

April 3, 2025



**NORTH
TO THE FUTURE**

Alaska Next-Gen SynFuel Refinery (ANSyR)

Alaska Department of Transportation & Public Facilities

Commissioner Ryan Anderson, P.E.

Deputy Commissioner Katherine Keith, PMP, PMI-ACP



FedEx

FedEx

FedEx

Alaska International Airport System

STRATEGIC CROSSROADS FOR GLOBAL AIR CARGO



Ted Stevens Anchorage International Airport

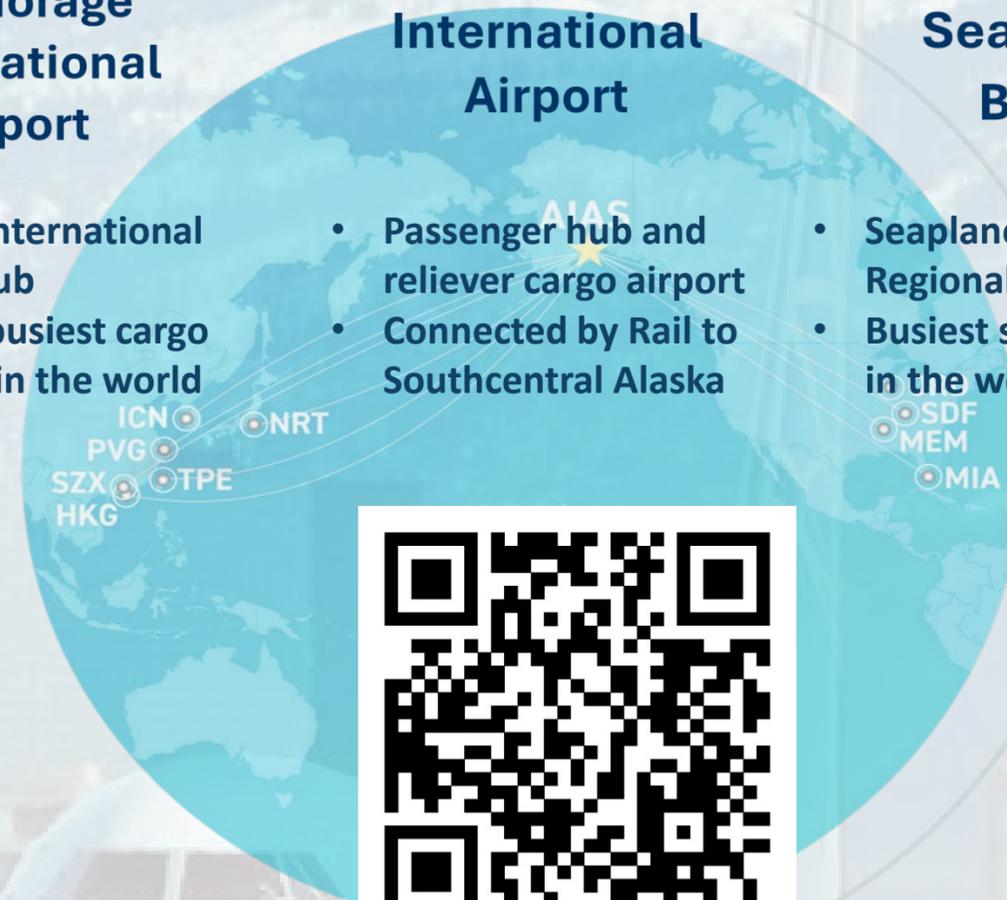
- Major international cargo hub
- 4th/3rd busiest cargo airport in the world

Fairbanks International Airport

- Passenger hub and reliever cargo airport
- Connected by Rail to Southcentral Alaska

Lake Hood Seaplane Base

- Seaplanes and Regional Air Carriers
- Busiest seaplane base in the world



Home Library

SUSTAINABLE AVIATION FUEL

Alaska's New Frontier

9.5 HOURS
FROM **90%**
OF THE
INDUSTRIALIZED
WORLD

Esri, USGS | Esri, TomTom, Garmin, FAA, NOAA, USGS, EPA, USFWS | Sources: Maxar, Airbus DS, USGS, NOAA, NASA, CIA/RN, GEBCO, Robinson, NCEAS, NOAA, USFWS, Geodatasyrels... Powered by Esri

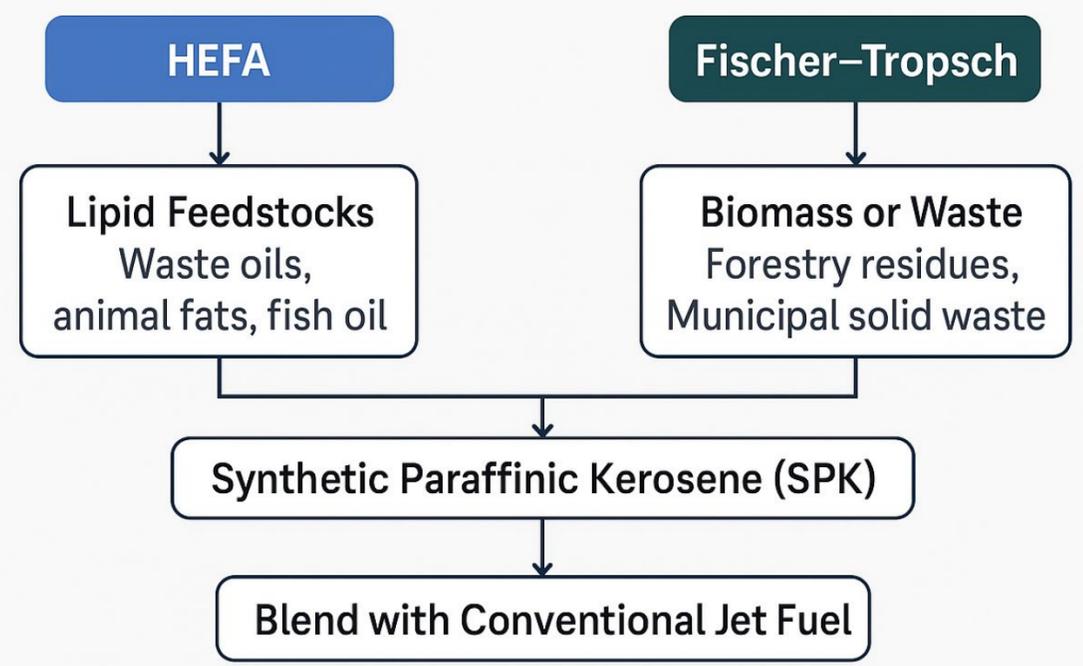
Synfuel Production Pathways for Alaska

Comparison Table Using Industry Averages*

Category	Hydroprocessed Esters and Fatty Acids (HEFA)	Fischer-Tropsch (FT)
Tech Maturity	Commercial, deployed globally	Early-stage for biomass, mature for fossil GTL
Primary Feedstocks	Waste oils, tallow, fish oil	Woody biomass, municipal solid waste, natural gas
CapEx	\$600M–\$1B	\$1B–\$3B+
Operating Cost Drivers	Feedstock (~70–90% of OpEx)	Utilities, syngas cleanup, oxygen
Minimum Fuel Selling Price	\$6.40–\$10.50 per gallon	\$6.40–\$19.00 per gallon
Hydrogen Demand	High (~6.5–7.0 kg/bbl): Steam Methane Reforming (SMR) + Carbon Capture & Storage (CCS)	Moderate (~3.0–3.5 kg/bbl from syngas)
GHG Reduction (vs Jet A)	50–80% (with CCS on SMR)	70–95% (biomass + CCS on gasification & SMR)
Feed Flexibility	Low (lipids only)	High (solid biomass, waste, gas)
Best Fit	Fast deployment using existing logistics & refining footprint	Long-term scalability with Alaska forest biomass

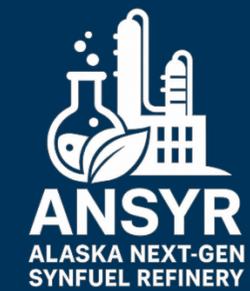


Synfuel Production Pathways – HEFA vs. Fischer-Tropsch



*Industry averages (e.g., DOE, IEA, or NREL studies)

Alaska's Biomass Landscape



Annual statewide fisheries production in 2023 was **~1.172 million tons (net weight)**, based on aggregated COAR data.

