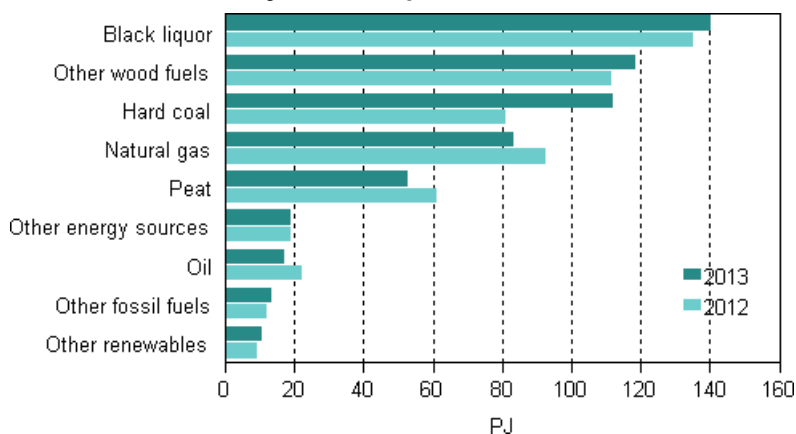


Production of electricity and heat 2013

Use of fossil fuels grew in electricity and heat production in 2013

The production of electricity in Finland amounted to 68.3 TWh in 2013. The production grew by one per cent from the previous year. The production of district heat went down by seven per cent and that of industrial heat by one per cent. The use of renewable fuels increased in the production of electricity and heat. The use of fossil fuels grew, as 38 per cent more hard coal was used than in the previous year. In contrast, the uses of natural gas and oil diminished. The use of peat decreased by 13 per cent from the previous year. These data derive from the statistics on the production of electricity and heat compiled by Statistics Finland.

Fuel use in electricity and heat production 2012–2013



In 2013, the **production of electricity in Finland** amounted to 68.3 terawatt hours (TWh) or billion kilowatt hours (kWh). The production went up by one per cent from the year before. In turn, total electricity consumption went down by one per cent and amounted to 84.0 TWh. Of total electricity consumption, 81 per cent was covered by domestic production and 19 per cent by net imports of electricity from the Nordic countries and Russia. Net imports of electricity declined by ten per cent from the year before. Imports of electricity from the Nordic markets decreased as the water situation in the Nordic countries was worse than one year earlier.

Altogether 36 per cent of the electricity produced in Finland was produced with renewable energy sources. Over one-half of this was produced with hydro power and almost all of the remainder with wood. Thirty-three per cent of the production of electricity was covered with nuclear power, 26 per cent with

fossil fuels and four per cent with peat. The amount of electricity produced with renewable energy sources decreased by 11 per cent, as the volume of electricity produced with hydro power declined by 24 per cent from the peak level of the year before. The amount of electricity produced with wood grew by seven per cent. The amount of electricity produced with peat decreased by 14 per cent from the year before. The amount of electricity produced with fossil fuels increased by 24 per cent from the previous year, as the amount produced with hard coal went up by 50 per cent. The increased production of condensing electricity raised the use of hard coal.

Electricity and heat production by production mode in 2013

	Electricity, TWh	District heat, TWh	Industrial heat, TWh	Fuels used, PJ ¹⁾
Separate production of electricity				
- Hydro power	12.7	-	-	-
- Wind power	0.8	-	-	-
- Nuclear power	22.7	-	-	-
- Condensing power ²⁾	8.9	-	-	87.8
- Total	45.0	-	-	87.8
Combined heat and power production	23.3	26.1	43.7	411.3
Separate heat production	-	8.4	8.5	71.6
Total production	68.3	34.5	52.2	570.7
Net imports of electricity	15.7	-	-	-
Total	84.0	34.5	52.2	570.7

1) In calculating total primary energy used, hydro power, wind power and net imports of electricity are made commensurate with fuels according to directly obtained electricity (3.6 PJ/TWh). Total nuclear energy used is calculated at the efficiency ratio of 33 per cent from produced nuclear power (10.91 PJ/TWh).

2) Condensing power includes condensing power plants, shares of condensing electricity of combined heat and power production plants, and peak gas turbines and similar separate electricity production plants.

