New Zealand
energy quarterly

September Quarter 2010

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The *New Zealand Energy Quarterly* provides quarterly statistics and trend data on the supply of major fuels, electricity generation and its associated greenhouse gas emissions, and liquid fuel prices. This publication is part of the suite of energy publications produced by the Energy Information and Modelling Group of the Ministry of Economic Development. It may be downloaded or subscribed to at www.med.govt.nz/energy/nzeq/

HIGHLIGHTS

This edition of the *New Zealand Energy Quarterly* includes data through to the September quarter 2010.

LATEST NEWS

Energy Light Speeds Ahead

Photo courtesy of Energy Light Ltd

Christchurch-based company Energy Light has developed an efficient lighting technology specifically tailored for bulk retail stores, warehouses, factories and distribution centres. According to the company, their High Five product range provides improved light quality and reduced energy consumption compared with traditional metal halide systems.

While fluorescent lamps are more energy efficient and produce a better quality of light than metal halides, they typically do not perform so well in large-scale high-bay applications. Energy Light has addressed this issue with the High Five product range, which uses a specifically designed high-performance roll-formed reflector to ensure a very high percentage of light is directed to where it is needed. When designing an installation, the team also considers luminaire spacing, height, lamp and reflector combinations along with the room fixtures and fittings to ensure light levels meet the necessary standards.

The High Five product range is the result of extensive research and development by Energy Light and US and European suppliers, and extensive testing in local conditions. Key challenges were maximising reflector performance, dealing with low operating temperatures in winter and managing heat build-up in summer.

Peter Baker Transport (PBT) has relit its Christchurch depot with High Five lamps. This has seen lighting costs reduce by around 40%, while improving light levels throughout.

Energy Light's Managing Director, Nelson Duder, is now focusing on bringing new products to market: "Product development is one of the key areas in securing our future, including the ever-growing market for LED technology."

Energy Light recently placed third in Deloitte's Fast 50 list of the fastest-growing companies in New Zealand.

Want a closer look?

For more information please visit:
www.highfivelighting.co.nz

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Ministry of Economic Development
Manatū Ōhanga

Electricity Generation

Electricity demand is usually highest during the September quarter and 2010 was no exception, with New Zealand recording its largest-ever quarterly electricity generation at 11,639 GWh. For the year to September 2010, a total of 43,019 GWh of electricity was generated- the highest 12 month total on record and around 3% above total generation for the previous 12 month period. This growth is almost entirely due to the Tiwai Point aluminium smelter returning to full production in the latter part of 2009.

Coal generation continues to decline, this quarter contributing less than half of the generation seen in the previous September quarter. This reflects the increased availability of gas, which allowed gas to be used instead of coal at Huntly.

New Zealand remains one of the leaders in the OECD in renewable electricity generation, with over 74% of generation coming from renewable sources in the year to September 2010. This was aided by consistent rain in hydro catchment areas and commissioning of nearly 400 MW of new wind and geothermal generation, thereby reducing the use of coal and gas for electricity consumption.

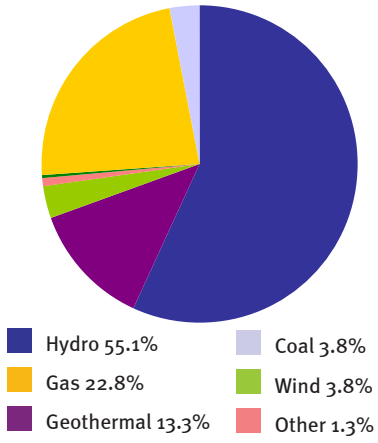
In recent years, both in New Zealand and internationally there have been huge advances in the use of geothermal and wind energy. These are likely to be the major growth areas for renewable energy into the future.

Net Quarterly Electricity Generation[1]

