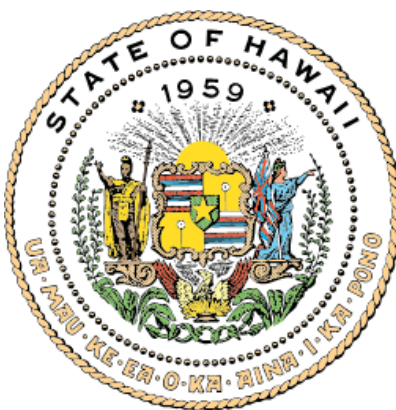


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# Hawai'i's Petroleum Consumption and Expenditures by Product and by Sector

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Department of Business, Economic Development & Tourism  
Research and Economic Analysis Division

This report was produced by the Research and Economic Analysis Division (READ) of the Department of Business, Economic Development & Tourism (DBEDT). This report was created by Binsheng Li, Ph.D. under the direction of the Economic Research Administrator Eugene Tian, Ph.D. Joseph Roos, Ph.D., Economic Research Program Manager, reviewed and provided inputs for this report.

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## LIST OF ABBREVIATIONS

Abbreviation	Definition
BTU	British Thermal Unit
MBTU	Million BTUs
BBTU	Billion BTUs
BBL	Physical Unit in Barrels
TBBL	Thousand BBLs
MBBL	Million BBLs
EIA	U.S. Energy Information Administration
GDP	(Nominal) Gross Domestic Product
Real GDP	Real Gross Domestic Product

## Executive Summary

This report provides data and analysis on petroleum consumption and expenditures by type of petroleum product and by usage sector. Consumption is measured by two units: heat content in a British thermal unit (BTU) and physical unit in barrels (BBL). Expenditures are measured in U.S. dollars.

Hawai'i has been heavily dependent on imported petroleum to meet its energy needs. During the 1960s and 1970s, Hawai'i's primary energy consumption was almost entirely dependent on imported petroleum. In 2020, petroleum consumption, in terms of British thermal unit (BTU), accounted for 80.7% of the total primary energy consumption. The remaining 19.3% was consumption of non-petroleum sources such as coal, natural gas, and renewable sources.

Hawai'i's petroleum consumption increased from 1960 to 1990 but decreased from 1990 to 2020. From 1990 to 2020, Hawai'i's total primary energy consumption decreased 1.1% per year on average and total petroleum consumption decreased 1.5% per year on average. During this period, total primary energy consumption per capita decreased 1.5% per year and petroleum consumption per capita decreased 1.9% per year.

In 2020, Hawai'i consumed about 191,546 billion BTUs (BBTUs) or 33.8 million barrels (MBBLs) of petroleum products. Measured by barrels, jet fuel consumption accounted for 26.8% of total petroleum consumption; followed by motor gasoline (25.5%), residual fuel oil (25.2%), distillate fuel oil (14.4%), and other petroleum products (8.1%). Other petroleum products mainly include still gas (3.9%), LPG/HGL (2.6%), and asphalt and road oil (0.7%).

From 1960 to 1990, the consumption of all major types of petroleum products increased. Distillate fuel oil increased the most at 6.9% per year on average; followed by residual fuel oil at 4.7%, jet fuel at 3.6%, motor gasoline at 3.1%, and other petroleum products at 0.3%. From 1990 to 2020, the consumption of all major types of petroleum products decreased 3.7% per year on average.

In terms of physical units (measured by barrels), the transportation sector accounted for 59.1% of total petroleum consumption in Hawai'i in 2020, followed by the electric power sector (29.4%), the industrial sector (7.3%), the commercial sector (3.8%), and the residential sector (0.4%). From 1990 to 2020, petroleum used for electricity generation decreased from 15.7 million barrels in 1990 to 10.0 million barrels in 2020, an average annual decrease of 1.5%.

Petroleum expenditures were mainly affected by petroleum prices. Between 1990 and 2020, Hawai'i's total petroleum expenditure increased from \$1.8 billion in 1990 to \$2.8 billion in 2020, an increase of 1.5% per year on average. As a price indicator, the average petroleum expenditure per barrel increased from \$35.29 in

1990 to \$82.55 in 2020, an increase of 2.9% per year. The volume of petroleum (in barrels) consumed decreased 1.3% per year during this period.

Among the four major petroleum products during the past 30 years (1990-2020), the average annual growth rate for expenditure on motor gasoline increased 2.6% per year; followed by distillate fuel oil at 2.0%, jet fuel at 0.5%, and residual fuel oil at 0.1%.

In 2020, among the four major petroleum products consumed in Hawai'i, the average expenditure on motor gasoline was the highest at \$134.1/BBL; followed by distillate fuel oil at \$111.3/BBL, residual fuel oil at \$55.8/BBL, and jet fuel at \$55.3/BBL.

Of the total petroleum expenditure of \$2.8 billion in 2020, motor gasoline accounted for the most at 41.3%; followed by distillate fuel oil at 19.5%, jet fuel at 18.0%, residual fuel oil at 17%, and other petroleum products at 4.2%.

Expenditures on other petroleum products mainly include LPG/HGL (\$61.1 million or 2.2% of total petroleum expenditure), lubricants (\$30.9 million or 1.1%), and asphalt and road oil (\$23.0 million or 0.8%). Expenditures on aviation gasoline were only \$2.7 million.

Among the five usage sectors, petroleum expenditures for the transportation sector accounted for the most at 71.4%; followed by the electric power sector at 20.8%, the commercial sector at 3.6%, the industrial sector at 3.5%, and the residential sector at 0.7%.

## 1. Introduction

Petroleum plays an important role in Hawai'i's economy. Before 1980, Hawai'i's primary energy consumption was almost entirely dependent on imported petroleum. Renewable energy accounted for less than 1% of total primary energy consumption, and there were no other types of fossil energy in Hawai'i.

Diversification away from petroleum has been an important energy strategy for Hawai'i. This report provides data and analysis on the historical trend of Hawai'i's petroleum consumption by type of product and by usage sector. Using the data in the report, readers can make assessments regarding the progress of Hawai'i's energy diversification and see how energy efficiency has been changing over time.

This study attempts to answer the following questions:

- What kind of petroleum products are consumed in Hawai'i?
- Who are the main consumers of petroleum products in Hawai'i?
- How has the consumption of petroleum products changed over time?
- What kind of petroleum products can be substituted by other types of energy?
- What are the costs of petroleum products consumed in Hawai'i?
- How have the costs of petroleum products changed over time?
- How has energy efficiency, measured by GDP produced per million BTU of primary energy consumed, changed over time?

This report updates the previous report by including the most recent data available.

The main data source for this report is the U.S. Energy Information Administration (EIA). The EIA data includes two parts: data from the State Energy Data System (SEDS) and data from the Detailed State Data in the Electricity (DSDE) section.



## **2. An Overview of Hawai'i's Total Energy and Petroleum Consumption**

Over the past 60 years from 1960 to 2020, Hawai'i's total primary energy consumption increased 1.5% per year on average, and total petroleum consumption increased 1.1% per year on average. Increased primary energy consumption was mainly due to population and tourism growth. On a per capita basis, total primary energy consumption per capita increased only 0.2% per year and petroleum consumption per capita decreased 0.2%.

As shown in Table 2.1, the increased total primary energy and petroleum consumption over the past 60 years was mainly due to increases from 1960 to 1990. From 1960 to 1990, Hawai'i's total primary energy consumption increased 4.2% per year on average, and total petroleum consumption increased 3.8% per year on average. During this period, total primary energy consumption per capita increased 1.9% per year and petroleum consumption per capita increased 1.6% per year.

From 1990 to 2020, Hawai'i's total primary energy consumption decreased 1.1% per year on average; from 1990 to 2001 when Hawai'i's economy was stagnant, total primary energy consumption decreased 1.6% per year; from 2001 to 2007 when the economy was booming, total primary energy consumption increased 3.8% per year; and from 2007 to 2020, total primary energy consumption decreased 2.8% per year. Total petroleum consumption followed a similar pattern during this period; from 1990 to 2020, Hawai'i's petroleum consumption decreased 1.5% per year on average; from 1990 to 2001, it decreased 1.8% per year; from 2001 to 2007, it increased 4.0% per year; and from 2007 to 2020, it decreased 3.6% per year. From 1990 to 2020, total primary energy consumption per capita decreased 1.5% per year and petroleum consumption per capita decreased 1.9% per year.

In 2020, Hawai'i consumed about 232.5 trillion BTUs of primary energy, of which 187.6 trillion BTUs were from petroleum. Petroleum consumption accounted for about 80.7% of total primary energy consumption in 2020. Total primary energy consumption per capita was about 162 million BTUs, and total petroleum consumption per capita was about 130 million BTUs.

As shown in Table 2.2, from 1960 to 1990, the consumption of all major types of petroleum products increased. Distillate fuel oil increased the most at 6.9% per year; followed by residual fuel oil at 4.7%, jet fuel at 3.8%, motor gasoline at 3.1%, and other petroleum products at 0.1%. From 1990 to 2020, the consumption of all major types of petroleum products decreased.

**Table 2.1. Hawai'i Total Primary Energy and Petroleum Consumption**

Year	Total Primary Energy BTUs	Petroleum Consumption Total* BTUs	% of Petroleum Consumption %	De facto Population Persons	Primary Energy Per Capita MBTUs/Capita	Petroleum Consumption Per Capita MBTUs/Capita
1960	94,839	94,547	99.7%	651,200	146	145
1970	196,947	195,388	99.2%	798,600	247	245
1980	262,347	249,539	95.1%	1,054,218	249	237
1985	248,554	232,123	93.4%	1,136,160	219	204
1990	321,420	292,762	91.1%	1,257,319	256	233
1995	296,775	252,252	85.0%	1,298,096	229	194
2000	273,307	235,191	86.1%	1,336,005	205	176
2005	324,737	293,847	90.5%	1,412,500	230	208
2006	327,288	295,474	90.3%	1,430,516	229	207
2007	337,829	303,540	89.9%	1,433,461	236	212
2008	276,654	239,055	86.4%	1,432,620	193	167
2009	275,928	238,944	86.6%	1,442,556	191	166
2010	297,556	262,036	88.1%	1,468,736	203	178
2011	302,550	265,802	87.9%	1,495,947	202	178
2012	297,399	258,992	87.1%	1,529,466	194	169
2013	301,914	260,439	86.3%	1,556,369	194	167
2014	295,244	249,839	84.6%	1,574,866	187	159
2015	298,992	253,735	84.9%	1,597,450	187	159
2016	300,390	251,421	83.7%	1,611,051	186	156
2017	308,376	261,251	84.7%	1,624,163	190	161
2018	306,342	260,643	85.1%	1,634,237	187	159
2019	307,764	263,501	85.6%	1,632,588	189	161
2020	232,516	187,551	80.7%	1,438,653	162	130
<b>Annual Average Growth Rate (%)</b>						
1960-1970	7.6%	7.5%	0.0%	2.1%	5.4%	5.4%
1970-1980	2.9%	2.5%	-0.4%	2.8%	0.1%	-0.3%
1980-1990	2.1%	1.6%	-0.4%	1.8%	0.3%	-0.2%
1990-2000	-1.6%	-2.2%	-0.6%	0.6%	-2.2%	-2.8%
2000-2010	0.9%	1.1%	0.2%	1.0%	-0.1%	0.1%
2010-2020	-2.4%	-3.3%	-0.9%	-0.2%	-2.2%	-3.1%
1960-1990	4.2%	3.8%	-0.3%	2.2%	1.9%	1.6%
1990-2020	-1.1%	-1.5%	-0.4%	0.5%	-1.5%	-1.9%
1960-2020	1.5%	1.1%	-0.4%	1.3%	0.2%	-0.2%

Source: Energy Information Administration, State Energy Data System

\*Does not include fuel ethanol

**Table 2.2. Hawai'i Petroleum Consumption by Product in Heat Content**

Year	Petroleum Consumption in Billion Btus						Share of Petroleum				
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total*	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum
1960	23,519	29,962	18,011	5,161	17,894	94,547	24.9%	31.7%	19.0%	5.5%	18.9%
1965	42,262	45,455	21,444	9,391	10,743	129,295	32.7%	35.2%	16.6%	7.3%	8.3%
1970	80,060	63,841	29,892	9,871	11,724	195,388	41.0%	32.7%	15.3%	5.1%	6.0%
1975	83,464	70,758	35,542	11,346	11,770	212,880	39.2%	33.2%	16.7%	5.3%	5.5%
1980	79,244	82,963	37,985	34,875	14,472	249,539	31.8%	33.2%	15.2%	14.0%	5.8%
1985	74,436	82,895	39,890	26,361	8,541	232,123	32.1%	35.7%	17.2%	11.4%	3.7%
1990	71,051	119,871	45,543	37,796	18,501	292,762	24.3%	40.9%	15.6%	12.9%	6.3%
1995	56,358	90,994	49,000	33,682	22,218	252,252	22.3%	36.1%	19.4%	13.4%	8.8%
2000	53,511	85,001	48,314	29,642	18,723	235,191	22.8%	36.1%	20.5%	12.6%	8.0%
2005	92,831	83,048	56,998	42,513	19,649	295,039	31.5%	28.1%	19.3%	14.4%	6.7%
2006	86,945	92,336	59,797	38,830	18,927	296,835	29.3%	31.1%	20.1%	13.1%	6.4%
2007	72,329	102,594	58,350	53,756	18,249	305,278	23.7%	33.6%	19.1%	17.6%	6.0%
2008	60,679	78,093	54,509	31,794	17,204	242,279	25.0%	32.2%	22.5%	13.1%	7.1%
2009	52,748	77,860	55,144	34,966	22,122	242,840	21.7%	32.1%	22.7%	14.4%	9.1%
2010	76,176	74,747	50,633	39,593	23,844	264,993	28.7%	28.2%	19.1%	14.9%	9.0%
2011	78,994	73,623	56,427	36,432	24,135	269,611	29.3%	27.3%	20.9%	13.5%	9.0%
2012	83,443	67,437	53,588	35,175	22,684	262,327	31.8%	25.7%	20.4%	13.4%	8.6%
2013	87,629	65,250	54,372	32,957	23,790	263,998	33.2%	24.7%	20.6%	12.5%	9.0%
2014	89,198	62,060	54,793	25,139	22,561	253,751	35.2%	24.5%	21.6%	9.9%	8.9%
2015	92,249	61,257	55,895	27,255	21,928	258,584	35.7%	23.7%	21.6%	10.5%	8.5%
2016	91,487	60,853	56,718	26,113	21,477	256,648	35.6%	23.7%	22.1%	10.2%	8.4%
2017	97,496	63,225	56,404	27,390	22,258	266,773	36.5%	23.7%	21.1%	10.3%	8.3%
2018	98,918	62,030	55,370	30,307	19,360	265,985	37.2%	23.3%	20.8%	11.4%	7.3%
2019	100,812	63,464	55,684	29,346	19,255	268,561	37.5%	23.6%	20.7%	10.9%	7.2%
2020	51,358	53,582	43,475	28,079	15,052	191,546	26.8%	28.0%	22.7%	14.7%	7.9%
Annual Average Growth Rate (%)											
1960-1970	13.0%	7.9%	5.2%	6.7%	-4.1%	7.5%	5.1%	0.3%	-2.2%	-0.8%	-10.9%
1970-1980	-0.1%	2.7%	2.4%	13.5%	2.1%	2.5%	-2.5%	0.2%	-0.1%	10.7%	-0.3%
1980-1990	-1.1%	3.7%	1.8%	0.8%	2.5%	1.6%	-2.7%	2.1%	0.2%	-0.8%	0.9%
1990-2000	-2.8%	-3.4%	0.6%	-2.4%	0.1%	-2.2%	-0.6%	-1.2%	2.8%	-0.2%	2.3%
2000-2010	3.6%	-1.3%	0.5%	2.9%	2.4%	1.2%	2.4%	-2.4%	-0.7%	1.7%	1.2%
2010-2020	-3.9%	-3.3%	-1.5%	-3.4%	-4.5%	-3.2%	-0.7%	-0.1%	1.7%	-0.2%	-1.3%
1960-1990	3.8%	4.7%	3.1%	6.9%	0.1%	3.8%	-0.1%	0.9%	-0.7%	2.9%	-3.6%
1990-2020	-1.1%	-2.6%	-0.2%	-1.0%	-0.7%	-1.4%	0.3%	-1.3%	1.3%	0.4%	0.7%
1960-2020	1.3%	1.0%	1.5%	2.9%	-0.3%	1.2%	0.1%	-0.2%	0.3%	1.7%	-1.5%

\*Include fuel ethanol.

Source: Energy Information Administration, State Energy Data System

As shown in Table 2.3, from 1960 to 2020, Hawai'i's total petroleum consumption increased from about 16.8 million barrels (MBBLs) to 33.8 MBBLs. The share of distillate fuel increased the most at 9.2 percentage points from 5.3% to 14.4%; followed by motor gasoline at 5.1 percentage points and jet fuel at 1.1 percentage points. The shares of residual fuel oil and other petroleum products decreased 3.1 percentage points and 12.3 percentage points, respectively.

**Table 2.3. Hawai'i Petroleum Consumption by Product in Physical Unit**

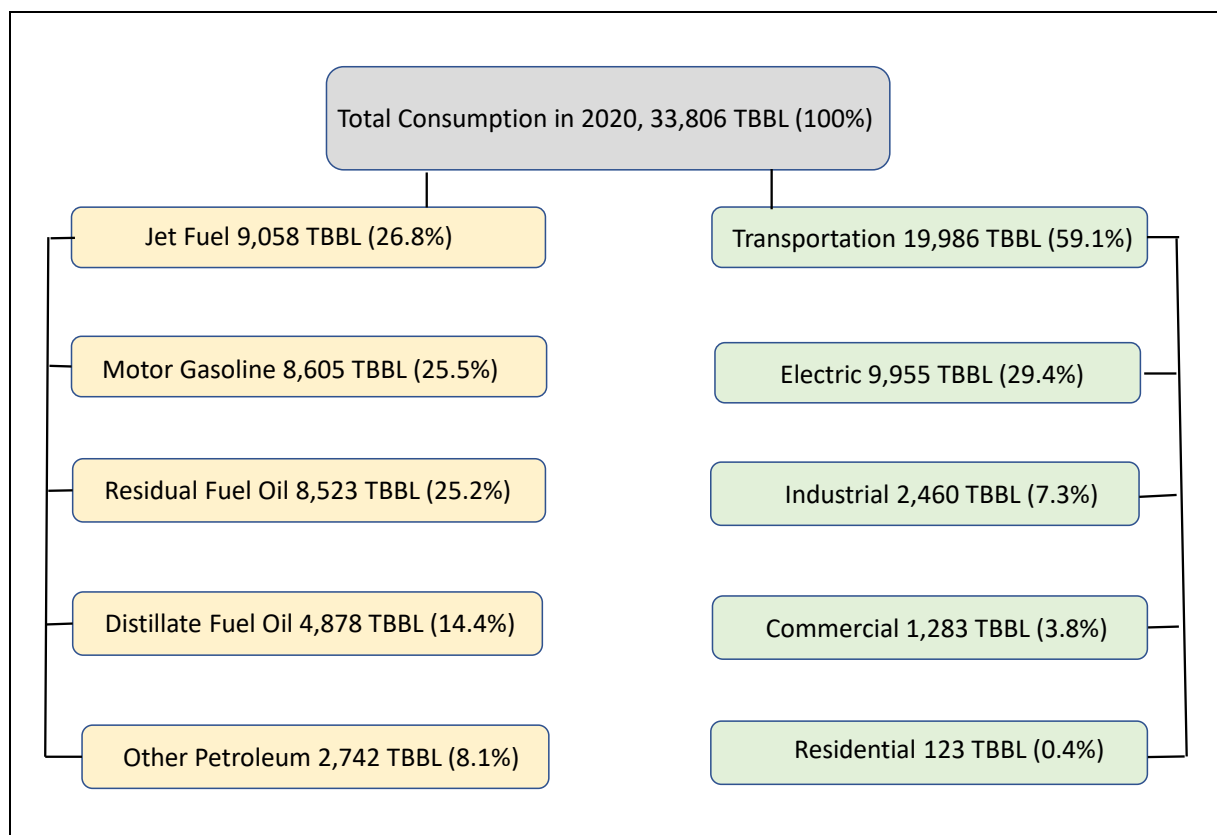
Year	Petroleum Consumption in Thousand Barrels						Share of Petroleum				
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum
1960	4,321	4,766	3,429	886	3,442	16,844	25.7%	28.3%	20.4%	5.3%	20.4%
1965	7,618	7,230	4,082	1,612	1,936	22,478	33.9%	32.2%	18.2%	7.2%	8.6%
1970	14,273	10,154	5,691	1,695	2,292	34,105	41.9%	29.8%	16.7%	5.0%	6.7%
1975	14,849	11,255	6,766	1,948	2,279	37,097	40.0%	30.3%	18.2%	5.3%	6.1%
1980	14,116	13,196	7,231	5,987	3,032	43,562	32.4%	30.3%	16.6%	13.7%	7.0%
1985	13,260	13,185	7,594	4,526	1,441	40,006	33.1%	33.0%	19.0%	11.3%	3.6%
1990	12,646	19,067	8,670	6,489	3,143	50,015	25.3%	38.1%	17.3%	13.0%	6.3%
1995	9,940	14,473	9,416	5,787	4,226	43,842	22.7%	33.0%	21.5%	13.2%	9.6%
2000	9,438	13,520	9,289	5,094	3,250	40,591	23.3%	33.3%	22.9%	12.5%	8.0%
2005	16,372	13,210	10,978	7,307	3,400	51,267	31.9%	25.8%	21.4%	14.3%	6.6%
2006	15,334	14,687	11,533	6,691	3,319	51,564	29.7%	28.5%	22.4%	13.0%	6.4%
2007	12,756	16,318	11,348	9,294	3,189	52,905	24.1%	30.8%	21.4%	17.6%	6.0%
2008	10,702	12,421	10,675	5,501	3,098	42,397	25.2%	29.3%	25.2%	13.0%	7.3%
2009	9,303	12,384	10,834	6,053	3,898	42,472	21.9%	29.2%	25.5%	14.3%	9.2%
2010	13,435	11,889	9,993	6,856	4,183	46,356	29.0%	25.6%	21.6%	14.8%	9.0%
2011	13,932	11,710	11,145	6,314	4,266	47,367	29.4%	24.7%	23.5%	13.3%	9.0%
2012	14,717	10,726	10,586	6,099	4,045	46,173	31.9%	23.2%	22.9%	13.2%	8.8%
2013	15,455	10,378	10,746	5,719	4,172	46,470	33.3%	22.3%	23.1%	12.3%	9.0%
2014	15,732	9,871	10,831	4,362	3,989	44,785	35.1%	22.0%	24.2%	9.7%	8.9%
2015	16,270	9,744	11,053	4,730	3,838	45,635	35.7%	21.4%	24.2%	10.4%	8.4%
2016	16,135	9,679	11,220	4,536	3,710	45,280	35.6%	21.4%	24.8%	10.0%	8.2%
2017	17,195	10,056	11,162	4,758	3,920	47,091	36.5%	21.4%	23.7%	10.1%	8.3%
2018	17,446	9,866	10,956	5,263	3,447	46,978	37.1%	21.0%	23.3%	11.2%	7.3%
2019	17,780	10,094	11,022	5,096	3,443	47,435	37.5%	21.3%	23.2%	10.7%	7.3%
2020	9,058	8,523	8,605	4,878	2,742	33,806	26.8%	25.2%	25.5%	14.4%	8.1%
Annual Average Growth Rate (%)											
1960-1970	12.7%	7.9%	5.2%	6.7%	-4.0%	7.3%	5.0%	0.5%	-2.0%	-0.6%	-10.5%
1970-1980	-0.1%	2.7%	2.4%	13.4%	2.8%	2.5%	-2.5%	0.2%	-0.1%	10.7%	0.4%
1980-1990	-1.1%	3.7%	1.8%	0.8%	0.4%	1.4%	-2.5%	2.3%	0.4%	-0.6%	-1.0%
1990-2000	-2.9%	-3.4%	0.7%	-2.4%	0.3%	-2.1%	-0.8%	-1.3%	2.8%	-0.3%	2.5%
2000-2010	3.6%	-1.3%	0.7%	3.0%	2.6%	1.3%	2.2%	-2.6%	-0.6%	1.7%	1.2%
2010-2020	-3.9%	-3.3%	-1.5%	-3.3%	-4.1%	-3.1%	-0.8%	-0.2%	1.7%	-0.2%	-1.1%
1960-1990	3.6%	4.7%	3.1%	6.9%	-0.3%	3.7%	0.0%	1.0%	-0.5%	3.1%	-3.9%
1990-2020	-1.1%	-2.6%	0.0%	-0.9%	-0.5%	-1.3%	0.2%	-1.4%	1.3%	0.4%	0.9%
1960-2020	1.2%	1.0%	1.5%	2.9%	-0.4%	1.2%	0.1%	-0.2%	0.4%	1.7%	-1.5%