The **production of district heat** totalled 34.5 TWh in 2013. The production decreased by seven per cent from the previous year. The need for the heating energy of buildings decreased due to the warmer weather than in the year before. According to the Finnish Meteorological Institute, heating degree days fell in all reference localities by at least five per cent from the previous year.

Around one-half of district heat was produced with fossil fuels, whose use fell, however, by 11 per cent from one year ago. The use of renewable fuels in the production of district heat grew by six per cent from the year before. District heat was produced most with wood fuels, hard coal and natural gas.

The **production of industrial heat** was 52.2 TWh in 2013. The production went down by one per cent from the year before. The economic development of manufacturing weakened, so the use of industrial heat remained at a low level as in previous years.

Over 70 per cent of industrial heat was produced with renewable fuels. The individual fuel that was used most was black liquor from the forest industry and other wood fuels. The biggest users of industrial heat are the forest industry, which uses own fuels in production. In the chemical and metal industries, part of the use of heat is often regarded as direct fuel use, so that is not visible in the statistics on heat production.

The statistics on the production of electricity and heat cover almost the entire production of electricity connected to the grid. Solar electricity has not yet been added to the statistics. The statistics do not cover small district heating plants or the heat production of small industrial enterprises.

Links:

[Statistics Finland's inquiry on heat production](#)

[Finnish Energy Industries, Electricity statistics](#)

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Appendix tables

Appendix table 1. Electricity and heat production by production mode and fuel in 2013

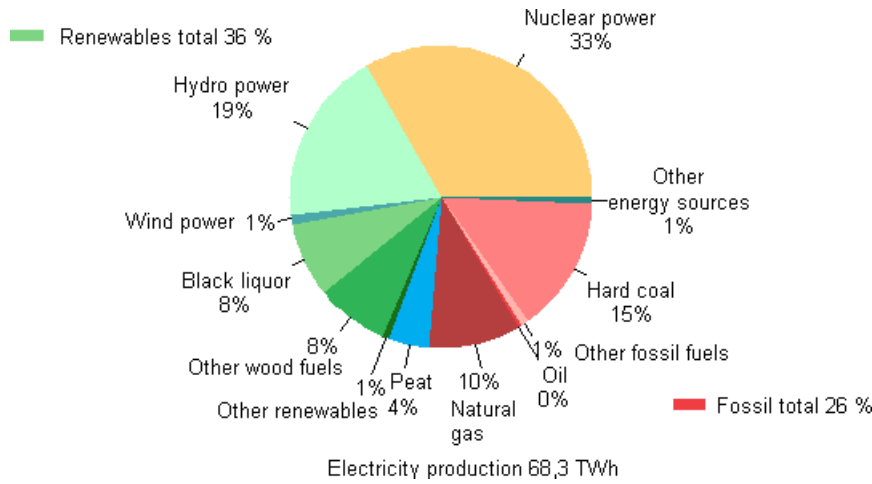
		Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, GWh	Fuels used, TJ
Condensing power production ¹⁾	Oil	93	-	-	322	1 161
	Hard coal	5 927	-	-	15 274	54 988
	Natural gas	137	-	-	377	1 355
	Other fossil ²⁾³⁾	344	-	-	1 268	4 563
	Peat	771	-	-	2 153	7 751
	Black liquor and other concentrated liquors	344	-	-	1 240	4 465
	Other wood fuels	1 005	-	-	2 891	10 407
	Other renewables ²⁾⁴⁾	132	-	-	364	1 311
	Other energy sources ⁵⁾	131	-	-	501	1 804
	Total	8 883	-	-	24 391	87 806
Combined heat and power production ⁶⁾	Oil	113	108	942	1 436	5 169
	Hard coal	4 070	7 433	501	14 324	51 568
	Natural gas	6 476	5 344	4 058	18 275	65 791
	Other fossil ²⁾³⁾	334	750	662	2 233	8 039
	Peat	2 195	4 140	2 753	11 144	40 119
	Black liquor and other concentrated liquors	5 093	178	24 324	37 594	135 339
	Other wood fuels	4 346	7 159	8 647	24 582	88 494
	Other renewables ²⁾⁴⁾	401	721	623	2 215	7 973
	Other energy sources ⁵⁾	298	275	1 160	2 444	8 798
	Total	23 326	26 108	43 671	114 248	411 292
Separate production of heat ⁷⁾	Oil	-	904	857	3 099	11 158
	Hard coal	-	1 033	400	1 606	5 783
	Natural gas	-	2 634	1 537	4 660	16 777
	Other fossil ²⁾³⁾	-	94	154	309	1 114
	Peat	-	821	458	1 505	5 419
	Black liquor and other concentrated liquors	-	-	179	198	712
	Other wood fuels	-	1 827	2 835	5 520	19 871
	Other renewables ²⁾⁴⁾	-	140	259	493	1 773
	Other energy sources ⁵⁾	-	969	1 821	2 494	8 977
	Total	-	8 421	8 500	19 884	71 584

