DNR Mission

- Work with citizens to conserve/manage state’s natural resources
- Provide outdoor recreation opportunities
- Provide for commercial uses of natural resources to create sustainable quality of life
Biomass

- Multiple definitions
  Often used to refer to low value material

- Multiple characteristics
  Not all biomass meets spec for all end uses
Regional Forest Resource

Hardwoods

Softwoods
DNR 2014 Biomass Estimate

- Completed by DNR Forestry, Resource Assessment group.
- Based on Forestry modeling and Federal Forest Inventory Assessment (FIA) Data
- Looked at 50, 100, 150 mile radii from Rochester
# The Biomass Assessment

## Conclusions: Physical Production in Green Tons

<table>
<thead>
<tr>
<th>Radius</th>
<th>Hardwood</th>
<th>Softwood</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 miles</td>
<td>1.5 million</td>
<td>135,000</td>
<td>1.6 million</td>
</tr>
<tr>
<td>100 miles</td>
<td>4.75 million</td>
<td>875,000</td>
<td>5.6 million</td>
</tr>
<tr>
<td>150 miles</td>
<td>9.1 million</td>
<td>1.9 million</td>
<td>11 million</td>
</tr>
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## Physical production – Less Current Consumption in Green Tons

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<td>590,000</td>
<td>3.4 million</td>
</tr>
<tr>
<td>150 miles</td>
<td>3.7 million</td>
<td>1.0 million</td>
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</table>
Economic and Socially Available Biomass

- Competition with existing users,
- SE Minnesota forest land is largely bluffs,
  - Traditional hardwood saw logs are high value
  - Cost of pulling additional material up or down the hill will impact availability
  - Harvest practices to prevent soil damage and erosion, may also limit removals
- SE Minnesota Forest is 90%+/- privately owned, parcellization and landowner interest may limit access
Other sources of Woody Material

- Municipal tree and brush disposal site
  Moving away from open burning
- Saw mill residue – bark, dust, ends and slabs
  Competition with livestock bedding
Sawmills, Cities and Cities without Natural Gas
Biomass Quality

Parameters impact suitability of biomass for some uses:

- Residential pellets, low ash – need round wood
- Gasification, low moisture, low ash
- Stoker boilers, fluidized bed boiler – more variability ok
- Biochemical – looking for sugar not ash.
Ash

Black ash

Green ash

White ash
Pine

Eastern white pine

Jack pine

Red pine
Take Aways

- There is a significant wood resource in south east Minnesota

- Supply chain will need some development
  - At least for large scale projects –
  - Smaller commercial heating, relatively easy to bite off

- We probably are going to see some costs higher than northern MN
Thank You

Mark.lindquist@state.mn.us
507-359-6038
mndnr.gov