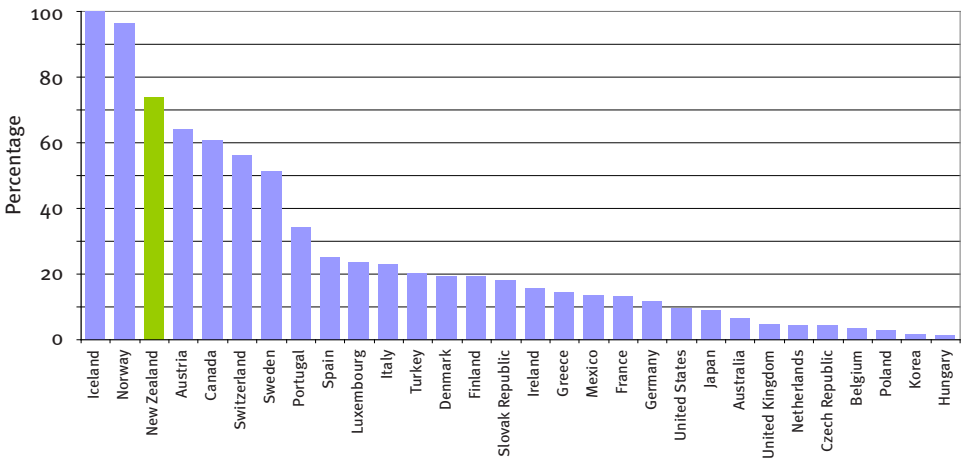
Units: Gigawatt-hours (GWh)		Dec 08	Mar 09	Jun 09	Sep 09	Dec 09	Mar 10	Jun 10	Sep 10
Renewable Generation	Hydro	5,926	5,481	5,954	6,340	6,187	5,697	5,969	6,633
	Geothermal	1,110	1,080	1,170	1,198	1,094	1,146	1,436	1,455
	Wind	304	294	274	377	511	413	407	391
	Wood	84	81	84	75	84	87	80	84
	Biogas	50	49	48	49	48	48	51	50
	Total	**7,473**	**6,985**	**7,531**	**8,039**	**7,923**	**7,392**	**7,942**	**8,614**
Thermal Generation	Gas	1,840	1,963	2,217	2,279	1,927	2,083	2,465	2,656
	Coal	749	609	1,032	854	585	607	409	355
	Oil	1	0	2	3	3	1	0	0
	Waste Heat	15	15	15	15	15	15	15	13
	Total	**2,605**	**2,586**	**3,265**	**3,151**	**2,529**	**2,705**	**2,889**	**3,024**
Total Generation		**10,078**	**9,571**	**10,796**	**11,190**	**10,452**	**10,097**	**10,831**	**11,639**
Renewable %		74%	73%	70%	72%	76%	73%	73%	74%

1 Excludes generation used on-site for auxiliary services (e.g. lighting, coal grinders) and internal losses.

Electricity Generation September Quarter 2010



Renewable Electricity Generation in OECD Countries



Greenhouse Gas Emissions

In the September quarter 2010, electricity generation in New Zealand produced 1,562 kt of carbon dioxide equivalent (CO_2-e) emissions. This was due to a combination of strong generation from hydro sources, record generation from geothermal and coal generation at an eight-year low.

Emissions per unit of electricity generated this quarter equated to only 0.13 kt CO_2-e/GWh, the lowest quarterly emissions factor in nearly a decade, and one that is extremely low by international standards.

Recently baseload coal generation has been displaced by gas and geothermal generation. Both gas and geothermal generation have associated greenhouse gas emissions; however, the emissions intensity of these fuels is much lower than for coal.

Due to the diminishing amount of coal being consumed in New Zealand for electricity generation, total greenhouse gas emissions from geothermal electricity generation exceeded those of coal generation for the first time this quarter. Generation from geothermal sources was four times higher than from coal.