		Electricity, GWh	District heat, GWh	Industrial heat, GWh	Fuels used, GWh	Fuels used, TJ
Total	Oil	205	1 012	1 799	4 858	17 488
	Hard coal	9 997	8 466	901	31 205	112 339
	Natural gas	6 614	7 978	5 595	23 312	83 923
	Other fossil ²⁾³⁾	678	844	816	3 810	13 716
	Peat	2 966	4 960	3 211	14 802	53 289
	Black liquor and other concentrated liquors	5 437	178	24 503	39 032	140 516
	Other wood fuels	5 351	8 986	11 483	32 992	118 772
	Other renewables ²⁾⁴⁾	533	861	882	3 072	11 058
	Other energy sources ⁵⁾	429	1 244	2 981	5 439	19 580
	Total	32 210	34 529	52 171	158 523	570 681

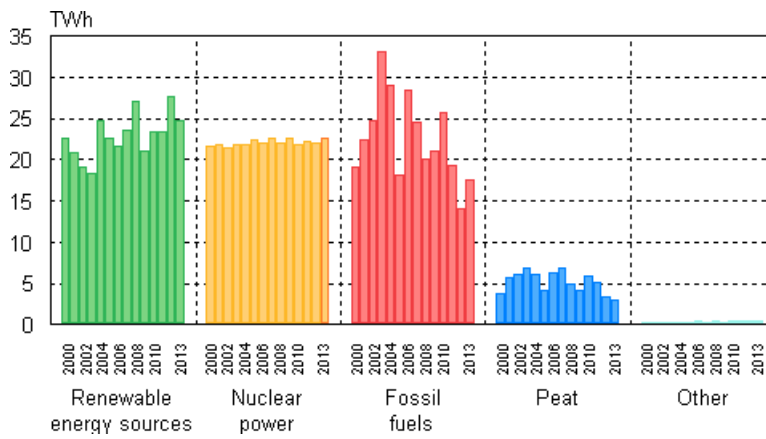
- 1) Condensate parts produced in connection with combined heat and power production were calculated with condensing power.
- 2) Mixed fuels (such as recycled fuel) are divided into renewable and fossil fuels in ratio to the fossil and biodegradable coal contained in them.
- 3) Other fossil fuels include blast furnace gas and coke oven gas and coke, and plastics fuels and other waste fuels and the fossil part of mixed fuels.
- 4) Other renewable fuels comprise the bio part of mixed fuels and biogas.
- 5) Other energy sources include hydrogen, electricity, and reaction and secondary heat of industry.
- 6) Combined heat and power production includes pure combined production.
- 7) Reduction heat produced in connection with condensate production and combined heat and power production were calculated in separate production of heat.

Appendix figures

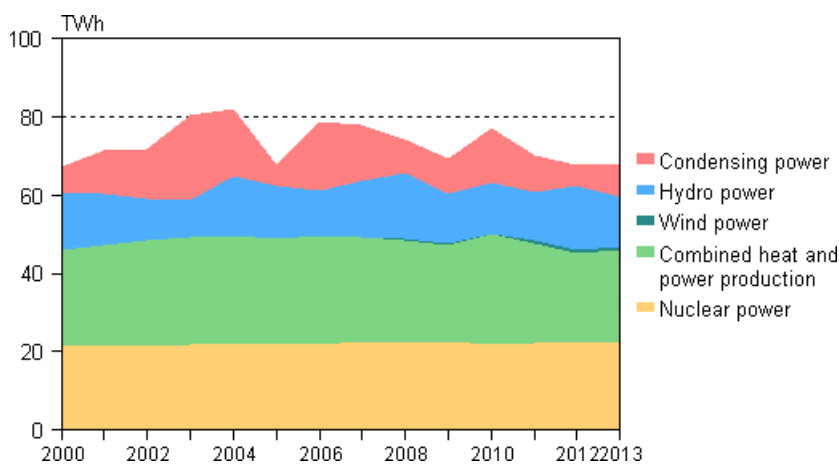
Appendix figure 1. Electricity generation by energy source 2013



