



NARA

# Woody Biomass from Logging and Mill Residuals

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# Grand Challenge

- Understanding woody biomass in logging & mill residuals
  - Amounts generated annually
  - Geographic distribution
  - Current uses
  - “Suitability” as biojet feedstock
  - “Availability” for biojet conversion



# Where are we today?

- Current biomass inventories
  - Forest Inventory & Analysis (FIA)
    - Standing live & dead trees
  - Timber Product Output (TPO)
    - Mill-delivered volumes of timber
    - Logging residue
    - Primary mill residuals



# Logging & Mill Residuals

- Goals and deliverables
  - Inventory assessment for NARA region
    - Emphasis on current and near-term residual generation by state
    - Preliminary logging residue estimates for OR & WA
    - Updated logging residue estimates for MT & ID
    - Mill residuals in all four states



# Roadmap to success

- Produce a woody biomass inventory
  - Utilize and enhance existing methods & data:
    - Field sampling of logging sites
    - TPO: logging residue, primary mill residue
    - Ongoing primary mill censuses
    - FIA: standing live & dead trees
  - Normalize the data between the “east” and “west”



# Roadmap to success

- **Necessary cross-team linkages**
  - Work with Feedstock Teams to identify & quantify “available” volumes based on cost, distance, etc.
  - Use Conversion Team expertise to refine volume estimates based on “suitability”
  - Coordinate with Outreach Team to identify test communities for more detailed local analyses



# Montana feedstock & wood products





# Montana's Timber Resource Non-reserved Timberlands 2003-2009

Growing stock volume	36,061 MMCF
Standing dead volume	6,421
Annual (gross) growth	853
Annual mortality	492
Annual harvest (2004)	198
average (2003 – 2009)	~140
(2011)	~ 90



