

Statistics Jersey: www.gov.je/statistics

Overview

This report examines supply and use of energy in Jersey through the importation, distribution, and consumption of fuels such as petroleum products and electricity.

The focus of the report is energy supply and use in 2021. Figures are also presented for calendar years 2017 to 2021. Longer term trends, going back to 1993 are shown for primary energy supply, road fuel consumption, and electricity importation and generation.

The energy data presented in this report provides the basis for calculating carbon emissions for Jersey. Through the UK, Jersey is a signatory to the Kyoto Protocol. Jersey's "Carbon Neutral Roadmap" was published in 2022¹ and sets out the Island's journey to carbon neutrality in line with commitments under the Paris Agreement.

Jersey's energy data is submitted annually to the compilers of the UK's national greenhouse gas inventory, Aether, who independently verify and validate the data using internationally agreed methodologies. The resultant emissions calculated for Jersey are published by Aether² and submitted to the international inventories as part of the UK's national inventory.

Summary for 2021

It is important to note that due to the global pandemic, activity related to travel and some economic sectors was reduced during 2020 and parts of 2021. This is expected to have had an impact on the supply and use of energy in those areas, especially in 2020, before a partial recovery to pre-pandemic levels in 2021.

Supply

- Almost all of Jersey's energy supply was imported; about 2% was produced on-Island as electricity generated by the Energy Recovery Facility and Jersey Electricity solar panels
- Petroleum products accounted for about three-fifths (61%) of Jersey's energy supply; electricity (imported and on-Island generated) accounted for the remainder (39%)
- Jersey's total primary energy supply (TPES) was 6% more than in 2020

Use

- Total final energy consumption (FEC) was 6% more than in 2020
- Energy consumption per head of resident population was 1.4 toe³ and was below that of the UK (1.9 toe)
- Of total energy used, just under half (42%) was by households, around a third (31%) for transportation (predominantly road) and a similar amount (27%) by industry and government

¹ www.gov.je/Government/Pages/StatesReports.aspx?ReportID=5530

² www.gov.je/Environment/GenerateEnergy/GreenHouseEmissions/Pages/GreenhouseGasEmissions.aspx

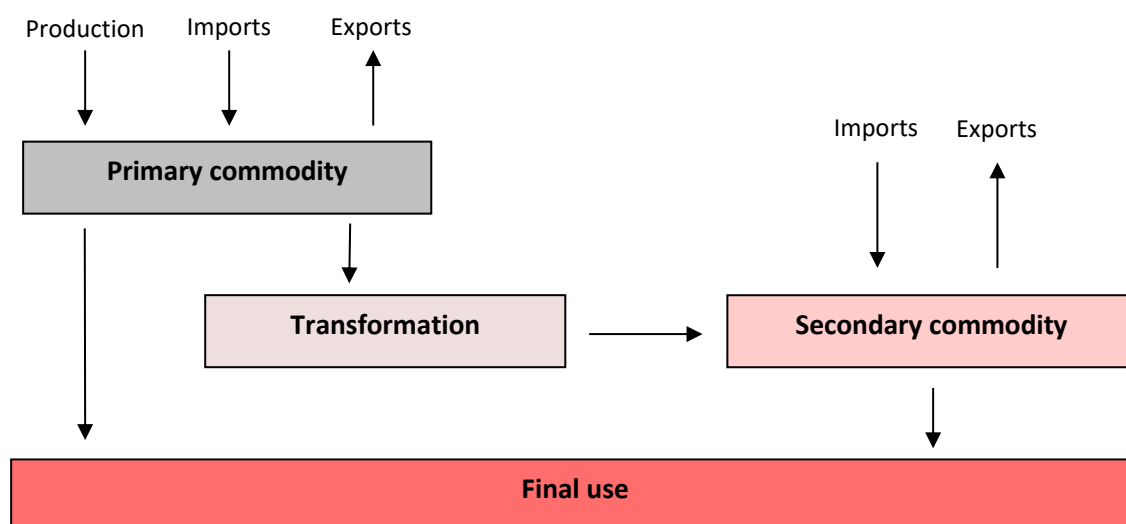
³ A toe (tonne of oil equivalent) is a unit of energy which represents the quantity of energy released through burning one tonne of crude oil; 1 toe =11,630 kWh or 10 million kilocalories.

Introduction

Energy is supplied to Jersey predominantly through imports; there is also a small amount of on-Island production. The primary supply of energy is either distributed to consumers in its original form or is transformed into different sources of energy; for example, petroleum products can be burned to generate electricity. Some energy is also used in such transformation processes and some is lost during transmission and distribution to consumers. The final uses of energy include consumption by households, industry, government and for transportation.

