

Statistics Jersey: [www.gov.je/statistics](http://www.gov.je/statistics)

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## 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 on energy supply and use in 2019. Figures are also presented for calendar years 2015 to 2018. Longer term trends, going back to 1993, are shown for road fuel consumption and for 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; the document “Pathway 2050: An Energy Plan for Jersey”<sup>1</sup> outlines how the Island intends to reduce its carbon emissions in line with the commitments of the UK and other European nations. A long-term climate action plan will be developed in 2021 setting out Jersey’s journey to carbon neutrality.

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 Aether<sup>2</sup> and submitted to the international inventories as part of the UK’s national inventory.

## Summary for 2019

### 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 solar panels.
- Petroleum products accounted for almost two-thirds (62%) of Jersey’s energy supply; electricity (imported and on-Island generated) accounted for the remainder (38%).
- Jersey’s total primary energy supply (TPES) was 2% less than in 2018.

### Use

- Total final energy consumption (FEC) was 2% lower than in 2018.
- Energy consumption per head of resident population was 1.4 toe<sup>3</sup> and was below that of the UK (2.1 toe).
- Of total energy used, more than a third (38%) was by households, a similar proportion (33%) for transportation (predominantly road) and over a quarter (29%) by industry and government.

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<sup>1</sup> [www.gov.je/government/pages/statesreports.aspx?reportid=1039](http://www.gov.je/government/pages/statesreports.aspx?reportid=1039)

<sup>2</sup> [www.gov.je/Environment/GenerateEnergy/GreenHouseEmissions/Pages/GreenhouseGasEmissions.aspx](http://www.gov.je/Environment/GenerateEnergy/GreenHouseEmissions/Pages/GreenhouseGasEmissions.aspx)

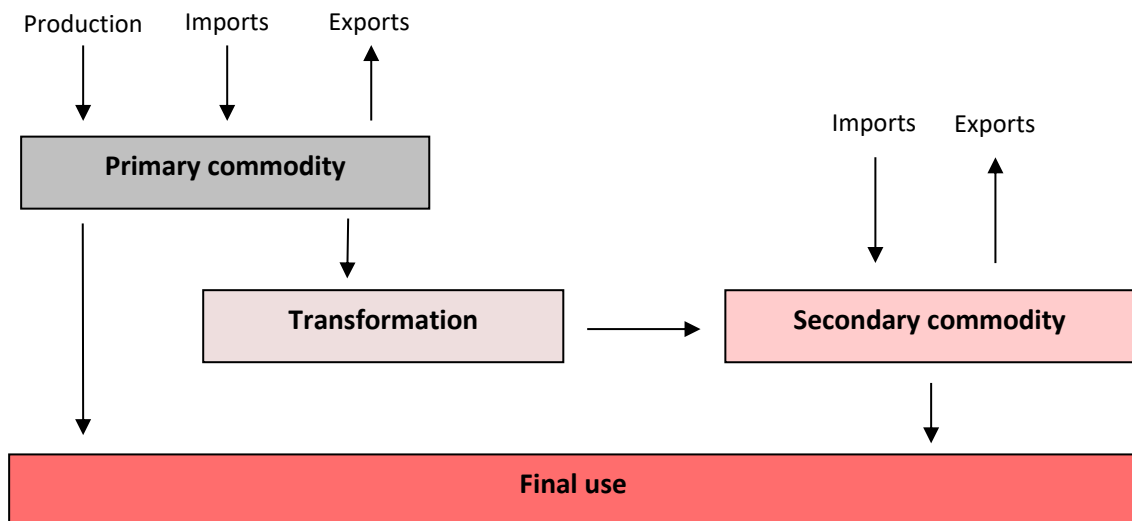
<sup>3</sup> A toe (tonne of oil equivalent) is a unit of energy which represents the quantity of energy released through burning one tonne of crude oil; 1 toe =11,630 kWh or 10 million kilocalories.

## 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 of 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 solar panels.