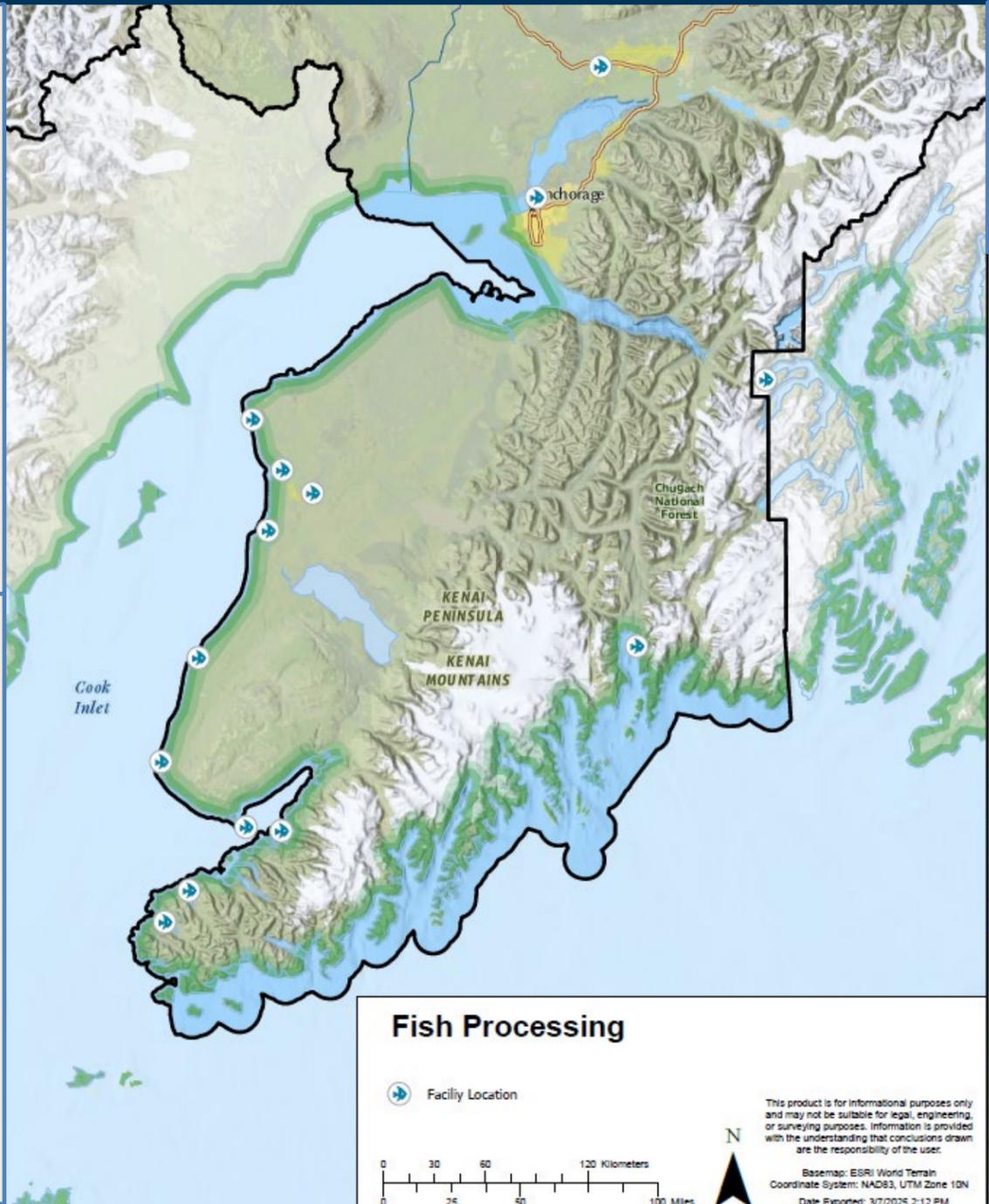
Processing concentrated in Kodiak, Dutch Harbor, Prince William Sound, Southeast Alaska, and Cook Inlet.

⚠️ COAR estimates exclude AYK and Bering Sea regions due to confidentiality thresholds.

Fish oil accounts for ~10% of total fish biomass.

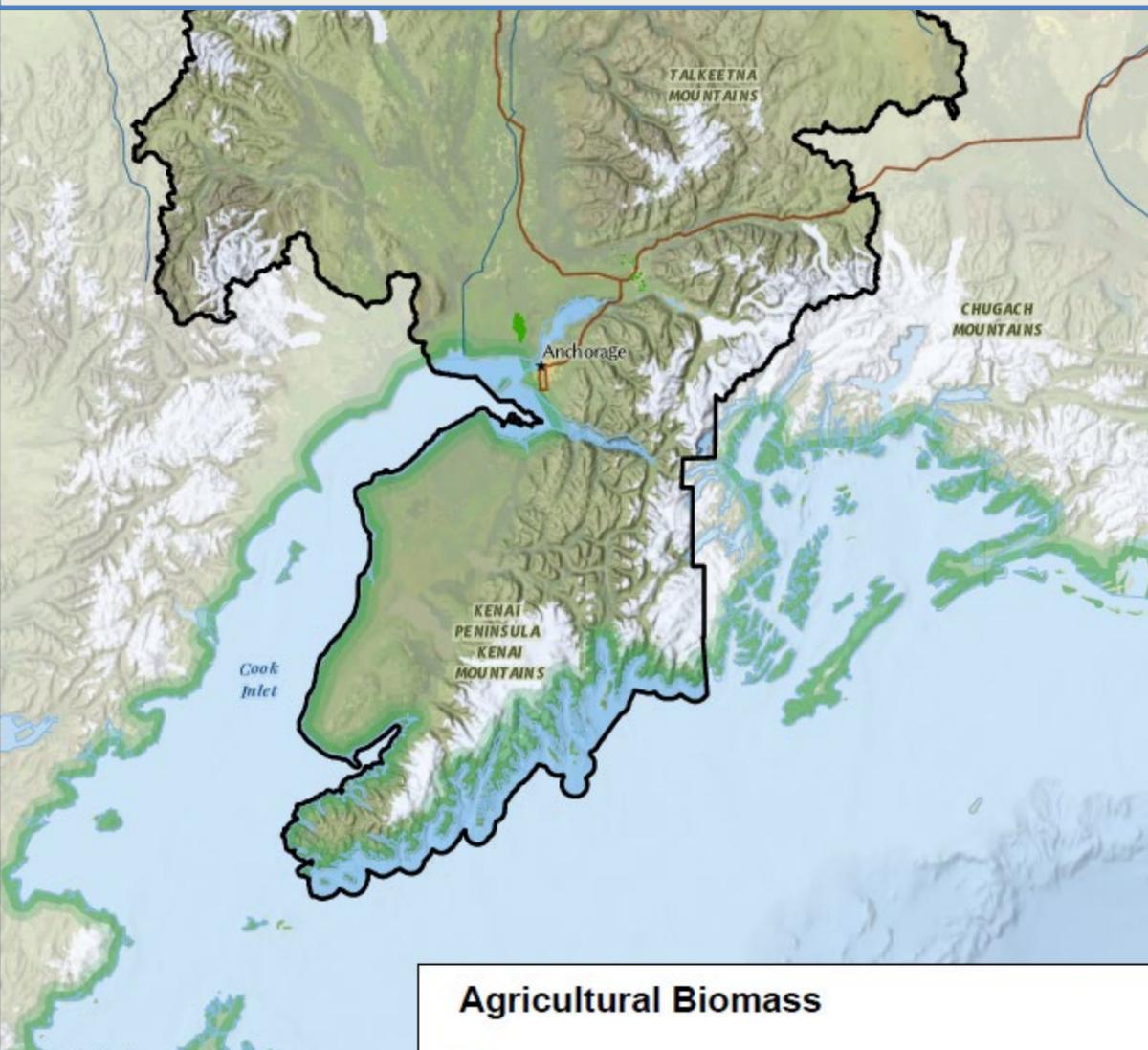
For HEFA SAF production at a scale of **215 MGY**, estimated fish oil input requirements are **~0.7–0.9 million tons/year**, assuming typical industry conversion yields.