The supply and use of each individual type of fuel ('commodity') may be considered by means of a commodity balance. Figure 1 outlines a commodity balance, showing how a primary commodity may be either used directly by consumers or transformed into a secondary commodity before then being used.

Figure 1 - Commodity balance outline



Energy balance

The overall flow of energy in Jersey may be examined by combining all the individual commodity balances into an "energy balance" which shows the energy flows from production to final use, including movements between fuel categories.

Units

Since different fuel types provide different amounts of energy, volume or mass measures (such as litres or tonnes) do not enable fuels to be compared directly from the perspective of energy supply and use. In order to compare and aggregate different fuels within a single framework (the energy balance) fuel quantities are converted into a standardised unit based on calorific value (see [Glossary of terms](#)).

The standardised unit of energy used in an energy balance is the toe (tonne of oil equivalent). A toe represents the quantity of energy released through burning one tonne of crude oil: 1 toe = 11,630 kWh or 10 million kilocalories.

Total Primary Energy Supply, TPES

Total primary energy supply (TPES) is defined as the total energy which a jurisdiction imports and produces from its own natural resources, accounting for any changes in stock, and subtracting any exports.

TPES for Jersey predominantly consists of imported petroleum products and imported electricity. There is also a small contribution (around 2%) to TPES from electricity generated within Jersey by the Energy Recovery Facility (formerly known as Energy from Waste) and Jersey Electricity solar panels.

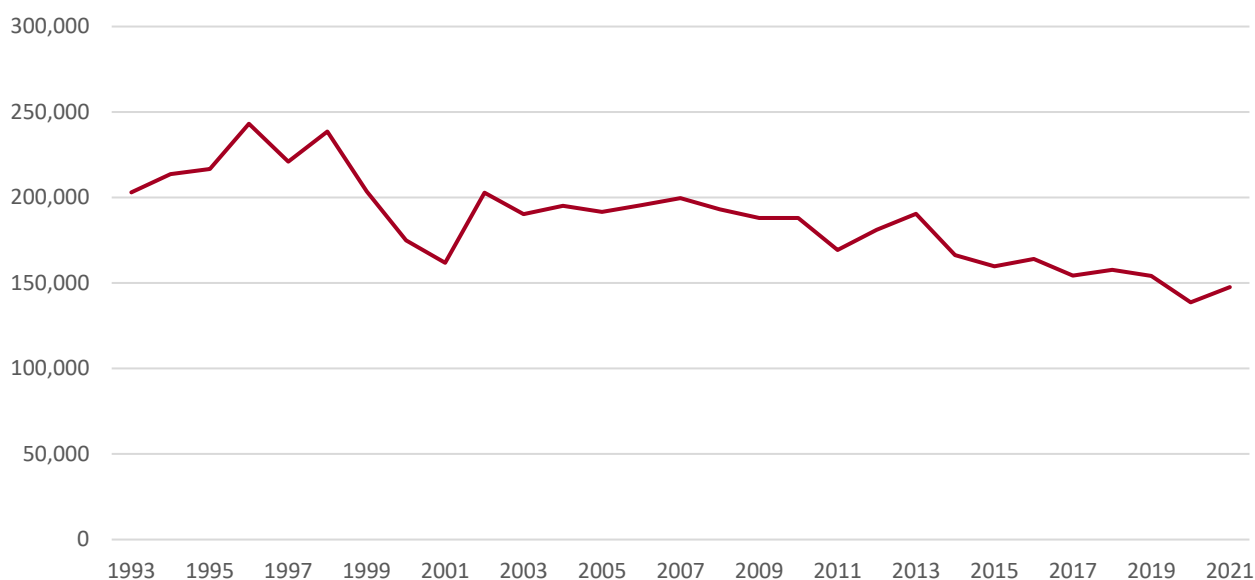
Table 1 shows TPES⁴ for each year from 2017 to 2021. Petroleum products accounted for three-fifths (61%) of Jersey's TPES in 2021, electricity (imported and on-Island generated) accounted for the remainder (39%).

Table 1 - Jersey's total primary energy supply (TPES) 2017 to 2021; toe

	2017	2018	2019	2020	2021
Total primary energy supply	154,293	157,712	154,092	138,926	147,572

TPES in 2021 was 6% larger than in the previous year (2020). The longer-term behaviour of Jersey's TPES is shown in Figure 2.