# Montana's Timber Resource

## Non-reserved Timberlands

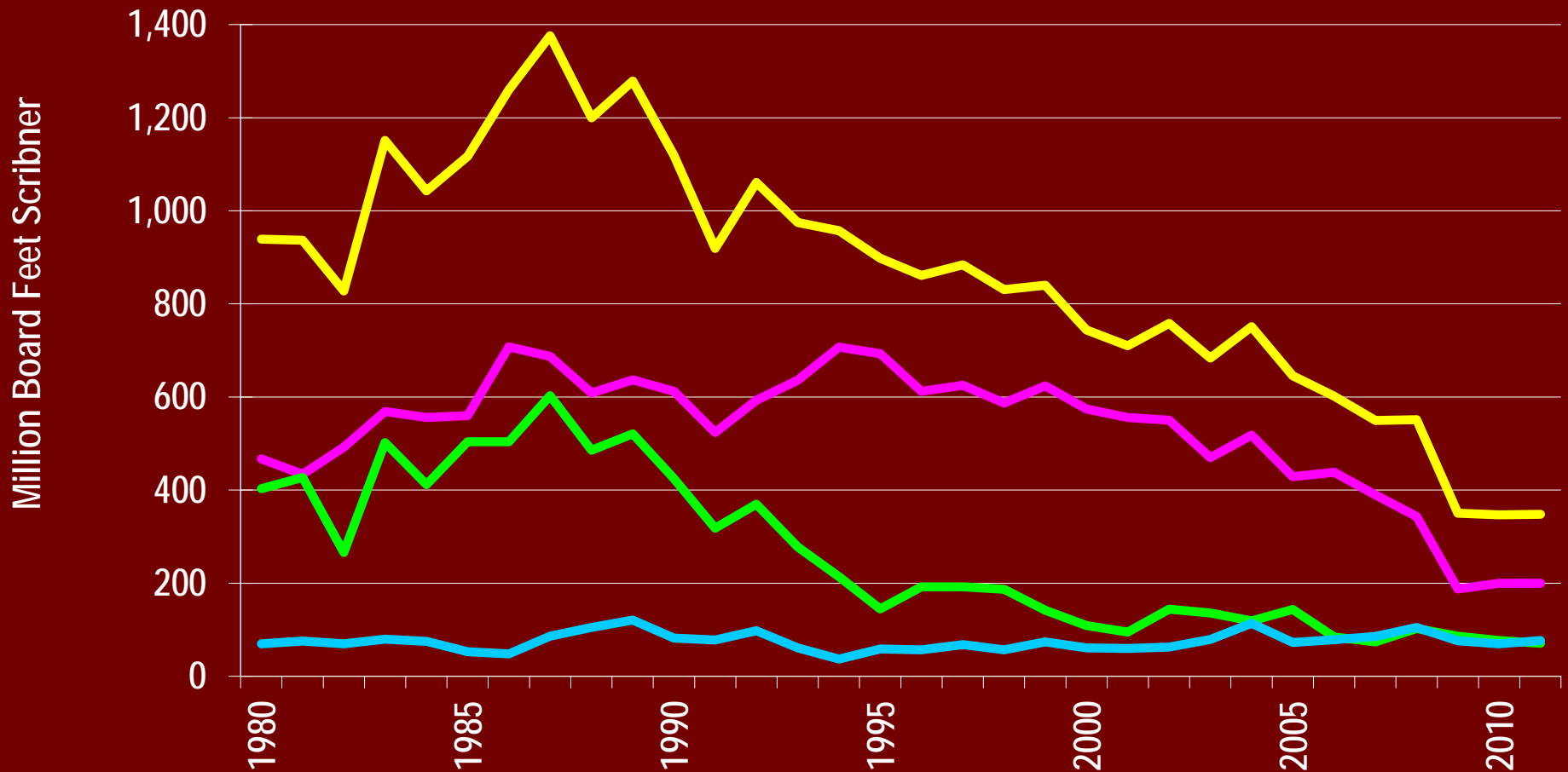
### 2003-2009

	<u>Public</u>	<u>Private</u>
<b>Net Growth (MMCF/yr)</b>	<b>239</b>	<b>122</b>
2011 <b>Harvest (MMCF)</b>	<b>~30</b>	<b>~52</b>
