



# From Wood to Wing: Opportunities to Build an Advanced Biofuels Industry in the Pacific Northwest Utilizing its Timber-based Assets

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## Overview

Forests have always been central to life in the Pacific Northwest. Native Americans, early pioneers, timber barons of the railroad era, post-war housing developers, and modern landowners have all utilized wood, but regional production peaked in the 1970s. Environmental laws and economic competition will likely prevent the region from ever surpassing this mark, but a new opportunity exist for utilizing the Northwest's forest residuals and the timber-based assets still present in the region. This opportunity is the production of renewable liquid biofuels made from woody biomass, including forest residuals and construction and demolition (C&D) waste. Organizations such as the Northwest Advanced Renewables Alliance (NARA) are working to research the potential for this emerging industry, and success will hinge on supply chain networks and community planning, with the support of government incentives.

## History of Timber in the Pacific Northwest

Timber usage in the Pacific Northwest has gone through multiple distinct eras. Original Native American inhabitants relied on wood for heat, construction, and art for as many as ten thousand years. As American settlers pushed westward during the mid-1800s, timber was used for construction both locally and transported eastward across the United States, in addition to being exported to other Pacific nations. The arrival of the railroad in the late 1800s allowed harvesting to reach previously-unseen levels, and the improved trucking and sawing technology of the early 20th century made resource extraction even easier. While slowed during the Great Depression, harvesting continued to fuel war efforts and reached all-time highs (Figure 1) as the Baby Boomers became home owners in the early 1970s. This peak in both timber harvesting and home construction remains today. Into the 1980s, economic recession and recovery was followed by the landmark 1991 *Spotted Owl v. Lujan* case, which banned timber harvesting from federal forests in Washington, Oregon, and northern California, due to the Northern Spotted Owl being listed as a threatened species. Harvesting drastically declined as a result, and the industry was dealt another blow by lack of construction during the Great Recession of 2007-2009. The graph below illustrates the decline in Pacific Northwest timber harvesting from its 1970s peak.

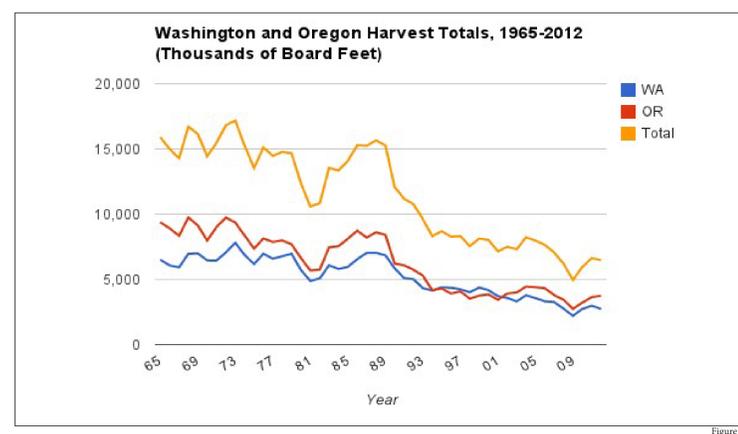


Figure 1

## Using Existing Assets

Although Pacific Northwest (Figure 2) harvesting has declined, there are a number of remaining assets that can be utilized for the emerging biofuels industry. Local residents with a history in wood products are one such asset, as they possess knowledge and skills that can serve as the foundation to a new biofuels industry. Historical timber communities in Washington and Oregon are well-positioned for the transition as well, as many have existing mill facilities and equipment, often with the appropriate zoning and permits required for such facilities. Incentives are available to businesses and communities at the state and national level for the utilization of biomass as well as brownfields. (Table 1 and Table 2) The system of rail, forest roads, highways, and ports that once facilitated the harvesting boom can once again be utilized for transporting woody biomass through the biojet supply chain. (Figure 3) In addition to these existing assets, current forest owners often conduct thinning efforts as a way to reduce the risk of wildfires. This thinning will not only benefit the health of the forest, but provide a source of woody biomass for the conversion to biojet fuel.