Figure 2 - Jersey's total primary energy supply (TPES), 1993 to 2021; toe



⁴ Throughout this report:

- coal and other solid fuels are not included due to the lack of available data; In 2007, the last year for which such data was compiled, the contribution from coal and other solid fuels to TPES was less than 1%
- electricity generated from private generators (wind, solar etc.) is not included

Figure 2 shows that there are two principal features in the longer-term behaviour of Jersey’s TPES:

- a reduction in level, from between 200,000 and 250,000 toe during most of the 1990s to between 150,000 and 200,000 toe since the turn of the millennium to 2019. A key factor in this reduction in the level of TPES has been the increase in imported electricity and the complementary decrease in imported petroleum products for on-Island electricity generation. A further reduction to around 140,000 toe was seen in 2020, followed by an increase to almost 150,000 toe in 2021. The onset and subsequent easing of the global pandemic is likely to have influenced TPES in the last 2 years.
- a generally downward trend in TPES since around 2007 due to a range of factors, including a reduction in the use of kerosene for domestic heating and of motor fuels for transportation

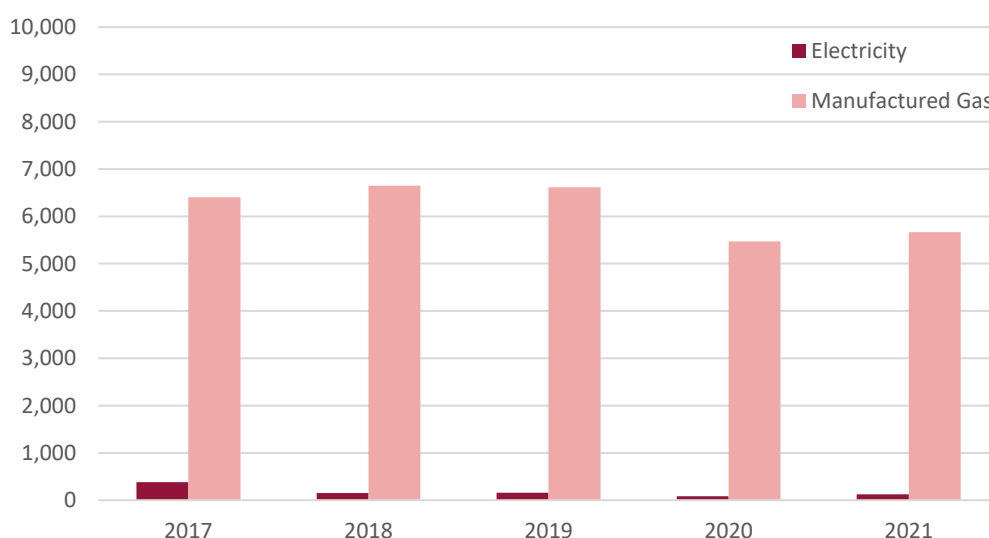
Transformation

Transformation is the process of converting fuel from one form into another, which is better suited for specific uses. There is little transformation carried out in Jersey since most fuel is imported in the form that the consumer requires. Transformation processes that do occur in Jersey are:

- the generation of electricity from petroleum products
- the conversion of Liquefied Petroleum Gas (LPG) into a gaseous form (referred to as “manufactured gas”) which can then be piped through the Island’s gas network

The supply of energy produced by on-Island transformations each year from 2017 to 2021 is shown in Figure 3.

Figure 3 - Energy supply produced by transformation processes, 2017 to 2021, toe



In 2021, Jersey Electricity (JE) used 533 toe of petroleum products to generate 122 toe of electricity.

The quantity of manufactured gas produced in 2021 was 5,664 toe, a small increase when compared to 2020. Over the last 5 years quantities of manufactured gas produced were, on average, around 6,500 toe between 2017 to 2019, then around 5,500 toe in 2020.

Final Energy Consumption

Final energy consumption (FEC) refers to the use of energy by final consumers, either as a primary commodity or as a secondary commodity after any transformations have occurred. The use of energy by the energy industry itself and losses due to transmission and distribution of energy are excluded from FEC.

Table 2 shows Jersey's FEC for each year from 2017 to 2021 and FEC per head of resident population (FEC per capita).