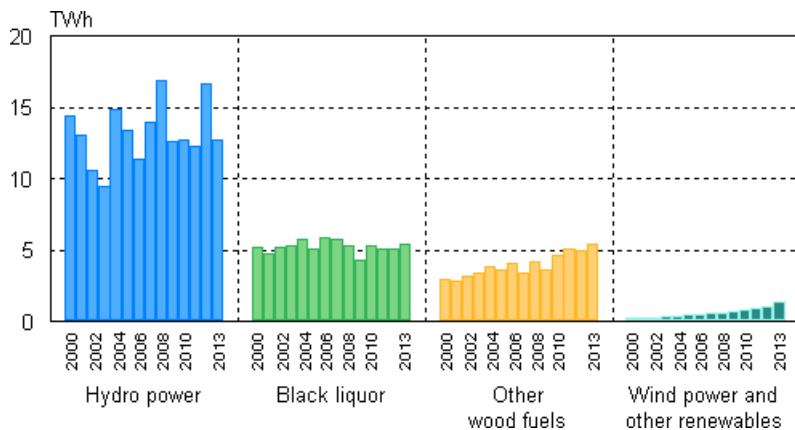
Appendix figure 2. Electricity generation by energy source 2000–2013



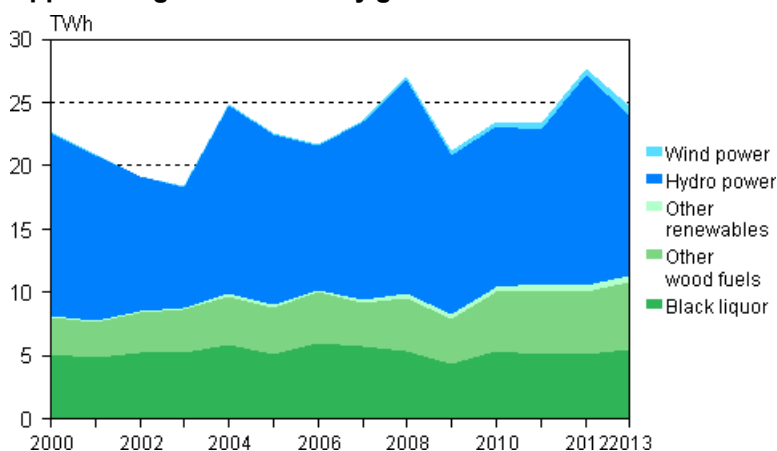
Appendix figure 3. Electricity generation by production mode 2000–2013



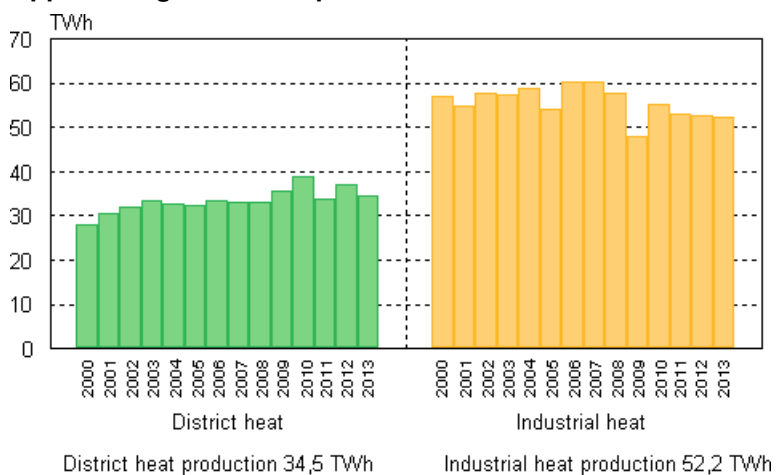
Appendix figure 4. Electricity generation with renewables 2000–2013