Source: Energy Information Administration, State Energy Data System

As shown in Figure 2.1, in 2020, Hawai'i consumed about 33.8 MBBLs of petroleum products. Jet fuel accounted for about 26.8% of total petroleum consumption; followed by motor gasoline (25.5%), residual fuel oil (25.2%), distillate fuel oil (14.4%), and other petroleum products (8.1%). Other petroleum products mainly include still gas (3.9%), LPG/HGL (2.6%), asphalt and road oil (0.7%), and lubricants (0.2%).

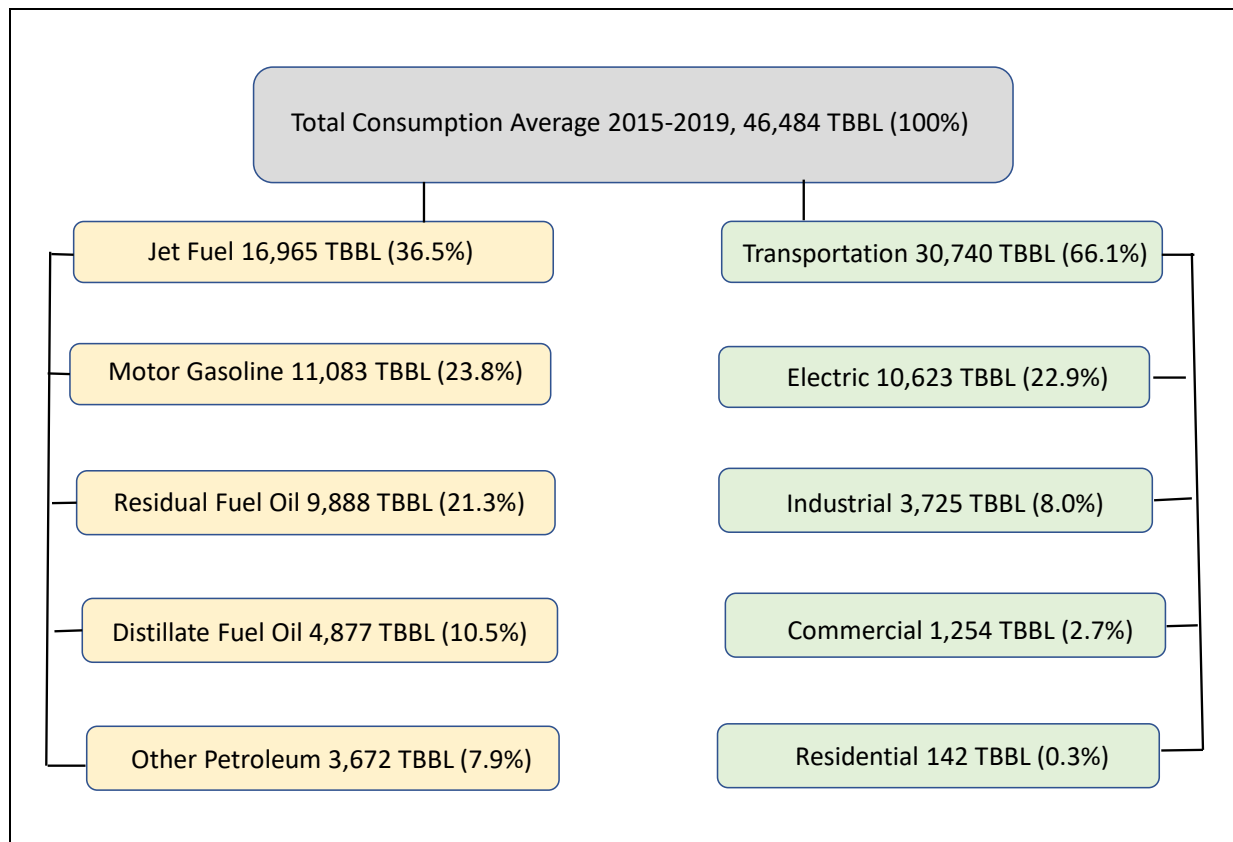
Hawai'i's petroleum products were mainly consumed in the transportation and electric power sectors. In 2020, the two sectors accounted for 59.1% and 29.4% of total petroleum consumption, respectively. The three other sectors together only accounted for 11.5% of total petroleum consumption.

**Figure 2.1. Hawai'i Petroleum Consumption (TBBL): 2020**



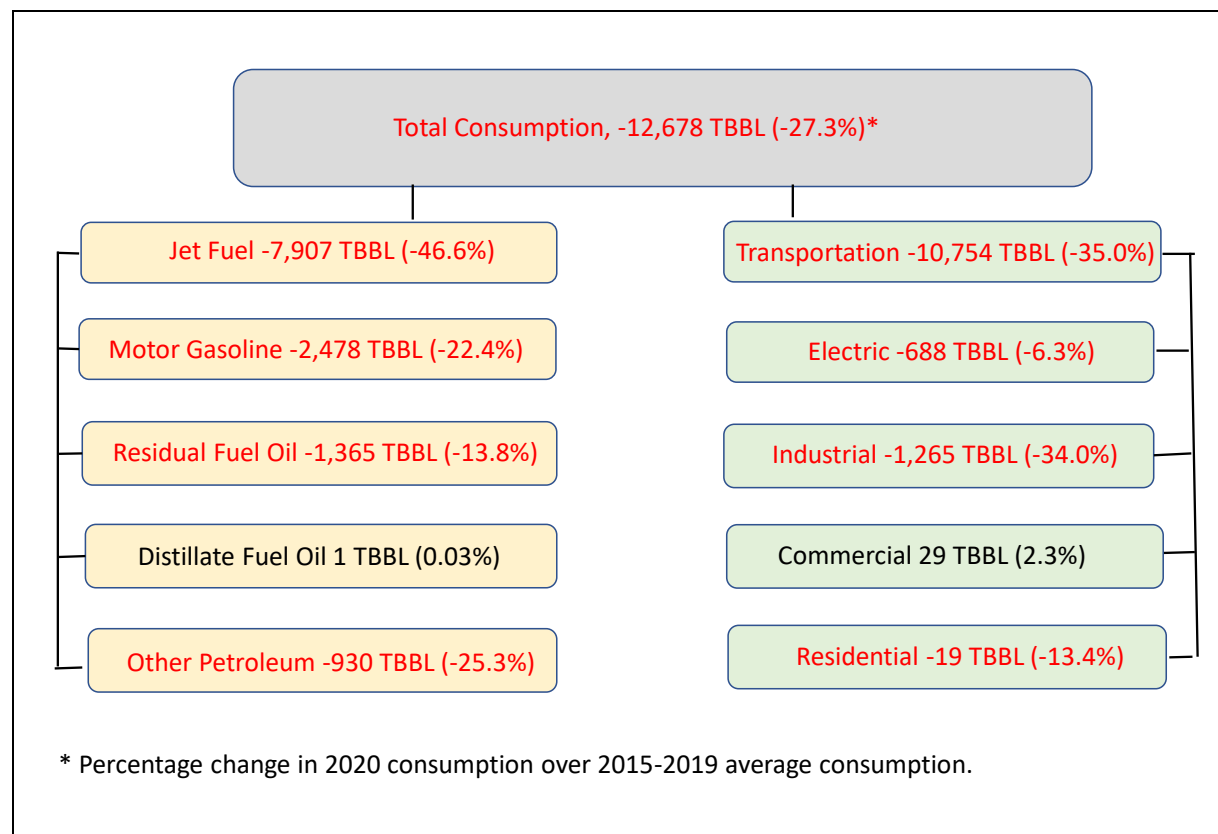
Before 2020, total petroleum consumption was relatively stable. As shown in Figure 2.2, from 2015 to 2019, the average total petroleum consumption in Hawai'i was about 46.5 MMBLs. Jet fuel accounted for about 36.5% of total petroleum consumption; followed by motor gasoline (23.8%), residual fuel oil (21.3%), distillate fuel oil (10.5%), and other petroleum products (7.9%).

**Figure 2.2. Average 2015-2019 Hawai'i Petroleum Consumption (TBBL)**



As shown in Figure 2.3, due to the impact of COVID-19, Hawai'i's total petroleum consumption in 2020 decreased 27.3% from the average consumption of the previous five years. Compared with the 2015-2019 five-year average, the 2020 consumption decreased the most for jet fuel (46.6%); followed by other petroleum products (25.3%), motor gasoline (22.4%), and residual fuel oil (13.8%). The consumption of distillate fuel increased slightly.

**Figure 2.3. Changes in Hawai'i Petroleum Consumption:  
2020 over 2015-2019 Average**



### **3. Hawai'i's Total Petroleum Consumption by Sector**

Petroleum products are consumed in five sectors of usage: residential, commercial, industrial, transportation, and electric power (electricity).

Tables 3.1-3.2 show Hawai'i's total petroleum consumption measured in heat content by sector. In 2020, the transportation sector accounted for 56.9% of total petroleum consumption; followed by the electric power sector (32.1%), the industrial sector (7.8%), the commercial sector (3.0%), and the residential sector (0.2%).

From 1960 to 2020, the share of the electric power sector increased the most at 13.8 percentage points; followed by the commercial sector at 1.8 percentage points and the residential sector at 0.1 of a percentage point. The shares of the transportation sector and the industrial sector decreased 8.4 percentage points and 7.3 percentage points, respectively. The increased share of the electric power sector from 1960 to 2020 was due to increases before 1990. From 1990 to 2020, the share of the electric power sector decreased 1.3 percentage points, while the share of the transportation sector increased 4.1 percentage points.

Tables 3.3-3.4 show Hawai'i's total petroleum consumption measured in physical units by sectors. In 2020, the transportation sector consumed about 20.0 MBBLs of total petroleum products; followed by the electric power sector (10.0 MBBLs), the industrial sector (2.5 MBBLs), the commercial sector (1.3 MBBLs), and the residential sector (0.1 MBBLs).

From 1960 to 2020, total petroleum consumption in Hawai'i increased by about 17.0 MBBLs; consumption in the transportation sector increased the most at 8.5 MBBLs; consumption in the electric power sector increased 7.2 MBBLs; consumption in the industrial sector increased 0.1 MBBLs; consumption in the commercial sector increased 1.1 MBBLs; and consumption in the residential sector increased 0.1 MBBLs.

The increased petroleum consumption in the transportation and the electric power sector from 1960 to 2020 was mainly due to the increases in the period from 1960 to 1990. During this period, petroleum consumption in the transportation sector increased 16.2 MBBLs and petroleum consumption in the electric power sector increased 12.9 MBBLs. From 1990 to 2020, petroleum consumption in the electric power sector decreased 5.7 MBBLs and petroleum consumption in the transportation sector decreased 7.7 MBBLs.



**Table 3.1. Hawai'i Petroleum Consumption by Sector in Heat Content**

Units: Billion Btu						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	100	1,115	14,243	61,778	17,311	94,547
1970	770	3,702	22,879	125,344	42,693	195,388
1975	550	2,258	21,202	130,543	58,328	212,880
1980	738	3,967	28,577	146,713	69,543	249,539
1985	173	1,439	18,521	142,888	69,102	232,123
1990	219	8,495	31,902	154,545	97,601	292,762
1995	157	2,691	31,163	138,041	80,199	252,252
2000	745	2,611	22,388	125,096	84,350	235,191
2001	756	2,133	20,979	131,913	84,037	239,817
2002	759	3,117	22,071	140,049	91,446	257,441
2003	563	2,632	22,155	162,790	81,275	269,414
2004	574	3,254	22,148	171,896	84,992	282,864
2005	585	3,282	26,000	179,067	86,104	295,039
2006	617	3,329	25,166	181,191	86,531	296,835
2007	499	2,551	22,808	194,211	85,210	305,278
2008	1,037	2,888	20,118	136,308	81,928	242,279
2009	936	3,711	25,070	132,827	80,296	242,840
2010	919	3,629	25,661	156,655	78,128	264,993
2011	855	4,213	25,729	161,281	77,533	269,611
2012	1,254	3,727	23,608	161,459	72,278	262,327
2013	839	3,837	24,376	165,027	69,920	263,998
2014	847	4,426	23,374	158,143	66,960	253,751
2015	507	5,180	23,754	161,860	67,284	258,584
2016	691	4,816	22,916	163,302	64,923	256,648
2017	581	5,816	24,667	170,880	64,830	266,773
2018	455	5,842	21,364	173,127	65,197	265,985
2019	495	6,554	21,301	174,189	66,022	268,561
2020	472	5,755	14,854	109,046	61,419	191,546
Annual Average Growth Rate (%)						
1960-1970	22.6%	12.7%	4.9%	7.3%	9.4%	7.5%
1970-1980	-0.4%	0.7%	2.2%	1.6%	5.0%	2.5%
1980-1990	-11.4%	7.9%	1.1%	0.5%	3.4%	1.6%
1990-2000	13.0%	-11.1%	-3.5%	-2.1%	-1.4%	-2.2%
2000-2010	2.1%	3.3%	1.4%	2.3%	-0.8%	1.2%
2010-2020	-6.4%	4.7%	-5.3%	-3.6%	-2.4%	-3.2%
1960-2020	2.6%	2.8%	0.1%	1.0%	2.1%	1.2%

Source: Energy Information Administration, State Energy Data System

**Table 3.2. Percent of Hawai'i Petroleum Consumption by Sector in Heat Content**

Units: % of Total Consumption							
Year	Residential	Commercial	Industrial	Transportation	Electric	Total	Ethanol
1960	0.1%	1.2%	15.1%	65.3%	18.3%	100.0%	0.0%
1965	0.2%	1.1%	16.5%	61.1%	21.1%	100.0%	0.0%
1970	0.4%	1.9%	11.7%	64.2%	21.9%	100.0%	0.0%
1975	0.3%	1.1%	10.0%	61.3%	27.4%	100.0%	0.0%
1980	0.3%	1.6%	11.5%	58.8%	27.9%	100.0%	0.0%
1985	0.1%	0.6%	8.0%	61.6%	29.8%	100.0%	0.0%
1990	0.1%	2.9%	10.9%	52.8%	33.3%	100.0%	0.0%
1995	0.1%	1.1%	12.4%	54.7%	31.8%	100.0%	0.0%
2000	0.3%	1.1%	9.5%	53.2%	35.9%	100.0%	0.0%
2001	0.3%	0.9%	8.7%	55.0%	35.0%	100.0%	0.0%
2002	0.3%	1.2%	8.6%	54.4%	35.5%	100.0%	0.0%
2003	0.2%	1.0%	8.2%	60.4%	30.2%	100.0%	0.0%
2004	0.2%	1.2%	7.8%	60.8%	30.0%	100.0%	0.0%
2005	0.2%	1.1%	8.8%	60.7%	29.2%	100.0%	0.4%
2006	0.2%	1.1%	8.5%	61.0%	29.2%	100.0%	0.5%
2007	0.2%	0.8%	7.5%	63.6%	27.9%	100.0%	0.6%
2008	0.4%	1.2%	8.3%	56.3%	33.8%	100.0%	1.3%
2009	0.4%	1.5%	10.3%	54.7%	33.1%	100.0%	1.5%
2010	0.3%	1.4%	9.7%	59.1%	29.5%	100.0%	1.1%
2011	0.3%	1.6%	9.5%	59.8%	28.8%	100.0%	1.2%
2012	0.5%	1.4%	9.0%	61.5%	27.6%	100.0%	1.1%
2013	0.3%	1.5%	9.2%	62.5%	26.5%	100.0%	1.1%
2014	0.3%	1.7%	9.2%	62.3%	26.4%	100.0%	1.3%
2015	0.2%	2.0%	9.2%	62.6%	26.0%	100.0%	1.5%
2016	0.3%	1.9%	8.9%	63.6%	25.3%	100.0%	1.6%
2017	0.2%	2.2%	9.2%	64.1%	24.3%	100.0%	1.5%
2018	0.2%	2.2%	8.0%	65.1%	24.5%	100.0%	1.5%
2019	0.2%	2.4%	7.9%	64.9%	24.6%	100.0%	1.5%
2020	0.2%	3.0%	7.8%	56.9%	32.1%	100.0%	1.7%

Source: Energy Information Administration, State Energy Data System

**Table 3.3. Hawai'i Petroleum Consumption by Sector in Physical Unit**

<b>Units: Thousand Barrels</b>						
<b>Year</b>	<b>Residential</b>	<b>Commercial</b>	<b>Industrial</b>	<b>Transportation</b>	<b>Electric</b>	<b>Total</b>
<b>1960</b>	26	209	2,367	11,487	2,756	16,844
<b>1970</b>	200	760	3,874	22,473	6,798	34,105
<b>1975</b>	143	477	3,648	23,520	9,309	37,097
<b>1980</b>	192	792	5,135	26,317	11,127	43,562
<b>1985</b>	45	275	2,997	25,641	11,047	40,006
<b>1990</b>	57	1,430	5,231	27,639	15,657	50,015
<b>1995</b>	40	480	5,643	24,759	12,921	43,842
<b>2000</b>	194	558	3,685	22,532	13,623	40,591
<b>2001</b>	197	478	3,513	23,704	13,588	41,479
<b>2002</b>	197	648	3,779	25,306	14,842	44,772
<b>2003</b>	146	536	3,733	29,347	13,098	46,861
<b>2004</b>	149	644	3,704	30,897	13,704	49,098
<b>2005</b>	152	651	4,298	32,278	13,888	51,267
<b>2006</b>	159	662	4,194	32,597	13,952	51,564
<b>2007</b>	128	517	3,844	34,678	13,738	52,905
<b>2008</b>	267	636	3,367	24,917	13,209	42,397
<b>2009</b>	242	825	4,131	24,320	12,954	42,472
<b>2010</b>	239	808	4,216	28,483	12,610	46,356
<b>2011</b>	222	943	4,233	29,451	12,518	47,367
<b>2012</b>	326	833	3,897	29,439	11,677	46,173
<b>2013</b>	218	867	3,992	30,098	11,295	46,470
<b>2014</b>	220	987	3,836	28,919	10,822	44,785
<b>2015</b>	132	1,138	3,920	29,565	10,880	45,635
<b>2016</b>	180	1,076	3,696	29,829	10,498	45,280
<b>2017</b>	151	1,311	4,015	31,125	10,488	47,091
<b>2018</b>	119	1,301	3,505	31,503	10,551	46,978
<b>2019</b>	129	1,446	3,487	31,678	10,696	47,435
<b>2020</b>	123	1,283	2,460	19,986	9,955	33,806
<b>Annual Average Growth Rate (%)</b>						
<b>1960-1970</b>	22.6%	13.8%	5.1%	6.9%	9.4%	7.3%
<b>1970-1980</b>	-0.4%	0.4%	2.9%	1.6%	5.1%	2.5%
<b>1980-1990</b>	-11.4%	6.1%	0.2%	0.5%	3.5%	1.4%
<b>1990-2000</b>	13.0%	-9.0%	-3.4%	-2.0%	-1.4%	-2.1%
<b>2000-2010</b>	2.1%	3.8%	1.4%	2.4%	-0.8%	1.3%
<b>2010-2020</b>	-6.4%	4.7%	-5.2%	-3.5%	-2.3%	-3.1%
<b>1960-2020</b>	2.6%	3.1%	0.1%	0.9%	2.2%	1.2%

Source: Energy Information Administration, State Energy Data System

**Table 3.4. Percent of Hawai'i Petroleum Consumption by Sector in Physical Unit**

Year	Units: % of Total Consumption					Total
	Residential	Commercial	Industrial	Transportation	Electric	
1960	0.2%	1.2%	14.1%	68.2%	16.4%	100.0%
1965	0.2%	1.3%	15.6%	63.6%	19.4%	100.0%
1970	0.6%	2.2%	11.4%	65.9%	19.9%	100.0%
1975	0.4%	1.3%	9.8%	63.4%	25.1%	100.0%
1980	0.4%	1.8%	11.8%	60.4%	25.5%	100.0%
1985	0.1%	0.7%	7.5%	64.1%	27.6%	100.0%
1990	0.1%	2.9%	10.5%	55.3%	31.3%	100.0%
1995	0.1%	1.1%	12.9%	56.5%	29.5%	100.0%
2000	0.5%	1.4%	9.1%	55.5%	33.6%	100.0%
2001	0.5%	1.2%	8.5%	57.1%	32.8%	100.0%
2002	0.4%	1.4%	8.4%	56.5%	33.2%	100.0%
2003	0.3%	1.1%	8.0%	62.6%	28.0%	100.0%
2004	0.3%	1.3%	7.5%	62.9%	27.9%	100.0%
2005	0.3%	1.3%	8.4%	63.0%	27.1%	100.0%
2006	0.3%	1.3%	8.1%	63.2%	27.1%	100.0%
2007	0.2%	1.0%	7.3%	65.5%	26.0%	100.0%
2008	0.6%	1.5%	7.9%	58.8%	31.2%	100.0%
2009	0.6%	1.9%	9.7%	57.3%	30.5%	100.0%
2010	0.5%	1.7%	9.1%	61.4%	27.2%	100.0%
2011	0.5%	2.0%	8.9%	62.2%	26.4%	100.0%
2012	0.7%	1.8%	8.4%	63.8%	25.3%	100.0%
2013	0.5%	1.9%	8.6%	64.8%	24.3%	100.0%
2014	0.5%	2.2%	8.6%	64.6%	24.2%	100.0%
2015	0.3%	2.5%	8.6%	64.8%	23.8%	100.0%
2016	0.4%	2.4%	8.2%	65.9%	23.2%	100.0%
2017	0.3%	2.8%	8.5%	66.1%	22.3%	100.0%
2018	0.3%	2.8%	7.5%	67.1%	22.5%	100.0%
2019	0.3%	3.0%	7.4%	66.8%	22.5%	100.0%
2020	0.4%	3.8%	7.3%	59.1%	29.4%	100.0%

Source: Energy Information Administration, State Energy Data System

#### **4. Petroleum Product Analysis**

Petroleum consumed in Hawai'i can be classified into five major groups based on the EIA data: (1) jet fuel, (2) residual fuel oil, (3) motor gasoline, (4) distillate fuel oil, and (5) other petroleum products. Other petroleum products consumed in Hawai'i include still gas, asphalt and road oil, LPG/HGL, petroleum coke, lubricants, and aviation gasoline. This section examines the petroleum consumption by sector for each petroleum product.