### NARA Region

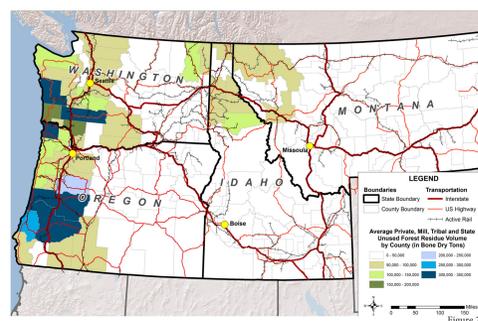


Figure 2

## Goals of NARA

1. Develop a sustainable biojet fuel industry in the Pacific Northwest using woody feedstock
2. Create valuable co-products from lignin - a byproduct of the process
3. Sustain and enhance rural economic development
4. Facilitate and promote supply chain coalitions
5. Improve bioenergy literacy to enhance the workforce and improve stakeholder understanding

### NARA SUPPLY CHAIN

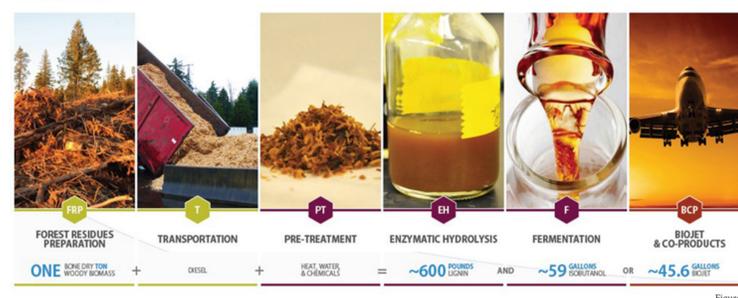


Figure 3

## Washington Woody Biomass Utilization Policy

Type of Action	Woody Biomass Utilization Policy	Brief Description	Information Link
Grant	Alternative Fuel Loans and Grants	Washington DOC administers Energy Freedom Program. Provides technical assistance. Will expire June 30, 2016.	www.afdc.energy.gov
	Renewable Energy Grant: Bonneville Environmental Foundation	NGO that helps fund renewable energy projects in the Pacific Northwest.	www.b-e-f.org
Program	Biofuel Quality Program	Tests and assesses biofuel quality and quantity to resolve any quality issues before the product reaches the consumer. The goal of the program is to create equity in the biofuel marketplace for refiners, suppliers, distributors, and retailers, and protect consumers.	www.afdc.energy.gov
Tax	Biofuels Production Tax Exemption	Exemptions to state and local taxes for qualifying buildings, equipment, and land used in the manufacture of biodiesel and biodiesel feedstock.	www.afdc.energy.gov
	Biofuels Tax Deduction	Tax deduction for the sale or distribution of biodiesel fuel. Available until July 1, 2015.	http://www.afdc.
	Tax benefits for biofuel sellers	Tax benefits for sellers of biodiesels, alcohol fuel, woody biomass fuel, biodiesel, etc. Applicable until July 1, 2015	http://dor.wa.gov
	Idle Reduction Tax Incentives and Exemptions	Incentives include a business and occupation tax deduction and a sales and tax exemption for machinery and equipment used to provide auxiliary power at truck stops. Applicable until July 1, 2015	www.afdc.energy.gov
	Wood Biomass Fuel Deduction	Tax benefits for sellers of biodiesels, alcohol fuel, woody biomass fuel, biodiesel, etc. Applicable until July 1, 2015	http://dor.wa.gov

Table 1

## Federal Brownfield Incentives

Type of Incentive	Name of Incentive	Description
Program	Brownfields Assessment Program	Funds and conducts assessments of brownfield sites to assist communities in revitalizing their neighborhoods.
	Voluntary Cleanup Program	Any legal entity recognized by law is eligible to apply to participate in the program.
Loan	Revolving Loan Fund	Strengthens the marketplace and encourages stakeholders to leverage the resources needed to clean up and redevelop brownfields.
Grant	Assessment Grant	Provides funding to inventory, characterize, assess, and conduct planning and community involvement related to brownfield sites.
	Area-Wide Planning Pilot Program	Funds area-wide planning which will inform the assessment, cleanup and reuse of brownfields properties and promote area-wide revitalization.
	Cleanup grants	Provide funding for to clean up and revitalize eligible brownfield properties.
	Environmental Workforce Development and Job Training Grants	Provide funding to eligible entities to recruit, train, and place predominantly low-income and minority, unemployed and under-employed residents of solid and hazardous waste-impacted communities with the skills needed to secure full-time, sustainable employment in the environmental field and in the assessment and cleanup work taking place in their communities.
	Multi-Purpose Pilot Grants	Provides a single grant to an eligible entity for both assessment and cleanup work at a specific brownfield site owned by the applicant.
	Revolving Loan Fund Grants	Enables states, political subdivisions, and Indian tribes to make low interest loans to carryout cleanup activities at brownfields properties.
	Training, Research, and Technical Assistance Grants	Training, Research, and Technical Assistance Grants provide funding to eligible organizations to provide training, research, and technical assistance to facilitate brownfields revitalization.
	Targeted Brownfields Assessments	Designed to help states, tribes, and municipalities minimize the uncertainties of contamination often associated with brownfields.

www.epa.gov Table 2

NARA

Northwest Advanced Renewables Alliance

### Sources

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