Availability depends on species composition, lipid yield, and interannual catch variability.



Hay production within the analysis area (Mat-Su Valley & Kenai Peninsula) is estimated at **16,600 dry tons per year**.

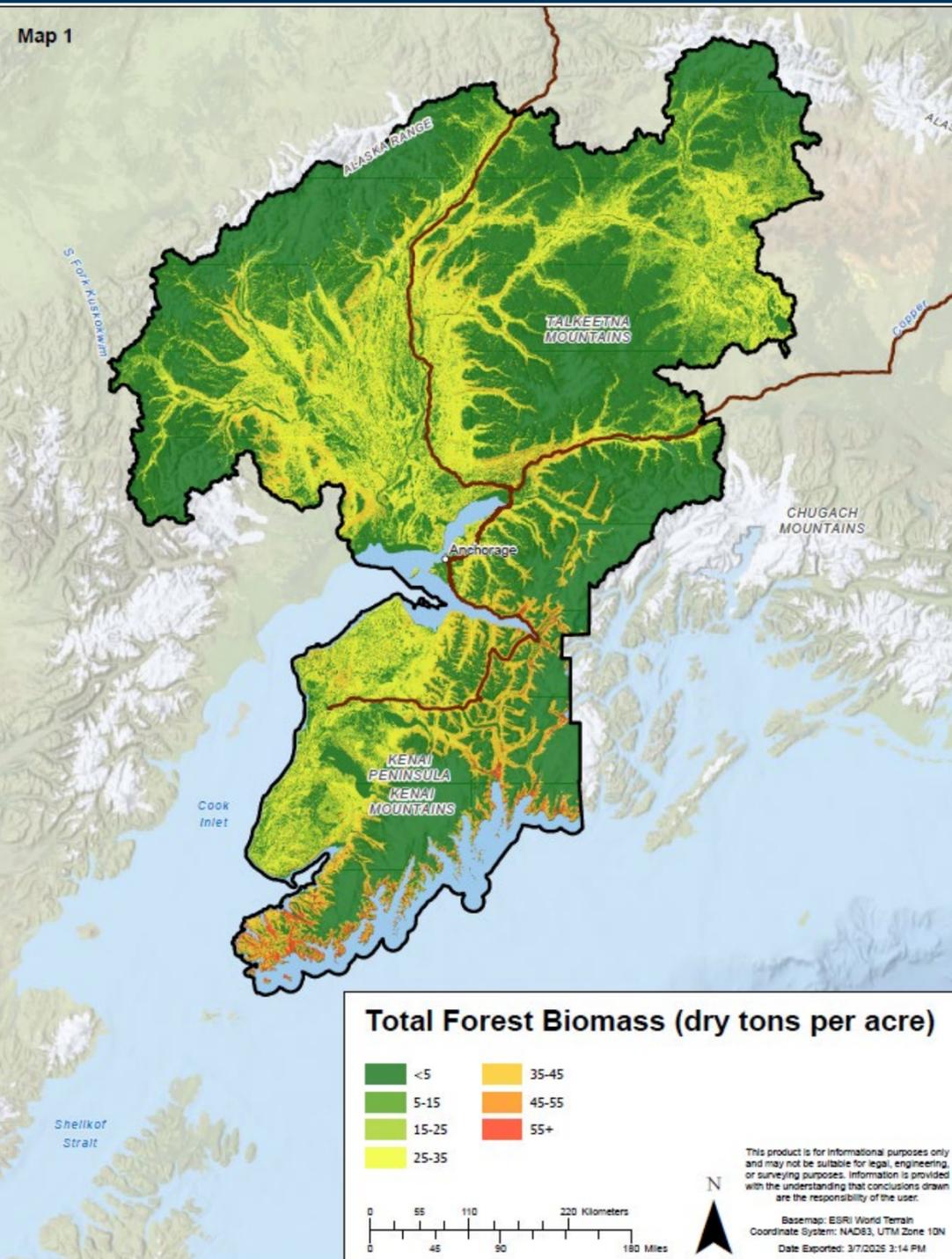
Key growing regions: Palmer and Point MacKenzie.



*DOT&PF Preliminary Biomass Inventory by Mason, Bruce & Girard and Evergreen Economics, March 2025
 COAR (Commercial Operator's Annual Report) data exclude estimates from AYK and Bering Sea regions due to confidentiality thresholds.

Alaska's Biomass Landscape

Preliminary Inventory – Mat-Su Valley & Kenai Peninsula (3/7/2025)



For a target output of **230 MGY** of synfuel, approximately **4.9 million dry tons** (equivalent to **9.8 million green tons**) of woody biomass are required, assuming standard moisture content and conversion yields.

The woody biomass in this studied area alone holds enough energy to power nearly 100,000 Alaskan homes for a year — the equivalent of supplying every home in Anchorage with electricity.

Road-Accessible Woody Biomass and Growth (Dry Tons)

Biomass Type	Within ¼ Mile of Road	Within 1 Mile of Road
Standing Live Volume	16,177,000	39,982,000
Standing Dead Volume	2,578,000	6,255,000
Total Dry Tons	18,755,000	46,236,000
Annual Growth Total	231,095	571,114

*Forest biomass is primarily harvestable during winter due to wet soil conditions in Mat-Su.

1 dry ton = ~18 gigajoules = ~47 gallons Sustainable Aviation Fuel

Optimizing Synfuel Yields

Target Output = 150 Million Gallons per Year (MGY) Sustainable Aviation Fuel

HEFA Pathway					
Scenario	SAF Yield	Diesel Yield	Estimated Incremental Cost (\$/gallon SAF)	Hydrogen Use (kg per barrel of SAF)	Co-Product Impact
Baseline	60%	35%	\$3.50 – \$4.50	3.0	Balanced SAF/Diesel
High SAF	75%	20%	\$4.00 – \$5.00	4.0	Lower diesel revenue
Max SAF	80%	15%	\$4.50 – \$5.50	4.5	Minimal diesel, high SAF

Fischer-Tropsch Pathway					
Scenario	SAF Yield	Diesel Yield	Estimated Incremental Cost (\$/gallon SAF)	Hydrogen Use (kg per barrel of SAF)	Co-Product Impact
Baseline	55%	35%	\$4.50 – \$6.00	2.5	Balanced SAF/Diesel
High SAF	70%	20%	\$5.00 – \$6.50	3.5	Reduced diesel revenue
Max SAF	75%	15%	\$5.50 – \$7.00	4.0	Minimal diesel, high SAF

Comparative Output Summary Table					
Production Pathway	SAF (MGY)	Diesel (MGY)	Naphtha (MGY)	Total Fuel (MGY)	Co-Product Share (%)
HEFA	150	54	11	215	30.2%
Fischer-Tropsch	150	58	23	231	35.1%

Cost values reflect modeled increases relative to baseline yields due to reactor tuning, catalyst loadings, and hydrogen demand. Co-product shifts affect refinery revenue streams (e.g., diesel, naphtha).

Assumptions: Commercial-scale hydrotreatment (HEFA) and gasification–FT synthesis based on optimized catalyst ratios, thermal efficiency, and hydrogen procurement strategy. Assumes stable input feedstock costs and consistent reactor efficiency.