All jet fuel in Hawai'i was consumed by the transportation sector. As shown in Table 4.1, from 1960 to 2020, jet fuel consumption increased 27,839 BBTUs or 1.3% per year on average. Most of the increase was in the 1960s. From 1960 to 1970, jet fuel consumption increased 56,541 BBTUs or 13.0% per year. From 1970 to 2019, jet fuel consumption increased only 20,752 BBTUs. Slow jet fuel consumption growth from 1970 to 2019 was mainly due to improved energy efficiency in air transportation. As shown in Table 4.1, from 1960 to 2019, total passengers to Hawai'i increased 5.4% per year, while jet fuel consumption increased only 2.5% per year. In 2020, due to the impact of COVID-19, jet fuel consumption decreased 49,454 BBTUs or 49.1% from the previous year. Reduced jet fuel consumption was due to reduced passengers, which decreased 71.9% in 2020 compared with the previous year.

**Table 4.1. Hawai'i Jet Fuel Consumption**

Year	Transportation Sector Jet Fuel Consumption		Total Passengers Arriving	Jet Fuel Per Passenger MBTUs
	BBTUs	TBBLs		
1960	23,519	4,321	532,547	44.2
1965	42,262	7,618	1,064,657	39.7
1970	80,060	14,273	2,219,559	36.1
1975	83,464	14,849	3,849,525	21.7
1980	79,244	14,116	5,380,383	14.7
1985	74,436	13,260	6,314,290	11.8
1990	71,051	12,646	8,507,330	8.4
1995	56,358	9,940	7,957,220	7.1
2000	53,511	9,438	8,105,368	6.6
2001	50,437	8,895	7,447,521	6.8
2002	57,774	10,189	7,628,983	7.6
2003	72,056	12,708	7,557,861	9.5
2004	75,861	13,379	8,225,648	9.2
2005	92,831	16,372	8,840,063	10.5
2006	86,945	15,334	9,049,713	9.6
2007	72,329	12,756	9,011,455	8.0
2008	60,679	10,702	8,034,872	7.6
2009	52,748	9,303	7,718,206	6.8
2010	76,176	13,435	8,258,740	9.2
2011	78,994	13,932	8,556,041	9.2
2012	83,443	14,717	9,232,172	9.0
2013	87,629	15,455	9,513,611	9.2
2014	89,198	15,732	9,691,996	9.2
2015	92,249	16,270	10,132,074	9.1
2016	91,487	16,135	10,462,968	8.7
2017	97,496	17,195	10,811,431	9.0
2018	98,918	17,446	11,403,884	8.7
2019	100,812	17,780	11,960,460	8.4
2020	51,358	9,058	3,361,708	15.3
<b>Annual Average Growth Rate</b>				
1960-1970	13.0%	12.7%	15.3%	-2.0%
1970-1980	-0.1%	-0.1%	9.3%	-8.6%
1980-1990	-1.1%	-1.1%	4.7%	-5.5%
1990-2000	-2.8%	-2.9%	-0.5%	-2.3%
2000-2010	3.6%	3.6%	0.2%	3.4%
2010-2020	-3.9%	-3.9%	-8.6%	5.2%
1960-2020	1.3%	1.2%	3.1%	-1.8%

Source: Energy Information Administration, State Energy Data System

Residual fuel oil is mainly used to generate electricity and supply heat. As shown in Tables 4.2-4.3, in 2020, 53,582 BBTUs of residual fuel oil were consumed in Hawai'i; about 91.0% was consumed in the electric power sector; and the transportation sector consumed about 9.0%. From 1960 to 2020, the share of the electric power sector increased 34.0 percentage points; the share of the industrial sector decreased 21.8 percentage points; and the share of the transportation sector decreased 11.4 percentage points.

**Table 4.2. Hawai'i Residual Fuel Oil Consumption by Sector in Heat Content**

Units: Billion Btu						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	-	255	6,525	6,087	17,094	29,962
1970	-	236	10,506	10,963	42,136	63,841
1980	-	157	9,374	9,060	64,372	82,963
1990	-	5,189	10,942	16,703	87,038	119,871
2000	-	52	2,751	13,995	68,202	85,001
2005	-	18	4,912	7,049	71,070	83,048
2006	-	5	5,102	14,933	72,295	92,336
2007	-	3	2,690	28,069	71,832	102,594
2008	-	-	2,730	6,146	69,217	78,093
2009	-	-	2,930	7,633	67,297	77,860
2010	-	-	2,834	6,756	65,157	74,747
2011	-	-	2,852	6,300	64,471	73,623
2012	-	-	2,051	5,699	59,686	67,437
2013	-	-	1,780	5,530	57,940	65,250
2014	-	-	1,614	5,330	55,115	62,060
2015	-	-	1,876	4,394	54,987	61,257
2016	-	-	2,565	5,091	53,197	60,853
2017	-	-	3,233	7,215	52,777	63,225
2018	-	-	2,797	6,443	52,790	62,030
2019	-	-	2,487	8,299	52,678	63,464
2020	-	-	-	4,796	48,786	53,582
Annual Average Growth Rate (%)						
1960-1970	NA	-0.8%	4.9%	6.1%	9.4%	7.9%
1970-1980	NA	-4.0%	-1.1%	-1.9%	4.3%	2.7%
1980-1990	NA	41.9%	1.6%	6.3%	3.1%	3.7%
1990-2000	NA	-36.9%	-12.9%	-1.8%	-2.4%	-3.4%
2000-2010	NA	-100.0%	0.3%	-7.0%	-0.5%	-1.3%
2010-2020	NA	NA	-100.0%	-3.4%	-2.9%	-3.3%
1960-2020	NA	-100.0%	-100.0%	-0.4%	1.8%	1.0%

Source: Energy Information Administration, State Energy Data System

**Table 4.3. Percent of Hawai'i Residual Fuel Oil Consumption by Sector in Heat Content**

Units: % of Total Residual Fuel Oil						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	0.0%	0.9%	21.8%	20.3%	57.1%	100.0%
1970	0.0%	0.4%	16.5%	17.2%	66.0%	100.0%
1980	0.0%	0.2%	11.3%	10.9%	77.6%	100.0%
1990	0.0%	4.3%	9.1%	13.9%	72.6%	100.0%
2000	0.0%	0.1%	3.2%	16.5%	80.2%	100.0%
2001	0.0%	0.0%	0.1%	20.0%	79.9%	100.0%
2002	0.0%	0.0%	3.5%	11.3%	85.2%	100.0%
2003	0.0%	0.0%	3.0%	7.6%	89.4%	100.0%
2004	0.0%	0.0%	3.0%	11.4%	85.6%	100.0%
2005	0.0%	0.0%	5.9%	8.5%	85.6%	100.0%
2006	0.0%	0.0%	5.5%	16.2%	78.3%	100.0%
2007	0.0%	0.0%	2.6%	27.4%	70.0%	100.0%
2008	0.0%	0.0%	3.5%	7.9%	88.6%	100.0%
2009	0.0%	0.0%	3.8%	9.8%	86.4%	100.0%
2010	0.0%	0.0%	3.8%	9.0%	87.2%	100.0%
2011	0.0%	0.0%	3.9%	8.6%	87.6%	100.0%
2012	0.0%	0.0%	3.0%	8.5%	88.5%	100.0%
2013	0.0%	0.0%	2.7%	8.5%	88.8%	100.0%
2014	0.0%	0.0%	2.6%	8.6%	88.8%	100.0%
2015	0.0%	0.0%	3.1%	7.2%	89.8%	100.0%
2016	0.0%	0.0%	4.2%	8.4%	87.4%	100.0%
2017	0.0%	0.0%	5.1%	11.4%	83.5%	100.0%
2018	0.0%	0.0%	4.5%	10.4%	85.1%	100.0%
2019	0.0%	0.0%	3.9%	13.1%	83.0%	100.0%
2020	0.0%	0.0%	0.0%	9.0%	91.0%	100.0%

Source: Energy Information Administration, State Energy Data System



As shown in Tables 4.4-4.5, from 1960 to 2020, total residual fuel oil consumption in Hawai'i increased by about 3.8 MBBLs; the electric power sector increased by about 5.0 MBBLs; the industrial sector decreased by about 1.0 MBBLs; and the transportation sector decreased 0.2 MBBLs. Increased residual fuel oil consumption occurred before 1990. From 1960 to 1990, total residual fuel oil consumption increased 14.3 MBBLs; the electric power sector increased 11.1 MBBLs; the transportation sector increased 1.7 MBBLs; the commercial sector increased 0.8 MBBLs; and the industrial sector increased 0.7 MBBLs. From 1990 to 2020, total residual fuel oil consumption decreased 10.5 MBBLs; the electric power sector decreased 6.1 MBBLs; the transportation sector decreased 1.9 MBBLs; the industrial sector decreased 1.7 MBBLs; and the commercial sector decreased 0.8 MBBLs.

**Table 4.4. Hawai'i Residual Fuel Oil Consumption by Sector in Physical Unit**

Units: Thousand Barrels						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	-	41	1,038	968	2,719	4,766
1970	-	38	1,671	1,744	6,702	10,154
1980	-	25	1,491	1,441	10,239	13,196
1990	-	825	1,740	2,657	13,844	19,067
2000	-	8	438	2,226	10,848	13,520
2005	-	3	781	1,121	11,304	13,210
2006	-	1	811	2,375	11,499	14,687
2007	-	-	428	4,465	11,426	16,318
2008	-	-	434	978	11,009	12,421
2009	-	-	466	1,214	10,704	12,384
2010	-	-	451	1,075	10,364	11,889
2011	-	-	454	1,002	10,255	11,710
2012	-	-	326	906	9,494	10,726
2013	-	-	283	880	9,216	10,378
2014	-	-	257	848	8,767	9,871
2015	-	-	298	699	8,746	9,744
2016	-	-	408	810	8,461	9,679
2017	-	-	514	1,148	8,395	10,056
2018	-	-	445	1,025	8,397	9,866
2019	-	-	396	1,320	8,379	10,094
2020	-	-	-	763	7,760	8,523
Annual Average Growth Rate (%)						
1960-1970	NA	-0.8%	4.9%	6.1%	9.4%	7.9%
1970-1980	NA	-4.1%	-1.1%	-1.9%	4.3%	2.7%
1980-1990	NA	41.9%	1.6%	6.3%	3.1%	3.7%
1990-2000	NA	-37.1%	-12.9%	-1.8%	-2.4%	-3.4%
2000-2010	NA	-100.0%	0.3%	-7.0%	-0.5%	-1.3%
2010-2020	NA	NA	-100.0%	-3.4%	-2.9%	-3.3%
1960-2020	NA	-100.0%	-100.0%	-0.4%	1.8%	1.0%

Source: Energy Information Administration, State Energy Data System

**Table 4.5. Percent of Hawai'i Residual Fuel Oil Consumption by Sector in Physical Unit**

Units: % of Total Residual Fuel Oil						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	0.0%	0.9%	21.8%	20.3%	57.0%	100.0%
1970	0.0%	0.4%	16.5%	17.2%	66.0%	100.0%
1980	0.0%	0.2%	11.3%	10.9%	77.6%	100.0%
1990	0.0%	4.3%	9.1%	13.9%	72.6%	100.0%
2000	0.0%	0.1%	3.2%	16.5%	80.2%	100.0%
2001	0.0%	0.0%	0.1%	20.0%	79.9%	100.0%
2002	0.0%	0.0%	3.5%	11.3%	85.2%	100.0%
2003	0.0%	0.0%	3.0%	7.6%	89.4%	100.0%
2004	0.0%	0.0%	3.0%	11.4%	85.6%	100.0%
2005	0.0%	0.0%	5.9%	8.5%	85.6%	100.0%
2006	0.0%	0.0%	5.5%	16.2%	78.3%	100.0%
2007	0.0%	0.0%	2.6%	27.4%	70.0%	100.0%
2008	0.0%	0.0%	3.5%	7.9%	88.6%	100.0%
2009	0.0%	0.0%	3.8%	9.8%	86.4%	100.0%
2010	0.0%	0.0%	3.8%	9.0%	87.2%	100.0%
2011	0.0%	0.0%	3.9%	8.6%	87.6%	100.0%
2012	0.0%	0.0%	3.0%	8.4%	88.5%	100.0%
2013	0.0%	0.0%	2.7%	8.5%	88.8%	100.0%
2014	0.0%	0.0%	2.6%	8.6%	88.8%	100.0%
2015	0.0%	0.0%	3.1%	7.2%	89.8%	100.0%
2016	0.0%	0.0%	4.2%	8.4%	87.4%	100.0%
2017	0.0%	0.0%	5.1%	11.4%	83.5%	100.0%
2018	0.0%	0.0%	4.5%	10.4%	85.1%	100.0%
2019	0.0%	0.0%	3.9%	13.1%	83.0%	100.0%
2020	0.0%	0.0%	0.0%	9.0%	91.0%	100.0%

Source: Energy Information Administration, State Energy Data System

Distillate fuel oil (including diesel oil) is mainly used to generate electricity and drive diesel engines. As shown in Tables 4.6-4.7, in 2020, Hawai'i consumed 28,079 BBTUs of distillate fuel oil; about 45.0% of distillate fuel oil was consumed in the electric power sector; followed by the transportation sector (43.3%), industrial sector (7.1%) and commercial sector (4.6%). From 1960 to 2020, the share of the electric power sector increased 40.8 percentage points; the share of the transportation sector increased 15.4 percentage points; the share of the industrial sector decreased 55.4 percentage points; and the share of the commercial sector decreased 0.7 of a percentage point.

**Table 4.6. Hawai'i Distillate Fuel Oil Consumption by Sector in Heat Content**

Units: Billion Btu						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	2	277	3,225	1,439	218	5,161
1965	3	416	3,697	4,919	355	9,391
1970	8	1,012	4,086	4,208	557	9,871
1975	4	491	3,512	4,842	2,498	11,346
1980	6	2,317	7,976	19,405	5,171	34,875
1985	2	768	2,665	18,548	4,378	26,361
1990	2	2,636	4,222	20,374	10,562	37,796
1995	10	1,998	3,191	15,613	12,870	33,682
2000	2	1,271	2,751	9,470	16,148	29,642
2001	2	793	2,751	14,287	17,312	35,144
2002	2	1,805	2,673	19,372	23,199	47,051
2003	2	1,644	2,557	30,179	13,367	47,748
2004	2	2,220	2,367	31,181	14,464	50,233
2005	1	2,237	2,977	22,263	15,035	42,513
2006	19	2,274	2,648	19,653	14,236	38,830
2007	19	1,629	2,606	36,125	13,377	53,756
2008	30	1,277	2,003	15,772	12,712	31,794
2009	16	1,573	2,332	18,045	12,999	34,966
2010	1	1,528	1,882	23,211	12,971	39,593
2011	1	1,728	1,972	19,670	13,062	36,432
2012	-	1,537	2,166	18,880	12,592	35,175
2013	-	1,471	1,873	17,632	11,980	32,957
2014	-	1,862	2,261	9,171	11,845	25,139
2015	2	1,298	1,851	11,808	12,297	27,255
2016	-	904	939	12,544	11,726	26,113
2017	1	1,181	1,789	12,365	12,053	27,390
2018	-	1,361	1,515	15,024	12,407	30,307
2019	-	1,823	2,191	11,988	13,344	29,346
2020	-	1,298	1,988	12,159	12,633	28,079
Annual Average Growth Rate (%)						
1960-1970	14.9%	13.8%	2.4%	11.3%	9.8%	6.7%
1970-1980	-2.8%	8.6%	6.9%	16.5%	25.0%	13.5%
1980-1990	-10.4%	1.3%	-6.2%	0.5%	7.4%	0.8%
1990-2000	0.0%	-7.0%	-4.2%	-7.4%	4.3%	-2.4%
2000-2010	-6.7%	1.9%	-3.7%	9.4%	-2.2%	2.9%
2010-2020	NA	-1.6%	0.5%	-6.3%	-0.3%	-3.4%
1960-2020	NA	2.6%	-0.8%	3.6%	7.0%	2.9%

Source: Energy Information Administration, State Energy Data System

**Table 4.7. Percent of Hawai'i Distillate Fuel Oil Consumption by Sector in Heat Content**

Year	Units: % of Total Distillate Fuel Oil					Total
	Residential	Commercial	Industrial	Transportation	Electric	
1960	0.0%	5.4%	62.5%	27.9%	4.2%	100.0%
1965	0.0%	4.4%	39.4%	52.4%	3.8%	100.0%
1970	0.1%	10.3%	41.4%	42.6%	5.6%	100.0%
1975	0.0%	4.3%	31.0%	42.7%	22.0%	100.0%
1980	0.0%	6.6%	22.9%	55.6%	14.8%	100.0%
1985	0.0%	2.9%	10.1%	70.4%	16.6%	100.0%
1990	0.0%	7.0%	11.2%	53.9%	27.9%	100.0%
1995	0.0%	5.9%	9.5%	46.4%	38.2%	100.0%
2000	0.0%	4.3%	9.3%	31.9%	54.5%	100.0%
2001	0.0%	2.3%	7.8%	40.7%	49.3%	100.0%
2002	0.0%	3.8%	5.7%	41.2%	49.3%	100.0%
2003	0.0%	3.4%	5.4%	63.2%	28.0%	100.0%
2004	0.0%	4.4%	4.7%	62.1%	28.8%	100.0%
2005	0.0%	5.3%	7.0%	52.4%	35.4%	100.0%
2006	0.0%	5.9%	6.8%	50.6%	36.7%	100.0%
2007	0.0%	3.0%	4.8%	67.2%	24.9%	100.0%
2008	0.1%	4.0%	6.3%	49.6%	40.0%	100.0%
2009	0.0%	4.5%	6.7%	51.6%	37.2%	100.0%
2010	0.0%	3.9%	4.8%	58.6%	32.8%	100.0%
2011	0.0%	4.7%	5.4%	54.0%	35.9%	100.0%
2012	0.0%	4.4%	6.2%	53.7%	35.8%	100.0%
2013	0.0%	4.5%	5.7%	53.5%	36.4%	100.0%
2014	0.0%	7.4%	9.0%	36.5%	47.1%	100.0%
2015	0.0%	4.8%	6.8%	43.3%	45.1%	100.0%
2016	0.0%	3.5%	3.6%	48.0%	44.9%	100.0%
2017	0.0%	4.3%	6.5%	45.1%	44.0%	100.0%
2018	0.0%	4.5%	5.0%	49.6%	40.9%	100.0%
2019	0.0%	6.2%	7.5%	40.9%	45.5%	100.0%
2020	0.0%	4.6%	7.1%	43.3%	45.0%	100.0%

Source: Energy Information Administration, State Energy Data System

As shown in Table 4.8, from 1960 to 2020, total distillate fuel oil consumption in Hawai'i increased by about 4.0 MBBLS; the electric power sector increased by about 2.2 MBBLS; and the transportation sector increased by about 1.9 MBBLS. Increased distillate fuel oil consumption occurred before 1990. From 1960 to 1990, total distillate fuel oil consumption increased 5.6 MBBLS; the electric power sector increased 1.8 MBBLS; and the transportation sector increased 3.3 MBBLS. From 1990 to 2020, total distillate fuel oil consumption decreased 1.6 MBBLS, mainly due to the transportation sector.

