

**FY 2004  
Cornell University  
Energy Fast Facts<sup>1</sup>**

**PRIMARY ENERGY CONSUMPTION**

*Consumption increased 5% from 2003*

|  |      |      |
|--|------|------|
| Primary Consumption (trillion Btu)                     |      | 2.57 |
| Coal   | 1.68 |      |
| Electricity (Purchased)                                | 0.68 |      |
| Hydro  | 0.02 |      |
| Natural Gas  | 0.14 |      |
| Oil  | 0.05 |      |
| 1990 Primary Consumption per Square Foot (million Btu) |      | 0.20 |
| 2004 Primary Consumption per Square Foot (million Btu) |      | 0.19 |

**END-USE ENERGY CONSUMPTION**

By Building Type:

|                 |     |
|-----------------|-----|
| Lab Buildings   | TBD |
| Residence Halls | TBD |
| Other           | TBD |

**ENERGY RELATED CO<sub>2</sub> EMISSIONS**

*Emissions increased 6% from 2003*

|  |     |
|--|-----|
| 1990 Total CO <sub>2</sub> Emissions (thousand tons) | 333 |
| 2004 Total CO <sub>2</sub> Emissions (thousand tons) | 280 |

|                         | <u>1990</u> | <u>2004</u> |
|-------------------------|-------------|-------------|
| By Primary Energy Type: |             |             |
| Coal                    | 42%         | 62%         |
| Electricity (purchased) | 50%         | 33%         |
| Hydro                   | 0%          | 0%          |
| Natural Gas             | 5%          | 3%          |
| Oil                     | 3%          | 2%          |

By Utility Type:

|                           |     |     |
|---------------------------|-----|-----|
| Chilled Water             | 5%  | 1%  |
| Electricity - Procured    | 50% | 33% |
| Electricity - Cogenerated | 3%  | 5%  |
| Steam                     | 47% | 61% |

**GLOSSARY**

|                 |                            |
|-----------------|----------------------------|
| Btu             | British thermal unit       |
| CO <sub>2</sub> | Carbon Dioxide             |
| Primary         | Central Plant Usage        |
| End Use         | Building metered usage     |
| COP             | Coefficient of Performance |

**NOTES**

- 1 Information provided is for Ithaca central utility campus only.
- 2 Chilled Water end use Btu are energy input to the central plants for production and distribution of cooling water.
- 3 1990 purchased electric emission rate determined from New York State Electric & Gas (NYSEG) 1990 annual report.
- 4 2004 purchased electric emission rate estimated using 2004 rates provided by New York State Public Service Commission

**CHILLED WATER**

|  |      |
|--|------|
| 1990 Total Chilled Water Production (trillion Btu) | 0.34 |
| 2004 Total Chilled Water Production (trillion Btu) | 0.48 |

|                                   | <u>1990</u> | <u>2004</u> |
|-----------------------------------|-------------|-------------|
| Generation Sources                |             |             |
| Chillers                          | 83%         | 2%          |
| Lake/Free Cooling                 | 17%         | 98%         |
| Total Energy Input (trillion Btu) | 0.08        | 0.02        |
| System COP                        | 4.15        | 25.46       |

**ELECTRICITY**

|                              |         |
|------------------------------|---------|
| 1990 Total Consumption (mwh) | 201,000 |
| Cornell Generated            | 26,000  |
| Purchased                    | 175,000 |
| 2004 Total Consumption (mwh) | 234,000 |
| Cornell Generated            | 35,000  |
| Purchased                    | 199,000 |

|                            | <u>1990</u> | <u>2004</u> |
|----------------------------|-------------|-------------|
| Cornell Generated Sources: |             |             |
| Cogeneration               | 81%         | 87%         |
| Hydro                      | 20%         | 13%         |

Purchased Electricity Sources<sup>3,4</sup>:

|             |     |     |
|-------------|-----|-----|
| Biomass     | 0%  | 1%  |
| Coal        | 74% | 15% |
| Natural Gas | 5%  | 38% |
| Hydro       | 14% | 18% |
| Nuclear     | 5%  | 25% |
| Oil         | 2%  | 3%  |
| Solar       | 0%  | 0%  |
| Solid Waste | 0%  | <1% |
| Wind        | 0%  | <1% |

**STEAM**

|  |      |
|--|------|
| 1990 Total Steam Export (trillion Btu) | 1.31 |
| 2004 Total Steam Export (trillion Btu) | 1.39 |

|   | <u>1990</u> | <u>2004</u> |
|---|-------------|-------------|
| Fuel Sources (10 <sup>12</sup> Btu)       |             |             |
| Coal                                      | 1.33        | 1.68        |
| Natural Gas                               | 0.29        | 0.14        |
| Oil                                       | 0.13        | 0.05        |
| Total Energy Input (10 <sup>12</sup> Btu) | 1.75        | 1.87        |
| Thermal Efficiency                        | 68%         | 69%         |

**ADDITIONAL STATISTICS**

|                                 | <u>1990</u> | <u>2004</u> |
|---------------------------------|-------------|-------------|
| Total Enrollment                | 18,450      | 19,620      |
| Campus Area (1000 sq. ft.)      | 11,800      | 13,700      |
| Square Feet per Student         | 640         | 698         |
| Heating Degree Days (7050 ave.) | 6,919       | 7,092       |