Table 2 - Jersey's final energy consumption (FEC) and per capita 2017 to 2021; toe

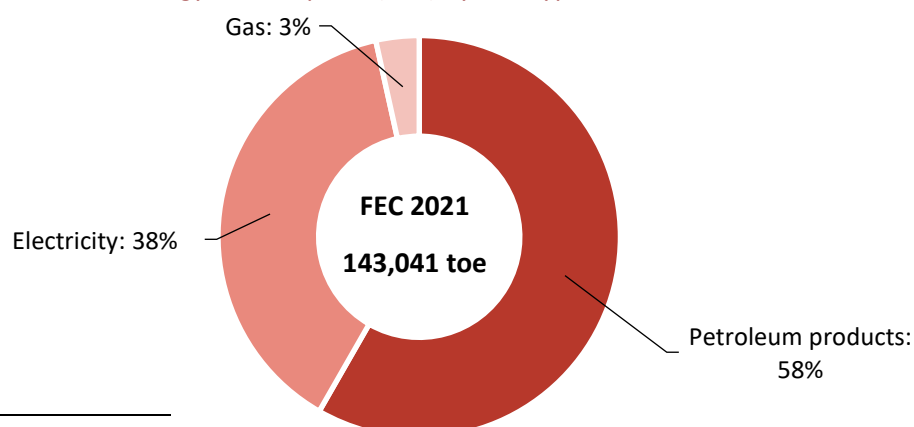
	2017	2018	2019	2020	2021
FEC	150,274	152,840	149,190	134,753	143,041
FEC per capita ⁵	1.4	1.4	1.4	1.3	1.4

Over the 3 years from 2017 to 2019, FEC had been relatively stable at around 150,000 toe, acknowledging the effect of warmer or colder winters (see [Appendix Table A1](#)). From 2019 to 2020, FEC in Jersey decreased by 10% to 134,753 toe. This will have been driven in part by reduced demand for certain fuels as an effect of the global pandemic. From 2020 to 2021, FEC increased by 6% to 143,041 toe in 2021 as the impact of the pandemic reduced.

FEC per capita in Jersey from 2017 and 2021, has mostly remained around 1.4 toe. Energy consumption per head of population in Jersey in 2021 was below that of the UK (1.9 toe⁶).

In 2021, petroleum products (such as road fuels and heating oil) accounted for three-fifths (58%) of Jersey's FEC (see [Figure 4](#)). Electricity accounted for over a third (38%) and manufactured gas the remainder (3%).⁷

Figure 4 - Jersey's total final energy consumption (FEC) by fuel type, 2021; toe



⁵ FEC per capita for Jersey using mid-year population estimates. In 2020 this data was unavailable, so the 2019 end of year population estimate was used instead. For 2021, the total resident population count was used from the 2021 census.

⁶ FEC per capita for the UK has been derived from:

- FEC: "Digest of UK Energy Statistics (DUKES) 2022", July 2022
- Population: the 2020 mid-year estimate (Office for National Statistics, June 2021) was used for the UK 2021 population figure, as this was the most current figure available at the time this report was published

⁷ Throughout this report, numbers have been rounded independently to the nearest integer, hence contributions shown may not sum to their total

Jersey's FEC, broken down by fuel type for each year from 2017 to 2021, is shown in Table 3.

Table 3 - FEC by fuel type, 2017 to 2021; toe

	2017	2018	2019	2020	2021
Petroleum products	91,720	92,181	88,871	76,864	83,368
Gas	5,252	6,191	5,977	4,961	4,965
Electricity	53,303	54,468	54,342	52,928	54,708
Total FEC⁷	150,274	152,840	149,190	134,753	143,041

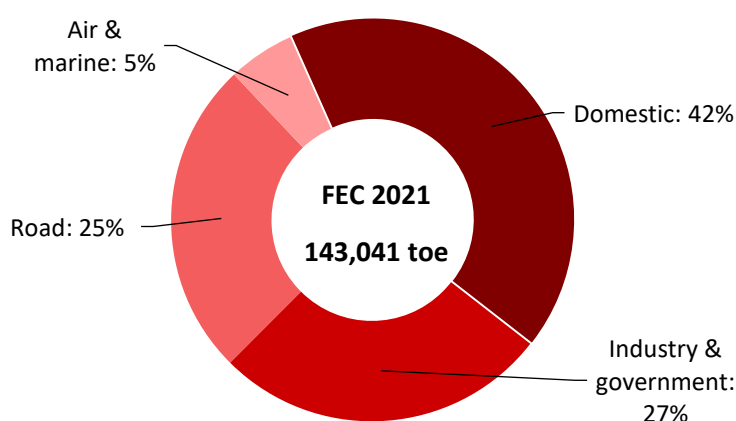
FEC may also be considered in terms of final end use sectors such as households, industry, government and transportation, as shown in Table 4.