**Table 4.8. Hawai'i Distillate Fuel Oil Consumption by Sector in Physical Unit**

Units: Thousand Barrels						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	-	48	554	247	37	886
1965	1	71	635	844	61	1,612
1970	1	174	701	722	96	1,695
1975	1	84	603	831	429	1,948
1980	1	398	1,369	3,331	888	5,987
1985	-	132	458	3,184	752	4,526
1990	-	453	725	3,498	1,813	6,489
1995	2	343	548	2,683	2,211	5,787
2000	-	218	473	1,627	2,775	5,094
2001	-	136	473	2,455	2,975	6,040
2002	-	310	459	3,329	3,987	8,086
2003	-	282	439	5,186	2,297	8,206
2004	-	382	407	5,359	2,486	8,634
2005	-	384	512	3,827	2,584	7,307
2006	3	392	456	3,387	2,453	6,691
2007	3	282	451	6,246	2,313	9,294
2008	5	221	347	2,729	2,199	5,501
2009	3	272	404	3,124	2,250	6,053
2010	-	265	326	4,019	2,246	6,856
2011	-	299	342	3,409	2,264	6,314
2012	-	266	376	3,274	2,183	6,099
2013	-	255	325	3,060	2,079	5,719
2014	-	323	392	1,591	2,055	4,362
2015	-	225	321	2,049	2,134	4,730
2016	-	157	163	2,179	2,037	4,536
2017	-	205	311	2,148	2,094	4,758
2018	-	236	263	2,609	2,154	5,263
2019	-	317	380	2,082	2,317	5,096
2020	-	226	345	2,112	2,195	4,878
Annual Average Growth Rate (%)						
1960-1970	NA	13.7%	2.4%	11.3%	10.0%	6.7%
1970-1980	NA	8.6%	6.9%	16.5%	24.9%	13.4%
1980-1990	NA	1.3%	-6.2%	0.5%	7.4%	0.8%
1990-2000	NA	-7.1%	-4.2%	-7.4%	4.3%	-2.4%
2000-2010	NA	2.0%	-3.7%	9.5%	-2.1%	3.0%
2010-2020	NA	-1.6%	0.6%	-6.2%	-0.2%	-3.3%
1960-2020	NA	2.6%	-0.8%	3.6%	7.0%	2.9%

Source: Energy Information Administration, State Energy Data System

**Table 4.9. Percent of Hawai'i Distillate Fuel Oil Consumption by Sector in Physical Unit**

Year	Units: % of Total Distillate Fuel Oil					Total
	Residential	Commercial	Industrial	Transportation	Electric	
1960	0.0%	5.4%	62.5%	27.9%	4.2%	100.0%
1965	0.1%	4.4%	39.4%	52.4%	3.8%	100.0%
1970	0.1%	10.3%	41.4%	42.6%	5.7%	100.0%
1975	0.1%	4.3%	31.0%	42.7%	22.0%	100.0%
1980	0.0%	6.6%	22.9%	55.6%	14.8%	100.0%
1985	0.0%	2.9%	10.1%	70.3%	16.6%	100.0%
1990	0.0%	7.0%	11.2%	53.9%	27.9%	100.0%
1995	0.0%	5.9%	9.5%	46.4%	38.2%	100.0%
2000	0.0%	4.3%	9.3%	31.9%	54.5%	100.0%
2001	0.0%	2.3%	7.8%	40.6%	49.3%	100.0%
2002	0.0%	3.8%	5.7%	41.2%	49.3%	100.0%
2003	0.0%	3.4%	5.3%	63.2%	28.0%	100.0%
2004	0.0%	4.4%	4.7%	62.1%	28.8%	100.0%
2005	0.0%	5.3%	7.0%	52.4%	35.4%	100.0%
2006	0.0%	5.9%	6.8%	50.6%	36.7%	100.0%
2007	0.0%	3.0%	4.9%	67.2%	24.9%	100.0%
2008	0.1%	4.0%	6.3%	49.6%	40.0%	100.0%
2009	0.0%	4.5%	6.7%	51.6%	37.2%	100.0%
2010	0.0%	3.9%	4.8%	58.6%	32.8%	100.0%
2011	0.0%	4.7%	5.4%	54.0%	35.9%	100.0%
2012	0.0%	4.4%	6.2%	53.7%	35.8%	100.0%
2013	0.0%	4.5%	5.7%	53.5%	36.4%	100.0%
2014	0.0%	7.4%	9.0%	36.5%	47.1%	100.0%
2015	0.0%	4.8%	6.8%	43.3%	45.1%	100.0%
2016	0.0%	3.5%	3.6%	48.0%	44.9%	100.0%
2017	0.0%	4.3%	6.5%	45.1%	44.0%	100.0%
2018	0.0%	4.5%	5.0%	49.6%	40.9%	100.0%
2019	0.0%	6.2%	7.5%	40.9%	45.5%	100.0%
2020	0.0%	4.6%	7.1%	43.3%	45.0%	100.0%

Source: Energy Information Administration, State Energy Data System

Motor gasoline is mainly consumed in the transportation sector. As shown in Tables 4.10-4.11, in 2020, Hawai'i consumed 43,475 BBTUs of motor gasoline; about 92.8% of motor gasoline was consumed in the transportation sector; and the commercial and industrial sectors together accounted for about 7.2% of motor gasoline consumption in Hawai'i. From 1960 to 2020, the transportation sector's share decreased 3.2 percentage points.

**Table 4.10. Hawai'i Motor Gasoline Consumption by Sector in Heat Content**

Units: Billion Btu						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	-	290	438	17,283	-	18,011
1965	-	309	401	20,734	-	21,444
1970	-	701	260	28,932	-	29,892
1975	-	517	278	34,747	-	35,542
1980	-	282	255	37,448	-	37,985
1985	-	249	546	39,096	-	39,890
1990	-	310	701	44,531	-	45,543
1995	-	58	1,274	47,668	-	49,000
2000	-	59	832	47,423	-	48,314
2001	-	60	635	49,805	-	50,500
2002	-	60	754	53,353	-	54,167
2003	-	61	714	54,296	-	55,071
2004	-	62	878	54,870	-	55,810
2005	-	63	690	56,245	-	56,998
2006	-	62	733	59,001	-	59,797
2007	-	62	1,253	57,035	-	58,350
2008	-	62	1,262	53,185	-	54,509
2009	-	62	1,189	53,894	-	55,144
2010	-	61	724	49,847	-	50,633
2011	-	61	746	55,619	-	56,427
2012	-	61	710	52,816	-	53,588
2013	-	63	699	53,610	-	54,372
2014	-	60	865	53,868	-	54,793
2015	-	1,563	1,437	52,895	-	55,895
2016	-	1,585	1,420	53,713	-	56,718
2017	-	1,610	1,432	53,362	-	56,404
2018	-	1,638	1,478	52,254	-	55,370
2019	-	1,646	1,481	52,556	-	55,684
2020	-	1,655	1,495	40,325	-	43,475
Annual Average Growth Rate (%)						
1960-1970	NA	9.2%	-5.1%	5.3%	NA	5.2%
1970-1980	NA	-8.7%	-0.2%	2.6%	NA	2.4%
1980-1990	NA	1.0%	10.6%	1.7%	NA	1.8%
1990-2000	NA	-15.3%	1.7%	0.6%	NA	0.6%
2000-2010	NA	0.3%	-1.4%	0.5%	NA	0.5%
2010-2020	NA	39.1%	7.5%	-2.1%	NA	-1.5%
1960-2020	NA	2.9%	2.1%	1.4%	NA	1.5%

Source: Energy Information Administration, State Energy Data System

**Table 4.11. Percent of Hawai'i Motor Gasoline Consumption by Sector in Heat Content**

Units: % of Total Motor Gasoline						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	0.0%	1.6%	2.4%	96.0%	0.0%	100.0%
1965	0.0%	1.4%	1.9%	96.7%	0.0%	100.0%
1970	0.0%	2.3%	0.9%	96.8%	0.0%	100.0%
1975	0.0%	1.5%	0.8%	97.8%	0.0%	100.0%
1980	0.0%	0.7%	0.7%	98.6%	0.0%	100.0%
1985	0.0%	0.6%	1.4%	98.0%	0.0%	100.0%
1990	0.0%	0.7%	1.5%	97.8%	0.0%	100.0%
1995	0.0%	0.1%	2.6%	97.3%	0.0%	100.0%
2000	0.0%	0.1%	1.7%	98.2%	0.0%	100.0%
2001	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2002	0.0%	0.1%	1.4%	98.5%	0.0%	100.0%
2003	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2004	0.0%	0.1%	1.6%	98.3%	0.0%	100.0%
2005	0.0%	0.1%	1.2%	98.7%	0.0%	100.0%
2006	0.0%	0.1%	1.2%	98.7%	0.0%	100.0%
2007	0.0%	0.1%	2.1%	97.7%	0.0%	100.0%
2008	0.0%	0.1%	2.3%	97.6%	0.0%	100.0%
2009	0.0%	0.1%	2.2%	97.7%	0.0%	100.0%
2010	0.0%	0.1%	1.4%	98.4%	0.0%	100.0%
2011	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2012	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2013	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2014	0.0%	0.1%	1.6%	98.3%	0.0%	100.0%
2015	0.0%	2.8%	2.6%	94.6%	0.0%	100.0%
2016	0.0%	2.8%	2.5%	94.7%	0.0%	100.0%
2017	0.0%	2.9%	2.5%	94.6%	0.0%	100.0%
2018	0.0%	3.0%	2.7%	94.4%	0.0%	100.0%
2019	0.0%	3.0%	2.7%	94.4%	0.0%	100.0%
2020	0.0%	3.8%	3.4%	92.8%	0.0%	100.0%

Source: Energy Information Administration, State Energy Data System



As shown in Table 4.12, from 1960 to 2020, total motor gasoline consumption in Hawai'i increased by about 5.2 MBBLS. Increased motor gasoline consumption was mainly before 2002. From 1960 to 2002, total motor gasoline consumption increased 7.0 MBBLS. Motor gasoline consumption decreased from 2002 to 2020.

**Table 4.12. Hawai'i Motor Gasoline Consumption by Sector in Physical Unit**

Units: Thousand Barrels						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	-	55	83	3,290	-	3,429
1965	-	59	76	3,947	-	4,082
1970	-	133	49	5,508	-	5,691
1975	-	98	53	6,615	-	6,766
1980	-	54	49	7,129	-	7,231
1985	-	47	104	7,443	-	7,594
1990	-	59	133	8,477	-	8,670
1995	-	11	245	9,160	-	9,416
2000	-	11	160	9,118	-	9,289
2001	-	12	122	9,576	-	9,710
2002	-	12	145	10,262	-	10,419
2003	-	12	137	10,448	-	10,597
2004	-	12	169	10,560	-	10,741
2005	-	12	133	10,833	-	10,978
2006	-	12	141	11,379	-	11,533
2007	-	12	244	11,092	-	11,348
2008	-	12	247	10,416	-	10,675
2009	-	12	234	10,588	-	10,834
2010	-	12	143	9,838	-	9,993
2011	-	12	147	10,985	-	11,145
2012	-	12	140	10,434	-	10,586
2013	-	13	138	10,595	-	10,746
2014	-	12	171	10,648	-	10,831
2015	-	309	284	10,460	-	11,053
2016	-	314	281	10,626	-	11,220
2017	-	319	283	10,560	-	11,162
2018	-	324	292	10,339	-	10,956
2019	-	326	293	10,403	-	11,022
2020	-	328	296	7,982	-	8,605
Annual Average Growth Rate (%)						
1960-1970	NA	9.2%	-5.1%	5.3%	NA	5.2%
1970-1980	NA	-8.6%	0.0%	2.6%	NA	2.4%
1980-1990	NA	0.9%	10.5%	1.7%	NA	1.8%
1990-2000	NA	-15.5%	1.9%	0.7%	NA	0.7%
2000-2010	NA	0.9%	-1.1%	0.8%	NA	0.7%
2010-2020	NA	39.2%	7.5%	-2.1%	NA	-1.5%
1960-2020	NA	3.0%	2.1%	1.5%	NA	1.5%

Source: Energy Information Administration, State Energy Data System

**Table 4.13. Percent of Hawai'i Motor Gasoline Consumption by Sector in Physical Unit**

Units: % of Total Motor Gasoline						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	0.0%	1.6%	2.4%	95.9%	0.0%	100.0%
1965	0.0%	1.4%	1.9%	96.7%	0.0%	100.0%
1970	0.0%	2.3%	0.9%	96.8%	0.0%	100.0%
1975	0.0%	1.4%	0.8%	97.8%	0.0%	100.0%
1980	0.0%	0.7%	0.7%	98.6%	0.0%	100.0%
1985	0.0%	0.6%	1.4%	98.0%	0.0%	100.0%
1990	0.0%	0.7%	1.5%	97.8%	0.0%	100.0%
1995	0.0%	0.1%	2.6%	97.3%	0.0%	100.0%
2000	0.0%	0.1%	1.7%	98.2%	0.0%	100.0%
2001	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2002	0.0%	0.1%	1.4%	98.5%	0.0%	100.0%
2003	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2004	0.0%	0.1%	1.6%	98.3%	0.0%	100.0%
2005	0.0%	0.1%	1.2%	98.7%	0.0%	100.0%
2006	0.0%	0.1%	1.2%	98.7%	0.0%	100.0%
2007	0.0%	0.1%	2.2%	97.7%	0.0%	100.0%
2008	0.0%	0.1%	2.3%	97.6%	0.0%	100.0%
2009	0.0%	0.1%	2.2%	97.7%	0.0%	100.0%
2010	0.0%	0.1%	1.4%	98.4%	0.0%	100.0%
2011	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2012	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2013	0.0%	0.1%	1.3%	98.6%	0.0%	100.0%
2014	0.0%	0.1%	1.6%	98.3%	0.0%	100.0%
2015	0.0%	2.8%	2.6%	94.6%	0.0%	100.0%
2016	0.0%	2.8%	2.5%	94.7%	0.0%	100.0%
2017	0.0%	2.9%	2.5%	94.6%	0.0%	100.0%
2018	0.0%	3.0%	2.7%	94.4%	0.0%	100.0%
2019	0.0%	3.0%	2.7%	94.4%	0.0%	100.0%
2020	0.0%	3.8%	3.4%	92.8%	0.0%	100.0%

Source: Energy Information Administration, State Energy Data System

As shown in Table 4.14, from 1960 to 2020, Hawai'i's total motor gasoline consumption increased 1.5% per year on average; while total vehicle registration increased 2.8% per year and total vehicle miles increased 2.9% per year. The slower growth of motor gasoline consumption, relative to vehicle registration and vehicle miles, was due to the improved energy efficiency of vehicles.

**Table 4.14. Hawai'i Motor Gasoline Consumption and Energy Efficiency**

Year	Total Motor Gasoline Consumption		Motor Vehicle Registration Total	Vehicle Miles Millions	Motor Gasoline Per Vehicle MBTUs	Motor Gasoline Per 100 Miles Gals
	BBTUs	TBBLs				
1960	18,011	3,429	230,709	1,990	78.1	7.2
1970	29,892	5,691	412,930	3,409	72.4	7.0
1980	37,985	7,231	617,571	5,570	61.5	5.5
1985	39,890	7,594	749,034	6,762	53.3	4.7
1990	45,543	8,670	889,096	8,065	51.2	4.5
1995	49,000	9,416	877,756	7,944	55.8	5.0
2000	48,314	9,289	941,242	8,526	51.3	4.6
2001	50,500	9,710	967,146	8,754	52.2	4.7
2002	54,167	10,419	987,598	8,937	54.8	4.9
2003	55,071	10,597	1,030,845	9,325	53.4	4.8
2004	55,810	10,741	1,072,211	9,735	52.1	4.6
2005	56,998	10,978	1,119,838	10,129	50.9	4.6
2006	59,797	11,533	1,127,467	10,196	53.0	4.8
2007	58,350	11,348	1,134,542	10,260	51.4	4.6
2008	54,509	10,675	1,127,567	10,189	48.3	4.4
2009	55,144	10,834	1,117,790	10,095	49.3	4.5
2010	50,633	9,993	1,120,080	10,111	45.2	4.2
2011	56,427	11,145	1,181,148	10,654	47.8	4.4
2012	53,588	10,586	1,278,233	11,518	41.9	3.9
2013	54,372	10,746	1,341,152	12,078	40.5	3.7
2014	54,793	10,831	1,284,193	10,173	42.7	4.5
2015	55,895	11,053	1,233,523	11,130	45.3	4.2
2016	56,718	11,220	1,232,731	11,132	46.0	4.2
2017	56,404	11,162	1,259,544	11,351	44.8	4.1
2018	55,370	10,956	1,267,136	11,418	43.7	4.0
2019	55,684	11,022	1,279,843	11,537	43.5	4.0
2020	43,475	8,605	1,235,139	11,141	35.2	3.2
<b>Annual Average Growth Rate</b>						
1960-1970	5.2%	5.2%	6.0%	5.5%	-0.8%	-0.3%
1970-1980	2.4%	2.4%	4.1%	5.0%	-1.6%	-2.5%
1980-1990	1.8%	1.8%	3.7%	3.8%	-1.8%	-1.9%
1990-2000	0.6%	0.7%	0.6%	0.6%	0.0%	0.1%
2000-2010	0.5%	0.7%	1.8%	1.7%	-1.3%	-1.0%
2010-2020	-1.5%	-1.5%	1.0%	1.0%	-2.5%	-2.4%
1960-2020	1.5%	1.5%	2.8%	2.9%	-1.3%	-1.3%

Source: Energy Information Administration, State Energy Data System

Other petroleum products consumed in Hawai'i mainly include still gas, LPG/HGL, asphalt and road oil, petroleum coke, lubricants, and aviation gasoline. In 2020, Hawai'i consumed 15,052 BBTUs or 2.7 MBBLs of other petroleum products, accounting for about 8.0% of total petroleum consumption.

In 2020, still gas accounted for 3.9% of total petroleum consumption based on physical units. All of the still gas was consumed in the industrial sector in Hawai'i without charges. From 1960 to 2020, still gas consumption increased 5,767 BBTUs (898 TBBLs).

In 2020, asphalt and road oil accounted for 0.7% of total petroleum consumption based on physical units. All asphalt and road oil was consumed in the industrial sector. From 1960 to 2020, total asphalt and road oil consumption increased by about 1,489 BBTUs (224 TBBLs).

Hawai'i did not consume any petroleum coke in 2020. All petroleum coke was consumed in the industrial sector without charges. From 1960 to 2020, total petroleum coke consumption decreased by about 621 BBTUs (103 TBBLs).

In 2020, LPG/HGL accounted for 2.6% of total petroleum consumption based on physical units. As shown in Tables 4.15-4.18, in 2020, about 83.3% of LPG/HGL was consumed in the commercial sector; followed by the residential sector (14.0%) and the industrial sector (2.7%). From 1960 to 2020, total LPG/HGL consumption increased by about 2,936 BBTUs (764 TBBLs) or 3.5% per year. During this period, the share of the commercial sector increased 45.5 percentage points; while the share of the industrial sector decreased 34.9 percentage points and the residential sector decreased 8.9 percentage points.

Other petroleum products consumed in Hawai'i also include a small amount of lubricants and aviation gasoline. From 1960 to 2020, the consumption of lubricants increased from 228 BBTUs (38 TBBLs) to 410 BBTUs (68 TBBLs); while the consumption of aviation gasoline decreased from 13,326 BBTUs (2,640 TBBLs) to only 119 BBTUs (24 TBBLs). All of the aviation gasoline was consumed in the transportation sector.

