

# NARA Liquids Depot Fact Sheet

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## What is a Liquids Depot?

A facility that receives raw and mechanically processed woody biomass directly from nearby forests, or chips or pellets from a solids depot. Sugar-rich syrup from a liquids depot could go to an integrated biorefinery (IBR) for further refining into biojet fuel or to other chemical conversion facilities to produce a range of products from bioplastics to resins.

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## Liquids Depot Requirements



### Other Infrastructure

This includes existing utilities; fermentation and separation tanks; pretreatment vats; storage, blending and distribution infrastructure. NARA examined both operating and moth-balled facilities with existing infrastructure to identify potential siting locations for biofuels facilities. Utilizing existing infrastructure can be an important way to reduce capital expenditures. Sulfite and Kraft mills are the best match for a wood-based biofuels plant.



### Biomass Cost

The costs associated with handling and processing raw forest residuals and C&D waste. Costs vary based on accessibility of feedstock and proximity to processing site. However, based on NARA economic analysis, biomass costs can be upwards of one-third of the operating expenditure for a wood to biofuels plant. Estimated biomass availability in the NARA region (WA, OR, ID & MT) range from 0 to over 400,000 Bone Dry Tons (BDT) available annually.



### Labor Cost

Average county-level wages estimates. County level data in the NARA region show a variation of average labor costs ranging from \$32,029 to \$52,000. The more complicated the processing, the greater the labor costs.



### Electricity Rates

The cost per kilowatt hour. In the NARA region, county-level electricity rates vary from 3 to 6 cents a kilowatt hour. Many of the processing steps are energy intensive, thus electricity rates can impact annual operating expenses.

# Liquids Depot Sitings

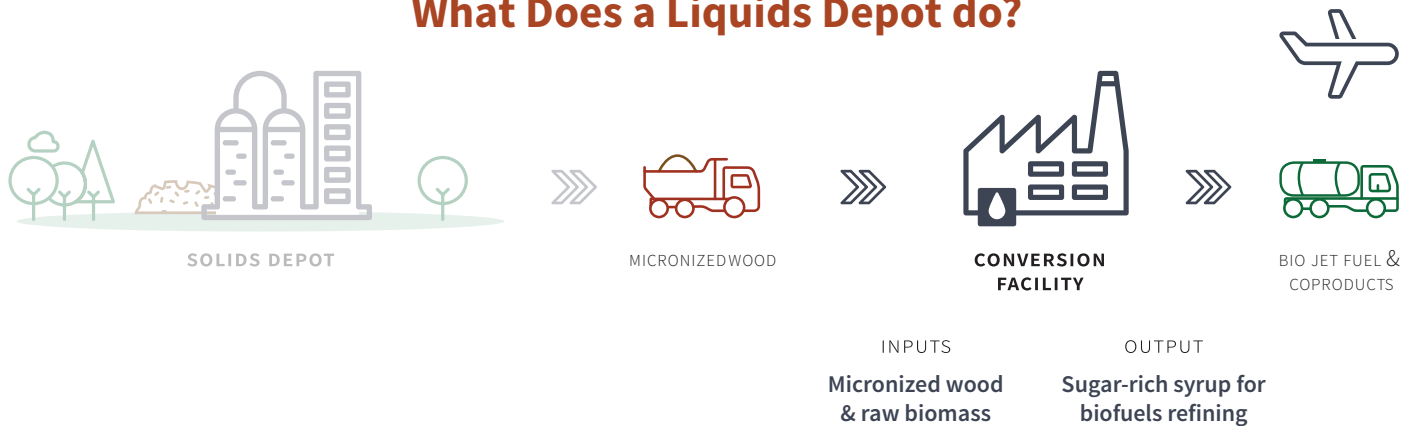
A liquids depot can take biomass from raw slash or other wood residuals and produce a sugar rich syrup, which could be further refined into biojet fuel, or a number of other valuable chemical products. The liquids depot handling and process stages include: A) Seasonal and surge storage for raw biomass; B) Mechanical feedstock size reduction, i.e., grinding or chipping; C) Chemical and thermal pretreatment to further break down the biomass into its cellulose, hemicellulose, and lignin constituents; and D) Enzymatic hydrolysis to separate cellulose and hemicellulose into their 5- and 6-carbon sugars. A liquids depot could ship, via truck, rail tank car, or dedicated pipeline, its sugar-rich syrup to an IBR for refining into a

biojet fuel or an ethanol plant. Lignin-based co-products might also be marketed from a liquids depot.

The selection criteria for liquids depot siting are:

- **Locally Available Feedstock**
- **Rail Access**
- **Barge Access**
- **Electricity Rates**
- **Water Availability**
- **Unemployment Rate**

## What Does a Liquids Depot do?



## The Liquids Depot's Role in the “Wood to Wing” Process

