Fiscal Year 2023 Cornell University Central Energy Plant (CEP) Fast Facts¹

	UMPTION	
Primary Consumption (trillion Btu)	<u>1990</u> (2)	2023
Electricity (Grid Purchased)	0.60	0.09
Coal	1.33	0.00
Hydro (electric)	0.02	0.02
Natural Gas	0.28	2.80
Oil	0.14	0.00
Total Primary Energy Consumption	2.35	2.90
CENTRAL ENERGY PLANT EFFICIENCY		
Energy Output (trillion Btu)	1990	2023
Total Steam Generation ⁽³⁾	1.35	1.34
Total Turbine Electric Generation	0.07	0.8
Total Energy Output	1.42	2.15
Total Energy Output	1.42	2.10
Fuel Sources (trillion Btu)	1990	2023
Coal	1.33	0.00
Natural Gas - Boilers	0.28	0.20
Natural Gas - Bollers Natural Gas - Turbines	0.28	2.28
Natural Gas - Turbines Natural Gas - Duct Burners		0.32
	0.00	
Oil Total Energy Input (trillion Btu)	0.14	0.00
Total Energy Input (trillion Btu)	1.74	2.80
Total Central Plant Efficiency	81%	77%
Total Steam Sales (trillion Btu)	0.99	0.79
Total Distrib and Building Steam Losses (%)	17%	24%
Total Steam Condensed for Electric (trillion Btu)	0.00	0.17
ELECTRICITY		
Cornell Utilities Generated (Mwh)	<u>1990</u>	2023
Cornell Utilities Hydro	5,200	5,000
Cornell Utilities Steam Turbine - Cogen	21,000	28,100
Cornell Utilities Gas Turbine - CCHPP ⁽³⁾	0	210,800
Total Cornell Utilities Generated	26,200	243,900
Electricity Exported to Grid (Mwh)	0	(59,600
Liectricity Exported to Grid (MMT)		
Electricity (Grid Purchased) (Mwh)	174,500	19,900
Electricity (Grid Purchased) (Mwh)		19,900 204,20 0
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh)	174,500 200,700	204,200
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh)	174,500	194,000
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh)	174,500 200,700 190,626	204,200 194,000 5,600
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources	174,500 200,700 190,626 0	204,200 194,000 5,600 2023
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables	174,500 200,700 190,626 0 1990 0%	204,200 194,000 5,600 2023 7%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal	174,500 200,700 190,626 0 1990 0% 19%	204,200 194,000 5,600 2023 7% 0%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas	174,500 200,700 190,626 0 1990 0% 19% 17%	204,200 194,000 5,600 2023 7% 0% 26%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro	174,500 200,700 190,626 0 1990 0% 19% 17% 21%	204,200 194,000 5,600 2023 7% 0% 26% 33%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear	174,500 200,700 190,626 0 1990 0% 19% 17% 21% 17%	204,200 194,000 5,600 2023 7% 0% 26% 33% 33%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum	174,500 200,700 190,626 0 1990 0% 19% 17% 21% 17% 25%	204,200 194,000 5,600 2023 7% 0% 26% 33% 33%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other	174,500 200,700 190,626 0 0% 19% 17% 21% 17% 25% 1%	204,200 194,000 5,600 2023 7% 0% 26% 33% 0% <1%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other Total	174,500 200,700 190,626 0 1990 0% 19% 17% 21% 17% 25%	204,200 194,000 5,600 2023 7% 0% 26% 33% 0% <1%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other Total CHILLED WATER	174,500 200,700 190,626 0 1990 0% 19% 17% 21% 17% 25% 1% 100%	204,200 194,000 5,600 2023 7% 0% 26% 33% 33% 0% <1%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other Total CHILLED WATER Energy Output & Input (trillion Btu)	174,500 200,700 190,626 0 1990 0% 19% 17% 21% 17% 25% 1% 100%	204,200 194,000 5,600 2023 7% 0% 26% 33% 33% 0% <19% 100%
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other Total CHILLED WATER Energy Output & Input (trillion Btu) Total Chilled Water Production (trillion Btu)	174,500 200,700 190,626 0 0% 19% 17% 21% 17% 25% 1% 100% 1990 0.381	204,200 194,000 5,600 2023 7% 0% 26% 33% 0% <1% 100% 2023 0.565
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other Total CHILLED WATER Energy Output & Input (trillion Btu) Total Chilled Water Production (trillion Btu) Total Energy Input (trillion Btu) ⁽⁶⁾	174,500 200,700 190,626 0 0% 19% 17% 21% 17% 25% 1% 100% 1900 0.381 0.072	204,200 194,000 5,600 2023 7% 0% 26% 33% 0% <1% 100% 2023 0.563 0.026
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other Total CHILLED WATER Energy Output & Input (trillion Btu) Total Chilled Water Production (trillion Btu) Total Energy Input (trillion Btu) System Coefficient of Performance	174,500 200,700 190,626 0 1990 0% 19% 17% 21% 17% 25% 1% 100% 1990 0.381 0.072	204,200 194,000 5,600 2023 7% 0% 26% 33% <1% 100% 2023 0.563 0.026 21.7
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other Total CHILLED WATER Energy Output & Input (trillion Btu) Total Chilled Water Production (trillion Btu) Total Energy Input (trillion Btu) System Coefficient of Performance Total Campus Sales (trillion Btu)	174,500 200,700 190,626 0 0% 19% 17% 21% 17% 25% 1% 100% 1900 0.381 0.072	