**Table 4.15. Hawai'i LPG/HGL Consumption by Sector in Heat Content**

Year	Units: Billion Btu					Total
	Residential	Commercial	Industrial	Transportation	Electric	
1960	98	162	161	7	-	428
1965	193	319	309	13	-	835
1970	762	1,259	1,409	99	-	3,529
1975	546	902	1,669	86	-	3,203
1980	733	1,211	3,669	100	-	5,713
1985	172	284	30	23	-	508
1990	217	359	53	49	-	678
1995	147	243	4,179	30	-	4,599
2000	743	1,228	167	-	-	2,138
2001	754	1,246	209	-	-	2,209
2002	757	1,251	848	-	-	2,856
2003	561	927	322	43	-	1,854
2004	572	946	231	-	-	1,749
2005	584	965	48	57	-	1,653
2006	598	988	141	64	-	1,790
2007	480	857	198	48	-	1,582
2008	1,007	1,549	16	15	-	2,586
2009	920	2,076	107	25	-	3,127
2010	919	2,041	200	12	-	3,171
2011	854	2,424	168	12	-	3,458
2012	1,254	2,129	-	13	-	3,396
2013	838	2,302	10	13	-	3,163
2014	847	2,504	22	11	-	3,383
2015	505	2,319	31	13	-	2,868
2016	691	2,327	37	13	-	3,068
2017	580	3,025	217	-	-	3,821
2018	455	2,843	408	-	-	3,706
2019	495	3,085	105	-	-	3,685
2020	472	2,803	90	-	-	3,364
<b>Annual Average Growth Rate (%)</b>						
1960-1970	22.8%	22.8%	24.2%	30.3%	NA	23.5%
1970-1980	-0.4%	-0.4%	10.0%	0.1%	NA	4.9%
1980-1990	-11.5%	-11.4%	-34.5%	-6.9%	NA	-19.2%
1990-2000	13.1%	13.1%	12.2%	-100.0%	NA	12.2%
2000-2010	2.1%	5.2%	1.8%	NA	NA	4.0%
2010-2020	-6.4%	3.2%	-7.7%	-100.0%	NA	0.6%
1960-2020	2.7%	4.9%	-1.0%	-100.0%	NA	3.5%

Source: Energy Information Administration, State Energy Data System

**Table 4.16. Percent of Hawai'i LPG/HGL Consumption by Sector in Heat Content**

Year	Units: % of Total LPG/HGL					Total
	Residential	Commercial	Industrial	Transportation	Electric	
1960	22.9%	37.9%	37.6%	1.6%	0.0%	100.0%
1965	23.1%	38.2%	37.0%	1.6%	0.0%	100.0%
1970	21.6%	35.7%	39.9%	2.8%	0.0%	100.0%
1975	17.0%	28.2%	52.1%	2.7%	0.0%	100.0%
1980	12.8%	21.2%	64.2%	1.8%	0.0%	100.0%
1985	33.9%	55.9%	5.9%	4.5%	0.0%	100.0%
1990	32.0%	52.9%	7.8%	7.2%	0.0%	100.0%
1995	3.2%	5.3%	90.9%	0.7%	0.0%	100.0%
2000	34.8%	57.4%	7.8%	0.0%	0.0%	100.0%
2001	34.1%	56.4%	9.5%	0.0%	0.0%	100.0%
2002	26.5%	43.8%	29.7%	0.0%	0.0%	100.0%
2003	30.3%	50.0%	17.4%	2.3%	0.0%	100.0%
2004	32.7%	54.1%	13.2%	0.0%	0.0%	100.0%
2005	35.3%	58.4%	2.9%	3.4%	0.0%	100.0%
2006	33.4%	55.2%	7.9%	3.6%	0.0%	100.0%
2007	30.3%	54.2%	12.5%	3.0%	0.0%	100.0%
2008	38.9%	59.9%	0.6%	0.6%	0.0%	100.0%
2009	29.4%	66.4%	3.4%	0.8%	0.0%	100.0%
2010	29.0%	64.4%	6.3%	0.4%	0.0%	100.0%
2011	24.7%	70.1%	4.9%	0.3%	0.0%	100.0%
2012	36.9%	62.7%	0.0%	0.4%	0.0%	100.0%
2013	26.5%	72.8%	0.3%	0.4%	0.0%	100.0%
2014	25.0%	74.0%	0.7%	0.3%	0.0%	100.0%
2015	17.6%	80.9%	1.1%	0.5%	0.0%	100.0%
2016	22.5%	75.8%	1.2%	0.4%	0.0%	100.0%
2017	15.2%	79.2%	5.7%	0.0%	0.0%	100.0%
2018	12.3%	76.7%	11.0%	0.0%	0.0%	100.0%
2019	13.4%	83.7%	2.8%	0.0%	0.0%	100.0%
2020	14.0%	83.3%	2.7%	0.0%	0.0%	100.0%

Source: Energy Information Administration, State Energy Data System

**Table 4.17. Hawai'i LPG/HGL Consumption by Sector in Physical Unit**

Units: Thousand Barrels						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	25	42	43	2	-	112
1965	50	83	82	4	-	219
1970	198	328	386	26	-	938
1975	142	235	472	22	-	872
1980	191	315	1,041	26	-	1,573
1985	45	74	9	6	-	133
1990	57	93	15	13	-	178
1995	38	63	1,207	8	-	1,316
2000	194	320	49	-	-	562
2001	196	324	61	-	-	582
2002	197	326	247	-	-	770
2003	146	241	94	11	-	492
2004	149	246	67	-	-	462
2005	152	251	14	15	-	432
2006	156	257	41	17	-	471
2007	125	223	58	12	-	419
2008	262	403	5	4	-	674
2009	239	540	32	6	-	819
2010	239	531	52	3	-	826
2011	222	631	44	3	-	900
2012	326	554	-	3	-	884
2013	218	599	3	3	-	824
2014	220	652	6	3	-	881
2015	131	604	8	3	-	747
2016	180	606	10	3	-	799
2017	151	787	56	0	-	995
2018	119	740	106	0	-	965
2019	129	803	27	0	-	959
2020	123	730	23	0	-	876
Annual Average Growth Rate (%)						
1960-1970	NA	22.8%	24.5%	29.2%	NA	23.7%
1970-1980	NA	-0.4%	10.4%	0.0%	NA	5.3%
1980-1990	NA	-11.5%	-34.6%	-6.7%	NA	-19.6%
1990-2000	NA	13.2%	12.6%	-100.0%	NA	12.2%
2000-2010	NA	5.2%	0.6%	NA	NA	3.9%
2010-2020	-6.4%	3.2%	-7.8%	-100.0%	NA	0.6%
1960-2020	2.7%	4.9%	-1.0%	-100.0%	NA	3.5%

Source: Energy Information Administration, State Energy Data System

**Table 4.18. Percent of Hawai'i LPG/HGL Consumption by Sector in Physical Unit**

Units: % of Total LPG/HGL						
Year	Residential	Commercial	Industrial	Transportation	Electric	Total
1960	22.3%	37.5%	38.4%	1.8%	0.0%	100.0%
1965	22.8%	37.9%	37.4%	1.8%	0.0%	100.0%
1970	21.1%	35.0%	41.2%	2.8%	0.0%	100.0%
1975	16.3%	26.9%	54.1%	2.5%	0.0%	100.0%
1980	12.1%	20.0%	66.2%	1.7%	0.0%	100.0%
1985	33.8%	55.6%	6.8%	4.5%	0.0%	100.0%
1990	32.0%	52.2%	8.4%	7.3%	0.0%	100.0%
1995	2.9%	4.8%	91.7%	0.6%	0.0%	100.0%
2000	34.5%	56.9%	8.7%	0.0%	0.0%	100.0%
2001	33.7%	55.7%	10.5%	0.0%	0.0%	100.0%
2002	25.6%	42.3%	32.1%	0.0%	0.0%	100.0%
2003	29.7%	49.0%	19.1%	2.2%	0.0%	100.0%
2004	32.3%	53.2%	14.5%	0.0%	0.0%	100.0%
2005	35.2%	58.1%	3.2%	3.5%	0.0%	100.0%
2006	33.1%	54.6%	8.7%	3.6%	0.0%	100.0%
2007	29.8%	53.2%	13.8%	2.9%	0.0%	100.0%
2008	38.9%	59.8%	0.7%	0.6%	0.0%	100.0%
2009	29.2%	65.9%	3.9%	0.7%	0.0%	100.0%
2010	28.9%	64.3%	6.3%	0.4%	0.0%	100.0%
2011	24.7%	70.1%	4.9%	0.3%	0.0%	100.0%
2012	36.9%	62.7%	0.0%	0.3%	0.0%	100.0%
2013	26.5%	72.7%	0.4%	0.4%	0.0%	100.0%
2014	25.0%	74.0%	0.7%	0.3%	0.0%	100.0%
2015	17.5%	80.9%	1.1%	0.4%	0.0%	100.0%
2016	22.5%	75.8%	1.3%	0.4%	0.0%	100.0%
2017	15.2%	79.1%	5.6%	0.0%	0.0%	100.0%
2018	12.3%	76.7%	11.0%	0.0%	0.0%	100.0%
2019	13.5%	83.7%	2.8%	0.0%	0.0%	100.0%
2020	14.0%	83.3%	2.6%	0.0%	0.0%	100.0%

Source: Energy Information Administration, State Energy Data System



## 5. Consumption by Sector Analysis

Tables 5.1 through 5.10 summarize the types of petroleum products consumed by each sector by heat content (BBTUs) and physical unit (TBBLs).

As shown in Table 5.1, in 2020, the transportation sector consumed 109,046 BBTUs of petroleum products. Based on heat content, in 2020, petroleum consumed in the transportation sector was mainly jet fuel (47.1%); followed by motor gasoline (37.0%), distillate fuel oil (11.2%), residual fuel oil (4.4%), and other petroleum products (0.4%). From 1960 to 2020, total petroleum consumption in the transportation sector increased 47,268 BBTUs or 1.0% per year. During this period, the share of jet fuel increased 9.0 percentage points; the share of motor gasoline increased 9.0 percentage points; the share of distillate fuel oil increased 8.8 percentage points; the share of residual fuel oil decreased 5.5 percentage points; and the share of other petroleum products (mainly aviation gasoline) decreased 21.4 percentage points.

Increased petroleum consumption in the transportation sector, from 1960 to 2020, was mainly due to the increase from 1960 to 1990. From 1990 to 2020, total petroleum consumption in the transportation sector decreased 45,499 BBTUs or 29.4%. All types of products decreased during this period. From 1990 to 2020, jet fuel consumption decreased 19,693 BBTUs or about 27.7%; motor gasoline consumption decreased 4,206 BBTUs or 9.4%; residual fuel oil consumption decreased 11,907 BBTUs or 71.3%; distillate fuel oil consumption decreased 8,215 BBTUs or 40.3%; and other petroleum products consumption decreased 1,478 BBTUs or 78.4%.

**Table 5.1. Petroleum Consumption by the Transportation Sector in Heat Content**

Year	Consumption in Billion Btu						% of Transportation Sector Petroleum Consumption				
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum
1960	23,519	6,087	17,283	1,439	13,450	61,778	38.1%	9.9%	28.0%	2.3%	21.8%
1970	80,060	10,963	28,932	4,208	1,181	125,344	63.9%	8.7%	23.1%	3.4%	0.9%
1980	79,244	9,060	37,448	19,405	1,556	146,713	54.0%	6.2%	25.5%	13.2%	1.1%
1985	74,436	9,591	39,096	18,548	1,217	142,888	52.1%	6.7%	27.4%	13.0%	0.9%
1990	71,051	16,703	44,531	20,374	1,886	154,545	46.0%	10.8%	28.8%	13.2%	1.2%
1991	62,557	16,309	46,076	24,473	1,786	151,201	41.4%	10.8%	30.5%	16.2%	1.2%
1992	56,501	23,616	45,562	16,661	1,787	144,127	39.2%	16.4%	31.6%	11.6%	1.2%
1993	50,409	16,683	45,949	15,579	1,466	130,086	38.8%	12.8%	35.3%	12.0%	1.1%
1994	53,705	18,457	47,384	18,755	1,564	139,865	38.4%	13.2%	33.9%	13.4%	1.1%
1995	56,358	16,832	47,668	15,613	1,570	138,041	40.8%	12.2%	34.5%	11.3%	1.1%
1996	57,194	4,413	47,439	11,218	1,269	121,533	47.1%	3.6%	39.0%	9.2%	1.0%
1997	57,955	3,077	47,387	7,695	1,067	117,181	49.5%	2.6%	40.4%	6.6%	0.9%
1998	56,695	2,410	47,167	7,229	1,017	114,518	49.5%	2.1%	41.2%	6.3%	0.9%
1999	53,720	10,739	45,707	12,051	772	122,989	43.7%	8.7%	37.2%	9.8%	0.6%
2000	53,511	13,995	47,423	9,470	697	125,096	42.8%	11.2%	37.9%	7.6%	0.6%
2001	50,437	16,709	49,805	14,287	675	131,913	38.2%	12.7%	37.8%	10.8%	0.5%
2002	57,774	9,035	53,353	19,372	515	140,049	41.3%	6.5%	38.1%	13.8%	0.4%
2003	72,056	5,745	54,296	30,179	514	162,790	44.3%	3.5%	33.4%	18.5%	0.3%
2004	75,861	9,388	54,870	31,181	596	171,896	44.1%	5.5%	31.9%	18.1%	0.3%
2005	92,831	7,049	56,245	22,263	679	179,067	51.8%	3.9%	31.4%	12.4%	0.4%
2006	86,945	14,933	59,001	19,653	659	181,191	48.0%	8.2%	32.6%	10.8%	0.4%
2007	72,329	28,069	57,035	36,125	653	194,211	37.2%	14.5%	29.4%	18.6%	0.3%
2008	60,679	6,146	53,185	15,772	526	136,308	44.5%	4.5%	39.0%	11.6%	0.4%
2009	52,748	7,633	53,894	18,045	507	132,827	39.7%	5.7%	40.6%	13.6%	0.4%
2010	76,176	6,756	49,847	23,211	665	156,655	48.6%	4.3%	31.8%	14.8%	0.4%
2011	78,994	6,300	55,619	19,670	698	161,281	49.0%	3.9%	34.5%	12.2%	0.4%
2012	83,443	5,699	52,816	18,880	621	161,459	51.7%	3.5%	32.7%	11.7%	0.4%
2013	87,629	5,530	53,610	17,632	626	165,027	53.1%	3.4%	32.5%	10.7%	0.4%
2014	89,198	5,330	53,868	9,171	576	158,143	56.4%	3.4%	34.1%	5.8%	0.4%
2015	92,249	4,394	52,895	11,808	514	161,860	57.0%	2.7%	32.7%	7.3%	0.3%
2016	91,487	5,091	53,713	12,544	467	163,302	56.0%	3.1%	32.9%	7.7%	0.3%
2017	97,496	7,215	53,362	12,365	442	170,880	57.1%	4.2%	31.2%	7.2%	0.3%
2018	98,918	6,443	52,254	15,024	488	173,127	57.1%	3.7%	30.2%	8.7%	0.3%
2019	100,812	8,299	52,556	11,988	534	174,189	57.9%	4.8%	30.2%	6.9%	0.3%
2020	51,358	4,796	40,325	12,159	408	109,046	47.1%	4.4%	37.0%	11.2%	0.4%

Source: Energy Information Administration, State Energy Data System

As shown in Table 5.2, in 2020, the transportation sector consumed about 19,986 TBBLs of petroleum products, about 9,058 TBBLs of jet fuel, 7,982 TBBLs motor gasoline, 2,112 TBBLs of distillate fuel oil, 763 TBBLs of residual fuel oil, and 71 TBBLs of other petroleum products (mainly lubricants). From 1990 to 2020, total petroleum consumed in the transportation sector decreased 7,653 TBBLs; jet fuel consumption decreased 3,588 TBBLs; motor gasoline consumption decreased 495 TBBLs; residual fuel oil consumption decreased 1,894 TBBLs; distillate fuel oil consumption decreased 1,386 TBBLs; and other petroleum products (mainly aviation gasoline) consumption decreased 290 TBBLs.

**Table 5.2. Petroleum Consumption by the Transportation Sector in Physical Unit**

Year	Consumption in Thousand Barrels						% of Transportation Sector Consumption					
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total
1960	4,321	968	3,290	247	2,661	11,487	37.6%	8.4%	28.6%	2.2%	23.2%	
1970	14,273	1,744	5,508	722	226	22,473	63.5%	7.8%	24.5%	3.2%	1.0%	
1980	14,116	1,441	7,129	3,331	300	26,317	53.6%	5.5%	27.1%	12.7%	1.1%	
1985	13,260	1,526	7,443	3,184	228	25,641	51.7%	6.0%	29.0%	12.4%	0.9%	
1990	12,646	2,657	8,477	3,498	361	27,639	45.8%	9.6%	30.7%	12.7%	1.3%	
1991	11,123	2,594	8,771	4,201	345	27,034	41.1%	9.6%	32.4%	15.5%	1.3%	
1992	9,993	3,756	8,674	2,860	348	25,631	39.0%	14.7%	33.8%	11.2%	1.4%	
1993	8,891	2,654	8,808	2,674	278	23,305	38.2%	11.4%	37.8%	11.5%	1.2%	
1994	9,472	2,936	9,088	3,223	298	25,017	37.9%	11.7%	36.3%	12.9%	1.2%	
1995	9,940	2,677	9,160	2,683	299	24,759	40.1%	10.8%	37.0%	10.8%	1.2%	
1996	10,087	702	9,104	1,928	237	22,058	45.7%	3.2%	41.3%	8.7%	1.1%	
1997	10,221	489	9,104	1,322	198	21,334	47.9%	2.3%	42.7%	6.2%	0.9%	
1998	9,999	383	9,065	1,242	187	20,876	47.9%	1.8%	43.4%	5.9%	0.9%	
1999	9,474	1,708	8,786	2,071	138	22,177	42.7%	7.7%	39.6%	9.3%	0.6%	
2000	9,438	2,226	9,118	1,627	123	22,532	41.9%	9.9%	40.5%	7.2%	0.5%	
2001	8,895	2,658	9,576	2,455	120	23,704	37.5%	11.2%	40.4%	10.4%	0.5%	
2002	10,189	1,437	10,262	3,329	89	25,306	40.3%	5.7%	40.6%	13.2%	0.4%	
2003	12,708	914	10,448	5,186	91	29,347	43.3%	3.1%	35.6%	17.7%	0.3%	
2004	13,379	1,493	10,560	5,359	106	30,897	43.3%	4.8%	34.2%	17.3%	0.3%	
2005	16,372	1,121	10,833	3,827	125	32,278	50.7%	3.5%	33.6%	11.9%	0.4%	
2006	15,334	2,375	11,379	3,387	122	32,597	47.0%	7.3%	34.9%	10.4%	0.4%	
2007	12,756	4,465	11,092	6,246	119	34,678	36.8%	12.9%	32.0%	18.0%	0.3%	
2008	10,702	978	10,416	2,729	92	24,917	43.0%	3.9%	41.8%	11.0%	0.4%	
2009	9,303	1,214	10,588	3,124	91	24,320	38.3%	5.0%	43.5%	12.8%	0.4%	
2010	13,435	1,075	9,838	4,019	116	28,483	47.2%	3.8%	34.5%	14.1%	0.4%	
2011	13,932	1,002	10,985	3,409	123	29,451	47.3%	3.4%	37.3%	11.6%	0.4%	
2012	14,717	906	10,434	3,274	108	29,439	50.0%	3.1%	35.4%	11.1%	0.4%	
2013	15,455	880	10,595	3,060	108	30,098	51.3%	2.9%	35.2%	10.2%	0.4%	
2014	15,732	848	10,648	1,591	100	28,919	54.4%	2.9%	36.8%	5.5%	0.3%	
2015	16,270	699	10,460	2,049	87	29,565	55.0%	2.4%	35.4%	6.9%	0.3%	
2016	16,135	810	10,626	2,179	79	29,829	54.1%	2.7%	35.6%	7.3%	0.3%	
2017	17,195	1,148	10,560	2,148	74	31,125	55.2%	3.7%	33.9%	6.9%	0.2%	
2018	17,446	1,025	10,339	2,609	84	31,503	55.4%	3.3%	32.8%	8.3%	0.3%	
2019	17,780	1,320	10,403	2,082	93	31,678	56.1%	4.2%	32.8%	6.6%	0.3%	
2020	9,058	763	7,982	2,112	71	19,986	45.3%	3.8%	39.9%	10.6%	0.4%	

Source: Energy Information Administration, State Energy Data System

As shown in Table 5.3, in 2020, the electric power sector consumed 61,419 BBTUs of petroleum products. Petroleum consumed in the electric power sector only includes residual fuel oil and distillate fuel oil. Based on heat content, residual fuel oil accounted for 79.4% of total petroleum consumption in the electric power sector in 2020; distillate fuel oil accounted for 20.6%. From 1960 to 2020, total

petroleum consumption in the electric power sector increased 44,108 BBTUs. During this period, the share of residual fuel oil decreased 19.3 percentage points. Increased petroleum consumption in the electric power sector, from 1960 to 2020, was due to the increase from 1960 to 1990. From 1990 to 2020, total petroleum consumption in the electric power sector decreased 36,182 BBTUs.

**Table 5.3. Petroleum Consumption by the Electric Power Sector in Heat Content**

Year	Consumption in Billion Btus						% of Electric Power	
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Residual Fuel Oil	Distillate Fuel Oil
1960	-	17,094	-	218	-	17,311	98.7%	1.3%
1965	-	26,984	-	355	-	27,339	98.7%	1.3%
1970	-	42,136	-	557	-	42,693	98.7%	1.3%
1975	-	55,830	-	2,498	-	58,328	95.7%	4.3%
1980	-	64,372	-	5,171	-	69,543	92.6%	7.4%
1985	-	64,724	-	4,378	-	69,102	93.7%	6.3%
1990	-	87,038	-	10,562	-	97,601	89.2%	10.8%
1991	-	70,373	-	9,958	-	80,332	87.6%	12.4%
1992	-	73,505	-	12,657	-	86,163	85.3%	14.7%
1993	-	63,509	-	12,640	-	76,149	83.4%	16.6%
1994	-	66,437	-	12,618	-	79,055	84.0%	16.0%
1995	-	67,329	-	12,870	-	80,199	84.0%	16.0%
1996	-	69,130	-	13,520	-	82,650	83.6%	16.4%
1997	-	68,356	-	13,398	-	81,754	83.6%	16.4%
1998	-	68,222	-	14,042	-	82,264	82.9%	17.1%
1999	-	68,518	-	14,867	-	83,385	82.2%	17.8%
2000	-	68,202	-	16,148	-	84,350	80.9%	19.1%
2001	-	66,725	-	17,312	-	84,037	79.4%	20.6%
2002	-	68,247	-	23,199	-	91,446	74.6%	25.4%
2003	-	67,907	-	13,367	-	81,275	83.6%	16.4%
2004	-	70,527	-	14,464	-	84,992	83.0%	17.0%
2005	-	71,070	-	15,035	-	86,104	82.5%	17.5%
2006	-	72,295	-	14,236	-	86,531	83.5%	16.5%
2007	-	71,832	-	13,377	-	85,210	84.3%	15.7%
2008	-	69,217	-	12,712	-	81,928	84.5%	15.5%
2009	-	67,297	-	12,999	-	80,296	83.8%	16.2%
2010	-	65,157	-	12,971	-	78,128	83.4%	16.6%
2011	-	64,471	-	13,062	-	77,533	83.2%	16.8%
2012	-	59,686	-	12,592	-	72,278	82.6%	17.4%
2013	-	57,940	-	11,980	-	69,920	82.9%	17.1%
2014	-	55,115	-	11,845	-	66,960	82.3%	17.7%
2015	-	54,987	-	12,297	-	67,284	81.7%	18.3%
2016	-	53,197	-	11,726	-	64,923	81.9%	18.1%
2017	-	52,777	-	12,053	-	64,830	81.4%	18.6%
2018	-	52,790	-	12,407	-	65,197	81.0%	19.0%
2019	-	52,678	-	13,344	-	66,022	79.8%	20.2%
2020	-	48,786	-	12,633	-	61,419	79.4%	20.6%

Source: Energy Information Administration, State Energy Data System

As shown in Table 5.4, in 2020, the electric power sector consumed about 9,955 TBBLs of petroleum products, about 7,760 TBBLs of residual fuel oil, and 2,195 TBBLs of distillate fuel oil. From 1990 to 2020, total petroleum consumed in the electric power sector decreased 5,702 TBBLs; residual fuel oil consumption decreased 6,084 TBBLs; and distillate fuel oil consumption increased 382 TBBLs.