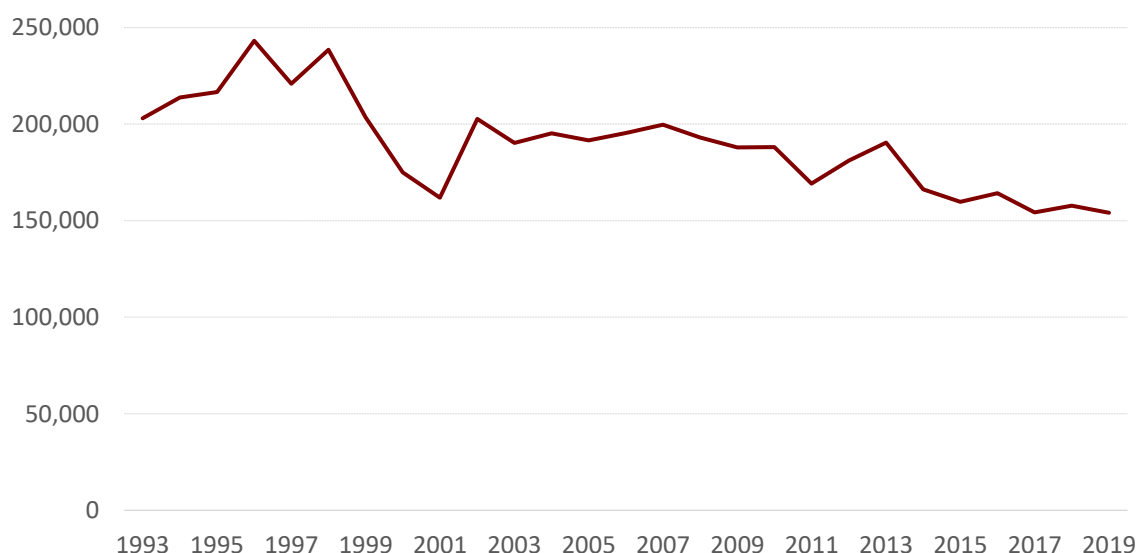
Table 1 shows TPES<sup>4</sup> for each year from 2015 to 2019. Petroleum products accounted for three-fifths (62%) of Jersey's TPES in 2019, electricity (imported and on-Island generated) accounted for the remainder (38%).

Table 1 - Jersey's total primary energy supply (TPES) 2015 to 2019; toe

	2015	2016	2017	2018	2019
TPES	159,699	164,165	154,293	157,712	154,092

TPES in 2019 was 2% lower than in the previous year (2018). The longer term behaviour of Jersey's TPES is shown in Figure 2.

Figure 2 - Jersey's total primary energy supply (TPES), 1993 to 2019; toe



<sup>4</sup> 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. 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 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

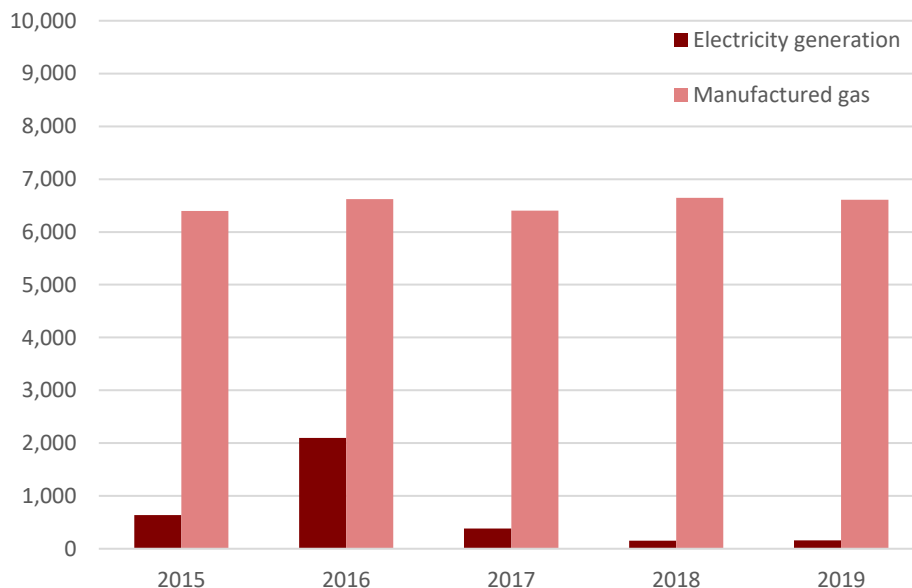
## Transformation

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 2015 to 2019 is shown in Figure 3.

