

Sustainable Aviation Fuel Biomass Assessment: Other Potential Biomass Sources

Prepared for

Alaska Department of Transportation



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Introduction

Other biomass includes biomass sources produced in relatively low quantities in Alaska. These include forest product manufacturing residuals and agricultural biomass.¹ These biomass resources may be relevant to certain SAF production pathways. This memo evaluates these resources as potential supplemental SAF-related resources. It does not establish these resources as a feedstock for the ANSyR preferred Fischer–Tropsch pathway or as a material supply source for the modeled ANSyR production scale.²

Relationship to ANSyR Design Basis

The ANSyR Technical and Economic Analysis evaluates a large-scale Port MacKenzie-centered Fischer–Tropsch Synfuel Refinery. This memo is a preliminary resource screen and does not modify the ANSyR proposed feedstock slate, production volume, lifecycle carbon-intensity result, capital cost estimate, or pathway selection. Any use of the resource described here would require separate technical, commercial, permitting, lifecycle, ASTM/pathway, and integration analysis before inclusion in the ANSyR design basis.

Description of the Resource

Forest Products Manufacturing Residuals

Forest products manufacturing residuals, frequently called “residue” includes chips, sawdust, bark, and offcuts from the sides and ends of logs. About 10% of this material has no commercial use in Alaska. The remaining 90% is used as fuelwood, animal bedding, landscaping materials, and other minor uses.

Agricultural biomass

Agricultural biomass includes crop residues or crops produced specifically for biomass. Based on data from the 2022 Alaska Agriculture Census, the most extensively grown crop is hay. Other major crops, including nursery products and vegetables, cover an area less than 10% of the area of hay fields. As these other crops either directly provide food for human consumption or are more valuable per unit in their current markets, we did not consider these as potential biomass sources.

Quantity of the Resource

Forest Products Manufacturing Residuals

Biomass from forest products manufacturing residue is produced by all 48 active primary wood products facilities in Alaska. Across the state, residue production is 20,800 bone dry tons BDT, based on 2019 production data. Within South-central and western Alaska, an area that includes the Mat-Su and Kenai regions, we estimate residue production to be 1,300 BDT. This volume includes unused residue (10% of the total) as well as material used as fuelwood, animal bedding, and landscaping materials.

In addition, 26,000 BTD of chips are exported directly from mills to Canada and the mainland U.S, which could potentially be used in SAF production.

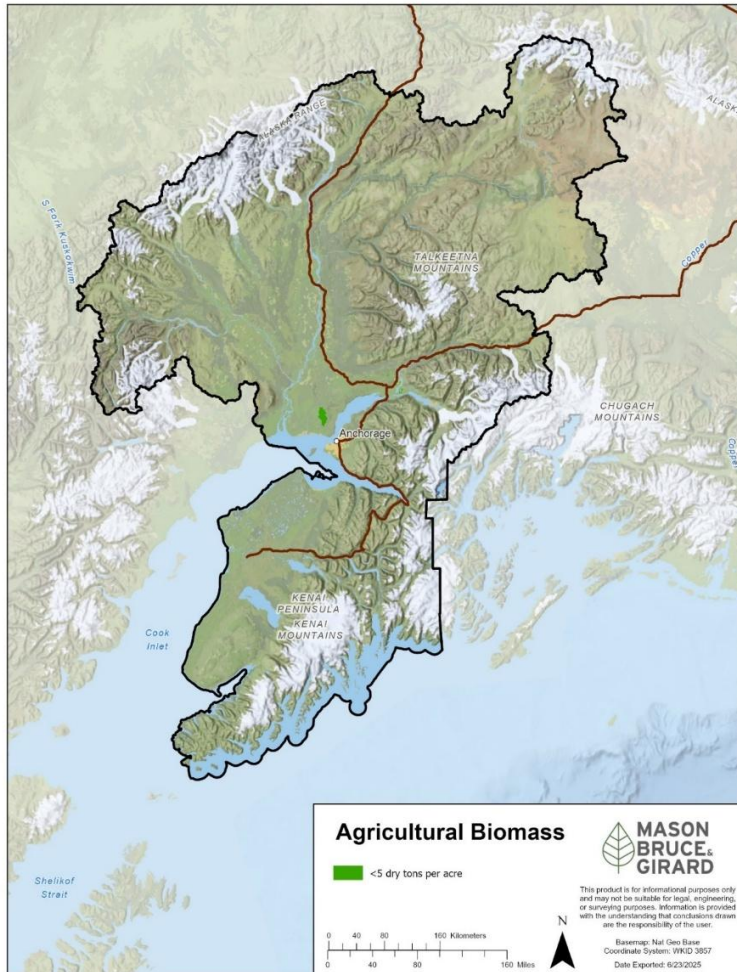
¹ In addition, we researched biomass from oyster production, seaweed, and microalgae but found insufficient data on production and price to consider these potential sources in this report.