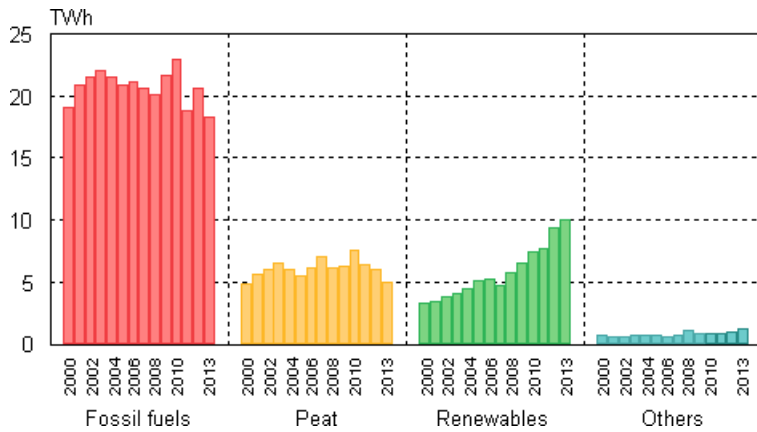
Appendix figure 5. Electricity generation with renewables 2000–2013



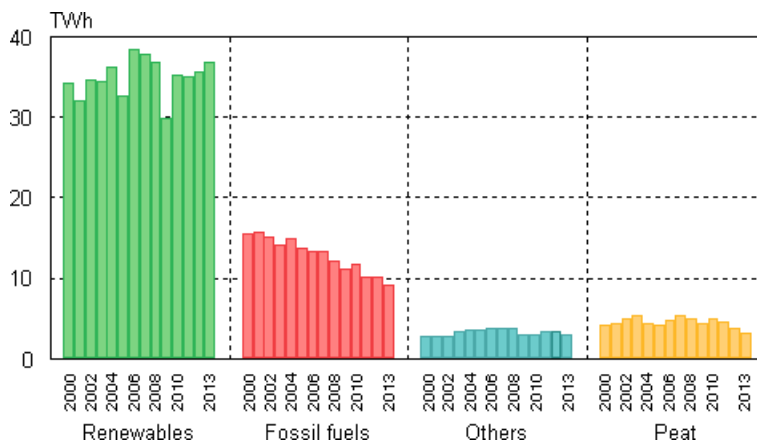
Appendix figure 6. Heat production 2000–2013



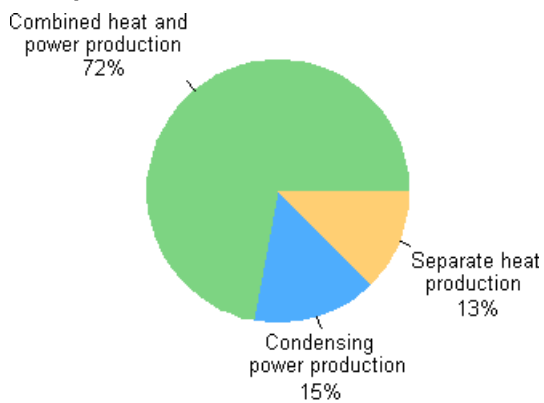
Appendix figure 7. District heat production by fuels 2000–2013



Appendix figure 8. Industrial heat production by fuels 2000–2013

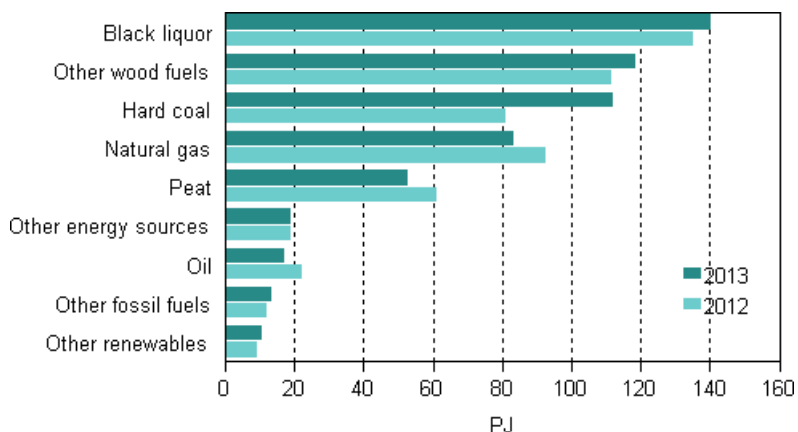


Appendix figure 9. Fuel use by production mode in electricity and heat production 2013