**Figure 3 - Energy supply produced by transformation processes, 2015 to 2019; toe**



In 2019, Jersey Electricity (JE) used 679 toe of petroleum products to generate 157 toe of electricity.

The quantity of manufactured gas produced in 2019 was at a similar quantity to that in each of the last 5 years (6,611 toe produced in 2019, compared with 6,397 toe in 2015).

## 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 2015 to 2019 and FEC per head of resident population (FEC per capita).

**Table 2 - Jersey's final energy consumption (FEC) and per capita 2015 to 2019; toe**

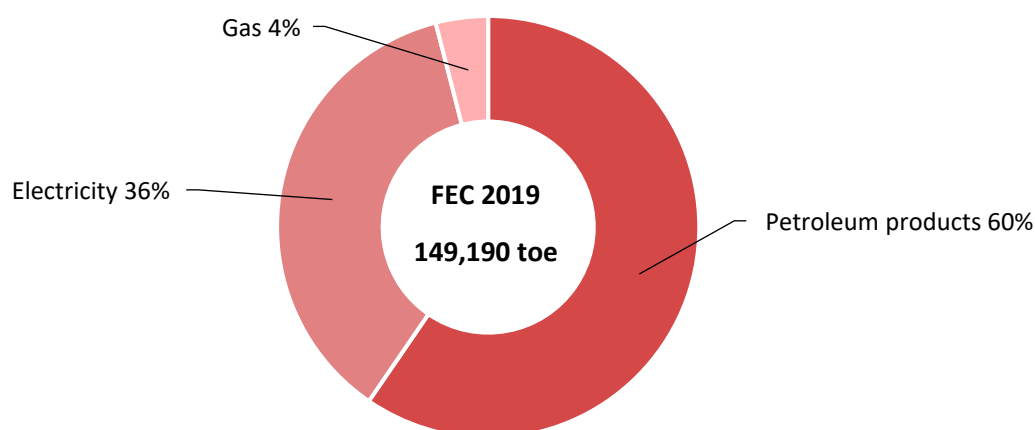
	2015	2016	2017	2018	2019
FEC	152,491	154,969	150,274	152,840	149,190
FEC per capita <sup>5</sup>	1.5	1.5	1.4	1.4	1.4

Over the 5 years from 2015 to 2019, FEC has been relatively stable at around 150,000 toe, acknowledging the effect of warmer or colder winters (see [Appendix Table A1](#)). In 2019 final energy consumption in Jersey was 2% lower than in 2018.

FEC per capita in Jersey has decreased slightly between 2015 and 2019, from approximately 1.5 to 1.4 toe. Energy consumption per head of population in Jersey in 2019 was below that of the UK (2.1 toe<sup>6</sup>).

In 2019, petroleum products (such as road fuels and heating oil) accounted for three-fifths (60%) of Jersey's FEC (see [Figure 4](#)). Electricity accounted for over a third (36%) and manufactured gas the remainder (4%).

**Figure 4 - Jersey's total final energy consumption (FEC) by fuel type, 2019; toe**



<sup>5</sup> FEC per capita for Jersey using mid-year population estimates

<sup>6</sup> FEC per capita for the UK has been derived from:

- FEC: "Energy Consumption in the UK", Department for Business, Energy & Industrial Strategy, October 2020
- Population: 2019 mid-year estimate, Office for National Statistics, June 2020.

Jersey's FEC broken down by fuel type for each year from 2015 to 2019 is shown in Table 3.