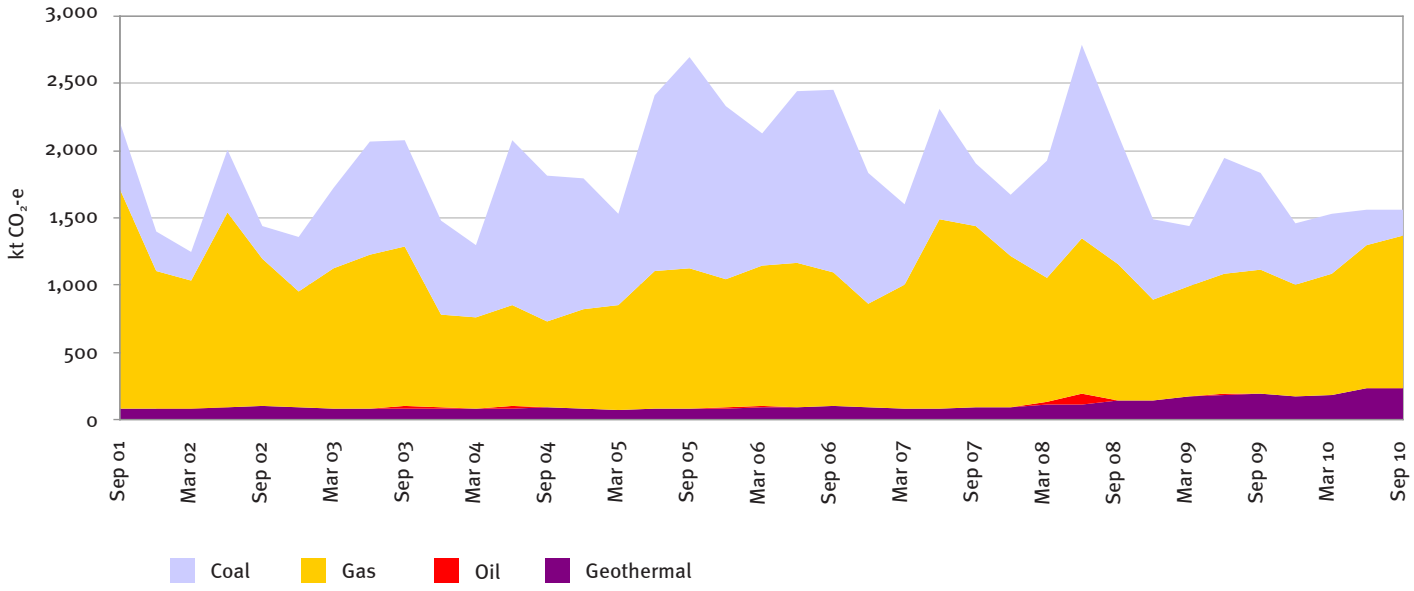
Electricity generation emissions vary significantly from quarter to quarter because of the seasonal variations in the amount of water available, electricity demand, plant outages and the type of thermal fuel used. Generally, in New Zealand, more electricity is generated from thermal plants in the winter months, when hydro-lake storage inflows are low and electricity demand is high, resulting in higher emissions.

Quarterly Emissions from Electricity Generation

		Dec 08	Mar 09	Jun 09	Sep 09	Dec 09	Mar 10	Jun 10	Sep 10
Electricity Generation (GWh)		10,078	9,571	10,796	11,190	10,452	10,097	10,831	11,639
Electricity Generation Emissions (kt CO_2-e)	Gas	743	820	894	919	832	897	1,067	1,141
	Coal	606	444	865	718	456	451	260	192
	Oil	0.4	0.1	1.8	2.7	2.3	0.5	0.3	0.1
	Biogas[1]	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
	Geothermal (fugitive)	144	172	186	191	174	182	229	229
	Total	**1,494**	**1,436**	**1,947**	**1,831**	**1,464**	**1,532**	**1,556**	**1,562**
Emissions per Unit of Electricity Generation (kt CO_2-e/GWh)		0.15	0.15	0.18	0.16	0.14	0.15	0.14	0.13

1 Associated direct emissions of carbon dioxide (CO_2) in biogas are excluded from the energy sector (which includes electricity) as they are included under waste in the Land Use, Land-Use Change and Forestry (LULUCF) sector. Methane (CH_4) and nitrous oxide (N_2O) are included as energy and are represented in kt CO_2-e.

Quarterly Emissions from Electricity Generation



Crude Oil, Condensate and Oil Products

New Zealand's crude oil production was 29.4 PJ (4.9 million barrels) in the September quarter 2010. This is high by historical standards, but is nearly 7 PJ short of the record high domestic crude oil production recorded in December 2007. Currently New Zealand's rolling annual crude oil production is around 120 PJ. Almost all of New Zealand's domestic crude oil production is exported.

Over 60 PJ of crude oil was imported in the September quarter 2010 to be refined at the Marsden Point oil refinery. This imported crude oil, along with a small amount of crude oil from New Zealand, produced almost 60 PJ of refined oil products for domestic consumption and some exports.

Final consumption of petrol remained steady at 26.8 PJ this quarter, while diesel consumption was up 1 PJ from last quarter to 25.8 PJ. Compared with the same quarter a year ago, petrol demand fell 0.6%, while diesel demand has registered its first increase in two years at 2% above September 2009. However, demand for both fuels remains significantly below the peaks achieved for petrol in December 2007 and for diesel in June 2008.

