

**FUELS FOR SCHOOLS EDUCATION
SESSION
ECOLOGICAL AND ENVIRONMENTAL
BENEFITS OF UTILIZING WASTE
WOODY BIOMASS**

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Presentation Organization

- Overview of fuels treatment ecological benefits
- Challenges to implementing fuels treatments
- Opportunities for thermal biomass development using fuel treatment project woody biomass

Fuel Treatment Ecological Benefits

- Our primary goal in fuel treatments is to minimize the potential for uncharacteristic fire effects by mitigating fire behavior.
- Our fuel treatments focus on the “fuels” leg of the fire behavior equation (fuels, terrain, and weather).
- Our benefits derive from not experiencing uncharacteristic fire effects.

“Characteristic” Fire Effects

Small patches of regenerating conifers thinned, crowns lifted

Widely-spaced, large-diameter, fire-tolerant trees

Plant cover protecting soils from erosion; unimpaired soil productivity

Light surface fuels



High, native understory diversity

“Uncharacteristic” Fire Effects



Increased water temperature



Sterilized soils (reduced productivity)



Increased soil erosion and sedimentation



Increased emissions of particulate and other hazardous chemicals



Reduction in overstory species cover and diversity



Increase in invasive plants and reduction in native species diversity

Challenges to Implementing Fuels Treatments

- ⦿ Traditional fuel treatment tactics:
 - Mechanical thinning (hog fuel and merchantable wood removal),
 - Mechanical mastication,
 - Manual thinning (piling and burn, lop and scatter),
 - Prescribed burning (with and without prior fuel treatment)
- ⦿ Challenges can be segregated into four categories:
 - Social,
 - Political (policy and regulation),
 - Economic,
 - Environmental.

Mechanical Thinning



- Social issues:
 - Public concerns over intensity and scale of thinning.
- Political issues:
 - Streamlined regulation for treating small-diameter trees,
 - Stumpage and royalties,
 - Canada-US Softwood Lumber Agreement.
- Economic issues:
 - Stumpage and royalties,
 - Inventory of the unmerchantable trees,
 - Markets,
 - Haul distance.
- Environmental issues:
 - Access to the resource (roads and landings),
 - Coarse woody debris,
 - Large-diameter trees.

Mechanical Mastication



- Social issues:
 - Public concerns over intensity and scale of treatment.
- Political issues:
 - n/a
- Economic issues:
 - Cost of treatment,
 - Availability of contractors.
- Environmental issues:
 - Coarse woody debris,
 - Fuel load persistence.

Manual Thinning



- Social issues:
 - Public concerns over intensity and scale of thinning.
- Political issues:
 - n/a.
- Economic issues:
 - Subsidized funding.
 - High cost/ha.
 - Repeated entries to fully treat the unit.
- Environmental issues:
 - Emissions during winter months,
 - Sterilized soil beneath burn piles,
 - Invasive plants on sterilized sites.
 - Deep chip layers and potential burn severity.

Prescribed Fire



- Social issues:
 - Public concerns over escapes, emissions, aesthetics, and environmental effects.
- Political issues:
 - Escaped fire and its consequences,
 - Limited legislative support.
- Economic issues:
 - Cost/ha high in the WUI.
- Environmental issues:
 - Emissions,
 - Soil productivity losses if burn too severe,
 - Subsequent insect issues,
 - Displaced wildlife populations.

Opportunities for Thermal Biomass Development Using Fuel Treatment Project Woody Biomass

- ◎ Replacing on-site treatments (mastication, manual slashing/piling/burning/chipping) with biomass or hog fuel removal limited by the following:
 - Volume of the material,
 - Mix of merchantable and unmerchantable material,
 - End-use product,
 - Access availability and costs,
 - Distance between resource and manufacturing facility,
 - Terrain,
 - Equipment availability,
 - Policy and regulation (subsidies, SLA, appraisal system, tenure system, etc.).