Table 3 - FEC by fuel type<sup>7</sup>, 2015 to 2019; toe

	2015	2016	2017	2018	2019
Petroleum products	92,799	94,585	91,720	92,181	88,871
Gas	6,217	5,636	5,252	6,191	5,977
Electricity	53,475	54,748	53,303	54,468	54,342
<b>Total FEC</b>	<b>152,491</b>	<b>154,969</b>	<b>150,274</b>	<b>152,840</b>	<b>149,190</b>

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

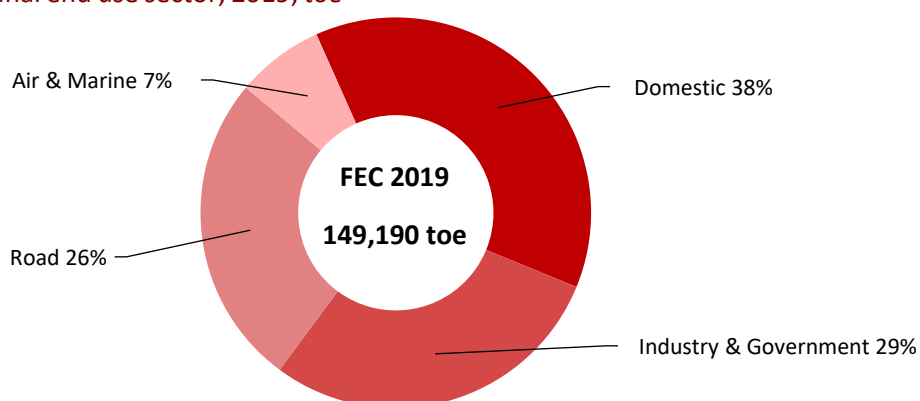
Table 4 - FEC by final end use sector, 2015 to 2019; toe

	2015	2016	2017	2018	2019
Industry and government	42,786	43,843	41,872	42,655 <sup>(r)</sup>	42,783
Air and marine <sup>8</sup>	11,779	11,735	9,839	11,740	10,832
Road	41,787	41,931	41,194	40,534 <sup>(r)</sup>	39,083
Domestic	56,140	57,460	57,370	57,911	56,492
<b>Total FEC</b>	<b>152,491</b>	<b>154,969</b>	<b>150,274</b>	<b>152,840</b>	<b>149,190</b>

<sup>(r)</sup> revised

In 2019, more than a third (38%) of Jersey's energy was consumed by households (the domestic sector), a third (33%) was used for transport (road, air and marine<sup>8</sup>) and the remainder (29%) was consumed by industry and government, see Figure 5.

Figure 5: FEC by final end use sector, 2019; toe



<sup>7</sup> Throughout this report, numbers have been rounded independently to the nearest integer. Hence, columns may not sum to totals.

<sup>8</sup> '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. 'Air' accounts for almost three-quarters of the final energy consumption of the 'Air & marine' sector shown in Table 4 and Figure 5.

## 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 use<sup>9</sup>, presented in one common unit of measurement (toe).

Table 5 shows the energy balance for Jersey for 2019.

Table 5 - Energy Balance for Jersey, 2019; toe

	Petroleum products	Gas	Electricity	Total
Production	0	0	3,651	3,651
Net Imports <sup>10</sup>	83,097	0	54,201	137,299
Stock change	13,143	0	0	13,143
<b>Primary supply</b>	<b>96,241</b>	<b>0</b>	<b>57,852</b>	<b>154,092</b>
Statistical difference <sup>11</sup>	128	0	255	383
<b>Primary demand</b>	<b>96,113</b>	<b>0</b>	<b>57,596</b>	<b>153,709</b>
<b>Transformations</b>				
Electricity Generation	-679	0	157	-522
Gas supply	-6,503	6,611	0	108
<b>Energy industry own use and losses</b>	<b>60</b>	<b>634</b>	<b>3,411</b>	<b>4,105</b>
<b>Final consumption</b>	<b>88,871</b>	<b>5,977</b>	<b>54,342</b>	<b>149,190</b>
Industry and government	14,295	3,317	25,171	42,783
Air and marine	10,832	0	0	10,832
Road <sup>12</sup>	39,083	0	0	39,083
Domestic	24,661	2,660	29,171	56,492