Carbon Intensity Performance

Compliance and CORSIA Standards



Target Carbon Intensity: $\leq 44 \text{ gCO}_2\text{e/MJ}^*$ (50% below baseline jet fuel CI of $\sim 89 \text{ gCO}_2\text{e/MJ}$)
 Aligned with ICAO CORSIA and California LCFS thresholds



HEFA-Based Synfuel (215 MGY)	Million Gallons per Year (MGY)	Carbon Intensity Estimate (gCO ₂ e/MJ)	Annual CO ₂ Avoided (metric tons)
SAF	150	~30	1.13
Renewable Diesel	49	~30	0.37
Renewable Naphtha	16	~40	0.10
TOTAL	215	30-40	1.60

Fischer–Tropsch Synfuel (231 MGY)	Million Gallons per Year (MGY)	Carbon Intensity Estimate (gCO ₂ e/MJ)	Annual CO ₂ Avoided (metric tons)
SAF	150	~30	1.13
Renewable Diesel	48	~30	0.37
Renewable Naphtha	32	~40	0.20
TOTAL	231	30-40	1.70

*Grams of carbon dioxide equivalent per megajoule of energy

Jet Fuel Supply Chain – Operations

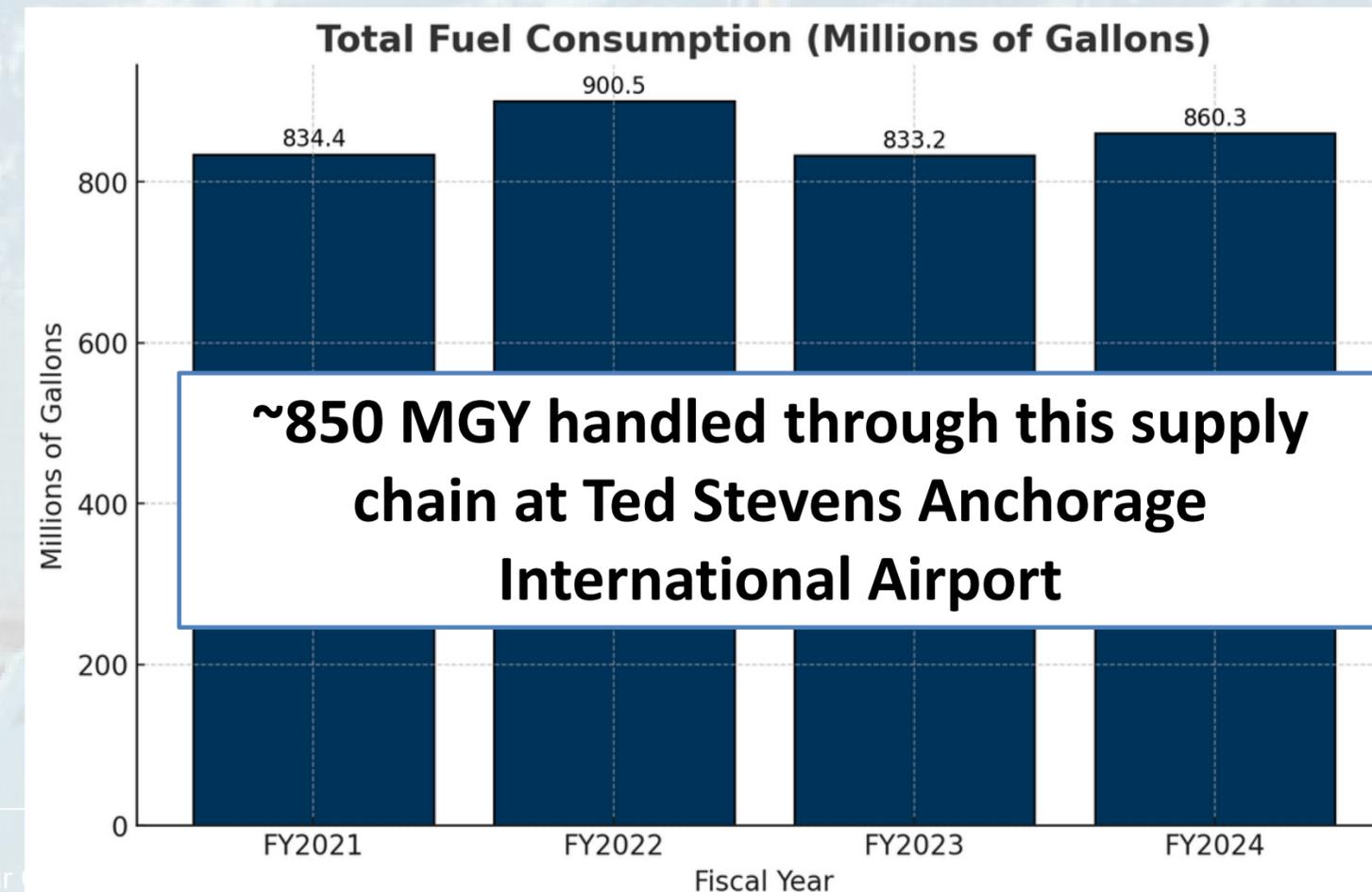
Refining, Pipelines, Storage, and Into-Plane Service at TSAIA



Stage	Description
Refining at Nikiski	Marathon Petroleum’s Kenai Refinery in Nikiski processes crude oil into refined products, including jet fuel.
Pipeline Transport to Port of Alaska	A 68-mile pipeline transports jet fuel, gasoline, and diesel from the refinery to the Port of Alaska in Anchorage.
Storage at Port of Alaska	The Port has 3.4 million barrels of liquid fuel storage capacity, supplying jet fuel to both Ted Stevens Anchorage International Airport and Joint Base Elmendorf-Richardson (JBER).
Pipeline Transport to Airport	From the Port, jet fuel is transported via pipeline to Ted Stevens Anchorage International Airport.
Fuel Storage at Airport	The Anchorage Fueling and Service Company (AFSC) manages on-site fuel storage facilities at the airport.
Into-Plane Fueling by Menzies Aviation	Menzies Aviation provides into-plane fueling services, directly refueling aircraft at the airport.

Why It Matters

- Understanding baseline operations is critical for integrating SAF.
- Each handoff is a potential integration point for alternative fuels.
- Pipeline compatibility and terminal capacity are constraints.