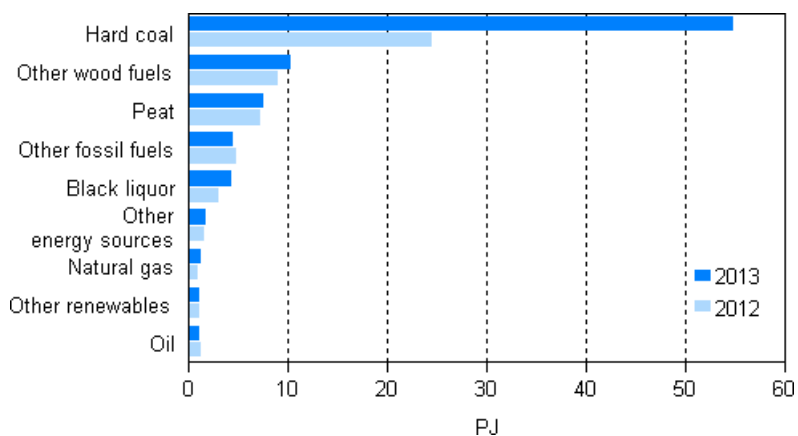


Total use of fuels 571 PJ or 158 TWh

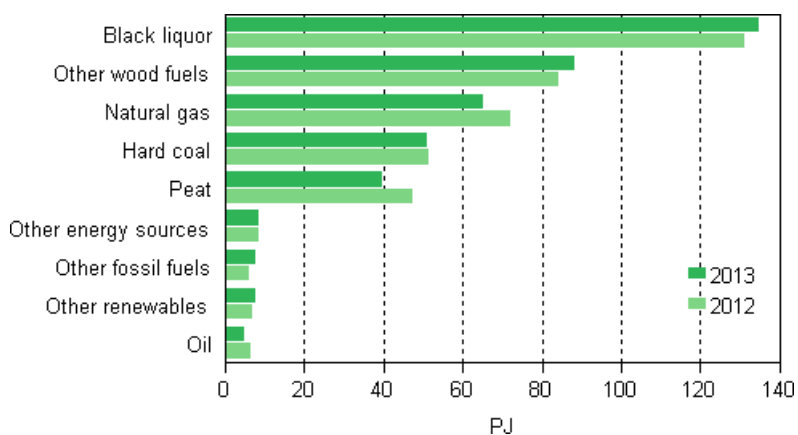
Appendix figure 10. Fuel use in electricity and heat production 2012–2013



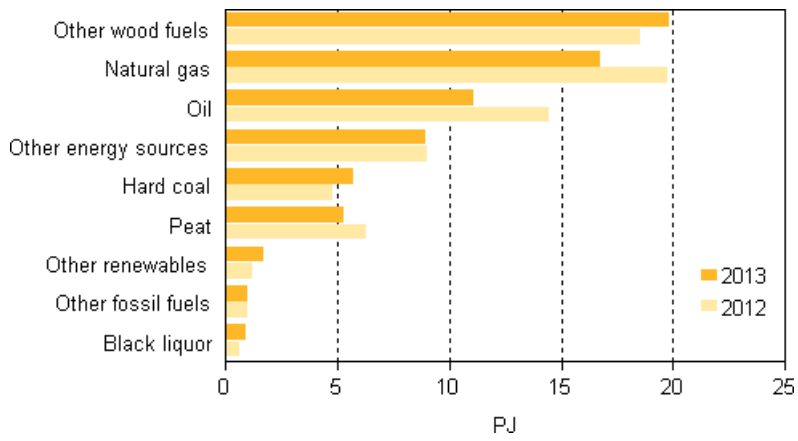
Appendix figure 11. Fuel use in separate electricity production 2012–2013



Appendix figure 12. Fuel use in combined heat and power production 2012–2013



Appendix figure 13. Fuel use in separate heat production 2012–2013



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Source: Statistics on production of electricity and heat, Statistics Finland and Electricity statistics, Finnish Energy Industries