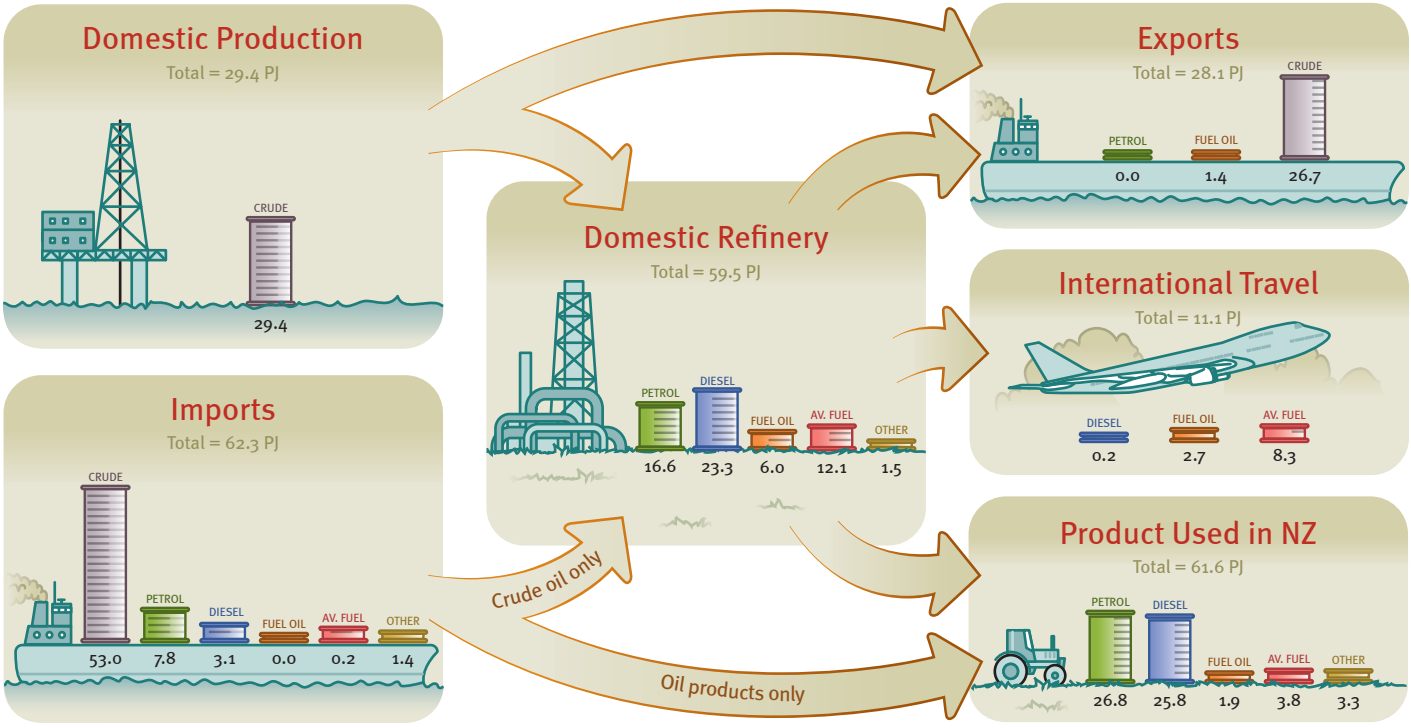
In terms of 12-month rolling totals, both fuels reached peak all-time demands in June 2008. As of September 2010, sales of both fuels remain well down with petrol at 110.5 PJ, some 4.1% lower, while diesel, at 103.6 PJ, remains 9.6% below its June 2008 peak.

Quarterly Oil Production, Imports and Exports

Units: Petajoules (PJ)		Dec 09	Mar 09	Jun 09	Sep 09	Dec 09	Mar 10	Jun 10	Sep 10
Domestic Crude Oil Supply	Production	25.7	25.7	28.5	33.8	30.8	28.8	29.2	29.4
	Imports	60.6	56.6	43.1	61.3	57.5	60.9	58.6	53.0
	Exports	21.4	20.2	27.9	32.8	25.6	28.5	27.9	26.7
Oil Product Supply	Refinery Output	56.3	51.1	55.1	53.8	55.8	59.4	49.4	59.5
	Imports	26.7	29.3	21.8	20.6	23.0	18.4	25.9	12.5
	Exports	4.0	2.0	1.5	2.6	2.5	0.4	-	1.4
Oil Product Demand	Total Petrol	27.8	27.1	27.2	27.0	28.8	28.1	26.8	26.8
	Diesel	26.2	26.3	26.1	25.3	27.5	25.4	24.8	25.8
	Other[1]	11.1	8.4	7.8	8.0	8.9	9.3	8.4	9.0
International Travel	Refined Products	9.7	14.1	11.2	8.5	11.6	12.7	11.3	11.1

1 Other includes fuel oil, aviation fuel, kerosene, bitumen, lubricants and other oil products.

Oil Energy Flows September Quarter 2010



Gas

Production

Gas production in the September quarter 2010 was 11% higher than in the September quarter 2009. This is a result of increased production at the Kupe and Maui gas fields allowing supply to meet increased demands for heating and electricity generation over the winter months.