Table 4 - FEC by final end use sector, 2017 to 2021; toe

	2017	2018	2019	2020	2021
Industry and government	41,872	42,655	42,783	37,100	38,566
Air and marine ⁸	9,839	11,740	10,832	5,154	7,687
Road	41,194	40,534	39,083	34,308	36,441
Domestic	57,370	57,911	56,492	58,190	60,346
Total FEC	150,274	152,840	149,190	134,753	143,041

In 2021, just under half (42%) of Jersey's energy was consumed by households (the domestic sector), around a third (31%) was used for transport (road, air and marine⁸) and the remainder (27%) was consumed by industry and government, see Figure 5.

Figure 5: FEC by final end use sector, 2021; toe



⁸ 'Air & marine' covers fuel that is supplied in Jersey, i.e. supplied to commercial airlines and also for private air or marine use whilst in Jersey. The category 'marine' includes both marine diesel and petrol.

Energy balance

An energy balance shows the flows of all forms of energy within a jurisdiction, from supply to final consumption. This includes transformations, losses and the energy industry's own use⁹, presented in one common unit of measurement (toe).

Table 5 shows the energy balance for Jersey for 2021.

Table 5 - Energy Balance for Jersey, 2021; toe

	Petroleum products	Gas	Electricity	Total
Production	0	0	2,762	2,762
Net Imports ¹⁰	86,536	0	55,374	141,910
Stock change	2,900	0	0	2,900
Primary supply	89,435	0	58,136	147,572
Statistical difference ¹¹	-74	0	-216	-290
Primary demand	89,509	0	58,353	147,862
Transformations				
Electricity Generation	-533	0	122	-411
Gas supply	-5,555	5,664	0	108
Energy industry own use and losses	52	699	3,767	4,518
Final consumption	83,368	4,965	54,708	143,041
Industry and government	13,493	2,629	22,444	38,566
Air and marine	7,687	0	0	7,687
Road ¹²	36,441	0	0	36,441
Domestic	25,747	2,335	32,264	60,346

⁹ See [Glossary](#) for definition of terms. For methodology used to construct the energy balance see "Energy Balance: methodology note", UK Department Business, Energy and Industrial Strategy, 2010 at: <https://www.gov.uk/government/publications/energy-balance-methodology-note>

¹⁰ Net Imports is the sum of imports less exports

¹¹ Statistical difference is defined as Primary supply minus Primary demand (see [Glossary](#))

¹² Electricity consumed in charging electric vehicles is included under Domestic, and Industry & government consumption; it is not included under road consumption.

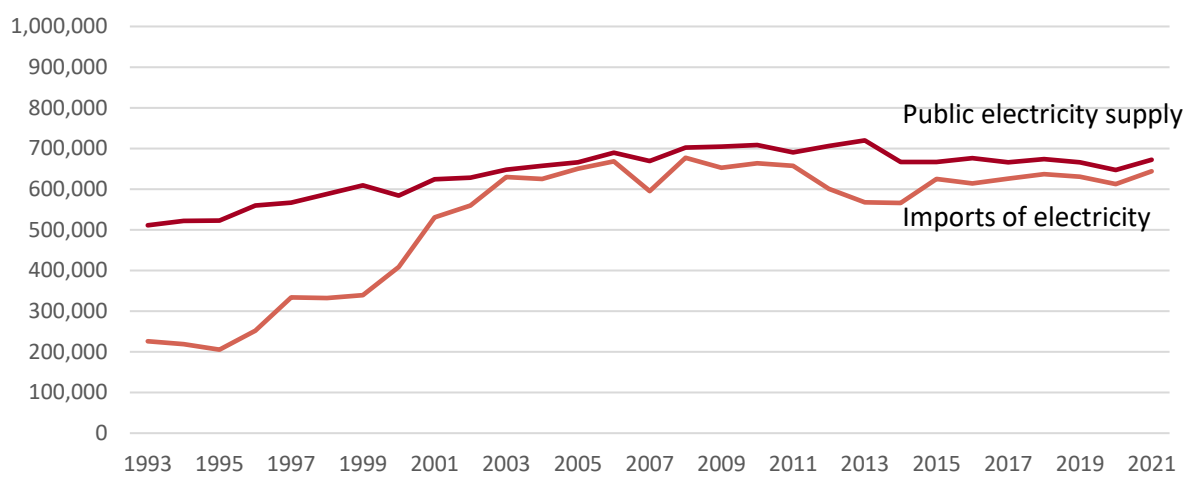
Individual fuel types

This section looks at individual fuels in more detail and in units which are specific to each type of fuel, e.g. electricity in MWh and petroleum products in tonnes.

Electricity

Since 1993, the overall public electricity supply¹³ and the proportion of electricity imported into Jersey have increased, see Figure 6.