**Table 5.4. Petroleum Consumption by the Electric Power Sector in Physical Unit**

Year	Consumption in Thousand Barrels						% of Electric Power	
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Residual Fuel Oil	Distillate Fuel Oil
1960	-	2,719	-	37	-	2,756	98.7%	1.3%
1965	-	4,292	-	61	-	4,353	98.6%	1.4%
1970	-	6,702	-	96	-	6,798	98.6%	1.4%
1975	-	8,880	-	429	-	9,309	95.4%	4.6%
1980	-	10,239	-	888	-	11,127	92.0%	8.0%
1985	-	10,295	-	752	-	11,047	93.2%	6.8%
1990	-	13,844	-	1,813	-	15,657	88.4%	11.6%
1991	-	11,193	-	1,710	-	12,903	86.7%	13.3%
1992	-	11,692	-	2,173	-	13,865	84.3%	15.7%
1993	-	10,102	-	2,170	-	12,272	82.3%	17.7%
1994	-	10,567	-	2,168	-	12,735	83.0%	17.0%
1995	-	10,709	-	2,211	-	12,921	82.9%	17.1%
1996	-	10,996	-	2,323	-	13,319	82.6%	17.4%
1997	-	10,873	-	2,302	-	13,175	82.5%	17.5%
1998	-	10,851	-	2,413	-	13,264	81.8%	18.2%
1999	-	10,898	-	2,555	-	13,453	81.0%	19.0%
2000	-	10,848	-	2,775	-	13,623	79.6%	20.4%
2001	-	10,613	-	2,975	-	13,588	78.1%	21.9%
2002	-	10,855	-	3,987	-	14,842	73.1%	26.9%
2003	-	10,801	-	2,297	-	13,098	82.5%	17.5%
2004	-	11,218	-	2,486	-	13,704	81.9%	18.1%
2005	-	11,304	-	2,584	-	13,888	81.4%	18.6%
2006	-	11,499	-	2,453	-	13,952	82.4%	17.6%
2007	-	11,426	-	2,313	-	13,738	83.2%	16.8%
2008	-	11,009	-	2,199	-	13,209	83.3%	16.6%
2009	-	10,704	-	2,250	-	12,954	82.6%	17.4%
2010	-	10,364	-	2,246	-	12,610	82.2%	17.8%
2011	-	10,255	-	2,264	-	12,518	81.9%	18.1%
2012	-	9,494	-	2,183	-	11,677	81.3%	18.7%
2013	-	9,216	-	2,079	-	11,295	81.6%	18.4%
2014	-	8,767	-	2,055	-	10,822	81.0%	19.0%
2015	-	8,746	-	2,134	-	10,880	80.4%	19.6%
2016	-	8,461	-	2,037	-	10,498	80.6%	19.4%
2017	-	8,395	-	2,094	-	10,488	80.0%	20.0%
2018	-	8,397	-	2,154	-	10,551	79.6%	20.4%
2019	-	8,379	-	2,317	-	10,696	78.3%	21.7%
2020	-	7,760	-	2,195	-	9,955	78.0%	22.0%

Source: Energy Information Administration, State Energy Data System

As shown in Table 5.5, in 2020, the industrial sector consumed 14,854 BBTUs of petroleum products. Based on heat content, petroleum consumed in the industrial sector was mainly other petroleum products (76.6%) in 2020; followed by distillate fuel oil (13.4%) and motor gasoline (10.1%). Other petroleum products consumed by the industrial sector mainly include still gas, asphalt and road oil, and petroleum coke. From 1960 to 2020, total petroleum consumption by the industrial sector increased 611 BBTUs. During this period, the share of other petroleum products increased 48.1 percentage points; the share of motor gasoline increased 7.0 percentage points; the share of distillate fuel oil decreased 9.3 percentage points; and the share of residual fuel oil decreased 45.8 percentage points.

Increased petroleum consumption in the industrial sector, from 1960 to 2020, was due to the increase from 1960 to 1990. From 1990 to 2020, total petroleum consumption in the industrial sector decreased 17,048 BBTUs; residual fuel oil consumption decreased 10,942 BBTUs; distillate fuel oil consumption decreased 2,234 BBTUs; and other petroleum products consumption decreased 4,666 BBTUs. Only motor gasoline consumption increased 794 BBTUs.

**Table 5.5. Petroleum Consumption by the Industrial Sector in Heat Content**

Year	Consumption in Billion Btus						% of Industrial Sector			
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum
1960	-	6,525	438	3,225	4,055	14,243	45.8%	3.1%	22.6%	28.5%
1965	-	10,763	401	3,697	6,459	21,320	50.5%	1.9%	17.3%	30.3%
1970	-	10,506	260	4,086	8,027	22,879	45.9%	1.1%	17.9%	35.1%
1975	-	8,463	278	3,512	8,949	21,202	39.9%	1.3%	16.6%	42.2%
1980	-	9,374	255	7,976	10,972	28,577	32.8%	0.9%	27.9%	38.4%
1985	-	8,449	546	2,665	6,861	18,521	45.6%	2.9%	14.4%	37.0%
1990	-	10,942	701	4,222	16,037	31,902	34.3%	2.2%	13.2%	50.3%
1991	-	11,274	788	4,014	14,443	30,519	36.9%	2.6%	13.2%	47.3%
1992	-	8,528	796	4,002	17,248	30,574	27.9%	2.6%	13.1%	56.4%
1993	-	6,640	1,258	3,895	18,123	29,916	22.2%	4.2%	13.0%	60.6%
1994	-	7,447	1,275	3,142	21,647	33,511	22.2%	3.8%	9.4%	64.6%
1995	-	6,441	1,274	3,191	20,257	31,163	20.7%	4.1%	10.2%	65.0%
1996	-	6,016	1,348	2,766	22,363	32,493	18.5%	4.1%	8.5%	68.8%
1997	-	5,310	1,261	3,624	18,030	28,225	18.8%	4.5%	12.8%	63.9%
1998	-	1,918	1,383	3,400	15,484	22,185	8.6%	6.2%	15.3%	69.8%
1999	-	2,090	808	2,487	15,083	20,468	10.2%	3.9%	12.2%	73.7%
2000	-	2,751	832	2,751	16,054	22,388	12.3%	3.7%	12.3%	71.7%
2001	-	50	635	2,751	17,543	20,979	0.2%	3.0%	13.1%	83.6%
2002	-	2,805	754	2,673	15,839	22,071	12.7%	3.4%	12.1%	71.8%
2003	-	2,287	714	2,557	16,597	22,155	10.3%	3.2%	11.5%	74.9%
2004	-	2,481	878	2,367	16,422	22,148	11.2%	4.0%	10.7%	74.1%
2005	-	4,912	690	2,977	17,421	26,000	18.9%	2.7%	11.5%	67.0%
2006	-	5,102	733	2,648	16,683	25,166	20.3%	2.9%	10.5%	66.3%
2007	-	2,690	1,253	2,606	16,259	22,808	11.8%	5.5%	11.4%	71.3%
2008	-	2,730	1,262	2,003	14,123	20,118	13.6%	6.3%	10.0%	70.2%
2009	-	2,930	1,189	2,332	18,619	25,070	11.7%	4.7%	9.3%	74.3%
2010	-	2,834	724	1,882	20,221	25,661	11.0%	2.8%	7.3%	78.8%
2011	-	2,852	746	1,972	20,159	25,729	11.1%	2.9%	7.7%	78.4%
2012	-	2,051	710	2,166	18,681	23,608	8.7%	3.0%	9.2%	79.1%
2013	-	1,780	699	1,873	20,024	24,376	7.3%	2.9%	7.7%	82.1%
2014	-	1,614	865	2,261	18,634	23,374	6.9%	3.7%	9.7%	79.7%
2015	-	1,876	1,437	1,851	18,590	23,754	7.9%	6.0%	7.8%	78.3%
2016	-	2,565	1,420	939	17,992	22,916	11.2%	6.2%	4.1%	78.5%
2017	-	3,233	1,432	1,789	18,213	24,667	13.1%	5.8%	7.3%	73.8%
2018	-	2,797	1,478	1,515	15,574	21,364	13.1%	6.9%	7.1%	72.9%
2019	-	2,487	1,481	2,191	15,142	21,301	11.7%	7.0%	10.3%	71.1%
2020	-	-	1,495	1,988	11,371	14,854	0.0%	10.1%	13.4%	76.6%

Source: Energy Information Administration, State Energy Data System

As shown in Table 5.6, in 2020, the industrial sector consumed about 2,460 TBBLs of petroleum products, about 1,819 TBBLs of other petroleum products, 345 TBBLs of distillate fuel oil, and 296 TBBLs of motor gasoline. From 1990 to 2020, total petroleum consumed in the industrial sector decreased 2,771 TBBLs; residual fuel oil consumption decreased 1,740 TBBLs; distillate fuel oil consumption decreased 380 TBBLs; motor gasoline consumption increased 163 TBBLs; and other petroleum products decreased 814 TBBLs.

**Table 5.6. Petroleum Consumption by the Industrial Sector in Physical Unit**

Year	Consumption in Thousand Barrels						% of Industrial Sector			
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum
1960	-	1,038	83	554	692	2,367	43.9%	3.5%	23.4%	29.2%
1965	-	1,712	76	635	1,074	3,497	49.0%	2.2%	18.2%	30.7%
1970	-	1,671	49	701	1,453	3,874	43.1%	1.3%	18.1%	37.5%
1975	-	1,346	53	603	1,646	3,648	36.9%	1.5%	16.5%	45.1%
1980	-	1,491	49	1,369	2,226	5,135	29.0%	1.0%	26.7%	43.3%
1985	-	1,344	104	458	1,091	2,997	44.8%	3.5%	15.3%	36.4%
1990	-	1,740	133	725	2,633	5,231	33.3%	2.5%	13.9%	50.3%
1991	-	1,793	150	689	2,357	4,989	35.9%	3.0%	13.8%	47.2%
1992	-	1,356	152	687	2,883	5,078	26.7%	3.0%	13.5%	56.8%
1993	-	1,056	241	669	3,284	5,250	20.1%	4.6%	12.7%	62.6%
1994	-	1,184	245	540	4,182	6,151	19.2%	4.0%	8.8%	68.0%
1995	-	1,024	245	548	3,826	5,643	18.1%	4.3%	9.7%	67.8%
1996	-	957	259	475	4,189	5,880	16.3%	4.4%	8.1%	71.2%
1997	-	845	242	623	2,962	4,672	18.1%	5.2%	13.3%	63.4%
1998	-	305	266	584	2,610	3,765	8.1%	7.1%	15.5%	69.3%
1999	-	332	155	427	2,466	3,380	9.8%	4.6%	12.6%	73.0%
2000	-	438	160	473	2,614	3,685	11.9%	4.3%	12.8%	70.9%
2001	-	8	122	473	2,910	3,513	0.2%	3.5%	13.5%	82.8%
2002	-	446	145	459	2,729	3,779	11.8%	3.8%	12.1%	72.2%
2003	-	364	137	439	2,793	3,733	9.8%	3.7%	11.8%	74.8%
2004	-	395	169	407	2,733	3,704	10.7%	4.6%	11.0%	73.8%
2005	-	781	133	512	2,872	4,298	18.2%	3.1%	11.9%	66.8%
2006	-	811	141	456	2,786	4,194	19.3%	3.4%	10.9%	66.4%
2007	-	428	244	451	2,721	3,844	11.1%	6.3%	11.7%	70.8%
2008	-	434	247	347	2,339	3,367	12.9%	7.3%	10.3%	69.5%
2009	-	466	234	404	3,027	4,131	11.3%	5.7%	9.8%	73.3%
2010	-	451	143	326	3,296	4,216	10.7%	3.4%	7.7%	78.2%
2011	-	454	147	342	3,290	4,233	10.7%	3.5%	8.1%	77.7%
2012	-	326	140	376	3,055	3,897	8.4%	3.6%	9.6%	78.4%
2013	-	283	138	325	3,246	3,992	7.1%	3.5%	8.1%	81.3%
2014	-	257	171	392	3,016	3,836	6.7%	4.5%	10.2%	78.6%
2015	-	298	284	321	3,017	3,920	7.6%	7.2%	8.2%	77.0%
2016	-	408	281	163	2,844	3,696	11.0%	7.6%	4.4%	76.9%
2017	-	514	283	311	2,907	4,015	12.8%	7.0%	7.7%	72.4%
2018	-	445	292	263	2,505	3,505	12.7%	8.3%	7.5%	71.5%
2019	-	396	293	380	2,418	3,487	11.4%	8.4%	10.9%	69.3%
2020	-	-	296	345	1,819	2,460	0.0%	12.0%	14.0%	73.9%

Source: Energy Information Administration, State Energy Data System



Petroleum products consumption in the commercial sector was more volatile. As shown in Table 5.7, in 2020, the commercial sector consumed 5,755 BBTUs of petroleum products. Based on heat content, petroleum consumed in the commercial sector was mainly other petroleum products (48.7%); followed by motor gasoline (28.8%) and distillate fuel oil (22.6%). Other petroleum products consumed by the industrial sector mainly include LPG/HGL. From 1960 to 2020, total petroleum consumption of the commercial sector increased 4,640 BBTUs. During this period, the share of other petroleum products increased 22.4 percentage points; the share of motor gasoline increased 2.7 percentage points; the share of distillate fuel oil decreased 2.3 percentage points; and the share of residual fuel oil decreased 22.9 percentage points. Since 2008, the commercial sector did not consume any residual fuel oil. Motor gasoline consumption in the commercial sector from 1993 to 2014 was very limited. Since 2015, motor gasoline consumption increased substantially in the commercial sector.

Increased petroleum consumption in the commercial sector, from 1960 to 2020, was due to the increase from 1960 to 1990. From 1990 to 2020, total petroleum consumption in the commercial sector decreased 2,740 BBTUs. Increased other petroleum and motor gasoline consumption was more than offset by decreased consumption of residual fuel oil and distillate fuel oil. From 1990 to 2020, other petroleum product consumption increased 2,442 BBTUs; motor gasoline consumption increased 1,345 BBTUs. On the other hand, residual fuel oil consumption decreased 5,189 BBTUs and distillate fuel oil consumption decreased 1,338 BBTUs.

**Table 5.7. Petroleum Consumption by the Commercial Sector in Heat Content**

Year	Consumption in Billion Btus						% of Commercial Sector			
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum
1960	-	255	290	277	293	1,115	22.9%	26.0%	24.8%	26.3%
1965	-	195	309	416	540	1,460	13.4%	21.2%	28.5%	37.0%
1970	-	236	701	1,012	1,753	3,702	6.4%	18.9%	27.3%	47.4%
1975	-	95	517	491	1,155	2,258	4.2%	22.9%	21.7%	51.2%
1980	-	157	282	2,317	1,211	3,967	4.0%	7.1%	58.4%	30.5%
1985	-	131	249	768	291	1,439	9.1%	17.3%	53.4%	20.2%
1990	-	5,189	310	2,636	360	8,495	61.1%	3.6%	31.0%	4.2%
1991	-	116	256	3,552	370	4,294	2.7%	6.0%	82.7%	8.6%
1992	-	6,612	234	2,901	1,163	10,910	60.6%	2.1%	26.6%	10.7%
1993	-	214	57	2,414	250	2,935	7.3%	1.9%	82.2%	8.5%
1994	-	2,719	57	2,265	254	5,295	51.4%	1.1%	42.8%	4.8%
1995	-	392	58	1,998	243	2,691	14.6%	2.2%	74.2%	9.0%
1996	-	79	58	1,302	302	1,741	4.5%	3.3%	74.8%	17.3%
1997	-	69	58	2,282	558	2,967	2.3%	2.0%	76.9%	18.8%
1998	-	10,711	58	1,225	1,586	13,580	78.9%	0.4%	9.0%	11.7%
1999	-	36	58	1,512	899	2,505	1.4%	2.3%	60.4%	35.9%
2000	-	52	59	1,271	1,229	2,611	2.0%	2.3%	48.7%	47.1%
2001	-	34	60	793	1,246	2,133	1.6%	2.8%	37.2%	58.4%
2002	-	-	60	1,805	1,252	3,117	0.0%	1.9%	57.9%	40.2%
2003	-	-	61	1,644	927	2,632	0.0%	2.3%	62.5%	35.2%
2004	-	27	62	2,220	945	3,254	0.8%	1.9%	68.2%	29.0%
2005	-	18	63	2,237	964	3,282	0.5%	1.9%	68.2%	29.4%
2006	-	5	62	2,274	988	3,329	0.2%	1.9%	68.3%	29.7%
2007	-	3	62	1,629	857	2,551	0.1%	2.4%	63.9%	33.6%
2008	-	-	62	1,277	1,549	2,888	0.0%	2.1%	44.2%	53.6%
2009	-	-	62	1,573	2,076	3,711	0.0%	1.7%	42.4%	55.9%
2010	-	-	61	1,528	2,040	3,629	0.0%	1.7%	42.1%	56.2%
2011	-	-	61	1,728	2,424	4,213	0.0%	1.4%	41.0%	57.5%
2012	-	-	61	1,537	2,129	3,727	0.0%	1.6%	41.2%	57.1%
2013	-	-	63	1,471	2,303	3,837	0.0%	1.6%	38.3%	60.0%
2014	-	-	60	1,862	2,504	4,426	0.0%	1.4%	42.1%	56.6%
2015	-	-	1,563	1,298	2,319	5,180	0.0%	30.2%	25.1%	44.8%
2016	-	-	1,585	904	2,327	4,816	0.0%	32.9%	18.8%	48.3%
2017	-	-	1,610	1,181	3,025	5,816	0.0%	27.7%	20.3%	52.0%
2018	-	-	1,638	1,361	2,843	5,842	0.0%	28.0%	23.3%	48.7%
2019	-	-	1,646	1,823	3,085	6,554	0.0%	25.1%	27.8%	47.1%
2020	-	-	1,655	1,298	2,802	5,755	0.0%	28.8%	22.6%	48.7%

Source: Energy Information Administration, State Energy Data System

As shown in Table 5.8, in 2020, the commercial sector consumed about 1,283 TBBLs of petroleum products, about 729 TBBLs of other petroleum products (LPG/HGL), 226 TBBLs of distillate fuel oil, and 328 TBBLs of motor gasoline. From 1990 to 2020, total petroleum consumed in the commercial sector decreased 147 TBBLs; residual fuel oil consumption decreased 825 TBBLs; distillate fuel oil consumption decreased 227 TBBLs; motor gasoline consumption increased 269 TBBLs; and other petroleum products increased 636 TBBLs.

**Table 5.8. Petroleum Consumption by the Commercial Sector in Physical Unit**

Year	Consumption in Thousand Barrels						% of Commercial Sector				
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	
1960	-	41	55	48	65	209	19.6%	26.3%	23.0%	31.1%	
1965	-	31	59	71	122	283	11.0%	20.8%	25.1%	43.1%	
1970	-	38	133	174	415	760	5.0%	17.5%	22.9%	54.6%	
1975	-	15	98	84	280	477	3.1%	20.5%	17.6%	58.7%	
1980	-	25	54	398	315	792	3.2%	6.8%	50.3%	39.8%	
1985	-	21	47	132	75	275	7.6%	17.1%	48.0%	27.3%	
1990	-	825	59	453	93	1,430	57.7%	4.1%	31.7%	6.5%	
1991	-	18	49	610	96	773	2.3%	6.3%	78.9%	12.4%	
1992	-	1,052	45	498	302	1,897	55.5%	2.4%	26.3%	15.9%	
1993	-	34	11	414	65	524	6.5%	2.1%	79.0%	12.4%	
1994	-	433	11	389	66	899	48.2%	1.2%	43.3%	7.3%	
1995	-	62	11	343	64	480	12.9%	2.3%	71.5%	13.3%	
1996	-	13	11	224	78	326	4.0%	3.4%	68.7%	23.9%	
1997	-	11	11	392	146	560	2.0%	2.0%	70.0%	26.1%	
1998	-	1,704	11	211	412	2,338	72.9%	0.5%	9.0%	17.6%	
1999	-	6	11	260	234	511	1.2%	2.2%	50.9%	45.8%	
2000	-	8	11	218	321	558	1.4%	2.0%	39.1%	57.5%	
2001	-	5	12	136	325	478	1.0%	2.5%	28.5%	68.0%	
2002	-	-	12	310	326	648	0.0%	1.9%	47.8%	50.3%	
2003	-	-	12	282	242	536	0.0%	2.2%	52.6%	45.1%	
2004	-	4	12	382	246	644	0.6%	1.9%	59.3%	38.2%	
2005	-	3	12	384	252	651	0.5%	1.8%	59.0%	38.7%	
2006	-	1	12	392	257	662	0.2%	1.8%	59.2%	38.8%	
2007	-	-	12	282	223	517	0.0%	2.3%	54.5%	43.1%	
2008	-	-	12	221	403	636	0.0%	1.9%	34.7%	63.4%	
2009	-	-	12	272	541	825	0.0%	1.5%	33.0%	65.6%	
2010	-	-	12	265	531	808	0.0%	1.5%	32.8%	65.7%	
2011	-	-	12	299	632	943	0.0%	1.3%	31.7%	67.0%	
2012	-	-	12	266	555	833	0.0%	1.4%	31.9%	66.6%	
2013	-	-	13	255	599	867	0.0%	1.5%	29.4%	69.1%	
2014	-	-	12	323	652	987	0.0%	1.2%	32.7%	66.1%	
2015	-	-	309	225	604	1,138	0.0%	27.2%	19.8%	53.1%	
2016	-	-	314	157	605	1,076	0.0%	29.2%	14.6%	56.2%	
2017	-	-	319	205	787	1,311	0.0%	24.3%	15.6%	60.0%	
2018	-	-	324	236	741	1,301	0.0%	24.9%	18.1%	57.0%	
2019	-	-	326	317	803	1,446	0.0%	22.5%	21.9%	55.5%	
2020	-	-	328	226	729	1,283	0.0%	25.6%	17.6%	56.8%	

Source: Energy Information Administration, State Energy Data System

Petroleum products consumed in the residential sector include mainly other petroleum products such as LPG/HGL. As shown in Tables 5.9-5.10, in 2020, about 472 BBTUs (123 TBBLs) of LPG/HGL were consumed in the residential sector. Consumption of LPG/HGL was volatile over time.

