



US Forest Service R&D PNW Research Station

Project Title: Decision Support for Management Identification of Best Forest Treatments for Lifecycle Carbon Offsets, Fire Reduction, and Avoiding Future Costs

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Project Description: The objective of this project, funded by the National Aeronautics and Space Administration, is to provide and demonstrate application of a site- and landscape-specific tree list-based decision-support tool for selecting forest management action priorities in the Western United States that best mitigate carbon emissions while reducing fire risk and future costs.

We will improve the carbon accounting and decision-support capacity of the Landscape Management System (LMS) by including carbon offsets. We will upgrade carbon accounting by (1) directly including carbon offset effects of using forest residuals for biofuels, (2) linking the Fuel Characteristic Classification System (FCCS) fuel loading mapped at landscape scales to tree information used for stand-scale treatment decisions to better identify fire reduction priorities, and (3) incorporating fire consumption models to improve estimates of the carbon consumed (emitted) by wildfires.

The tool will also be used to evaluate the impacts of treatment alternatives across a range of representative forest types on public and private forest lands. Predominant forest types, conditions, and management alternatives will be identified in collaboration with WO Forest Management and National Forest managers as well as demonstration-site collaborators. The tool will also be used to evaluate the potential for siting liquid biofuels plants to use biomass identified in treatment alternatives.

By providing and demonstrating application of the existing LMS model and linked Forest Service models, we will specifically contribute to achieving two near-term research objectives noted on page 11 of the FS Global Change Research Strategy (Feb 2008): (1) to "...augment existing decision-support tools to include inventory/life cycle analysis (measurement of carbon and dollar costs and benefits from harvest at the stump to material disposal or use, e.g. in bio-energy)" and (2) to "...implement regional case studies on changes in land management that could increase carbon sequestration on land and in products, that will serve as examples for managers."

Project Deliverables

- Improvements to the LMS model's carbon accounting and decision-support capacity that will (1) include carbon offset effects of using forest residuals for biofuels, (2) directly link FCCS fuel loadings, which are mapped at landscape scales, to the tree information used for stand-

scale treatment decisions to identify fire reduction priorities, and (3) incorporate fire consumption models to improve estimates of the carbon consumed by wildfires.

- Training session and interactive streaming video characterizing the impacts of treatment alternatives across a range of forest types on public and private forest lands.
- Demonstration of the utility of the model and evaluation of the benefits for Stewardship planning units in the Lakeview Federal Stewardship Unit (Fremont-Winema NF) or others with concurrent timing.
- Identification of management alternatives in collaboration with WO Forest Management and National Forest managers.

Project Outcomes: Forest and policy managers will have a tool to select best treatments that, over the long run, reduce life cycle carbon emissions while reducing fires and future costs.