Increased production at the Kupe field has resulted in the largest quarterly production of LPG since the June quarter 2006. This production total is more than is used by the domestic market and as a result there has been growth in LPG exports and, for the first time since the March 2006 quarter, New Zealand hasn't needed to import LPG.

Supply

Gas supply is calculated as the difference between the total amount of gas produced and the amount of gas flared, reinjected, extracted as LPG, and the losses and own use during gas production. In line with the higher production, supply was 10% higher than the previous September quarter. The rolling 12-month total gas supply of 192 PJ to September 2010 is the highest since September 2003.

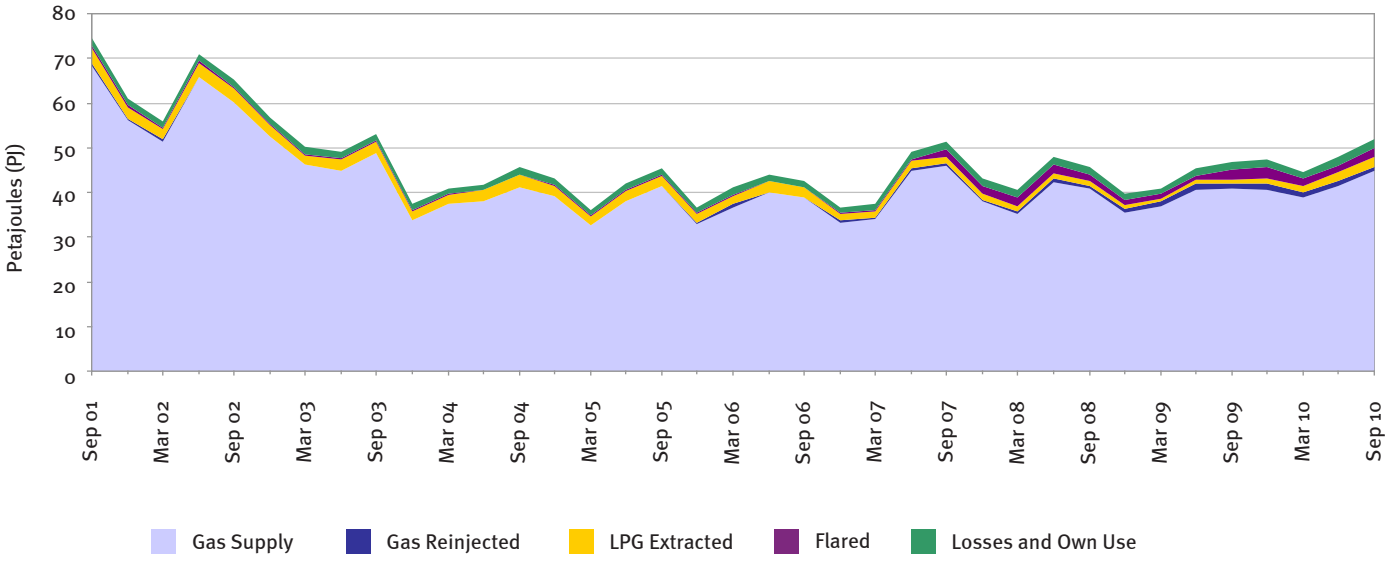
In contrast to the March and June quarters, gas flaring was up significantly in the September quarter 2010, an increase of 31%, compared with the June quarter 2010. This increase can be attributed to increased oil and gas production at the Maari field, in instances where the gas wasn't able to be used for on-site demands.