**Table 5.9. Petroleum Consumption by the Residential Sector in Heat Content**

Year	Consumption in Billion Btus						% of Residential	
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Petroleum Total	Distillate Fuel Oil	Other Petroleum
1960	-	-	-	2	98	100	2.0%	98.0%
1965	-	-	-	3	193	196	1.5%	98.5%
1970	-	-	-	8	762	770	1.0%	99.0%
1975	-	-	-	4	546	550	0.7%	99.3%
1980	-	-	-	6	732	738	0.8%	99.2%
1985	-	-	-	2	171	173	1.2%	98.8%
1990	-	-	-	2	217	219	0.9%	99.1%
1991	-	-	-	2	223	225	0.9%	99.1%
1992	-	-	-	2	704	706	0.3%	99.7%
1993	-	-	-	11	150	161	6.8%	93.2%
1994	-	-	-	10	153	163	6.1%	93.9%
1995	-	-	-	10	147	157	6.4%	93.6%
1996	-	-	-	1	183	184	0.5%	99.5%
1997	-	-	-	3	337	340	0.9%	99.1%
1998	-	-	-	2	959	961	0.2%	99.8%
1999	-	-	-	2	543	545	0.4%	99.6%
2000	-	-	-	2	743	745	0.3%	99.7%
2001	-	-	-	2	754	756	0.3%	99.7%
2002	-	-	-	2	757	759	0.3%	99.7%
2003	-	-	-	2	561	563	0.4%	99.6%
2004	-	-	-	2	572	574	0.3%	99.7%
2005	-	-	-	1	584	585	0.2%	99.8%
2006	-	-	-	19	598	617	3.1%	96.9%
2007	-	-	-	19	480	499	3.8%	96.2%
2008	-	-	-	30	1,007	1,037	2.9%	97.1%
2009	-	-	-	16	920	936	1.7%	98.3%
2010	-	-	-	1	918	919	0.1%	99.9%
2011	-	-	-	1	854	855	0.1%	99.9%
2012	-	-	-	-	1,254	1,254	0.0%	100.0%
2013	-	-	-	-	839	839	0.0%	100.0%
2014	-	-	-	-	847	847	0.0%	100.0%
2015	-	-	-	2	505	507	0.4%	99.6%
2016	-	-	-	-	691	691	0.0%	100.0%
2017	-	-	-	1	580	581	0.2%	99.8%
2018	-	-	-	-	455	455	0.0%	100.0%
2019	-	-	-	-	495	495	0.0%	100.0%
2020	-	-	-	-	472	472	0.0%	100.0%

Source: Energy Information Administration, State Energy Data System

**Table 5.10. Petroleum Consumption by the Residential Sector in Physical Unit**

Year	Consumption in Thousand Barrels					Petroleum Total	% of Residential	
	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum		Distillate Fuel Oil	Other Petroleum
1960	-	-	-	-	26	26	0.0%	100.0%
1965	-	-	-	1	50	51	2.0%	100.0%
1970	-	-	-	1	199	200	0.5%	100.0%
1975	-	-	-	1	142	143	0.7%	100.0%
1980	-	-	-	1	191	192	0.5%	100.0%
1985	-	-	-	-	45	45	0.0%	100.0%
1990	-	-	-	-	57	57	0.0%	100.0%
1991	-	-	-	-	58	58	0.0%	100.0%
1992	-	-	-	-	184	184	0.0%	100.0%
1993	-	-	-	2	39	41	5.1%	100.0%
1994	-	-	-	2	40	42	5.0%	100.0%
1995	-	-	-	2	38	40	5.3%	100.0%
1996	-	-	-	-	48	48	0.0%	100.0%
1997	-	-	-	-	88	88	0.0%	100.0%
1998	-	-	-	-	250	250	0.0%	100.0%
1999	-	-	-	-	142	142	0.0%	100.0%
2000	-	-	-	-	194	194	0.0%	100.0%
2001	-	-	-	-	197	197	0.0%	100.0%
2002	-	-	-	-	197	197	0.0%	100.0%
2003	-	-	-	-	146	146	0.0%	100.0%
2004	-	-	-	-	149	149	0.0%	100.0%
2005	-	-	-	-	152	152	0.0%	100.0%
2006	-	-	-	3	156	159	1.9%	100.0%
2007	-	-	-	3	125	128	2.4%	100.0%
2008	-	-	-	5	262	267	1.9%	100.0%
2009	-	-	-	3	239	242	1.3%	100.0%
2010	-	-	-	-	239	239	0.0%	100.0%
2011	-	-	-	-	222	222	0.0%	100.0%
2012	-	-	-	-	326	326	0.0%	100.0%
2013	-	-	-	-	218	218	0.0%	100.0%
2014	-	-	-	-	220	220	0.0%	100.0%
2015	-	-	-	-	132	132	0.0%	100.0%
2016	-	-	-	-	180	180	0.0%	100.0%
2017	-	-	-	-	151	151	0.0%	100.0%
2018	-	-	-	-	119	119	0.0%	100.0%
2019	-	-	-	-	129	129	0.0%	100.0%
2020	-	-	-	-	123	123	0.0%	100.0%

Source: Energy Information Administration, State Energy Data System

## 6. Hawai'i's Petroleum Expenditures

As shown in Table 6.1, petroleum accounted for 95.8% of Hawai'i's primary energy expenditures and about 59.4% of total energy expenditures (including electricity) in 2020. Due to fluctuations in petroleum prices, petroleum's share of total energy expenditures increased from 74.3% in 1970 to 86.6% in 1980; it decreased to 58.6% in 1998, increased to 78.9% in 2007, and then decreased to 59.4% in 2020.

**Table 6.1. Hawai'i's Total Energy, Primary Energy, and Petroleum Expenditures**

Year	Total Energy Expenditures	Primary Energy Expenditures	Petroleum Expenditures	Petroleum as % of	
	\$ Million	\$ Million	\$ Million	Total Energy %	Primary Energy %
1970	273.9	203.8	203.5	74.3	99.9
1975	651.5	518.6	518.1	79.5	99.9
1980	1,720.7	1,539.7	1,490.3	86.6	96.8
1981	2,060.7	1,785.0	1,730.3	84.0	96.9
1985	1,906.9	1,594.7	1,542.0	80.9	96.7
1986	1,461.9	1,139.2	1,100.7	75.3	96.6
1987	1,480.5	1,179.4	1,137.6	76.8	96.5
1988	1,592.9	1,267.9	1,227.4	77.1	96.8
1989	1,809.4	1,463.4	1,422.9	78.6	97.2
1990	2,117.9	1,807.6	1,764.9	83.3	97.6
1991	2,029.2	1,540.2	1,488.4	73.3	96.6
1992	1,984.3	1,472.8	1,416.7	71.4	96.2
1993	2,017.3	1,398.4	1,332.0	66.0	95.3
1994	2,122.1	1,441.7	1,375.7	64.8	95.4
1995	2,202.7	1,470.2	1,392.8	63.2	94.7
1996	2,305.8	1,532.5	1,453.4	63.0	94.8
1997	2,272.6	1,455.8	1,375.7	60.5	94.5
1998	2,092.5	1,296.7	1,226.6	58.6	94.6
1999	2,163.2	1,379.8	1,309.6	60.5	94.9
2000	2,705.1	1,863.0	1,783.7	65.9	95.7
2001	2,779.2	1,891.1	1,813.3	65.2	95.9
2002	2,688.2	1,882.7	1,798.8	66.9	95.5
2003	3,335.9	2,341.4	2,223.1	66.6	94.9
2004	4,024.6	2,886.3	2,782.3	69.1	96.4
2005	4,996.9	3,892.2	3,785.4	75.8	97.3
2006	5,729.1	4,535.9	4,418.7	77.1	97.4
2007	6,177.1	4,994.8	4,871.1	78.9	97.5
2008	6,828.5	5,297.3	5,138.9	75.3	97.0
2009	4,804.8	3,540.0	3,413.0	71.0	96.4
2010	6,199.8	4,866.8	4,721.0	76.1	97.0
2011	8,067.9	6,569.5	6,410.3	79.5	97.6
2012	8,289.5	6,690.3	6,523.1	78.7	97.5
2013	8,214.8	6,543.6	6,379.2	77.7	97.5
2014	7,769.8	5,983.6	5,807.1	74.7	97.1
2015	5,906.3	4,207.6	4,053.8	68.6	96.3
2016	5,215.5	3,580.7	3,440.3	66.0	96.1
2017	5,843.1	4,194.3	4,050.9	69.3	96.6
2018	6,828.7	5,080.1	4,918.8	72.0	96.8
2019	6,728.1	4,939.2	4,775.7	71.0	96.7
2020	4,695.9	2,912.0	2,790.8	59.4	95.8

Source: Energy Information Administration, State Energy Data System

As shown in Table 6.2, petroleum expenditures as a percent of nominal GDP increased from 4.4% to 12.3% from 1970 to 1981, decreased to 3.3% in 1998, increased to 9.3% in 2011, and then decreased to 3.4% in 2020.

**Table 6.2. Petroleum Expenditures and Gross Domestic Product (GDP)**

<b>Year</b>	<b>Nominal GDP \$ Million</b>	<b>Petroleum Expenditures \$ Million</b>	<b>Petroleum Expenditures As Percent of GDP %</b>
1970	4,639.4	203.5	4.4
1975	7,878.2	518.1	6.6
1980	12,897.4	1,490.3	11.6
1981	14,111.9	1,730.3	12.3
1985	19,974.6	1,542.0	7.7
1986	21,627.7	1,100.7	5.1
1987	23,397.5	1,137.6	4.9
1988	25,832.4	1,227.4	4.8
1989	28,365.6	1,422.9	5.0
1990	31,360.5	1,764.9	5.6
1991	33,117.8	1,488.4	4.5
1992	34,825.9	1,416.7	4.1
1993	35,407.1	1,332.0	3.8
1994	36,046.2	1,375.7	3.8
1995	36,400.9	1,392.8	3.8
1996	36,749.9	1,453.4	4.0
1997	37,707.4	1,375.7	3.6
1998	37,622.9	1,226.6	3.3
1999	38,990.6	1,309.6	3.4
2000	41,096.8	1,783.7	4.3
2001	42,585.4	1,813.3	4.3
2002	44,644.2	1,798.8	4.0
2003	48,166.1	2,223.1	4.6
2004	52,353.5	2,782.3	5.3
2005	57,369.4	3,785.4	6.6
2006	60,846.5	4,418.7	7.3
2007	64,163.6	4,871.1	7.6
2008	65,678.2	5,138.9	7.8
2009	64,549.7	3,413.0	5.3
2010	66,873.0	4,721.0	7.1
2011	69,083.9	6,410.3	9.3
2012	71,905.3	6,523.1	9.1
2013	74,555.0	6,379.2	8.6
2014	76,773.3	5,807.1	7.6
2015	81,230.3	4,053.8	5.0
2016	83,914.4	3,440.3	4.1
2017	87,217.4	4,050.9	4.6
2018	90,330.8	4,918.8	5.4
2019	91,912.7	4,775.7	5.2
2020	82,535.5	2,790.8	3.4

Source: Energy Information Administration, State Energy Data System

Petroleum expenditures are affected by petroleum prices and consumption. Since petroleum consumption is less volatile than the petroleum price, the fluctuation of Hawai'i's petroleum expenditures is mainly affected by the fluctuation of petroleum prices or the average petroleum expenditure.

As shown in Table 6.3, from 1970 to 2020, Hawai'i's total petroleum expenditures increased \$2587.3 million or 5.4% per year on average; the average petroleum expenditure increased \$13.53/MBTUs (\$76.59/BBL) or 5.4% per year; and petroleum consumption decreased 0.04% per year.

Petroleum expenditures are volatile over time mainly due to petroleum price fluctuations. From 1970 to 1981, the average petroleum expenditure in dollars per million BTUs (\$/MBTUs) increased by about 20.0% per year. As a result, petroleum expenditures in Hawai'i increased \$1,526.8 million or 21.5% per year. During this period, the consumption of petroleum only increased 1.2% per year.

From 1981 to 1998, the average petroleum expenditure in \$/MBTUs decreased by about 2.3% per year. As a result, petroleum expenditures in Hawai'i decreased \$503.7 million or 2.0% per year. During this period, the consumption of petroleum only increased 0.3% per year.

From 1998 to 2008, the average petroleum expenditure in \$/MBTUs increased about 15.0% per year. As a result, petroleum expenditures in Hawai'i increased \$3,912.3 million or 15.4% per year. During this period, the consumption of petroleum only increased 0.4% per year.

From 2008 to 2009, the average petroleum expenditure decreased by about 33.7%, and petroleum expenditures in Hawai'i decreased \$1,725.9 million or 33.6%.

From 2009 to 2012, the average petroleum expenditure increased by about 20.9% per year and petroleum expenditures in Hawai'i increased \$3,110.1 million or 24.1% per year.

From 2012 to 2020, the average petroleum expenditure decreased by about 6.5% per year, and petroleum expenditures in Hawai'i decreased by \$3,782.3 million or 10.1% per year.



**Table 6.3. Hawai‘i’s Average Petroleum Expenditure**

Year	Petroleum Expenditures \$ Million	Petroleum Consumption BBTUs	Petroleum Consumption TBBLs	Average Petroleum Expenditures	
				\$/MBTUs	\$/BBL
1970	203.5	195,388	34,105	1.04	5.97
1975	518.1	212,880	37,097	2.43	13.97
1980	1,490.3	249,539	43,562	5.97	34.21
1981	1,730.3	223,133	38,811	7.75	44.58
1985	1,542.0	232,123	40,006	6.64	38.54
1986	1,100.7	227,619	39,044	4.84	28.19
1987	1,137.6	228,894	39,389	4.97	28.88
1988	1,227.4	268,023	45,902	4.58	26.74
1989	1,422.9	280,097	48,021	5.08	29.63
1990	1,764.9	292,762	50,015	6.03	35.29
1991	1,488.4	266,571	45,758	5.58	32.53
1992	1,416.7	272,480	46,655	5.20	30.37
1993	1,332.0	239,247	41,392	5.57	32.18
1994	1,375.7	257,889	44,843	5.33	30.68
1995	1,392.8	252,252	43,842	5.52	31.77
1996	1,453.4	238,601	41,631	6.09	34.91
1997	1,375.7	230,468	39,829	5.97	34.54
1998	1,226.6	233,508	40,493	5.25	30.29
1999	1,309.6	229,893	39,662	5.70	33.02
2000	1,783.7	235,191	40,591	7.58	43.94
2001	1,813.3	239,817	41,479	7.56	43.72
2002	1,798.8	257,441	44,772	6.99	40.18
2003	2,223.1	269,414	46,861	8.25	47.44
2004	2,782.3	282,864	49,098	9.84	56.67
2005	3,785.4	295,039	51,267	12.83	73.84
2006	4,418.7	296,835	51,564	14.89	85.69
2007	4,871.1	305,278	52,905	15.96	92.07
2008	5,138.9	242,279	42,397	21.21	121.21
2009	3,413.0	242,840	42,472	14.05	80.36
2010	4,721.0	264,993	46,356	17.82	101.84
2011	6,410.3	269,611	47,367	23.78	135.33
2012	6,523.1	262,327	46,173	24.87	141.28
2013	6,379.2	263,998	46,470	24.16	137.28
2014	5,807.1	253,751	44,785	22.89	129.67
2015	4,053.8	258,584	45,635	15.68	88.83
2016	3,440.3	256,648	45,280	13.40	75.98
2017	4,050.9	266,773	47,091	15.18	86.02
2018	4,918.8	265,985	46,978	18.49	104.70
2019	4,775.7	268,561	47,435	17.78	100.68
2020	2,790.8	191,546	33,806	14.57	82.55
<b>Annual Average Growth Rate (%)</b>					
1970-1981	21.5%	1.2%	1.2%	20.0%	20.1%
1981-1998	-2.0%	0.3%	0.2%	-2.3%	-2.2%
1998-2008	15.4%	0.4%	0.5%	15.0%	14.9%
2008-2009	-33.6%	0.2%	0.2%	-33.7%	-33.7%
2009-2012	24.1%	2.6%	2.8%	20.9%	20.7%
2012-2020	-10.1%	-3.9%	-3.8%	-6.5%	-6.5%
1970-2020	5.4%	-0.04%	0.0%	5.4%	5.4%

Source: Energy Information Administration, State Energy Data System

As shown in Table 6.4, from 1970 to 2020, the average petroleum expenditure increased 5.4% per year. Among the four major petroleum products, the average expenditure of residual fuel oil increased the most at 6.5% per year; followed by distillate fuel oil at 6.1%, jet fuel at 5.3%, and motor gasoline at 4.2%.

**Table 6.4. Hawai'i's Average Petroleum Expenditure by Product in Heat Content**

Year	Total Petroleum \$/MBTU	Jet Fuel \$/MBTU	Residual Fuel \$/MBTU	Motor Gasoline \$/MBTU	Distillate Fuel \$/MBTU	HGL/LPG \$/MBTU	Asphalt Road Oil \$/MBTU	Lubricants \$/MBTU	Aviation Gasoline \$/MBTU
1970	1.0	0.7	0.4	3.3	1.0	1.6	0.6	5.1	2.2
1975	2.4	2.0	1.5	5.4	2.3	2.4	1.8	7.4	3.4
1980	6.0	6.2	3.7	10.8	6.6	4.3	3.6	14.4	9.1
1981	7.8	7.6	6.1	12.5	8.1	3.9	4.6	18.1	10.9
1985	6.6	6.2	4.8	11.1	7.9	11.2	4.4	18.1	9.9
1990	6.0	6.0	3.9	11.7	7.9	11.7	3.2	20.5	9.3
1995	5.5	4.4	2.9	11.5	7.3	7.3	3.2	21.7	8.4
2000	7.6	7.0	4.9	13.5	9.3	17.9	3.4	23.2	11.1
2001	7.6	5.9	4.8	14.6	9.0	18.7	3.7	24.5	11.1
2002	7.0	5.5	4.7	12.4	7.9	16.0	3.8	26.7	10.1
2003	8.3	6.6	4.7	15.2	10.5	17.6	4.2	28.9	13.0
2004	9.8	9.4	4.9	17.2	12.8	19.8	4.8	30.1	15.2
2005	12.8	12.9	8.1	20.7	15.7	23.0	5.0	35.2	18.8
2006	14.9	15.1	9.3	24.0	19.1	25.5	4.8	43.9	22.1
2007	16.0	16.2	10.7	24.6	20.2	26.6	5.3	47.0	23.8
2008	21.2	22.4	15.7	29.5	26.1	34.6	6.3	55.2	27.1
2009	14.1	12.7	9.1	22.9	16.8	27.2	16.1	56.2	20.1
2010	17.8	16.4	12.9	28.0	21.9	31.1	16.3	58.9	25.0
2011	23.8	22.7	18.5	34.4	29.2	32.2	18.4	69.6	31.8
2012	24.9	22.9	20.4	36.2	30.7	29.9	20.8	72.0	32.9
2013	24.2	22.6	19.5	34.8	30.2	27.3	21.7	69.5	32.4
2014	22.9	21.0	18.5	33.7	27.5	29.3	21.8	69.4	32.9
2015	15.7	12.3	9.7	27.7	22.2	18.3	18.0	67.3	25.5
2016	13.4	10.3	7.6	24.1	20.3	19.5	13.0	65.8	20.0
2017	15.2	12.1	10.0	26.8	20.9	21.4	11.7	67.3	24.0
2018	18.5	15.8	12.8	30.7	23.7	20.9	13.7	72.3	26.6
2019	17.8	14.8	12.0	31.2	22.2	19.4	13.7	75.0	25.3
2020	14.6	9.7	8.9	26.5	19.3	18.2	13.7	75.4	22.7
Annual Average Growth Rate (%)									
1970-1981	20.0%	23.7%	28.5%	12.8%	20.9%	8.6%	21.1%	12.2%	15.5%
1981-1998	-2.3%	-4.2%	-5.0%	-0.2%	-2.0%	8.2%	-1.4%	1.0%	-1.7%
1998-2008	15.0%	19.8%	19.9%	9.4%	16.2%	8.9%	5.7%	10.0%	12.8%
2008-2009	-33.7%	-43.5%	-41.9%	-22.3%	-35.5%	-21.4%	157.7%	1.7%	-25.8%
2009-2012	20.9%	21.9%	31.0%	16.5%	22.1%	3.2%	8.9%	8.7%	17.8%
2012-2020	-6.5%	-10.1%	-9.9%	-3.8%	-5.6%	-6.0%	-5.1%	0.6%	-4.5%
1970-2020	5.4%	5.3%	6.5%	4.2%	6.1%	5.0%	6.6%	5.5%	4.7%

Source: Energy Information Administration, State Energy Data System

As shown in Table 6.5, from 1970 to 2020, the average petroleum expenditure in Hawai'i increased from \$6.0/BBL to \$82.6/BBL. The average petroleum expenditure reached a peak of \$141.3/BBL in 2012. In 2020, among the four major petroleum products consumed in Hawai'i, the average expenditure of motor gasoline was the highest at \$134.1/BBL; followed by distillate fuel oil at \$111.3/BBL, residual fuel oil at \$55.8/BBL, and jet fuel at \$55.3/BBL.