Figure 6 - Public electricity supply and imports of electricity, 1993 to 2021; MWh



Throughout the 1990s imported electricity accounted for between 40% and 60% of Jersey’s public electricity supply. In 2021, this proportion was 96%.

Petroleum products

The category ‘petroleum products’ covers a range of fuels derived from crude oil. Such products accounted for over half (58%) of Jersey’s overall final energy consumption (FEC) in 2021, see Figure 4.

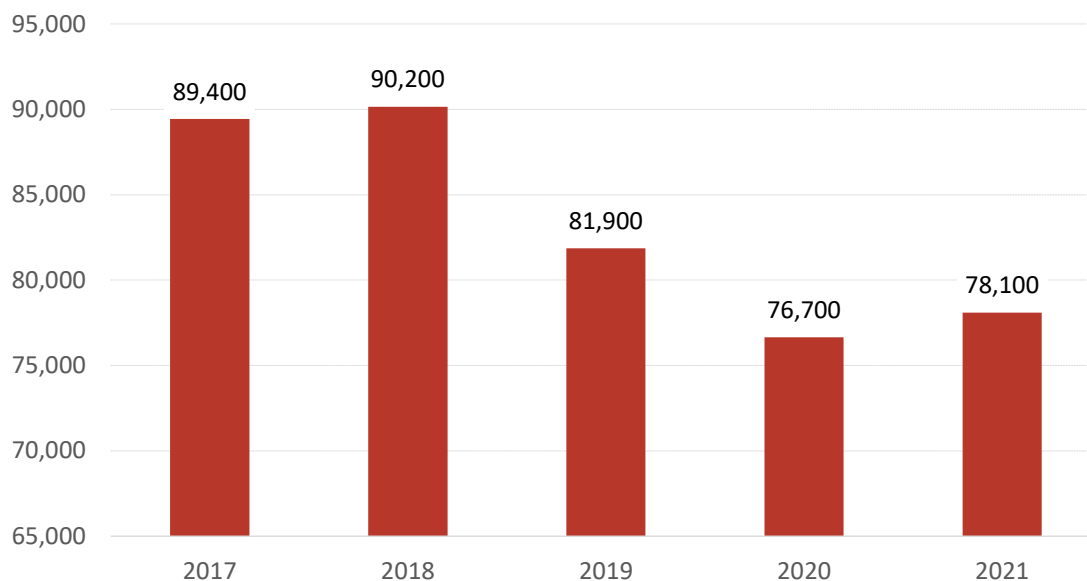
All the petroleum products supplied and used in Jersey are imported; around 78,000 tonnes of petroleum products were imported in 2021, a similar amount to 2020 (77,000 tonnes)¹⁴.

The imported quantities of various petroleum products in each year from 2017 to 2021 are shown in Figure 7 (see [Glossary](#) for description of products included in each category).

¹³ Public electricity supply (PES) is electricity provided to consumers through the JE network. PES is the sum of imported electricity (pre-transmission losses) and electricity produced in Jersey (both by JE and the Energy Recovery Facility).

¹⁴ Quantities of commodities that pass through Jersey on their way to a final destination in another jurisdiction are excluded from import totals.

Figure 7 - Imports of petroleum products, 2017 to 2021; tonnes



Some of these imports were used to generate electricity and produce manufactured gas. Since the 1990s, there has been a considerable reduction in the use of petroleum products to generate electricity in Jersey. This was a result of the increased importation of electricity through submarine cables, see Figure 8.

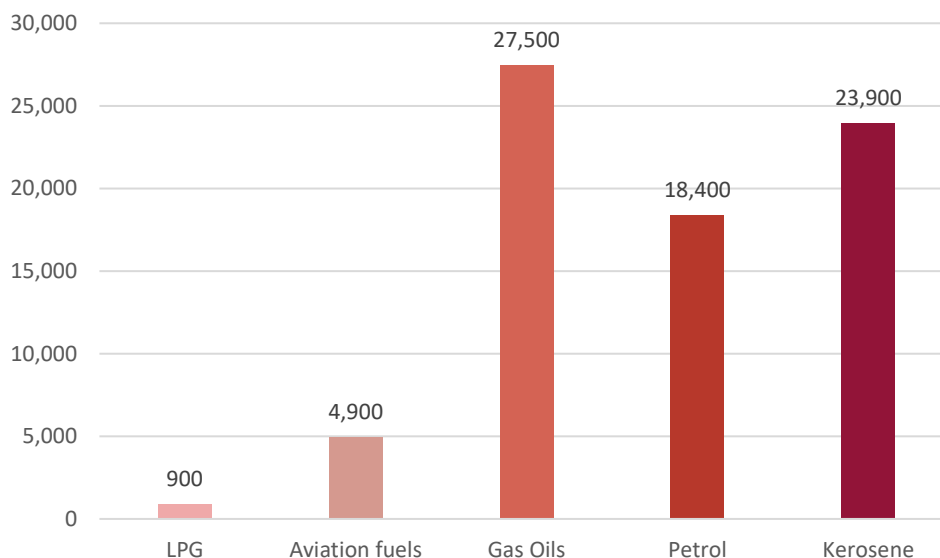
Figure 8 - Oil used for electricity generation, 1993 to 2021; tonnes