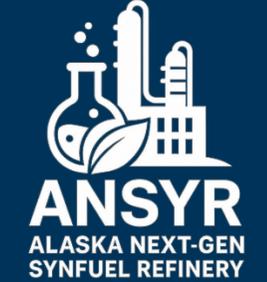


Existing Infrastructure

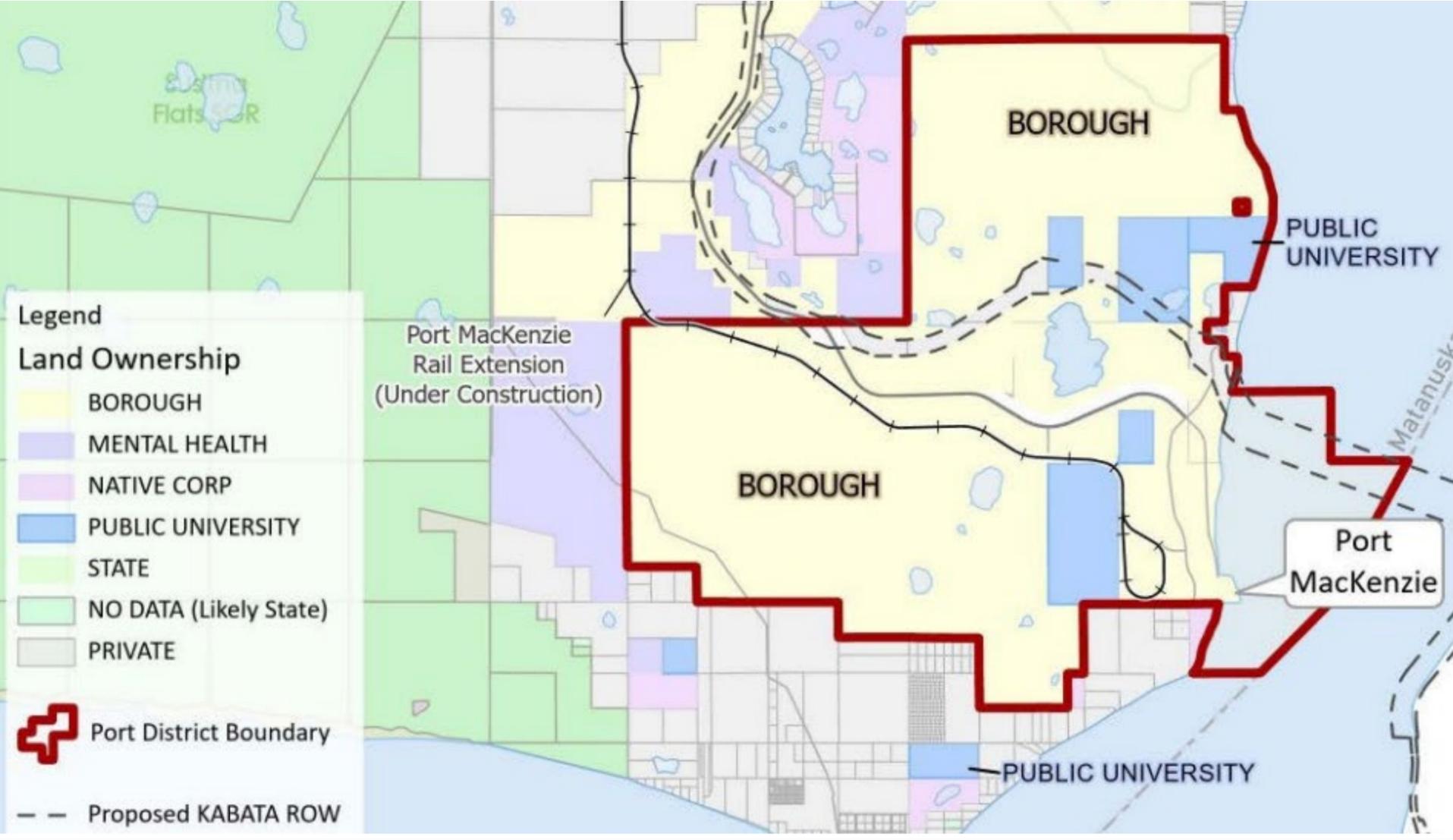
	Site	Existing Infrastructure	Readiness	Required Upgrades	Opportunities/Constraints
Refineries	Petro Star Refineries (Valdez & North Pole)	Small topping refineries (~22,000 bpd combined), limited hydrotreating-may co-process up to 5% bio-feed	✗ Minimal	Major upgrades: feedstock pretreatment, hydrogen plant, catalyst changes	⚠ Remote, limited capacity; not viable for large-scale SAF
	Marathon Kenai Refinery	Large-scale refinery: distillation, hydrotreaters, tank farm, dock, workforce, permits	✓ High	Feed pretreatment, catalyst switch, hydrogen expansion, PSA/CCS, possible dock heating	✓ Retrofit-ready; proximity to NG; reduced CAPEX
Pipeline	Port-to-Airport Pipeline (Anchorage)	~5M barrels/year throughput, trending upward	⚠ Approaching capacity	Pump upgrades or twinning by ~2030	⚠ Critical link for SAF; pressure spec & future compatibility to assess
Airports & Storage	TSAIA (Anchorage Airport)	Modern fuel farm, hydrant system, large-volume throughput	Available	Optional: fuel stratification mixers, SAF tank if segregated	✓ SAF-ready fueling system; minor additions only
	Port of Alaska (Anchorage)	Tank farms, fuel terminals, marine dock, pipeline to airport	✓ High	SAF-dedicated tanks, blending systems, minor pipeline upgrades	✓ Excellent for SAF distribution; limited local feedstock access
	Storage and Blending (Kenai & Anchorage)	Tank farms, in-line blending systems	Available	Blend controllers, SAF-dedicated tanks, certification metering	✓ Leverages existing systems; minor retrofits needed

Potential Greenfield Site

Port MacKenzie



Zoning Overview
Port Industrial District I = 3,047 acres
Port Industrial District II = 4,836 acres
ANSyR requires ~500 acres of contiguous land

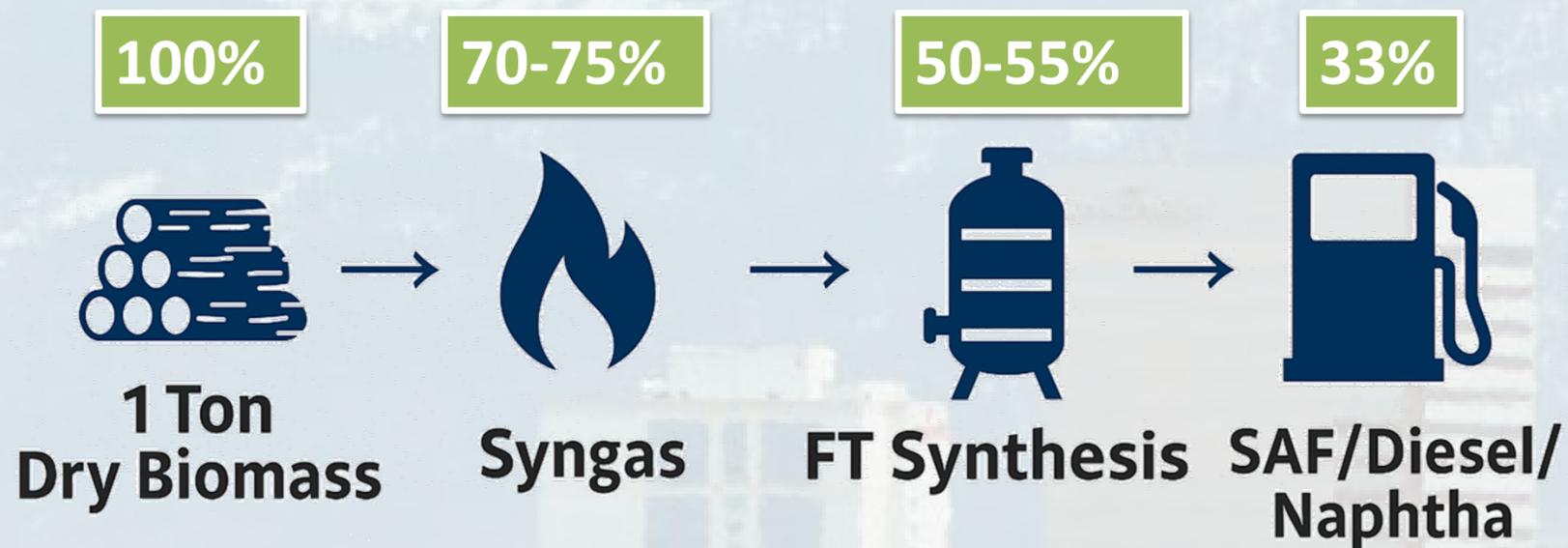


- Water**
- 1,200 ft Deep Draft Dock -60' at low tide
 - 375 ft Barge Dock -20' at low tide
 - Open year round