Quarterly Gas Production

Units: Petajoules (PJ)	Dec 08	Mar 09	Jun 09	Sep 09	Dec 09	Mar 10[R]	Jun 10[R]	Sep 10
Gas Production	**39.8**	**40.9**	**45.2**	**46.8**	**47.4**	**44.6**	**47.8**	**52.0**
Gas Reinjected	0.8	1.0	1.2	1.2	1.6	1.2	1.1	0.9
LPG Extracted	0.9	0.7	0.9	1.0	1.1	1.4	1.9	2.3
Flared	1.1	1.1	1.0	2.0	2.5	1.8	1.5	2.0
Losses and Own Use	1.5	1.2	1.4	1.8	1.8	1.5	1.7	1.8
Gas Supply	**35.5**	**36.9**	**40.7**	**40.8**	**40.5**	**38.7**	**41.5**	**45.0**

R Data has been revised due to updated company returns.

Quarterly Gas Production



Coal

Production

Production of coal in the September quarter of 2010 was 1.3 million tonnes, of which 55% was bituminous, 41% was sub-bituminous and 4% was lignite. This total was a 13% decrease from the previous quarter, but still 5% greater than the level seen in the September quarter of 2009. In the previous quarter there had been an unusually high level of sub-bituminous coal production supplied to the domestic steel manufacturing industry.

While overall coal production was down compared with the June quarter 2010, bituminous coal production was at its highest level since the December quarter 2006.

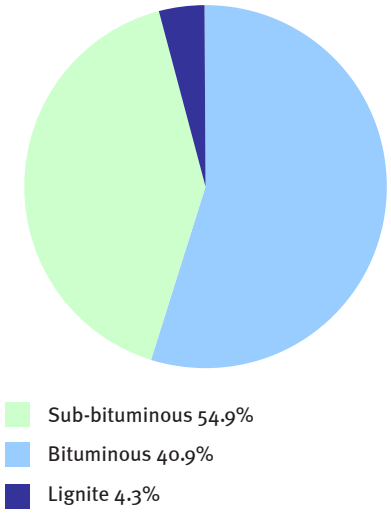
Perth-based newcomer Bathurst Resources recently announced plans to open a fourth major coking coal mine on the South Island's West Coast in late 2011. Bathurst intends include production at the Deep Creek mine of up to 1 million tonnes of coking coal a year by 2012 with production increasing up to 2 million tonnes a year with the addition of other coking coal deposits from the Buller coal field. Further test drilling is expected to take place in 2011 in an attempt to establish a second mining operation based on the company's deposits north of Stockton.

Quarterly Coal Production, Exports and Imports

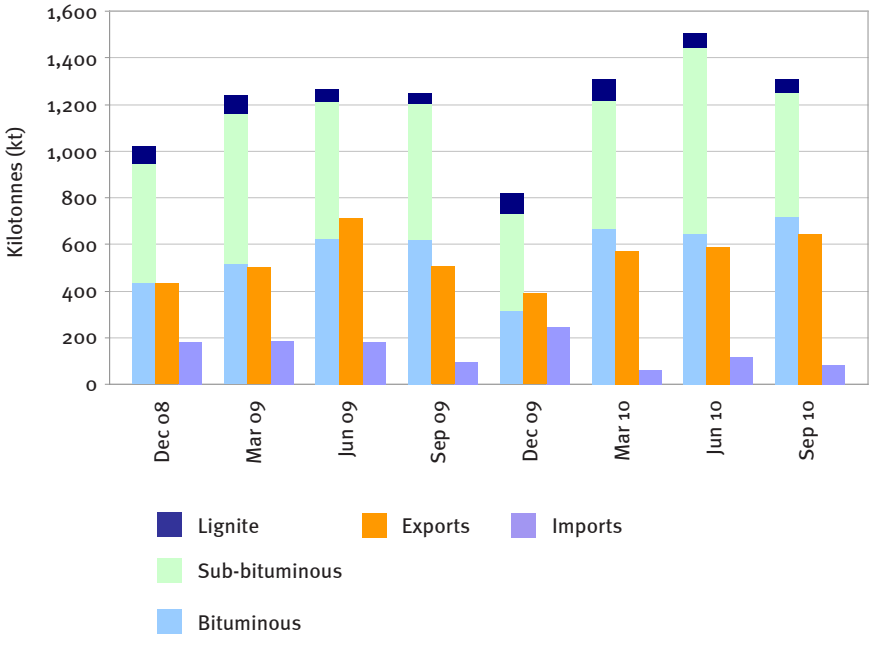
Units: kilotonnes (kt)	Dec 08[R]	Mar 09	Jun 09	Sep 09	Dec 09	Mar 10	Jun 10[R]	Sep 10
Production	**1,019**	**1,237**	**1,261**	**1,246**	**819**	**1,305**	**1,505**	**1,305**
Bituminous	434	519	628	623	315	666	645	716
Sub-bituminous	514	640	585	578	415	551	799	534
Lignite	71	78	49	45	88	89	61	56
Exports	**431**	**500**	**714**	**504**	**389**	**569**	**588**	**645**
Imports	**180**	**185**	**182**	**94**	**244**	**60**	**116**	**81**

R Data has been revised due to updated company returns.