In the early 1990s around 80,000 tonnes of oil were used each year to generate electricity on-Island. In 2021 this figure had reduced to 493 tonnes.

Petroleum products that are not used in transformations constitute the final consumption. Of the final consumption of petroleum products in 2021, gas oils (including road diesel, marine diesel and other gas oil) accounted for 36%, and kerosene for 32%. Sales of petrol accounted for around a quarter (24%), with aviation fuels and LPG making up the remainder (7% and 1% respectively), see Figure 9.

Figure 9 - Final consumption of petroleum products in 2021; tonnes



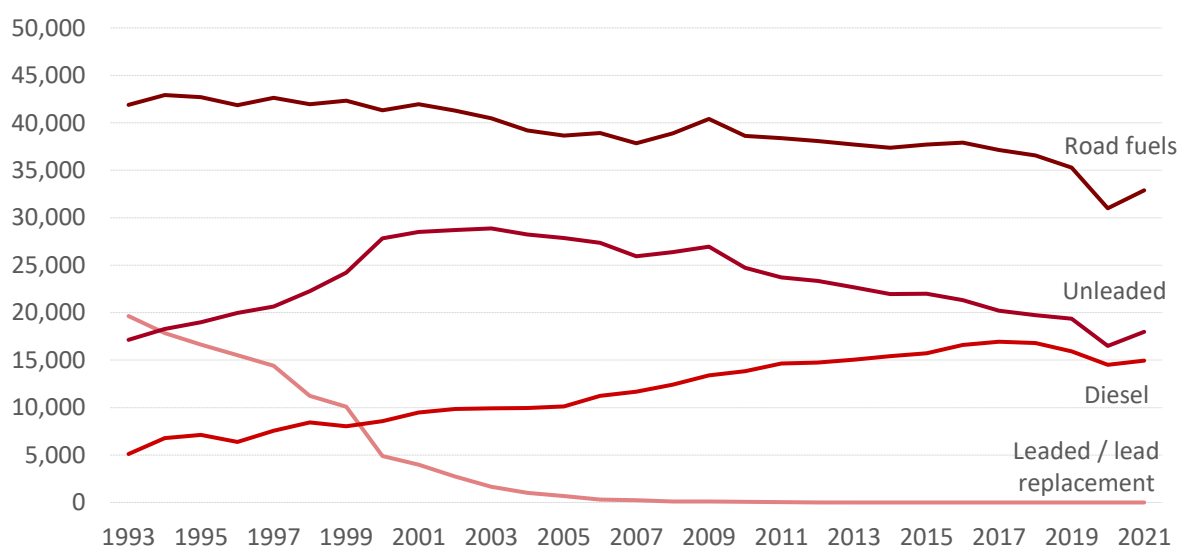
Petrol and motor diesel consumption has generally declined from 2017 to 2020, then increased slightly from 2020 to 2021 (see Table 6).

Table 6 - Road fuel consumption, 2017 to 2021; tonnes

	2017	2018	2019	2020	2021
Unleaded petrol	20,205	19,750	19,356	16,493	17,972
Motor diesel	16,938	16,814	15,938	14,505	14,928
Total road fuels	37,143	36,563	35,294	30,997	32,900

Overall, there has been a general decline in the long-term consumption of petrol and motor diesel, since the mid 1990's (figure 10).

Figure 10 - Road fuel consumption, 1993 to 2021; tonnes



Energy use in homes

Table 7 shows final energy consumption by households in Jersey over the period from 2017 to 2021, broken down by fuel type. Variations in average monthly winter temperatures are a factor in annual fluctuations (see Appendix Table A1).

Table 7 - Household final energy consumption, 2017 to 2021; *toe*

	2017	2018	2019	2020	2021
Petroleum products	27,129	26,323	24,661	25,023	25,747
Manufactured gas	2,669	2,785	2,660	2,516	2,335
Electricity	27,572	28,803	29,171	30,652	32,264
Total household consumption	57,370	57,911	56,492	58,190	60,346

In 2021 electricity consumption accounted for about half of total domestic consumption (53%); petroleum products accounted for 43%; and gas accounted for the remainder (4%).