<sup>9</sup> 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>

<sup>10</sup> Net Imports is the sum of imports less exports

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

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

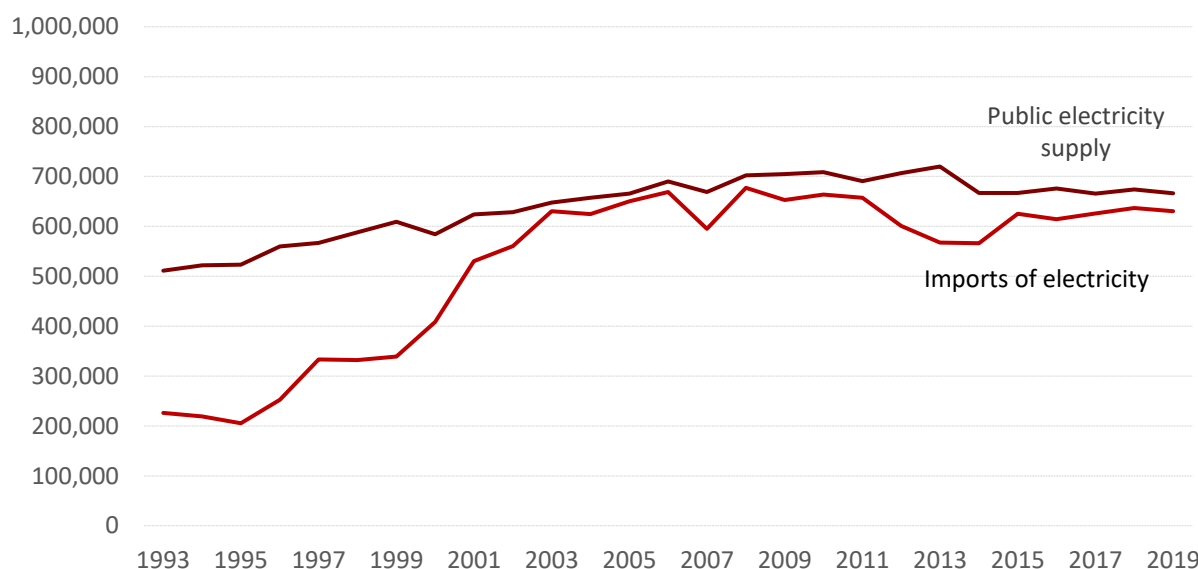
## Individual fuel types

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 supply<sup>13</sup> and the proportion of electricity imported into Jersey have increased, see Figure 6.

Figure 6 - Public electricity supply and imports of electricity, 1993 to 2019; MWh



Throughout the 1990s imported electricity accounted for between 40% and 60% of Jersey's public electricity supply. In 2019, this proportion was 95%.

### Petroleum products

The category 'petroleum products' covers a range of fuels derived from crude oil. Such products accounted for three-fifths (60%) of Jersey's overall final energy consumption (FEC) in 2019, see Figure 4.

All of the petroleum products supplied and used in Jersey are imported; some 80,000 tonnes of petroleum products were imported in 2019 compared with about 90,000 tonnes in 2018<sup>14</sup>.

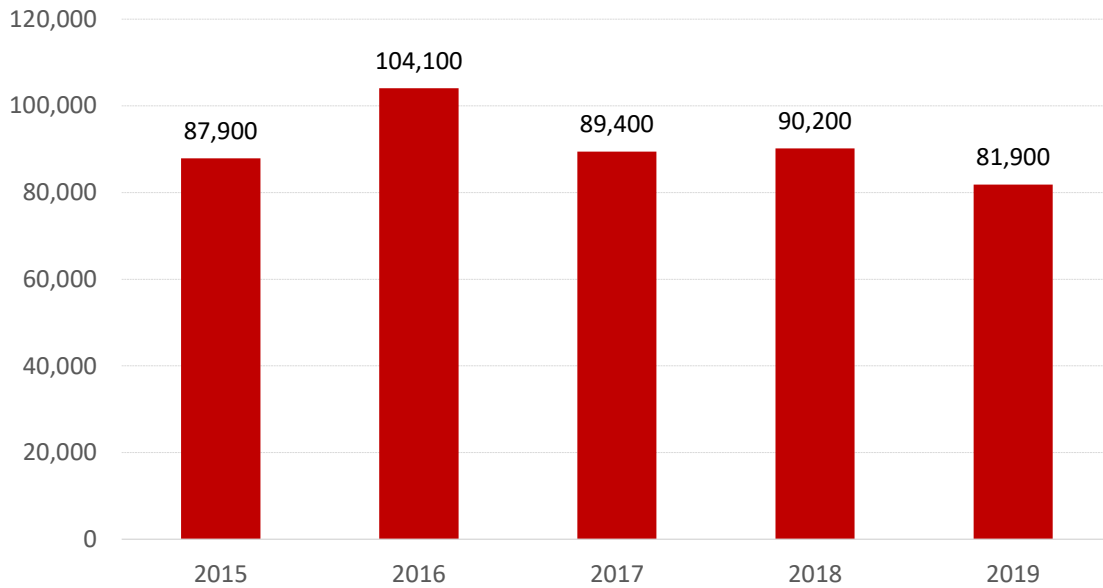
The imported quantities of various petroleum products in each year from 2015 to 2019 are shown in Figure 7 (see [Glossary](#) for description of products included in each category).