Coal Production by Rank September Quarter 2010



Quarterly Coal Production, Exports and Imports



Prices

www.med.govt.nz/energy/data/prices/

Liquid Fuel Prices

Crude oil prices in Dubai were down by 4.5% from the previous quarter and this flowed through to regular and premium petrol prices, which, on average, were down 2.4 c/l from the June quarter.

Liquid fuels were incorporated into the emissions trading scheme (ETS) on 1 July. As expected, the oil companies raised petrol and diesel prices by 3 c/l on 1 July to cover their obligations under the scheme.

The petrol and diesel importer margins provide an indication of the proportion of the fuel price available after taxes and the landed cost of fuel is removed to cover oil companies' domestic costs and profits. Importer margins have increased during 2010, with the average margin for regular petrol in the September 2010 quarter at 17.5 c/l, up 1.6 c/l on the previous quarter and up 3.9 c/l on the September 2009 quarter. A factor in this change is the introduction of smaller, more frequent price movements since early 2010.

Quarterly Liquid Fuel Prices

	Dec 08	Mar 09	Jun 09	Sep 09	Dec 09	Mar 10	Jun 10	Sep 10
Regular Petrol[1] (c/l)	156.9	155.5	160.4	163.5	161.9	173.2	175.5	173.1
Premium Petrol[1] (c/l)	163.6	162.2	167.6	171.6	170.3	181.8	184.2	181.8
Diesel[1] (c/l)	124.4	100.5	99.8	104.1	103.5	110.6	116.7	116.8
Crude Oil (Dubai) (US$/barrel)	52.0	43.2	58.2	68.1	74.8	76.0	77.6	74.1

1 Includes GST.

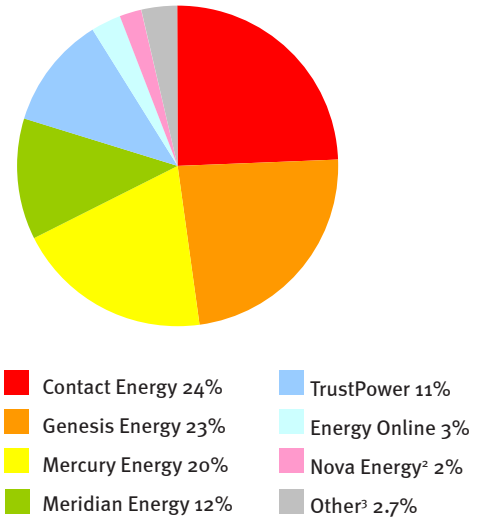
Residential Electricity Prices

Residential electricity tariffs are surveyed each quarter in 45 regions throughout New Zealand. The most recent survey, taken on 15 November 2010, shows national average electricity prices for an 8,000 kWh per annum customer have increased by 2.6% in the last quarter. This increase was mainly due to retailers passing through the GST increase nationwide, which equates to a 2.2 percent increase in the price of goods and services. The additional increase above the GST increase was a result of Genesis Energy, Contact Energy, TrustPower and Powershop making a number of price increases across their networks.

For the last four months, customer-initiated switching rates have consistently been over 30,000 switches per month. This is in stark contrast to the period prior to January 2009, where customer-initiated switching rates had not exceeded 20,000 switches per month. This change is a good indication of increasing consumer awareness.

