

**Fiscal Year 2018
Cornell University
Central Energy Plant (CEP) Fast Facts¹**

CEP PRIMARY ENERGY CONSUMPTION		
Primary Consumption (trillion Btu)	1990⁽²⁾	2018
Electricity (Grid Purchased)	0.60	0.05
Coal	1.33	0.00
Hydro (electric)	0.02	0.02
Natural Gas	0.28	3.11
Oil	0.14	0.00
Total Primary Energy Consumption	2.35	3.17

CENTRAL ENERGY PLANT EFFICIENCY		
Energy Output (trillion Btu)	1990	2018
Total Steam Generation ⁽³⁾	1.35	1.36
Total Turbine Electric Generation	0.07	0.91
Total Energy Output	1.42	2.27

Fuel Sources (trillion Btu)	1990	2018
Coal	1.33	0.00
Natural Gas - Boilers	0.28	0.16
Natural Gas - Turbines	0.00	2.69
Natural Gas - Duct Burners	0.00	0.26
Oil	0.14	0.00
Total Energy Input (trillion Btu)	1.74	3.11
Total Central Plant Efficiency	81%	73%
Total Steam Sales (trillion Btu)	0.99	0.88
Total Distrib and Building Steam Losses (%)	17%	22%
Total Steam Condensed for Electric (trillion Btu)	0.00	0.23

ELECTRICITY		
Cornell Utilities Generated (Mwh)	1990	2018
Cornell Utilities Hydro	5,200	6,000
Cornell Utilities Steam Turbine - Cogen	21,000	26,800
Cornell Utilities Gas Turbine - CCHPP ⁽³⁾	0	239,400
Total Cornell Utilities Generated	26,200	272,200
Electricity Exported to Grid (Mwh)	0	(67,800)
Electricity (Grid Purchased) (Mwh)	174,500	8,900
Total CEP Electricity (Mwh)	200,700	213,300
Total Campus Sales (Mwh)	190,626	202,400
LSC Electricity (Grid Purchased) (Mwh)	0	4,600

Electricity (NY Grid) Sources		
	1990	2018
Other Renewables	0%	6%
Coal	19%	1%
Natural Gas	17%	42%
Hydro	21%	20%
Nuclear	17%	31%
Petroleum	25%	<1%
Other	1%	<1%
Total	100%	100%

CHILLED WATER		
Energy Output & Input (trillion Btu)	1990	2018
Total Chilled Water Production (trillion Btu)	0.381	0.513
Total Energy Input (trillion Btu) ⁽⁶⁾	0.072	0.021
System Coefficient of Performance	5.3	24.4
Total Campus Sales (trillion Btu)	0.348	0.509
Chilled Water Sources		
Mechanical Chillers	85%	2%
Lake Source Cooling	0%	98%
"Free" Cooling	15%	0%

ENERGY RELATED CARBON DIOXIDE (CO₂) EMISSIONS		
Purchased Electric	1990	2018
Grid CO ₂ Emission Factor (kg/MWh)	870	134
Grid Electric CO ₂ (1,000 metric tons)	152	2
Cornell Central Energy Plant		
Cornell Coal ⁽⁴⁾	125	0
Cornell Natural Gas ⁽⁵⁾	15	165
Cornell Oil	11	0
Total CEP CO ₂ Emissions (1,000 metric tons)	151	165
Total CO₂ Emissions (1,000 metric tons)	303	167

CO₂ Emissions By Primary Energy Type:		
	1990	2018
Electricity (Grid Purchased)	50%	1%
On-Site Coal	41%	0%
On-Site Natural Gas	5%	99%
On-Site Oil	4%	0%
On-Site Hydro	0%	0%

CENTRALLY CONNECTED BLDG GSF x 1,000		
	1990	2018
Electric (provided via CEP)	NA	14,100
Steam (provided via CEP)	NA	12,800
Chilled Water (provided via CEP)	NA	10,800

ENERGY METRICS (KBTU/GSF) PER YEAR		
	1990	2018
Electric Sales	NA	52
Steam Sales	NA	106
Chilled Water Sales	NA	48

ENERGY CONSUMPTION BY BUILDING		
Building Type: (trillion Btu)	1990	2018
Research/Teaching	NA	2.42
Campus Life	NA	0.51
Administration (includes CEP)	NA	0.23

POPULATION AND WEATHER		
	1990	2018
Students	18,389	22,369
Staff/Non-Faculty	7,690	9,463
Faculty	1,617	1,537
Ithaca Campus ⁽⁶⁾ (1000 GSF)	11,800	15,876
Campus GSF per Student	642	710
Heating Degree Days (7,220 Normal)	6,919	6,916
Cooling Degree Days (337 Normal)	312	403

GLOSSARY & NOTES		
Btu: British thermal unit		
Primary: Central Plant Usage		
MMBtu: Million Btu		
Mwh: mega watt-hour		
(1) Info for CEP only, not all campus facilities part of CEP		
(2) Kyoto Base Year is 1990		
(3) Combined Heat & Power Plant start-up FY 2010		
(4) "Beyond Coal" begins FY 2012		
(5) GHG NOT adjusted for exported electric		
(6) Ithaca Campus GSF includes non-CEP connected facilities		