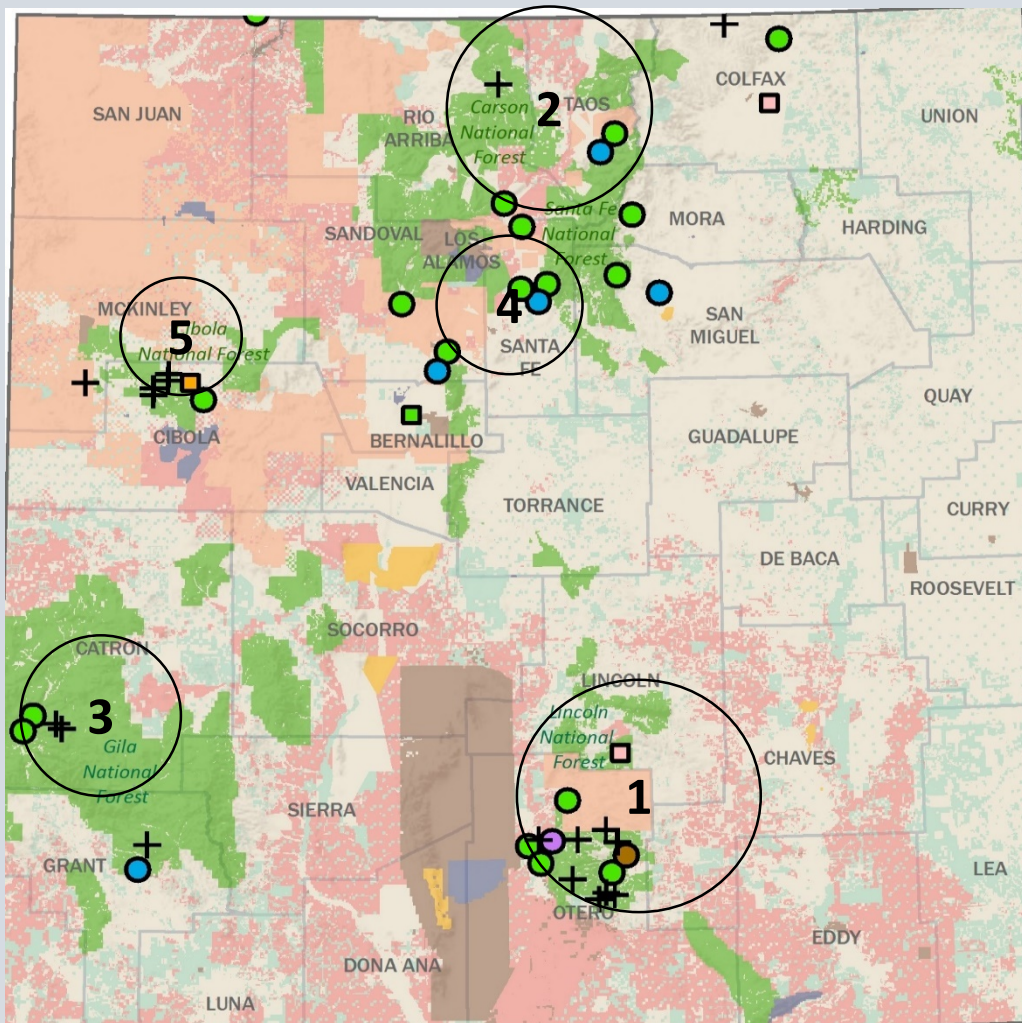
In New Mexico, 8.5% of the harvested bole volume (plus limbs & tops) remains in the woods as logging residue

Uses for this information



- Removals factors
- Whole tree volume equations for tops and limbs
- Mill study data
- Scalable to harvest

1.76 green tons of residue per MBF of commercial harvest



Logging residue estimates based on 2012 TPO data.

