

**Fiscal Year 2012
Cornell University
Central Energy Plant (CEP) Fast Facts¹**

CEP PRIMARY ENERGY CONSUMPTION		
Primary Consumption (trillion Btu)	1990⁽²⁾	2012
Electricity (Grid Purchased)	0.60	0.22
Coal	1.33	0.00
Hydro (electric)	0.02	0.02
Natural Gas	0.28	2.40
Oil	0.14	0.00
Total Primary Energy Consumption	2.35	2.64

CENTRAL ENERGY PLANT EFFICIENCY		
Energy Output (trillion Btu)	1990	2012
Total Steam Generation	1.31	1.19
Total Turbine Electric Generation	0.07	0.70
Total Energy Output	1.38	1.88

Fuel Sources (trillion Btu)	1990	2012
Coal	1.33	0.00
Natural Gas - Boilers	0.28	0.09
Natural Gas - Turbines	0.00	2.04
Natural Gas - Duct Burners	0.00	0.28
Oil	0.14	0.00
Total Energy Input (trillion Btu)	1.74	2.40
Total Central Plant Efficiency	69%	78%

Total Steam Sales (trillion Btu)	NA	0.97
Total Steam Losses (%)	NA	18%

ELECTRICITY		
Cornell Utilities Generated (Mwh)	1990	2012
Cornell Utilities Hydro	5,200	5,700
Cornell Utilities Steam Turbine - Cogen	21,000	23,900
Cornell Utilities Gas Turbine - CCHPP ⁽³⁾	0	182,700
Total Cornell Utilities Generated	26,200	212,300
Electricity Exported to Grid (Mwh)	0	(31,800)
Electricity (Grid Purchased) (Mwh)	175,000	57,700
Total CEP Electricity (Mwh)	201,200	238,200
Total Campus Sales (Mwh)	NA	222,000
Electricity LSC (Grid Purchased) (Mwh)	0	5,900

<i>Electricity (Grid Purchased) Sources</i>	1990	2012
Other Renewables	0%	4%
Coal	74%	7%
Natural Gas	5%	44%
Hydro	14%	11%
Nuclear	5%	13%
Petroleum	2%	16%
Other Gases	0%	<1%
Pumped Storage	0%	4%

CHILLED WATER		
Energy Output & Input (trillion Btu)	1990	2012
Total Chilled Water Production (trillion Btu)	0.338	0.585
Total Energy Input (trillion Btu) ⁽⁶⁾	0.072	0.024
System Coefficient of Performance	4.7	24.4
Total Campus Sales (trillion Btu)	N/A	0.580
Chilled Water Sources		
Mechanical Chillers	83.2%	1%
Lake Source Cooling	17%	99%

ENERGY RELATED CARBON DIOXIDE (CO₂) EMISSIONS		
Purchased Electric	1990	2012
Grid CO ₂ Emission Factor (lbs/MWh)	1,918	669
Grid Electric CO ₂ (1,000 tons)	167	21
Cornell Central Energy Plant		
Cornell Coal ⁽⁴⁾	138	0
Cornell Natural Gas ⁽⁵⁾	15	120
Cornell Oil	12	0.4
Total CEP CO ₂ Emissions (1,000 tons)	165	120
Total CO₂ Emissions (1,000 tons)	333	141

CO ₂ Emissions By Primary Energy Type:	1990	2012
Electricity (Grid Purchased)	50%	15%
On-Site Coal	42%	0%
On-Site Natural Gas	5%	85%
On-Site Oil	4%	0%
On-Site Hydro	0%	0%

CENTRALLY CONNECTED BLDG GSF x 1,000		
	1990	2012
Electric (provided via CEP)	NA	13,700
Steam (provided via CEP)	NA	12,600
Chilled Water (provided via CEP)	NA	8,000

ENERGY METRICS (KBTU/GSF) PER YEAR		
	1990	2012
Electric Sales	NA	59
Steam Sales	NA	94
Chilled Water Sales	NA	73

ENERGY CONSUMPTION BY BUILDING		
Building Type: (trillion Btu)	1990	2012
Research/Teaching	NA	1.90
Campus Life	NA	0.53
Administration	NA	0.21

POPULATION AND WEATHER		
	1990	2012
Students	18,389	20,377
Staff/Non-Faculty	7,690	8,046
Faculty	1,617	1,596
Ithaca Campus ⁽⁶⁾ (1000 GSF)	11,800	15,200
Campus GSF per Student	642	746
Heating Degree Days (7,220 Normal)	6,919	5,767
Cooling Degree Days (337 Normal)	312	570

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 adjusted for exported electric
- (6) Ithaca Campus includes non-CEP connected facilities