

# C02 Emissions for electricity production by source in 2015

If not otherwise indicated, data from: [data/raw/electricity/electricity\\_fuel\\_2015.csv](data/raw/electricity/electricity_fuel_2015.csv)

CANSIM Database Table:127-0004

Fuel	Amount	Amt. Unit	Density [kg/m <sup>3</sup> ]	Density Source	Mass [kg]	Percentage
subbituminous coal	24479385 t				24.48E+09	48.78%
natural gas	10870993 Ml		0.90	[1a]	9.78E+09	19.50%
lignite	8846528 t				8.85E+09	17.63%
bituminous coal	2897518 t				2.90E+09	5.77%
wood	2680909 t				2.68E+09	5.34%
heavy fuel oil	698003 kl		930.00	[2a]	649.14E+06	1.29%
petroleum coke	577519 t				577.52E+06	1.15%
diesel	155734 kl		874.61	[2a]	136.21E+06	0.27%
methane	182914 Ml		0.72	[1a]	131.15E+06	0.26%
light fuel oil	57115 kl		719.23	[2a]	41.08E+06	0.08%
propane	58 kl		1.70	[2a]	98.60E+00	0.00%
<b>total</b>					<b>50.22E+09</b>	

## Sources

[1a] [http://www.engineeringtoolbox.com/gas-density-d\\_158.html](http://www.engineeringtoolbox.com/gas-density-d_158.html)

[2a] [http://www.engineeringtoolbox.com/fuels-densities-specific-volumes-d\\_166.html](http://www.engineeringtoolbox.com/fuels-densities-specific-volumes-d_166.html)

Emissions

Energy Production: 631.86E+09 kWh

CO2 per kWh: 0.20

KCO2	KCO2 Unit	KCO2 Source	KCO2 [kg/MJ]	ΔC	ΔC Unit	ΔC Source	ΔC [MJ/kg]	KCO2 [kg/kg]	CO2 mass [kg]
93.3 kg/Mbtu		[1b]	88.43E-03	31.3 MJ/kg		[3b]	31.30	2.77	67.76E+09
53.07 kg/Mbtu		[1b]	50.30E-03	47.7 MJ/kg		[3b]	47.70	2.40	23.47E+09
97.7 kg/Mbtu		[1b]	92.60E-03	22 MJ/kg		[3b]	22.00	2.04	18.02E+09
93.3 kg/Mbtu		[1b]	88.43E-03	31.3 MJ/kg		[3b]	31.30	2.77	8.02E+09
0.39 kg/kWh		[2b]	108.33E-03	15 MJ/kg		[3b]	15.00	1.63	4.36E+09
73.16 kg/Mbtu		[1b]	69.34E-03	41 MJ/kg		[3b]	41.00	2.84	1.85E+09
102.1 kg/Mbtu		[1b]	96.77E-03	34.2 MJ/kg		[3b]	34.20	3.31	1.91E+09
3.2 kg/kg		[2b]						3.20	435.86E+06
2.8 kg/kg		[2b]						2.80	367.22E+06
2.6 kg/kg		[2b]						2.60	106.80E+06
63.07 kg/Mbtu		[1b]	59.78E-03	46.3 MJ/m3		[3b]	1.63	2.77	272.90E+00
<b>total</b>									<b>126.30E+09</b>

Sources

- [1b] [https://www.eia.gov/electricity/annual/html/epa\\_a\\_03.html](https://www.eia.gov/electricity/annual/html/epa_a_03.html)
- [2b] [http://www.engineeringtoolbox.com/co2-emission-fuels-d\\_1085.html](http://www.engineeringtoolbox.com/co2-emission-fuels-d_1085.html)
- [3b] <http://www.manualihoep.li.it/media/doc/pr243.pdf>

# Emissions by Households Appliances

data from:

<http://www.torontohydro.com/sites/electricsystem/residential/yourbilloverview/Pages/ApplianceCh>

An average tree can absorb 48 pounds of CO2 per year

CO2 Absorption per month in kg: 1.82

source: <https://projects.ncsu.edu/project/treesofstrength/treefact.htm>

Appliance	Consumption [W]	Avg. Usage per Month [h]	Avg. Energy Consumption [kWh]	CO2 Emissions [kg]	Trees Needed
Air Cleaner (Room & Furnace)	40	400	16.0	3.20	5.81
Clothes Dryer	5000	20	100.0	19.99	36.31
Clothes Washer & Dryer	500	10	5.0	1.00	1.82
Printer)	200	100	20.0	4.00	7.26
Dishwasher	1300	10	13.0	2.60	4.72
Food Freezer	350	60	21.0	4.20	7.63
Microwave oven	1000	5	5.0	1.00	1.82
Stove (Oven)	5000	100	500.0	99.94	181.56
Fridge	500	150	75.0	14.99	27.23
Television	100	200	20.0	4.00	7.26
Water Bed Heater	500	150	75.0	14.99	27.23
Water Heater typical family of 4	3500	118	413.0	82.55	149.97
<b>total</b>	<b>17990.00</b>	<b>1323.00</b>	<b>1263.00</b>	<b>252.45</b>	<b>458.62</b>