<sup>13</sup> 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).

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

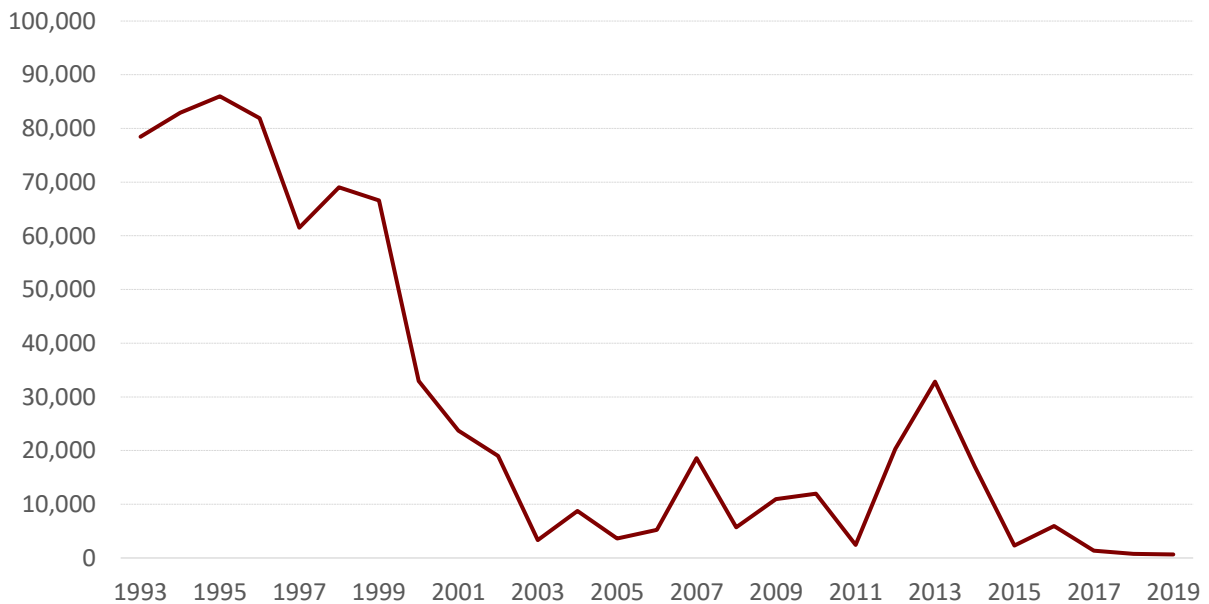


Figure 7 - Imports of petroleum products, 2015 to 2019; tonnes



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 (specifically of fuel oil and gas oil) 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 2019; tonnes