**Table 6.5. Hawai'i's Average Petroleum Expenditure by Product in Physical Unit**

Year	Total Petroleum \$/BBL	Jet Fuel \$/BBL	Residual Fuel \$/BBL	Motor Gasoline \$/BBL	Distillate Fuel \$/BBL	HGL/LPG \$/BBL	Asphalt Road Oil \$/BBL	Lubricants \$/BBL	Aviation Gasoline \$/BBL
1970	6.0	4.1	2.4	17.4	5.8	5.9	3.7	31.0	11.3
1975	14.0	11.5	9.6	28.6	13.1	8.7	11.6	45.2	17.2
1980	34.2	34.9	23.4	56.8	38.2	15.6	23.9	87.2	45.7
1981	44.6	42.3	38.4	65.5	47.3	14.0	30.5	110.0	54.6
1985	38.5	34.8	30.0	58.5	45.8	42.9	29.5	109.3	50.3
1990	35.3	33.6	24.6	61.5	45.8	44.4	21.0	125.0	47.1
1991	32.5	29.1	19.4	54.6	45.8	42.1	21.9	137.2	44.1
1992	30.4	27.7	17.4	57.5	42.0	40.9	18.6	136.4	43.2
1993	32.2	27.1	18.4	58.2	43.8	21.0	19.6	134.4	41.9
1994	30.7	24.4	16.4	59.2	43.1	24.4	20.6	130.9	40.0
1995	31.8	25.2	18.4	59.9	42.5	25.5	21.2	131.5	42.2
1996	34.9	29.7	21.2	63.4	45.0	28.4	22.4	131.5	46.7
1997	34.5	28.5	22.0	63.9	37.4	64.7	23.0	133.0	47.1
1998	30.3	20.8	16.0	62.5	33.8	55.3	23.9	129.3	41.1
1999	33.0	27.1	19.9	59.0	41.0	62.8	23.5	139.0	44.8
2000	43.9	39.6	30.7	70.0	54.1	68.0	22.8	140.8	55.6
2001	43.7	33.3	30.1	75.7	52.3	71.1	24.6	148.9	56.3
2002	40.2	30.9	29.5	64.6	45.9	59.4	25.2	161.8	50.0
2003	47.4	37.3	29.7	79.0	61.1	66.5	28.2	175.6	66.7
2004	56.7	53.4	30.9	89.6	74.6	74.9	31.7	183.1	76.9
2005	73.8	73.3	50.7	107.6	91.4	88.2	33.2	213.3	95.5
2006	85.7	85.6	58.4	124.4	110.6	96.8	33.3	265.4	112.2
2007	92.1	92.0	67.5	126.5	117.1	100.5	33.3	286.7	119.5
2008	121.2	127.0	98.4	150.5	150.9	132.8	50.0	336.4	135.7
2009	80.4	71.8	57.1	116.6	97.2	103.9	106.9	338.6	100.0
2010	101.8	92.9	80.9	141.8	126.6	119.5	107.9	355.6	127.0
2011	135.3	128.5	116.4	174.4	168.2	123.8	122.1	422.5	160.0
2012	141.3	130.1	128.5	183.2	176.8	114.9	138.1	437.4	164.5
2013	137.3	128.1	122.5	176.2	174.1	105.0	144.0	420.2	163.0
2014	129.7	119.3	116.5	170.4	158.6	112.6	144.6	420.8	164.3
2015	88.8	69.9	60.8	139.9	128.0	70.1	119.1	408.7	133.3
2016	76.0	58.7	47.7	121.7	117.1	75.0	86.2	401.0	100.0
2017	86.0	68.6	63.2	135.6	120.6	82.3	77.4	408.9	120.0
2018	104.7	89.5	80.2	155.4	136.3	80.3	90.7	437.9	131.8
2019	100.7	83.7	75.4	157.6	127.8	74.7	91.0	452.4	129.0
2020	82.6	55.3	55.8	134.1	111.3	69.7	90.9	454.4	112.5

Source: Energy Information Administration, State Energy Data System

Hawai'i's petroleum expenditures by major product category are provided in Table 6.6. From 1970 to 2020, the share of distillate fuel oil increased 14.6 percentage points, the share of residual fuel oil increased 4.9 percentage points, the share of motor gasoline decreased 7.4 percentage points, the share of jet fuel decreased 10.8 percentage points, and the share of other petroleum products decreased 1.3 percentage points.

**Table 6.6. Hawai'i's Petroleum Expenditures by Product**

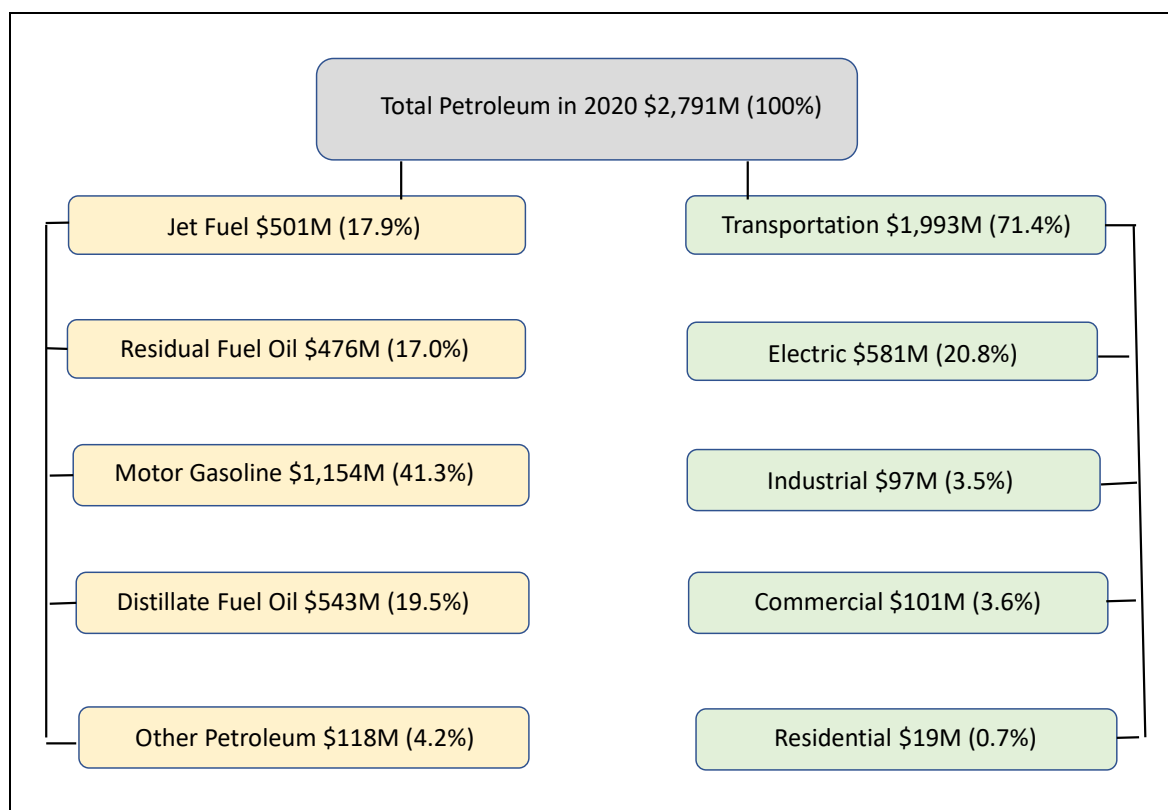
Year	Petroleum Expenditures: \$ Million						% of Petroleum Expenditures				
	Total Petroleum	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum	Jet Fuel	Residual Fuel Oil	Motor Gasoline	Distillate Fuel Oil	Other Petroleum
1970	203.5	58.4	24.7	99.2	9.9	11.3	28.7%	12.1%	48.7%	4.9%	5.6%
1975	518.1	170.3	108.5	193.5	25.6	20.2	32.9%	20.9%	37.3%	4.9%	3.9%
1980	1,490.3	492.4	308.6	410.7	228.7	49.9	33.0%	20.7%	27.6%	15.3%	3.3%
1981	1,730.3	424.4	505.3	470.9	285.0	44.7	24.5%	29.2%	27.2%	16.5%	2.6%
1985	1,542.0	462.1	395.4	444.4	207.1	33.0	30.0%	25.6%	28.8%	13.4%	2.1%
1990	1,764.9	425.3	468.5	533.4	297.0	40.7	24.1%	26.5%	30.2%	16.8%	2.3%
1995	1,392.8	250.5	266.8	563.9	246.0	65.6	18.0%	19.2%	40.5%	17.7%	4.7%
2000	1,783.7	373.4	415.5	650.0	275.5	69.3	20.9%	23.3%	36.4%	15.4%	3.9%
2001	1,813.3	295.9	400.1	735.3	316.0	66.0	16.3%	22.1%	40.6%	17.4%	3.6%
2002	1,798.8	315.0	375.6	673.4	371.0	63.8	17.5%	20.9%	37.4%	20.6%	3.5%
2003	2,223.1	474.0	359.0	837.6	501.4	51.1	21.3%	16.1%	37.7%	22.6%	2.3%
2004	2,782.3	714.2	404.7	962.2	644.5	56.7	25.7%	14.5%	34.6%	23.2%	2.0%
2005	3,785.4	1,199.9	669.5	1,181.7	667.7	66.6	31.7%	17.7%	31.2%	17.6%	1.8%
2006	4,418.7	1,313.2	858.4	1,434.2	739.8	73.1	29.7%	19.4%	32.5%	16.7%	1.7%
2007	4,871.1	1,173.3	1,102.0	1,435.5	1,088.1	72.2	24.1%	22.6%	29.5%	22.3%	1.5%
2008	5,138.9	1,359.2	1,222.2	1,607.0	830.0	120.5	26.4%	23.8%	31.3%	16.2%	2.3%
2009	3,413.0	667.7	707.5	1,263.6	588.6	185.6	19.6%	20.7%	37.0%	17.2%	5.4%
2010	4,721.0	1,248.2	961.4	1,416.9	868.3	226.2	26.4%	20.4%	30.0%	18.4%	4.8%
2011	6,410.3	1,790.5	1,363.3	1,943.7	1,062.2	250.6	27.9%	21.3%	30.3%	16.6%	3.9%
2012	6,523.1	1,914.2	1,378.6	1,939.7	1,078.5	212.1	29.3%	21.1%	29.7%	16.5%	3.3%
2013	6,379.2	1,980.4	1,271.5	1,893.3	995.6	238.4	31.0%	19.9%	29.7%	15.6%	3.7%
2014	5,807.1	1,877.1	1,150.0	1,846.1	691.7	242.2	32.3%	19.8%	31.8%	11.9%	4.2%
2015	4,053.8	1,137.7	592.7	1,546.4	605.3	171.7	28.1%	14.6%	38.1%	14.9%	4.2%
2016	3,440.3	946.7	461.3	1,365.4	531.2	135.7	27.5%	13.4%	39.7%	15.4%	3.9%
2017	4,050.9	1,179.3	635.1	1,513.4	573.7	149.4	29.1%	15.7%	37.4%	14.2%	3.7%
2018	4,918.8	1,561.4	791.2	1,702.1	717.1	147.0	31.7%	16.1%	34.6%	14.6%	3.0%
2019	4,775.7	1,487.5	761.5	1,737.2	651.4	138.1	31.1%	15.9%	36.4%	13.6%	2.9%
2020	2,790.8	500.6	475.6	1,153.7	543.1	117.8	17.9%	17.0%	41.3%	19.5%	4.2%
Annual Average Growth Rate (%)											
1970-1981	21.5%	19.8%	31.6%	15.2%	35.7%	13.3%	-1.4%	8.3%	-5.2%	11.7%	-6.7%
1981-1998	-2.0%	-4.1%	-5.0%	1.3%	-3.7%	2.9%	-2.2%	-3.0%	3.3%	-1.7%	5.0%
1998-2008	15.4%	20.7%	19.2%	10.7%	18.6%	5.2%	4.6%	3.2%	-4.1%	2.8%	-8.9%
2008-2009	-33.6%	-50.9%	-42.1%	-21.4%	-29.1%	54.0%	-26.0%	-12.8%	18.4%	6.8%	131.9%
2009-2012	24.1%	42.1%	24.9%	15.4%	22.4%	4.5%	14.5%	0.6%	-7.0%	-1.4%	-15.8%
2012-2020	-10.1%	-15.4%	-12.5%	-6.3%	-8.2%	-7.1%	-6.0%	-2.7%	4.2%	2.1%	3.3%
1970-2020	5.4%	4.4%	6.1%	5.0%	8.3%	4.8%	-0.9%	0.7%	-0.3%	2.8%	-0.5%

Source: Energy Information Administration, State Energy Data System

In 2020, the total petroleum expenditure in Hawai'i was about \$2,791 million. Motor gasoline accounted for the most at 41.3%; followed by distillate fuel oil at 19.5%, jet fuel at 17.9%, residual fuel oil at 17%, and other petroleum products at 4.2% (Figure 6.1). Among the six types of petroleum products included in other petroleum consumed in 2020, still gas and petroleum coke were the two groups consumed by the industrial sector without charge, therefore, their expenditures were zero. Expenditures on other petroleum products mainly include expenditures on LPG/HGL (\$61.1 million or 2.2% of total petroleum expenditures), lubricants (\$30.9 million or 1.1%), and asphalt and road oil (\$23.0 million or 0.8%). Expenditures on aviation gasoline were only \$2.7 million in 2020.

Among the five usage sectors, petroleum expenditures of the transportation sector accounted for the most at 71.4%; followed by the electric power sector at 20.8%, the commercial sector at 3.6%, the industrial sector at 3.5%, and the residential sector at 0.7%.

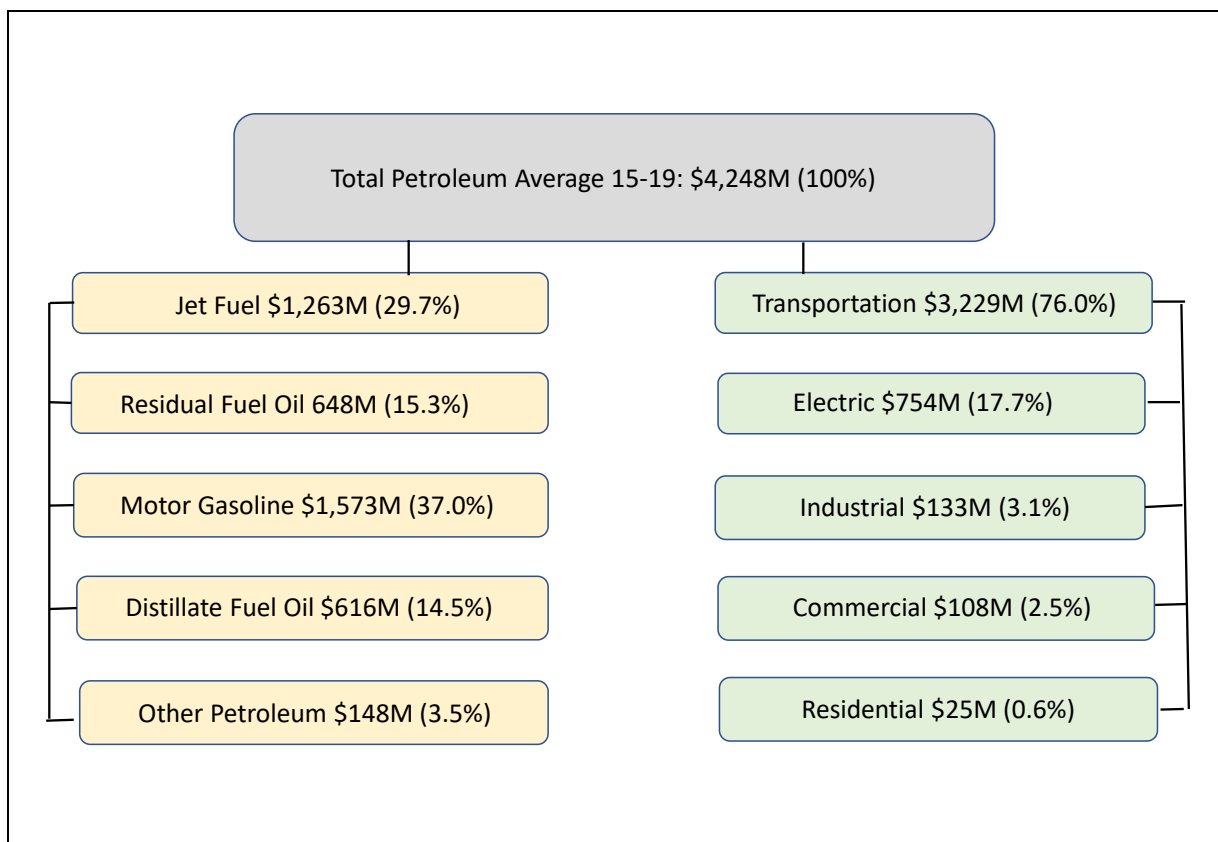
**Figure 6.1. 2020 Hawai'i Petroleum Expenditures (\$M)**



The average petroleum expenditures in the previous five years, from 2015 to 2019, are provided in Figure 6.2. The average total petroleum expenditure in Hawai‘i was about \$4,248 million. Motor gasoline accounted for the most at 37.0%; followed by jet fuel at 29.7%, residual fuel oil at 15.3%, distillate fuel oil at 14.5%, and other petroleum products at 3.5%.

Among the five sectors, petroleum expenditures of the transportation sector accounted for the most at 76.0%; followed by the electric power sector at 17.7%, the industrial sector at 3.1%, the commercial sector at 2.5%, and the residential sector at 0.6%.

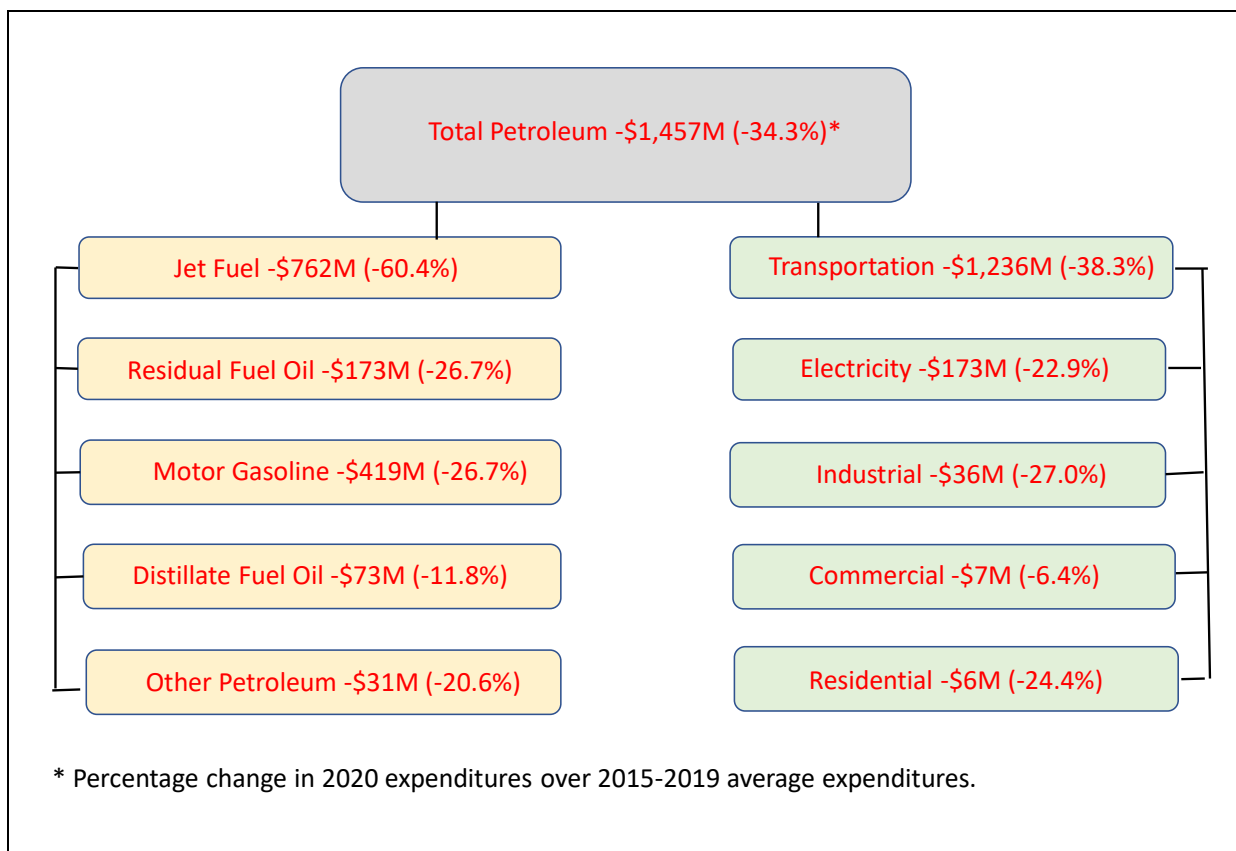
**Figure 6.2. Average 2015-2019 Hawai‘i’s Petroleum Expenditures (\$M)**



The changes in petroleum expenditures in 2020, over the average of the previous five years, are provided in Figure 6.3. In 2020, the total petroleum expenditures in Hawai'i decreased \$1,457 million or 34.3% from the average expenditures of the previous five years. The expenditures of jet fuel decreased the most at \$762 million or 60.4%; followed by motor gasoline at \$419 million or 26.7%, residual fuel oil at \$173 Million or 26.7%, distillate fuel oil at \$73 million or 11.8%, and other petroleum at \$31 million or 20.6%.

Among the five sectors, the transportation sector decreased the most at \$1,236 million or 38.3%; followed by the electric power sector at \$173 million or 22.9%, the industrial sector at \$36 million or 27.1%, the commercial sector at \$7 million or 6.5%, and the residential sector at \$6 million or 24.0%.

**Figure 6.3. Changes in Hawai'i's Petroleum Expenditures:  
2020 over 2015-2019 Average**



The changes in the average petroleum expenditure in 2020, over the average of the previous five years, are provided in Figure 6.4. In 2020, the average total petroleum expenditure in Hawai'i decreased 9.5% compared with the average of the previous five years, from \$91.2/BBL to \$82.6/BBL. The average expenditure of jet fuel decreased the most at 25.4%; followed by residual fuel oil at 14.7%, distillate fuel oil at 11.6%, and motor gasoline at 5.6%. The average expenditure on other petroleum increased 6.2%.

**Figure 6.4. Average Petroleum Expenditures in Hawai'i**