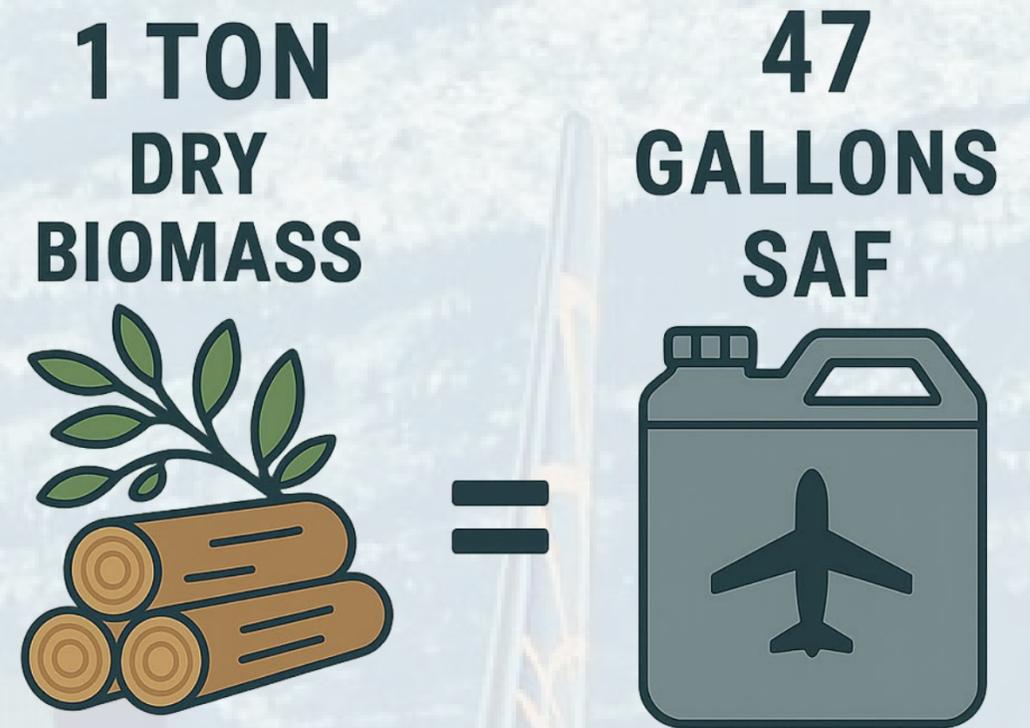
Woody Biomass Conversion to Synfuel

Biomass Intake Requirements

- ◆ Annual Fuel Output Target: 230 million gallons/year
- ◆ Biomass Needed (dry basis): 4.9 million metric tons
- ◆ Equivalent Moisture-Adjusted Feedstocks:
 - 5.75 million metric tons @ 15% moisture content
 - 9.78 million metric tons @ 50% moisture content



Carbon and energy yield into liquid fuel is ~33%

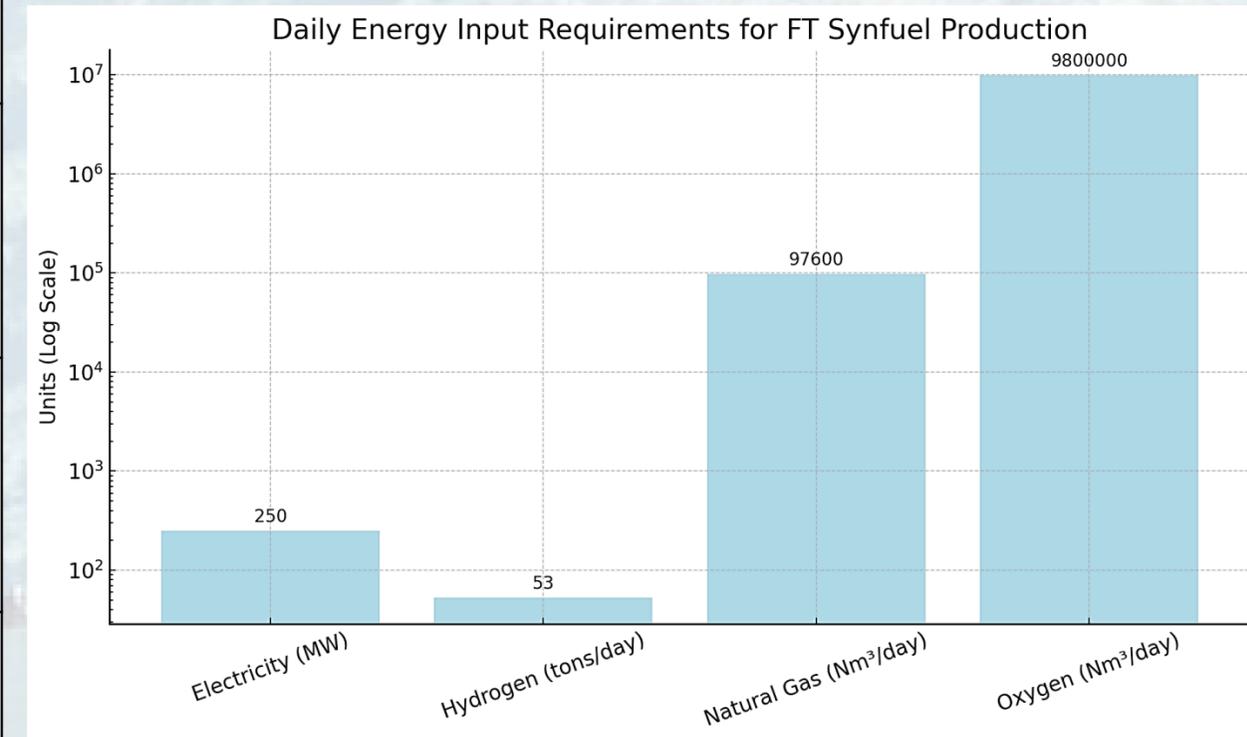


Fisher-Tropsch 230 MGY Refinery

Daily Energy & Mass Balance



Input	Daily Input Requirement	Primary Use
⚡ Electricity	Approximately 250 MW of continuous power	Powers air separation unit, industrial compressors, and plant support systems
💧 Hydrogen (H ₂)	52.6 metric tons per day	Used to convert waxy synthetic fuel into jet fuel through catalytic processing
🔥 Natural Gas	50,600 normal cubic meters per day (Steam Methane Reformer- SMR)	Provides hydrogen via steam reforming
	47,000 normal cubic meters per day (Combined Heat And Power - CHP)	Supplies fuel for power generation
🌀 Oxygen (O ₂)	14,000 metric tons per day (approx. 9.8 million cubic meters)	Required for converting biomass into synthesis gas using high-temperature gasification



Fisher-Tropsch 230 MGY Refinery

Key Design Parameters

230 million gallons per year total
150 MGY of sustainable aviation fuel
58 MGY of renewable diesel
22 MGY of renewable naphtha

System Area	Design Sizing & Capability
Biomass Feedstock	15,000 metric tons per day of green woody biomass (approximately 7,500 dry tons per day); 4.0 million metric tons per year total input
Feedstock Preparation	7 industrial wood chippers, 10 hammer mills, and 15 rotary biomass dryers
Gasification System	5 oxygen-blown, entrained-flow gasifier reactors (approximately 3,000 dry tons per day each)
Oxygen Supply System	14,000 metric tons per day via cryogenic air separation; power demand: 120–130 MW
Fischer–Tropsch Reactor System	5 reactor trains using slurry bubble column reactors; approximately 20,000 barrels per day of synthetic hydrocarbon liquids
Fuel Upgrading (Hydroprocessing)	Hydrocracker with 20,000 barrels per day capacity; includes isomerization to improve jet fuel and diesel properties
Hydrogen Production System	50 metric tons per day of hydrogen via steam methane reforming; includes pressure swing adsorption purification and carbon dioxide capture from reformer flue gas
Carbon Dioxide Capture and Storage	Approximately 4 million metric tons per year captured; includes drying, compression, a 20-mile pipeline, and subsea geologic injection infrastructure
Onsite Power and Steam Generation	250 MW combined heat and power system (gas turbines, heat recovery steam generator, steam turbine); approximately 100 megawatts available for export. 100 MW surplus electricity may be exportable
Water Treatment and Cooling Systems	\$15 million for process and boiler water treatment; \$15 million for cooling towers capable of rejecting approximately 230 megawatts of thermal load
Fuel Storage Capacity	Two tanks for sustainable aviation fuel (~300,000 barrels total), one tank for renewable diesel (~150,000 barrels), and one tank for renewable naphtha (~75,000–100,000 barrels), providing approximately 30 days of product storage
Product Loading and Distribution	\$15 million for marine loading dock and infrastructure; 10-mile pipeline to Port MacKenzie terminal; optional truck and rail loading systems