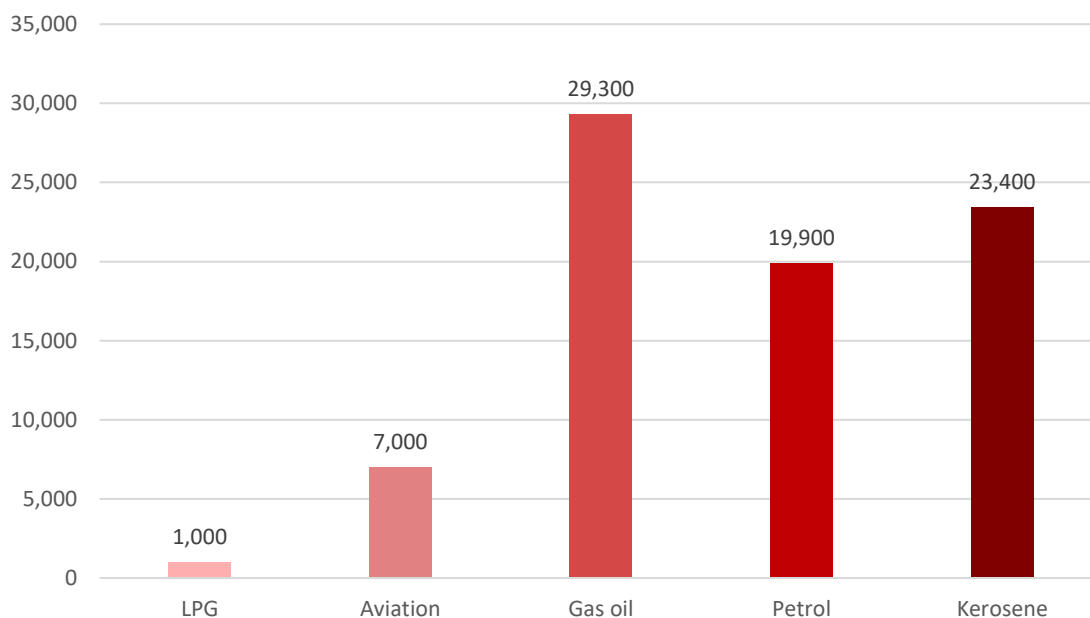


*Includes fuel oil and gas oil used by JE*

In the early 1990s around 80,000 tonnes of oil were used each year to generate electricity on-Island. In 2019 this figure had reduced to 652 tonnes.

Petroleum products that are not used in transformation constitute the final consumption. Of the final consumption of petroleum products in 2019, gas oils (including road diesel, marine diesel and other gas oil) accounted for around a third (36%), and kerosene for 29%. Sales of petrol accounted for a quarter (25%), with aviation fuels and LPG making up the remainder (9% and 1% respectively), see Figure 9.

**Figure 9 - Final consumption of petroleum products in 2019; tonnes**



A generally downward trend in the consumption of petrol since 2015 is apparent in Table 6. Consumption of motor diesel increased from 2015 to 2017, and has since decreased.

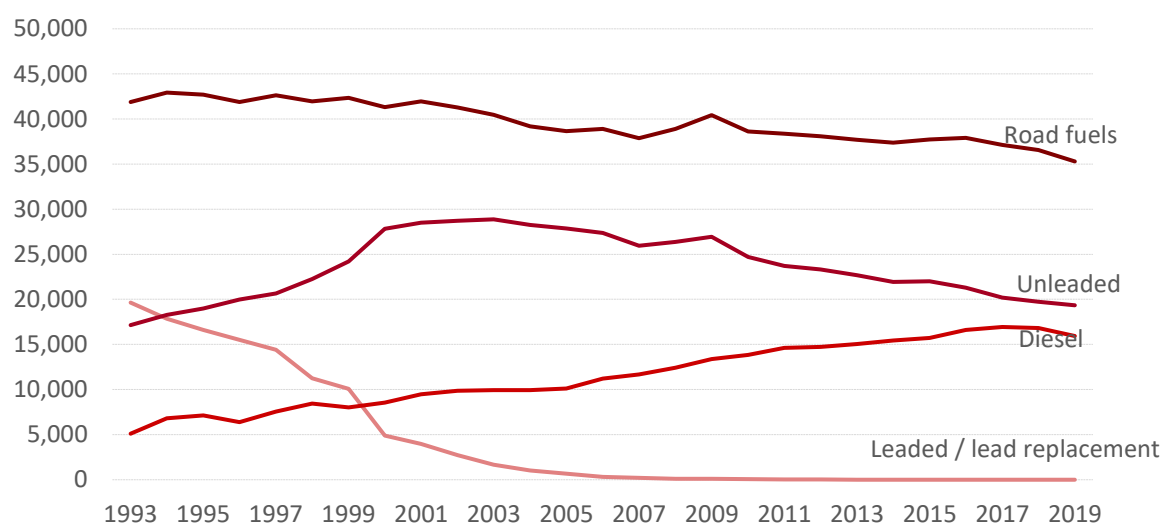
**Table 6 - Road fuel consumption, 2015 to 2019; tonnes**