<b>Ratio</b>	<b>8 : 1</b>	<b>2 : 1</b>

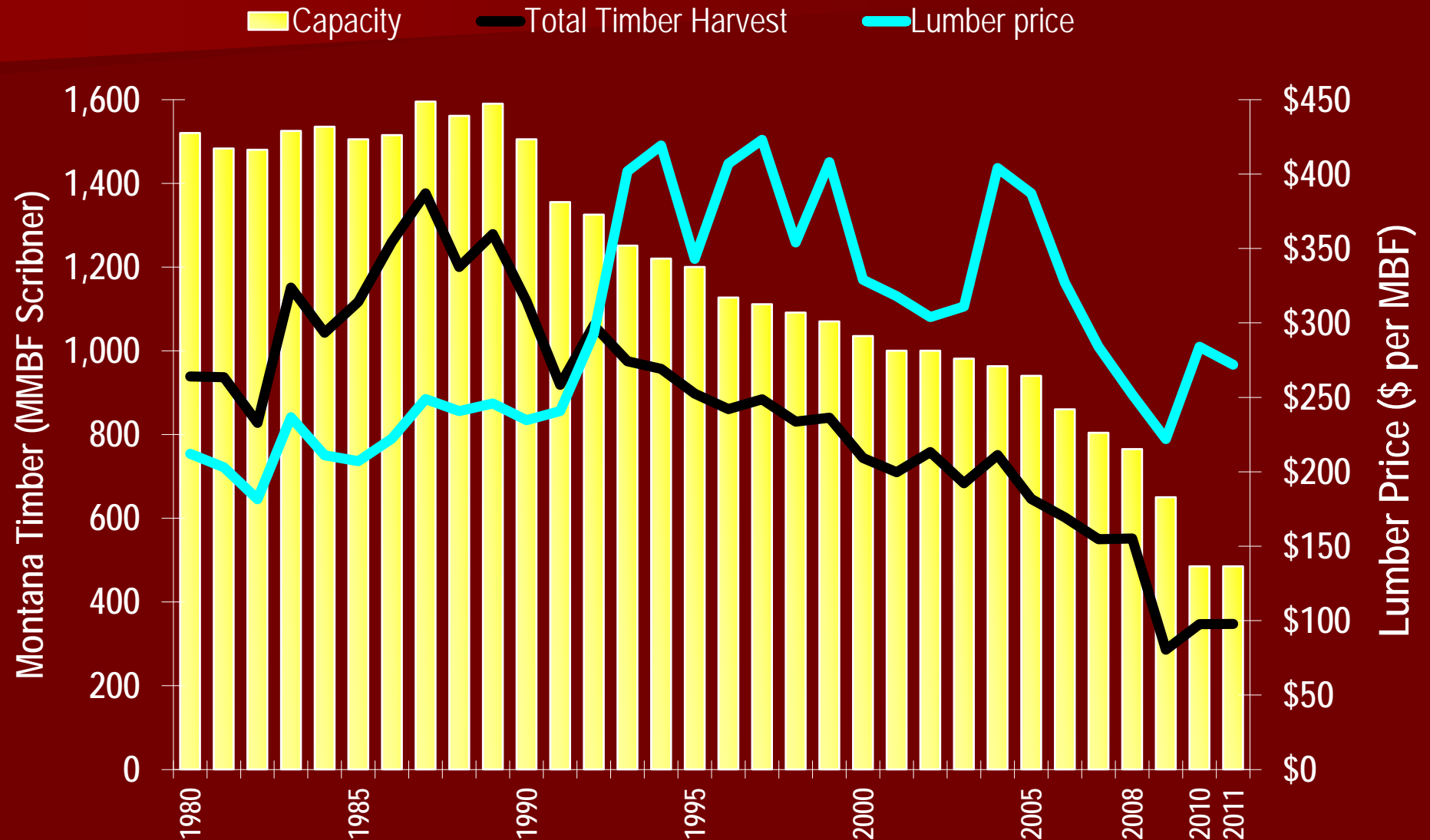
Source: Miles. Tue, Jun 12, 2012. Forest Inventory EVALIDator web-application version 1.5.00. <http://apps.fs.fed.us/Evalidator/tmattribute.jsp>

