

SELECT A SITE

COUNTRY

Portugal

LOCATION

Cabo Carvoeiro / Peniche

PLANT SIZE

3 t/day — reference unit (\$4.5M)

ENERGY SOURCE

Grid / contract (basis below)

ELECTRICITY BASIS

UNITS

US gallons

SITE PROFILE				
Country	Portugal			
Site	Cabo Carvoeiro / Peniche			
Mean wind at 50 m	8.5 m/s (19.0 mph)			
Consumer retail				
Business retail proxy				
Negotiated PPA				
Tariff used				
Local pump price	\$8.14/gal			
Plant size	3 t/day reference unit (1,000 gal/day · capex \$4,500,000)			
Wind contractor price				
Solar contractor price				
PRODUCTION COST BY PLANT SIZE				
Plant size	Capex	Diesel	Gasoline	Kerosene
1/10 t/day demonstrator	\$425,000	\$5.16/gal	\$4.94/gal	\$5.07/gal
1 t/day	\$2,000,000	\$3.06/gal	\$2.84/gal	\$2.97/gal
3 t/day reference unit	\$4,500,000	\$2.56/gal	\$2.34/gal	\$2.47/gal
5 t/day (pro-rata modules)	\$7,500,000	\$2.56/gal	\$2.34/gal	\$2.47/gal
10 t/day (pro-rata modules)	\$15,000,000	\$2.56/gal	\$2.34/gal	\$2.47/gal
100 t/day (pro-rata modules)	\$150,000,000	\$2.56/gal	\$2.34/gal	\$2.47/gal
Production cost per unit of fuel at the tariff above. The highlighted row is the plant size selected.				

DIESEL
PRIORITY — fund first

Cost \$2.56/gal
Market \$9.60/gal · margin 73%
EBITDA \$1,413,627/yr · payback 3.2 yr

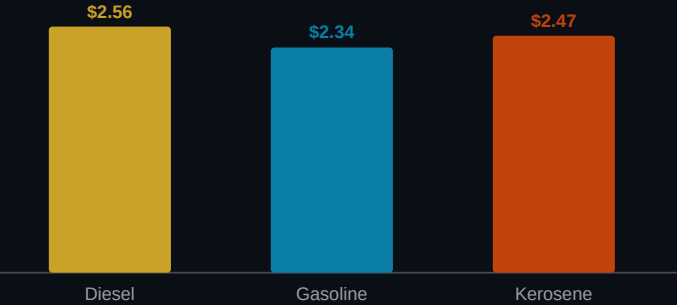
GASOLINE
PRIORITY — fund first

Cost \$2.34/gal
Market \$8.14/gal · margin 71%
EBITDA \$1,163,268/yr · payback 3.9 yr

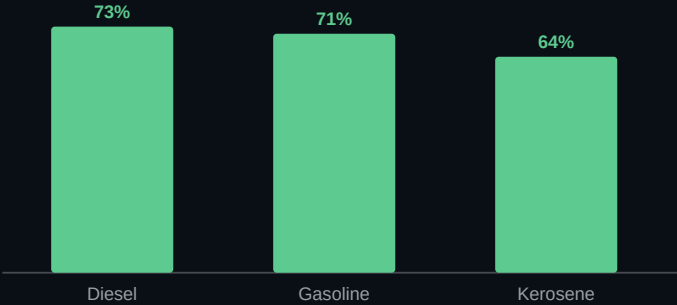
KEROSENE
STRONG — second wave

Cost \$2.47/gal
Market \$6.92/gal · margin 64%
EBITDA \$893,621/yr · payback 5.0 yr

PRODUCTION COST BY FUEL



MARGIN AGAINST THE LOCAL MARKET



FULL ANALYSIS – ALL THREE FUELS

Fuel	Cost	Market	Margin	EBITDA/yr	Payback
Diesel	\$2.56/gal	\$9.60/gal	73%	\$1,413,627	3.2 yr
Gasoline	\$2.34/gal	\$8.14/gal	71%	\$1,163,268	3.9 yr
Kerosene	\$2.47/gal	\$6.92/gal	64%	\$893,621	5.0 yr

TARIFF SENSITIVITY AT THIS SITE



Cost per litre against tariff. Dashed line = the tariff in use. Colours match the fuels above.