² This resource assessment memo provides only an overview of resource quantity and price information. It is not an assessment of feasibility to use the resource to produce sustainable aviation fuel.

Agricultural Biomass

Hay yields an average of 1.4 tons per acre. Within the entire state of Alaska, total production in 2023 was 28,000 tons. We estimate total production within the Mat-Su and Kenai regions is approximately 16,600 tons per year. Production is primarily located in Palmer and Point MacKenzie. The production of agricultural biomass is limited and seasonal.

Figure 1. Annual agricultural biomass production (tons) in the Mat-Su and Kenai regions.



Estimated Cost of Delivery

Forest Products Manufacturing Residuals

About 10% of mill residue has no current market in Alaska. Without a market, these mills must pay to dispose of these residues, which at a minimum, must be trucked off site. It is likely that this biomass can be acquired at no cost from producers. Delivery costs are estimated to be \$0.25 per ton per mile from the facility to Port McKenzie.³ Delivered wood chips, shavings, and sawdust prices are approximately \$110 per ton, \$27 per ton, and \$35 per ton, respectively, in the Pacific Northwest, which is the primary export destination for Alaska material. However, due to transportation costs, shavings and sawdust are unlikely to be exported from Alaska and so they are likely to be available at lower cost.⁴

The cost of delivery depends on travel distance and method. Delivery by truck is estimated to be approximately \$0.25 per mile. Residue from southeast Alaska would require marine transport, likely by barge. Based on 2025 rates for ocean-going barges on the U.S. west coast, the cost to barge biomass from southeast Alaska to Port MacKenzie is about \$16.50 per ton, assuming a 4-day transit time. Additional costs for loading and unloading would be incurred at an estimated \$2,000 per day. Both of

these estimates are likely low, as the cost of fuel and equipment is generally higher in Alaska than for the West Coast as a whole.

Agricultural Biomass

According to the Alaska State Agricultural overview, in 2025 hay cost was \$425 per ton, before delivery costs. Delivery costs to Port MacKenzie are estimated at about \$25 per ton from Palmer and under \$10 per ton from Point MacKenzie. Current retail hay prices are higher, at \$825 or more per ton.⁵

³ The report assumes transport costs of \$5.38 per mile based on national average trucking costs reported by the EPA for trucks transporting biomass, <https://www.epa.gov/sites/default/files/2016-03/documents/r02002.pdf>.

⁴ Shavings are sold at retail outlets in at a price of approximately \$800 per ton. However, the price for small quantities of material are typically well above wholesale bulk purchase prices.

⁵ The price for small quantities of material are typically well above wholesale bulk purchase prices

Methods

Quality Estimates

Forest Products Manufacturing Residuals

MB&G estimated biomass in forest products manufacturing residue based on U.S. Forest Service mill production data for 2019, the most recent year for which data are available.⁶

Agricultural Biomass

Agricultural biomass values are from U.S. Department of Agriculture agricultural census reporting for 2022.⁷ The same values are reported for 2025.⁸

Cost Estimates

Forest Products Manufacturing Residuals

Trucking costs for residuals are based on an EPA estimate of the cost of biomass haul costs.⁹ Prices for residuals and barging are from a report on the fiber and residual market in the Pacific Northwest by Mason, Bruce & Girard based on data from Forisk and interviews and is available from the Clallam County Economic Development Council. The report considered the market for residuals from southern Oregon to southeast Alaska.

Agricultural Biomass

Agricultural biomass price data are from U.S. Department of Agriculture data for 2025.¹⁰ Retail price estimates are based on prices listed on websites of multiple feed stores in the Mat-Su and Kenai region. Retail prices for small quantities of material are typically well above wholesale bulk purchase prices. Trucking costs for residuals are based on an EPA estimate of the cost of biomass haul costs.

⁶ Simmons, E.A, T. Dillon, E.C. Berg, J.M. Daniels, T.A. Morgan, G.A. Christensen, and L.P. Koch. 2024. Alaska's timber harvest and forest products industry, 2019. USDA Forest Service. General Technical Report PNW-GTR-1023. https://www.fs.usda.gov/pnw/pubs/pnw_gtr1023.pdf

⁷ https://www.nass.usda.gov/Publications/AgCensus/2022/Full_Report/Volume_1,_Chapter_1_State_Level/Alaska/akv1.pdf

⁸ https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=Alaska

⁹ <https://www.epa.gov/sites/default/files/2016-03/documents/r02002.pdf>

¹⁰ https://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=Alaska