# Montana Annual Timber Harvest 1980-2011

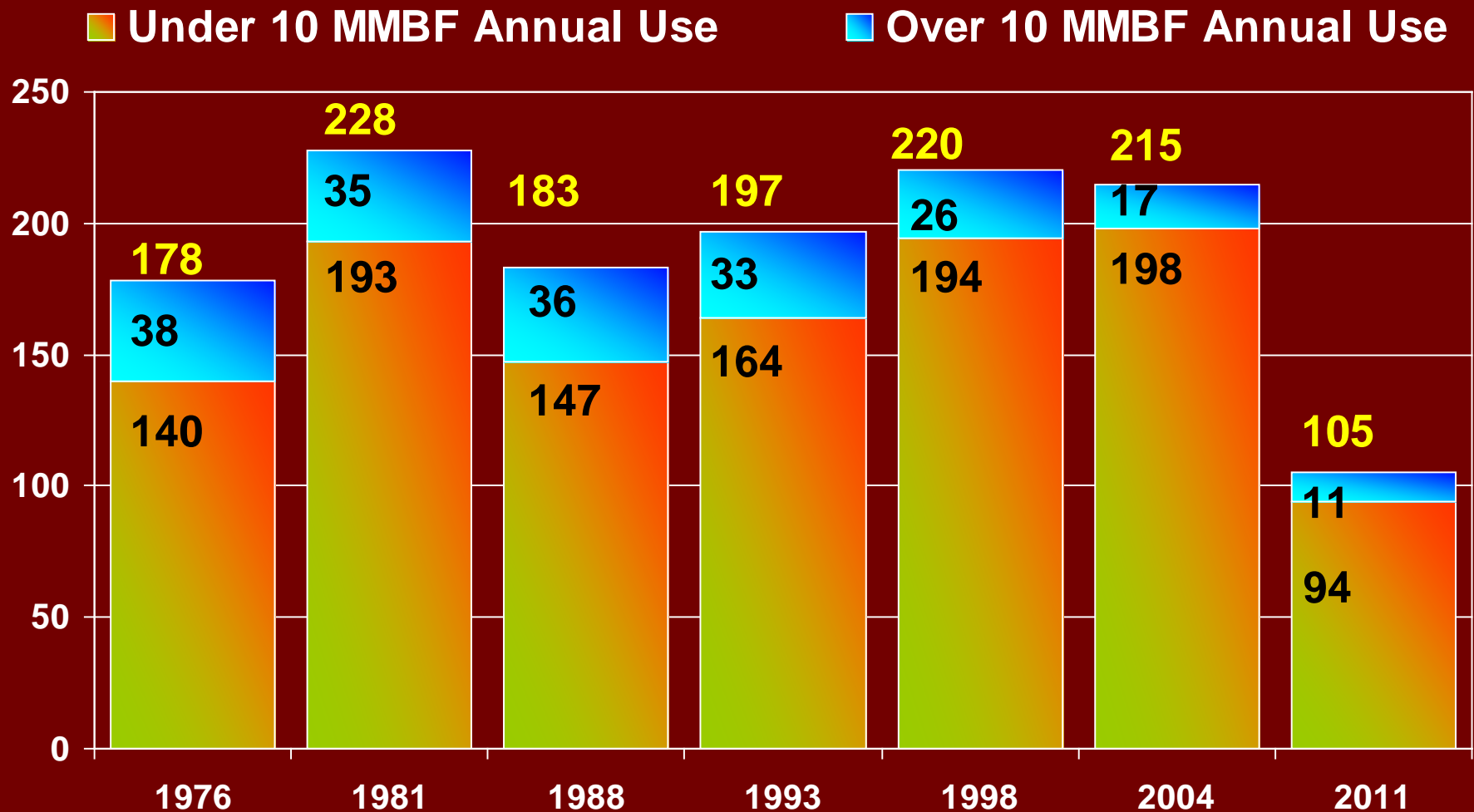
Private National Forest Other Total



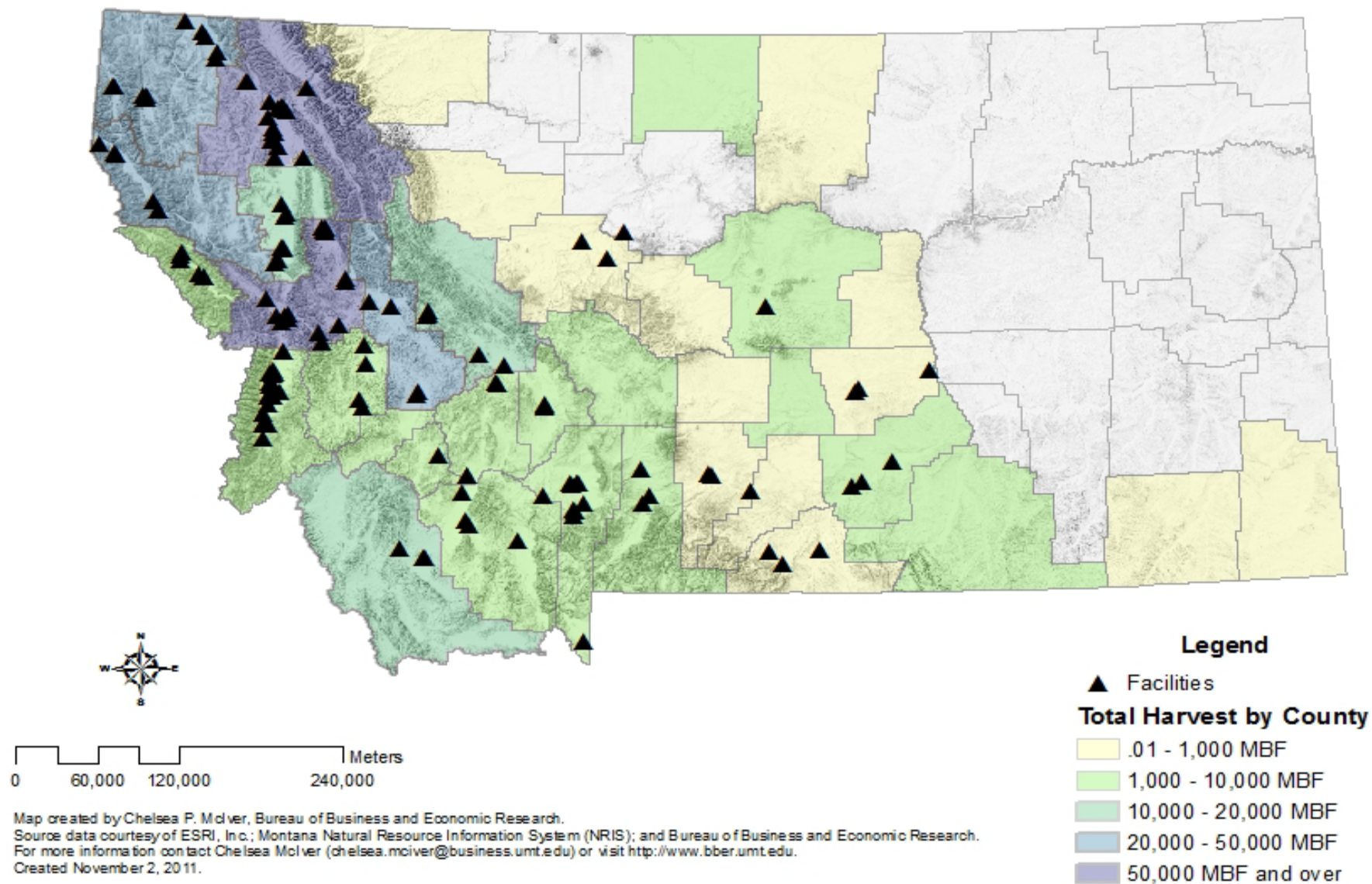
# Montana Timber-Processing Capacity & U.S. Lumber Prices, 1980-2011