Fisher-Tropsch 230 MGY Refinery

Class Four Estimate: Total Installed Cost



Feedstock Logistics & Handling	\$83,250,000
Gasification & Syngas Production	\$609,400,000
Fischer-Tropsch Synthesis & Product Upgrading	\$492,500,000
Utility Systems (CHP, SMR, ASU)	\$649,600,000
Product Storage & Distribution	\$62,400,000
CO2 Management	\$191,200,000
Site Infrastructure	\$69,300,000
Direct Costs	\$2,157,650,000
Contingency (15%)	\$323,647,500
Preconstruction Costs (14%)	\$302,071,000
Total	\$2,783,368,500

The total installed cost (TIC) of a 230 million gallons per year (MGY) Fischer-Tropsch (FT) refinery is estimated at approximately **\$2.78 billion**, based on a Class 4 level estimate (-30% to +50%).

Fisher-Tropsch 230 MGY Refinery FT 230MW Total Installed Cost

Gasification → SAF → **FT synthesis** → **\$2.96 billion**
In Alaska using woody biomass for feedstock

Fisher-Tropsch 230 MGY Refinery

Rough Order of Magnitude Annual Operating Costs (OpEx)

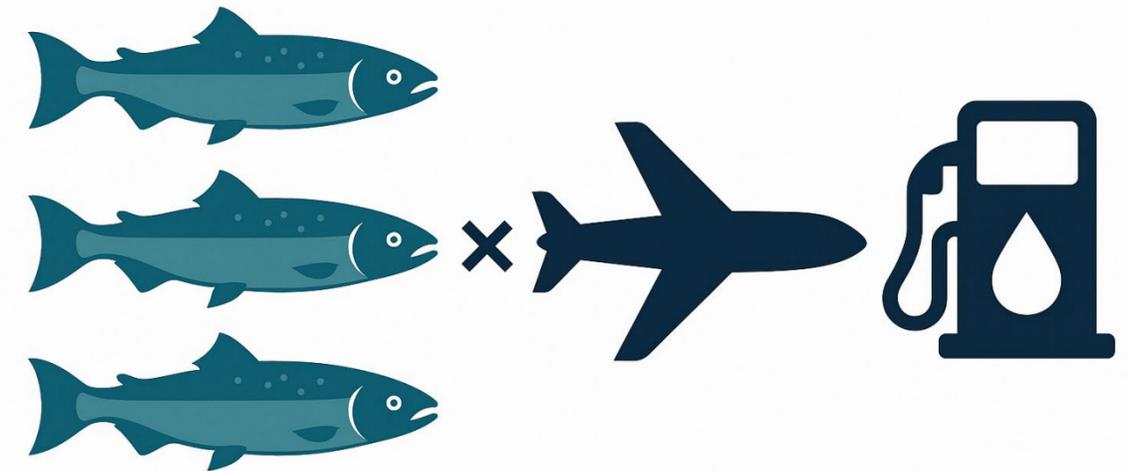
230 MW FT costs
~\$534 million per
year to operate

Cost Category	Annual Cost (\$M)	\$ per Gallon	Key Assumptions (Base Year)
Fixed	152	0.66	
Insurance & Property Tax	46	0.20	~0.5% insured value + ~1% capital PILOT tax
Labor (Ops & Maint.)	21	0.09	~180 FTE @ ~\$100k/yr fully burdened
Admin & Overhead	5	0.02	G&A ~20% of labor cost, incl. office staff, HR, accounting, admin systems
Maintenance (Routine)	60	0.26	~2% of capital in spare parts/repairs; routine inspections and contractor services
Maintenance (Turnaround)	5	0.02	Major overhauls 5-yearly (~\$25–30 MM each, amortized)
Regulatory & Compliance	7	0.03	Title V air permit, stormwater/WQ, hazardous materials tracking, CEMS maintenance, EPCRA
Misc Operations	8	0.04	Tied to financing, compliance, and digital operations
Variable	295	1.28	
Water & Utilities	2	0.01	Well water ~1.5 MGD @ \$0.50/kgal; on-site O ₂ production
Supplemental Natural Gas for CHP	4	0.01	Electricity/steam generation supplement to FT off-gas; \$11,448/day gas cost
Natural Gas for SMR	5	0.02	~50k Nm ³ /day for H ₂ production via SMR (~1.8 MMSCFD) @ \$6.90/Mcf
Feedstock	276	1.20	8.9M green tons × \$75/ton = \$667M/year; procured on wet basis
Waste Disposal	1	0.01	Minor solid/hazardous waste: spent catalyst, sorbents, filters, water treatment sludges
Chemicals & Catalysts	7	0.03	Cobalt-based FT catalyst and Pt hydrotreater catalyst (5-yr cycles); solvents, water treatment
Distribution	20	0.09	
Marine Barge (Port MacKenzie → Anchorage)	10	0.04	Cook Inlet barge ops; tug fuel, crew, mooring, terminal ops at both ends
TSAIA Jet Fuel System Integration Costs	5	0.02	Storage tank leasing, hydrant fees, safety compliance, aviation liability insurance
Storage and Blending at the Port of Alaska	5	0.02	Tank heating, maintenance, metering, throughput fee, fuel quality testing (ASTM D1655 compliance)
CCS	67	0.29	
CO ₂ Transport & Storage	67	0.29	~6.55 MtCO ₂ /year captured and injected @ \$10/ton; compression, pipeline, well monitoring
Total OpEx (Year 1)	534	2.32	All costs in constant 2025 dollars; excludes power export, excludes LCFS/45Q revenue credits.

HEFA Mass and Energy Components

Items	Material / Input	Units/Notes
 Fish Biomass	~25 lbs per fish	Assumed 10% yield of oil
 Fish Oil (Feedstock)	1 gallon (≈3.5 kg)	Average energy content ≈ 33 MJ/kg
 Hydrogen	~0.1 kg per gallon SAF	Required for hydroprocessing: deoxygenation and saturation
 Utilities (Steam, Power)	~7.5 MJ thermal energy	Used for heating, compression, and separation processes
 Final Output	1 gallon SAF	Energy content ≈ 42.8 MJ/gal

It takes 3 salmon to make 1 gallon of sustainable aviation fuel.



Alaska Fish	Oil Yield (% by weight)	Energy Content (MJ/kg)	Typical Annual Harvest in Alaska (Metric Tons)	Oil yield (MT)	SAF Yield (Million Gallons)
Herring	10–20%	~39–41	345,000 (138,000 in by-products)	27,600	7.3
Salmon	8–12%	~39–42	468,800 (187,520 in by-products)	22,502	5.9
TOTAL				50,102 Metric Tons	13.2 MGY

Alaska’s current fisheries byproducts could support a small-scale, synfuel refinery—potentially modular or co-located with existing rendering infrastructure—producing approximately 9% of the targeted SAF output of 150 MGY.