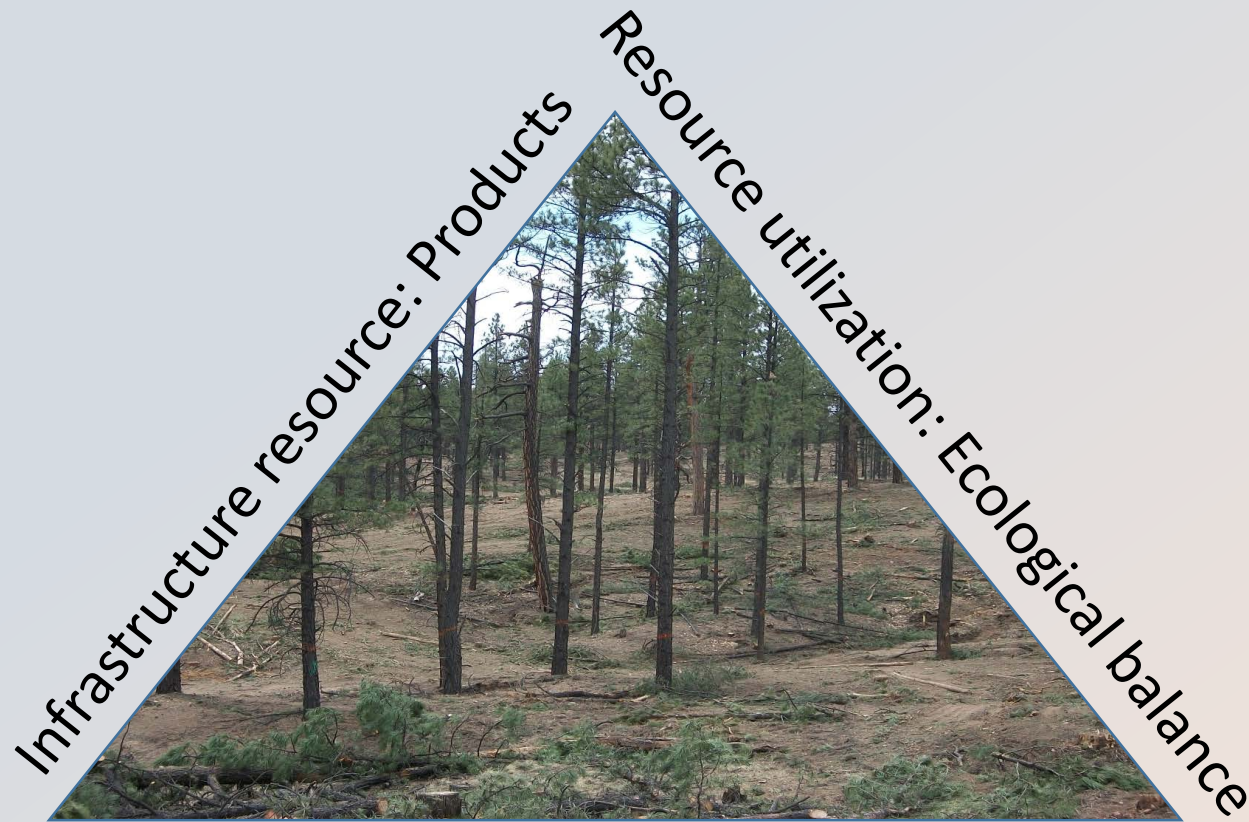
Total 50,690 green tons

- Area 1 - 38%
- Area 2 - 33%
- Area 3 - 12%
- Area 4 - 11%
- Area 5 - 6%

Residue estimates prepared by Todd Morgan, the Director of our program



Sustainable Stewardship



The resource: Land managers



Northwest Advanced Renewables Alliance (NARA)

Washington State University, Oregon State University, Idaho State University, University of Washington and The University of Montana

- The answers will not be the same for New Mexico
- Methodologies may be useful
- Supply chain
- Logistics
- Life cycle analysis (carbon accounting)
- Socio-economic analysis
- Quantifying residues (already partially done with this study)

<http://nararenewables.org/>

Thank you and see you in the woods!



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<http://www.bber.umt.edu/fir/>