	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Unleaded petrol	21,997	21,303	20,205	19,750 <sup>(r)</sup>	19,356
Motor diesel	15,731	16,612	16,938	16,814	15,938
<b>Total road fuels</b>	<b>37,728</b>	<b>37,915</b>	<b>37,143</b>	<b>36,563<sup>(r)</sup></b>	<b>35,294</b>

<sup>(r)</sup> revised

The short-term changes in consumption of petrol and motor diesel reflect the general downward trend in the overall consumption of road fuel since the mid-1990's (Figure 10).

Figure 10 - Road fuel consumption, 1993 to 2019; tonnes



## Energy use in homes

Table 7 shows final energy consumption by households in Jersey over the period from 2015 to 2019, 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, 2015 to 2019; toe

	2015	2016	2017	2018	2019
Petroleum products	26,050	27,089	27,129	26,323	24,661
Manufactured gas	2,984	2,829	2,669	2,785	2,660
Electricity	27,107	27,542	27,572	28,803	29,171
<b>Total household consumption</b>	<b>56,140</b>	<b>57,460</b>	<b>57,370</b>	<b>57,911</b>	<b>56,492</b>

In 2019 electricity consumption accounted for about half of total domestic consumption (52%); petroleum products accounted for 44%; and gas accounted for the remainder.

Statistics Jersey

18 February 2021

## Appendix

Table A1 - Average (mean) daily air temperature in Jersey, 2009-2019; degrees Celsius, °C

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Jan</b>	4.5	4.4	6.6	8.2	6.3	8.3	7.7	7.8	5.9	8.5	7.0
<b>Feb</b>	6.1	6.0	8.5	5.7	5.3	8.3	6.3	7.6	8.0	4.9	8.6
<b>Mar</b>	8.8	7.8	9.0	10.3	6.1	9.5	8.8	7.8	10.4	7.5	10.0
<b>Apr</b>	11.2	11.3	13.8	9.7	9.2	11.8	12.4	9.8	11.1	11.9	11.5
<b>May</b>	13.5	13.0	14.0	13.3	12.0	13.8	13.4	13.9	14.7	14.6	13.1
<b>Jun</b>	16.8	16.7	15.6	16.1	14.7	17.1	16.6	16.0	18.0	16.9	16.5
<b>Jul</b>	18.1	18.7	17.0	18.1	19.2	19.1	18.4	17.8	18.5	20.2	19.7
<b>Aug</b>	18.3	17.5	17.5	18.6	18.7	17.4	18.0	18.9	17.7	18.5	18.6
<b>Sep</b>	16.8	16.1	17.5	15.7	16.6	18.5	15.4	18.1	15.4	16.8	16.7
<b>Oct</b>	14.2	13.6	14.6	13.3	14.9	15.7	13.5	13.1	14.4	13.7	13.8
<b>Nov</b>	11.4	9.0	12.4	9.4	9.6	11.7	12.6	9.8	10.3	10.1	9.4
<b>Dec</b>	6.9	4.2	9.0	8.3	8.5	8.8	11.6	8.2	8.2	9.2	8.6
<b>Year</b>	<b>12.2</b>	<b>11.5</b>	<b>13.0</b>	<b>12.2</b>	<b>11.8</b>	<b>13.3</b>	<b>12.9</b>	<b>12.4</b>	<b>12.7</b>	<b>12.7</b>	<b>12.8</b>

## 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 2015 (DUKES A1-A3)” published by the UK Department for Business, Energy & Industrial Strategy:

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

**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.