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other Total CHILLED WATER Energy Output & Input (trillion Btu) Total Chilled Water Production (trillion Btu) Total Energy Input (trillion Btu) System Coefficient of Performance Total Campus Sales (trillion Btu) Chilled Water Sources	174,500 200,700 190,626 0 1990 0% 19% 17% 21% 17% 25% 1% 100% 1990 0.381 0.072 5.3	204,200 194,000 5,600 2023 7% 0% 26% 33% 0% <1% 100% 2023 0.563 0.026 21.7
Electricity (Grid Purchased) (Mwh) Total CEP Electricity (Mwh) Total Campus Sales (Mwh) LSC Electricity (Grid Purchased) (Mwh) Electricity (NY State Grid) Sources Other Renewables Coal Natural Gas Hydro Nuclear Petroleum Other Total CHILLED WATER Energy Output & Input (trillion Btu) Total Chilled Water Production (trillion Btu) Total Energy Input (trillion Btu) System Coefficient of Performance	174,500 200,700 190,626 0 1990 0% 19% 17% 21% 17% 25% 1% 100% 1990 0.381 0.072	204,200 194,000 5,600 2023 7% 0% 26% 33% <1% 100% 2023 0.563 0.026 21.7

	EMISSIONS	3
Purchased Electric	1990	2023
Grid CO ₂ Emission Factor (kg/MWh)	870	125
Grid Electric CO ₂ (1,000 metric tons)	152	3
Cornell Central Energy Plant		
Cornell Coal ⁽⁴⁾	105	0
Cornell Natural Gas ⁽⁵⁾	125	0
Cornell Oil	15	148
	11	0
Total CEP CO ₂ Emissions (1,000 metric tons) Total CO ₂ Emissions (1,000 metric tons)	151	149
	303	152
CO ₂ Emissions By Primary Energy Type:	1990	2023
	<u>1990</u> 50%	<u>2023</u> 2%
Electricity (Grid Purchased)	41%	0%
On-Site Coal	5%	98%
On-Site Natural Gas		
On-Site Oil	4%	0%
On-Site Hydro	0%	0%
CENTRALLY CONNECTED BLDG GSF x 1,000	1	
TENTIONE CONNECTED BEDG GOT X 1,000	, <u>1990</u>	2023
Electric (provided via CEP)	NA	14,700
Steam (provided via CEP)	NA.	13,600
Chilled Water (provided via CEP)	NA	•
Crilled Water (provided via CEP)	INA	11,900
ENERGY METRICS (KBTU/GSF) PER YEAR		
, , ,	<u>1990</u>	2023
Electric (CEP to Campus)	NA	47
Steam (gross Generation less SCB)	NA	86
Chilled Water (gross Production)	NA	47
Chillied Water (gross Froduction)	10.	-11
ENERGY CONSUMPTION BY BUILDING		
Building Type: (trillion Btu)	<u>1990</u>	2023
Research/Teaching	NA	2.09
Campus Life	NA	0.58
Administration (includes CEP)	NA	0.23
POPULATION AND WEATHER		
POPULATION AND WEATHER	<u>1990</u>	<u>2023</u>
POPULATION AND WEATHER Students	1990 18,389	<u>2023</u> 24,278
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Students	18,389	24,278
Students Staff/Non-Faculty	18,389 7,690	24,278 10,410
Students Staff/Non-Faculty Faculty	18,389 7,690 1,617	24,278 10,410 1,543
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF)	18,389 7,690 1,617 11,800	24,278 10,410 1,543 16,613
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student	18,389 7,690 1,617 11,800 642	24,278 10,410 1,543 16,613 684
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal)	18,389 7,690 1,617 11,800 642 6,919	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal)	18,389 7,690 1,617 11,800 642 6,919	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal)	18,389 7,690 1,617 11,800 642 6,919	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal) GLOSSARY & NOTES Btu: British thermal unit	18,389 7,690 1,617 11,800 642 6,919	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal) GLOSSARY & NOTES Btu: British thermal unit Primary: Central Plant Usage	18,389 7,690 1,617 11,800 642 6,919	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal) GLOSSARY & NOTES Btu: British thermal unit Primary: Central Plant Usage MMBtu: Million Btu Mwh: mega watt-hour	18,389 7,690 1,617 11,800 642 6,919 312	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal) 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	18,389 7,690 1,617 11,800 642 6,919 312	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal) 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 (2) Kyoto Base Year is 1990	18,389 7,690 1,617 11,800 642 6,919 312	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal) 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 (2) Kyoto Base Year is 1990 (3) Combined Heat & Power Plant start-up FY 20	18,389 7,690 1,617 11,800 642 6,919 312	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal) 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 (2) Kyoto Base Year is 1990 (3) Combined Heat & Power Plant start-up FY 20 (4) "Beyond Coal" begins FY 2012	18,389 7,690 1,617 11,800 642 6,919 312	24,278 10,410 1,543 16,613 684 6,083
Students Staff/Non-Faculty Faculty Ithaca Campus ⁽⁶⁾ (1000 GSF) Campus GSF per Student Heating Degree Days (7,220 Normal) Cooling Degree Days (337 Normal) 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 (2) Kyoto Base Year is 1990 (3) Combined Heat & Power Plant start-up FY 20	18,389 7,690 1,617 11,800 642 6,919 312	24,278 10,410 1,543 16,613 684 6,083 489