Statistics Jersey

10 August 2022

Appendix

Table A1 - Average (mean) daily air temperature in Jersey, 2011-2021; degrees Celsius, °C

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Jan	6.6	8.2	6.3	8.3	7.7	7.8	5.9	8.5	7.0	8.2	6.3
Feb	8.5	5.7	5.3	8.3	6.3	7.6	8.0	4.9	8.6	9.0	6.9
Mar	9.0	10.3	6.1	9.5	8.8	7.8	10.4	7.5	10.0	9.0	9.0
Apr	13.8	9.7	9.2	11.8	12.4	9.8	11.1	11.9	11.5	13.5	9.4
May	14.0	13.3	12.0	13.8	13.4	13.9	14.7	14.6	13.1	14.9	12.3
Jun	15.6	16.1	14.7	17.1	16.6	16.0	18.0	16.9	16.5	16.7	16.6
Jul	17.0	18.1	19.2	19.1	18.4	17.8	18.5	20.2	19.7	17.7	18.5
Aug	17.5	18.6	18.7	17.4	18.0	18.9	17.7	18.5	18.6	19.7	17.6
Sep	17.5	15.7	16.6	18.5	15.4	18.1	15.4	16.8	16.7	17.4	18.2
Oct	14.6	13.3	14.9	15.7	13.5	13.1	14.4	13.7	13.8	13.0	14.4
Nov	12.4	9.4	9.6	11.7	12.6	9.8	10.3	10.1	9.4	11.4	10.0
Dec	9.0	8.3	8.5	8.8	11.6	8.2	8.2	9.2	8.6	8.2	8.5
Year	13.0	12.2	11.8	13.3	12.9	12.4	12.7	12.7	12.8	13.2	12.3

Glossary of terms

Petroleum products

Aviation spirit - a light hydrocarbon oil product used to power piston-engine aircraft.

Aviation turbine fuel – used in aircraft jet and gas-turbine engines, consisting of either kerosene or a mixture of naphtha and kerosene; also known as ‘jet fuel’.

Fuel oil - used in furnaces and boilers of power stations and in industry.

Gas oil - used in industry, diesel engines and as marine diesel, burned in central heating systems.

Kerosene - known as burning oil or heating oil, used for lighting and heating.

Ultra low sulphur Petrol (ULSP) - motor spirit with a sulphur content of less than 0.005 per cent.

Ultra low sulphur Diesel (ULSD) – motor diesel which has a sulphur content of less than 0.005 per cent.

Lead Replacement Petrol (LRP) - contains an additive different to lead for lubrication.

Gas

LPG – liquefied petroleum gas; a mixture of gaseous hydrocarbons that is changed into liquid form under pressure. LPG may be converted (transformed) into a gaseous form (manufactured gas) and is also used in portable cooking stoves and heaters and to power some vehicles.

Manufactured gas - used as a fuel in homes for cooking and heating; made by converting (transforming) LPG into a gaseous form which can be piped through a gas network.

Energy balance

Available supply – the sum of supply and transformation.

Calorific value - the calorific values assigned to each fuel are from the tables “Estimated average calorific values of fuels (DUKES A1-A3)” published by the UK Department for Business, Energy & Industrial Strategy:

<https://www.gov.uk/government/statistics/dukes-calorific-values>

The prior year’s calorific values are used due to their availability at time of analysis.

Demand - the sum of transformations, energy industry use and losses, and final consumption, including non-energy use.

Energy industry use - consumption to support transformation processes e.g. for lighting, operating compressors and cooling systems, but not for transformation itself.

Final consumption - energy consumption by final users; does not include energy used in transformation processes, energy industry own use or losses.

Losses - the intrinsic losses that occur during the transmission and distribution of electricity and gas.

Public electricity supply - the sum of electricity produced in Jersey, imports (pre-transmission losses) and exports.

Statistical difference - the excess of supply over demand. A statistical difference arises when figures are gathered from a variety of independent sources and reflect differences in timing, definition of coverage, commodity definition and also in metering and accounting. A non-zero statistical difference is generally expected.

Supply - the sum of production, imports and other sources, accounting for exports and stock changes; commodities that pass through Jersey on their way to a final destination in another jurisdiction are excluded.

Transformation - activities that transform the original primary (and sometimes secondary) commodity into a form which is more suited for specific uses, e.g. burning petroleum products in order to generate electricity; converting LPG into a gaseous state which can then be pumped through a gas network.