CARBON BALANCE & PLANT REQUIRED

Diesel — CO ₂ removed	1,996 t/yr (2.626 kg/L · 9.94 kg/gal)
Gasoline — CO ₂ removed	1,745 t/yr (2.296 kg/L · 8.69 kg/gal)
Kerosene — CO ₂ removed	1,919 t/yr (2.525 kg/L · 9.56 kg/gal)
O ₂ returned (diesel basis)	2,146 t/yr
Output at 3 t/day reference unit	759,921 L (200,750 gal)
Capex at this size	\$4,500,000
Continuous power	1,800 kW

Carbon is circular: the CO₂ removed to make the fuel returns when it burns. The benefit is displacement of fossil carbon, not removal.

ABOUT THESE FIGURES

These figures are indicative planning estimates. They combine the fuel's energy content, the electricity price you choose, the scale of plant and a standard allowance for other operating costs. Technical background, assumptions and test reports are available on request from info@fuelfromair.com.

LOCAL FUEL PICTURE — USE, MARGIN AND CARBON

Every year **Portugal**, where **Cabo Carvoeiro / Peniche** sits, burns about **2.65 billion gallons** of diesel, gasoline and kerosene. Here is each fuel's share, the margin FFA would earn on it at this site, and the carbon dioxide taken from the air if FFA fuel replaced it.

DIESEL

Used per year

837.3 million gal



Profit margin at this site

73%



GASOLINE

Used per year

1.51 billion gal



Profit margin at this site

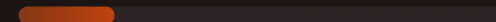
71%



KEROSENE

Used per year

301.4 million gal



Profit margin at this site

64%



CO₂ taken from the air per year

8.3 million tonnes



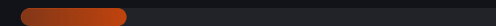
CO₂ taken from the air per year

13.1 million tonnes



CO₂ taken from the air per year

2.9 million tonnes



All three fuels, per year

10.02 billion L · 2.65 billion gal

CO₂ taken from the air if all replaced

24.3 million tonnes

WHAT THAT CARBON IS EQUAL TO, EVERY YEAR

The fossil carbon that would no longer be added to the air if FFA fuel replaced these fuels at Portugal levels of use.

VEHICLES AND FOREST



104.0 thousand

long-haul lorries

Carbon avoided by replacing the diesel, every year



2.8 million

passenger cars

Carbon avoided by replacing the gasoline, every year



104

jet aircraft, flying all year

Carbon avoided by replacing the jet fuel, every year



3.0 million

return flights London–New York

Kerosene — passengers, one return trip each



3.5 million ha

of forest to absorb it

Planted forest needed to take up the same CO₂

LOCAL EFFECTS



68%

of the country's fossil CO₂

Share of the national fossil CO₂ emissions



7.2 million gal

of fuel displaced every day

Fossil fuel no longer needed, every day of the year



762

road tankers a day

Fewer fuel deliveries by road and sea



\$22.39 billion

a year spent on these fuels

At the local pump price, money that could stay in the local economy



2.33 t

of fossil CO₂ avoided per person

Shared across the population

INDUSTRY SCALE



47%

a year of Toyota Group cars

Compared with one year of driving all the vehicles sold



73%

a year of Hyundai Motor Group cars

Compared with one year of driving all the vehicles sold



1.2×

a year of Ford cars

Compared with one year of driving all the vehicles sold



1.1×

a year of Airbus jets

Compared with one year of flying all the jets delivered



1.5×

a year of Boeing jets

Compared with one year of flying all the jets delivered

These are approximations to give a sense of scale. The figures, factors and assumptions behind them are available on request from info@fuelfromair.com. Carbon is circular: the CO₂ taken from the air returns when the fuel burns, so the benefit is displacement of fossil carbon, not removal.