Full results of the Quarterly Survey of Domestic Electricity Prices can be obtained at www.med.govt.nz/electricity/qsdep/

Retail Market Share[1] at 15 October 2010

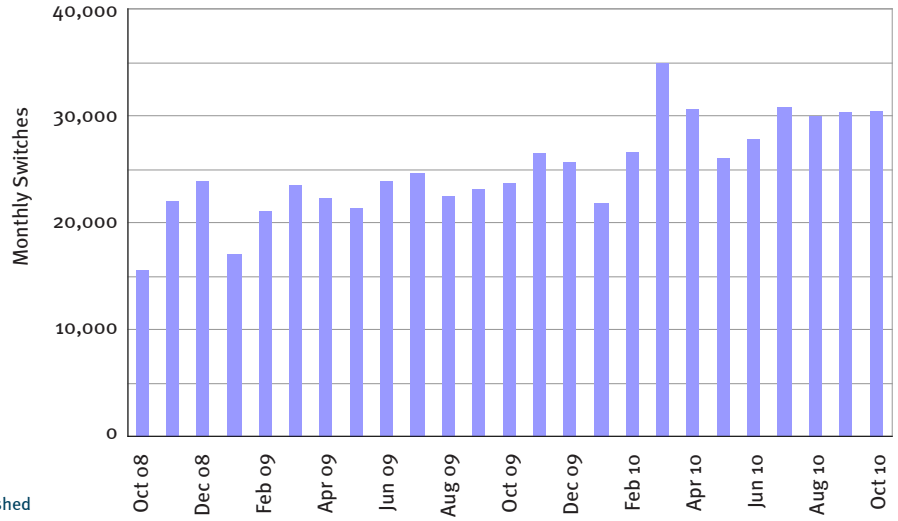


1 Determined by consumer connections (active ICPs) as published by the Electricity Commission.

2 Nova includes Bay of Plenty Energy and Auckland Gas Company.

3 Other includes King Country Energy, Bosco Connect, Pulse Energy and Powershop.

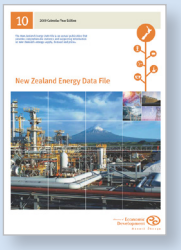
Monthly Customer Switches



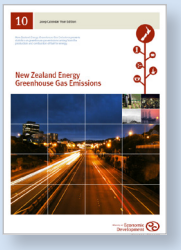
FURTHER READING

www.med.govt.nz/energy/data/info/

Energy Information and Modelling Group Publications



New Zealand Energy Data File provides comprehensive statistics and supporting information on New Zealand's energy supply, demand, reserves and prices, mostly as national aggregates. The 2010 edition is now out.
⇢ www.med.govt.nz/energy/edf



New Zealand Energy Greenhouse Gas Emissions provides detailed inventory information on carbon dioxide equivalent emissions from New Zealand's energy sector and industrial processes for the calendar years 1990–2009. The 2010 edition is now out.
⇢ www.med.govt.nz/energy/ghg

New Zealand's Energy Outlook sets out a 25-year projection of energy supply, demand, prices and energy sector greenhouse gas emissions. The 2010 edition is now out.
⇢ www.med.govt.nz/energyoutlook

New Zealand Energy Snapshot provides a handy pocket-sized overview and insight into New Zealand's energy sector. The *New Zealand Energy Snapshot*, which is out now, replaces *New Zealand Energy in Brief*.
⇢ www.med.govt.nz/energy/snapshot

New Zealand Energy Quarterly provides quarterly energy statistics and trend data on the supply of major fuel types, electricity generation and its associated greenhouse gas emissions, and fuel prices.
⇢ www.med.govt.nz/energy/nzeq

Meet the Energy Information and Modelling Group

Bryan Field – Senior Energy Analyst

Bryan is the Energy Information and Modelling Group's specialist in the downstream oil market, and energy prices. He is an experienced analyst with a broad view on energy market issues and provides leadership on the group's information systems. Bryan joined the Energy Information and Modelling Group in January 2009.

Bryan has an MSc in Physics from the University of Otago and has previously worked as an Aerodynamics Scientist and as a Data Manager/Seismologist. For help with finding information on oil demand and energy prices in New Zealand, you are encouraged to contact Bryan on (04) 470 2339 or bryan.field@med.govt.nz

WEBSITE

The *New Zealand Energy Quarterly* is available in PDF format through the MED website: www.med.govt.nz/energy/nzeq

More detailed information is available through the Energy Data section of the MED website: www.med.govt.nz/energy/data Updated tables and charts may also be downloaded in Excel format.

Conversion factors and definitions of terms are available in the Energy Data File, online at: www.med.govt.nz/energy/edf

DATA SOURCES

The *New Zealand Energy Quarterly* is compiled using a range of surveys and returns provided by oil, gas, coal and electricity companies, and other government agencies. In some cases, provisional figures are used, which are amended once updated data becomes available.

NEXT RELEASE

The next edition of the *New Zealand Energy Quarterly* is scheduled for release on 16 March 2011.

Please forward any inquiries to:

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