HEFA 215 MGY Refinery

Key Design Parameters

215 MGY Total ~10,700 barrels per day

150 MGY of sustainable aviation fuel

54 MGY of renewable diesel

11 MGY of renewable naphtha

System	Sizing / Capacity (for approximately 215 million gallons per year)
Feedstock Throughput	14,000 barrels per day of fish oil (approximately 600,000 kilograms per day)
Product Yields	150 million gallons per year of sustainable aviation fuel, 54 million gallons per year of renewable diesel, 11 million gallons per year of naphtha and liquefied petroleum gas (approximately 10,700 barrels per day total)
Hydrodeoxygenation Reactors	2 hydrodeoxygenation reactors, approximately 10–12 feet in diameter by 30–40 feet tall, approximately 100 cubic meters of catalyst in total
Isomerization Reactor	1 hydrocracking reactor, approximately 8–10 feet in diameter by 25 feet tall, approximately 30 cubic meters of catalyst
Hydrogen Production Plant (Steam Methane Reformer)	35 million standard cubic feet per day of hydrogen (approximately 88,000 kilograms per day) production, approximately 450 tonnes per day of carbon dioxide captured
Combined Heat and Power Plant	Approximately 50 megawatts (1 × 40 MW gas turbine with heat recovery steam generator and 10 MW steam turbine), approximately 400,000 pounds per hour of steam output
Carbon Dioxide Pipeline	Approximately 30 miles, 4-inch diameter, approximately 450 tons of carbon dioxide per day transported to sequestration site
Product Pipeline	Approximately 15 miles, 4-inch diameter, approximately 10,700 barrels per day of liquid fuel transported to port storage
Tank Storage	2 × 50,000-barrel feedstock tanks, 1 × 100,000-barrel sustainable aviation fuel tank, 1 × 50,000-barrel renewable diesel tank, 1 × 15,000-barrel naphtha tank, 3 × 60,000-gallon liquefied petroleum gas tanks
Utilities and Supporting Infrastructure	Sized to support the full facility, including water systems, instrument air, emergency flare system, buildings, and Arctic-specific design features

HEFA 215 MGY Refinery

Class Four Estimate: Total Installed Cost

Feedstock Logistics & Handling	\$40,000,000
Gasification & Syngas Production	\$300,000,000
Fischer–Tropsch Synthesis & Product Upgrading	\$238,000,000
Utility Systems (CHP, SMR, ASU)	\$33,400,000
Product Storage & Distribution	\$98,700,000
CO2 Management	\$99,300,000
Direct Costs	\$809,400,000
Contingency (15%)	\$121,410,000
Preconstruction Costs (14%)	\$113,316,000
Total	\$1,044,126,000

The total installed cost (TIC) of a 215 million gallons per year (MGY) HEFA refinery is estimated at approximately **\$1.04 billion**, based on a Class 4 level estimate (-30% to +50%).



HEFA 215 MGY Refinery

Rough Order of Magnitude Annual Operating Costs (OPEX)



OpEx Component	Total OpEx Cost	Cost / Gallon
Fixed	\$43,700,000	\$0.19
Admin & Overhead	\$3,000,000	\$0.01
Insurance & Property Tax	\$6,000,000	\$0.03
Labor (Ops & Maint.)	\$15,000,000	\$0.07
Maintenance (Routine)	\$15,000,000	\$0.07
Maintenance (Turnaround)	\$3,000,000	\$0.01
Misc Operations	\$700,000	\$0.00
Regulatory & Compliance	\$1,000,000	\$0.00
Variable	\$974,180,000	\$4.54
Chemicals & Catalysts	\$6,000,000	\$0.03
Feedstock	\$935,000,000	\$4.35
Natural Gas for SMR	\$25,500,000	\$0.12
Waste Disposal	\$2,000,000	\$0.01
Water & Utilities	\$5,680,000	\$0.03
Opex-Transportation and Distribution	\$21,500,000	\$0.10
Storage and Blending at the Port of Alaska	\$21,500,000	\$0.10
CO₂ Transport & Storage	\$1,250,000	\$0.01
CO ₂ Transport & Storage	\$1,250,000	\$0.01
Grand Total	\$1,040,630,000	\$4.84

Delivered Cost of Synfuel

Preliminary Pre-Incentive Pricing Model



Cost Component	HEFA (\$/gal)	FT (\$/gal)	Explanation
Capital Recovery (Depreciated CapEx)	\$0.19	\$0.48	Capital recovery amortized over 25 years. Includes full EPC cost, contingency, and indirect costs.
Operating Expenses	\$4.84	\$2.32	Includes all fixed and variable O&M: feedstock, labor, maintenance, utilities, and catalysts.
Debt Service (Interest Only)	\$0.19	\$0.28	Interest-only cost from DOE loan (i.e., \$2.07B @ 6% over 30 years). Equity cost captured in Capital Recovery above.
Net Production Cost	\$5.22	\$3.08	Final estimated cost per gallon of fuel produced after accounting for financing.
Equity Return – IRR target	\$0.75	\$0.75	Includes both principal repayment + return on equity (ROE)
Optional Market Uplift	\$0.50	\$0.50	Market-driven uplift; optional depending on buyer
Total Cost to Airlines	\$6.47	\$4.33	Excludes credits (e.g., LCFS, RFS, SAF tax credits, 45Q)

Pathway Comparisons



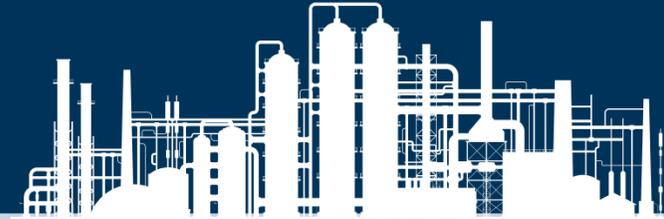
Metric	HEFA Pathway Refinery	Fischer–Tropsch Pathway Refinery
Total Cost per Gallon	\$6.47	\$4.33
Production Volume	215 MGY (150 SAF, 54 diesel, 11 naphtha)	230 MGY (150 SAF, 58 diesel, 22 naphtha)
CapEx: Total Installed Cost	\$1,044,126,000	\$2,783,368,500
OpEx: Total Annual Operating Cost	\$1.04B/year (\$4.84/gal)	~\$534M/year (\$2.32/gal)
Primary Feedstock / Cost per gallon	Fish oil (\$4.35/gal)	Woody biomass (\$1.20/gal)
Conversion Technology	Hydroprocessing (HEFA)	Gasification + FT synthesis
Reactor System	2 Hydrodeoxygenation + 1 Isomerization	5 Slurry FT reactors + 1 Hydrocracker
Hydrogen Source / Demand	Steam Methane Reforming (SMR) / 88,000 kg per day	SMR + CHP integration / 50,000 kg per day
Electric Power Demand	~50 MW (mainly hydroprocessing + SMR)	250 MW (ASU, gasifier, CHP)

The **Fischer–Tropsch pathway** offers a **lower-cost, higher-impact, and scalable long-term SAF solution** for Alaska, supported by biomass availability and deep CO₂ reduction potential.

The **HEFA pathway** may serve as a **modular, early-phase deployment** but is constrained by high feedstock cost and volume limitations.

WE HAVE A PLAN

SAF IN ALASKA: PATHWAY TO 2030



Phase 1: SAF Feasibility Analysis

January – July 2025

- Stakeholder Outreach: Airlines, airports, agencies
- Feasibility Studies: Feedstock, technology, logistics
- Partner Outreach: Producers, agencies, investors
- Financial Modeling: Costs, funding, partnerships

Phase 2: Preliminary Design and Pre-Application

August - December 2025

- Preliminary Design: Site selection, technology, infrastructure
- Environmental Scoping: Carbon lifecycle assessment
- Regulatory Work: Permitting agencies, key requirements, DOE pre-application

Phase 3: Blending SAF Imports

2026 - 2030

- SAF Imports: Suppliers, agreements, blending logistics
- Blending Hubs: Anchorage or Fairbanks locations

Phase 4: Final Design and Permitting

2026 – 2028

- Final Design: Complete SAF facility plans
- Permitting & Funding: Secure approvals and financing
- Construction: Build facility and infrastructure

Phase 5: Staged Construction

2028 – 2030

- Construction: Suppliers, agreements, blending logistics
- 2030 Launch: SAF production begins in Alaska

Alaska Department of Transportation & Public Facilities

Commissioner Ryan Anderson, P.E.
Deputy Commissioner Katherine Keith, PMP, PMI-ACP