# Montana Timber-Processing Facilities by Size Class



# Montana Primary Timber Processing Facilities and Timber Harvest, 2009



# Montana Logging Utilization Results

**Cubic feet of growing stock  
per MCF delivered to mills**

	1965	1988	2002	2011*
<b>G.S. product</b>	<b>997</b>	<b>999</b>	<b>986</b>	<b>987</b>
<b>G.S. residue</b>	<b>163</b>	<b>122</b>	<b>54</b>	<b>37</b>
<b>G.S. removals</b>	<b>1,160</b>	<b>1,121</b>	<b>1,041</b>	<b>1,024</b>

1965 Factors are from Wilson et al. 1970.

1988 Factors are from McLain 1992.

2002 Factors are from Morgan et al. 2005.

\*2011 Factors are preliminary—7 sites.

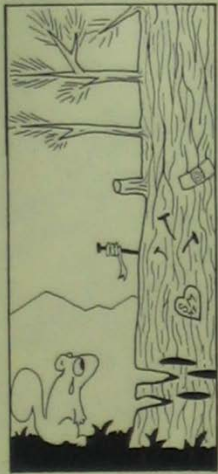
# Preliminary Montana Results

## 2011

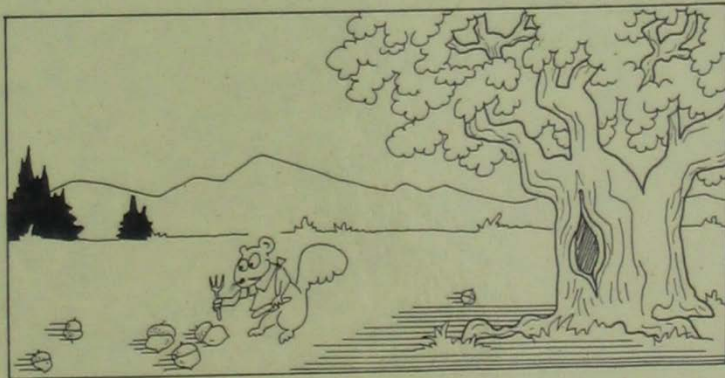
- 7 sites
- 196 trees
- 7.0 – 22.5" dbh
- 4 more years of measurements



# Comments/Questions?



**BE KIND  
TO  
TREES**



THEY PROVIDE SHADE, FOOD & HOMES

