iCAP Information

1. The FY Utility Summary File

**Coal Use**

The FY Utility Summary file contains a monthly breakdown of several campus utility usage and price quantities of relevance to iCAP. Starting with FY06, this data is compiled into annual summaries as well, though such information can be easily pulled out from the file if needed.

The first section of the file contains information about coal use – usage, costs and supplementary inputs – limestone and gypsum used in operating the pollution controls for the coal boilers. Column HD (Column FZ in previous versions of the Utility Summary file), later in the file lists the actual energy content of the coal in MBTU. The conversion factor used by campus is 1 ton provides 21.846 Million BTU of input energy. The new version of the file has a formula error that fails to calculate data prior to FY2012.

|  |  |
| --- | --- |
| **Column** | **Description** |
| E | Coal Burned Cost |
| F | Coal Burned Usage |
| G | Coal Burned Cost/Ton |
| H | Limestone Consumed Cost |
| I | Limestone Consumed Usage |
| J | eDNA Reported Usage |
| K | Limestone Cost/Ton |
| L | Ash/Gyp Cost |
| M | Ash/Gyp Usage |
| N | Ash/Gyp Cost/Ton |
| HD |  Coal Usage in Mbtu |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|   | Cost of Coal (E) | Tons of Coal (F) | Cost per Ton (G) | Total Energy (HD) | Total Cost (E+H+L) | % Use Change from FY08 | Carbon Emissions (not in FY file) |
| FY 2006 | $2,887,172  | 72,872 | $39.62 | 1,591,965 | $3,192,229 | -11.2% | 148,580.7  |
| FY 2007 | $3,653,145  | 90,324 | $40.44 | 1,973,218 | $4,409,463 | 10.1% | 184,163.6  |
| FY 2008 | $3,563,355  | 82,050 | $43.43 | 1,792,464 | $4,253,563 | 0.0% | 167,293.6  |
| FY 2009 | $5,865,177  | 94,171 | $62.28 | 2,057,260 | $6,794,981 | 14.8% | 192,007.4  |
| FY 2010 | $5,363,657  | 60,161 | $89.16 | 1,314,277 | $5,942,795 | -26.7% | 122,663.6  |
| FY 2011 | $5,012,245  | 60,479 | $82.88 | 1,321,224 | $5,656,006 | -26.3% | 123,312.0  |

The specific information used in the iCAP target template file is the number of tons used on campus and the amount of energy in MBTU used on campus from coal.

Additional Information

1. The cost of coal has approximately doubled from FY2006 to FY2011.
2. The cost of supplementary materials such as gypsum and limestone adds approximately 13% to the cost of coal. Where the total cost of coal burned in FY2011 was $5,012,245, the total cost of coal, limestone and gypsum together was $5,656,005.
3. If expressed in cost per MMBTU, coal in FY2011 averaged $3.79 per MMBTU ($4.29 per MMBTU including costs of limestone and gypsum). This is higher than the cost of natural gas ($6.59 per MMBTU), though the spread has declined significantly over the past three years. A per-MMBTU comparison also does not account for the higher internal energy loads from operating the pollution controls and the higher maintenance expenses on the coal system.
4. Maximum monthly coal use in the past year was 9,701 tons in December 2010.
5. Campus has adopted a policy of no-coal use from mid-April to mid-October (estimated). This policy is expected to continue in future years with an expanding window of no-coal use, dependent on continued energy conservation and favorable natural gas prices (4,197 tons of coal were used in September in response to a spike in gas prices)
6. Using the current numbers for July-October consumption and assuming consumption similar to FY10 in remaining months, we would anticipate an FY12 coal consumption of 51,395 tons. The cost of this action compared to FY11 levels of consumption (using the above cost per MMBTU figures) would be $456,432, with the real cost differential being a little lower.
7. Carbon emissions can be calculated according to the formula where 1 ton of coal releases 2.0389225 tons of CO2, representing a carbon content of 55.61%. On a per Million BTU basis, coal at U of I releases 0.093331619 tons of CO2.

**Fuel Oil**

Fuel oil is another fuel utilized at Abbott power plant in small quantities. FY09 was the only year in the past five where it represented as much as 0.1% of natural gas use at Abbott power plant. As a result, it is not tracked in the iCAP Target Template File. The data can be found in column HF and is used in estimating the total campus carbon footprint.

|  |  |
| --- | --- |
| **Column** | **Description** |
| HF | App Fuel Oil Usage in Mbtu |

|  |  |
| --- | --- |
|   | Fuel Oil Use (HF) |
| FY 2006 | 34,268 |
| FY 2007 | 1,629 |
| FY 2008 | 987 |
| FY 2009 | 4,974 |
| FY 2010 | 1,050 |
| FY 2011 | 268 |

**Natural Gas Use**

Natural gas use at Abbott Power Plant (in MMBTU) is recorded in the column HE (Column GA in previous versions) directly next to the coal use in MMBTU. The new version of the file has a formula error that fails to calculate data prior to FY2012 as well as certain errors in the columns in formulas to calculate total UI Gas use. The data is calculated by converting from therms where 1 therm provides 0.1 Million BTU of input energy.

The cost of each million BTUs of natural gas was $6.593 per million BTUs in FY2011 down from a high of $9.84 in FY2009 and at its lowest level since FY2005. The highest level of monthly consumption of natural gas at Abbott power plant in the past year was 3.915 million therms in January of 2011 while the lowest was 1.087 million therms in September of 2011.

Carbon emissions for natural gas use can be calculated using the formula: Generation of 1 million BTUs of input energy from natural gas releases .053222386 tons of CO2 which is 57% of the carbon footprint of energy from coal.

|  |  |
| --- | --- |
| **Column** | **Description** |
| BC | Market Gas Cost – This represents the total cost of gas delivered to the Urbana campus and primarily used at Abbott power plant |
| BD | NICOR Urbana Gas Delivered [UA] Market – This represents the total amount of gas delivered to the Urbana campus primarily for use at Abbott power plant, but also at some other campus buildings (Therms) |
| BI | Cost/Therm (Urbana) – This represents the cost of gas delivered (BC/BD) to campus. The product of this with column BK will be total cost of natural gas used at Abbott power plant. This is in the following table but not explicitly calculated in the FY utility summary file |
| BK | APP Gas Burned Usage – Gas used at Abbott power plant (Therms) |
| BL |  Campus Bldg UI Gas Usage |
| BM | All Vendor & UI GAS Cost – Total UIUC Gas cost – Abbott + on-campus + off-campus (but UIUC facility) gas cost |
| BN | All Vendor & UI GAS Usage – Total UIUC Gas usage – Abbott + on-campus + off-campus (but UIUC facility) gas usage – Sum of Columns (BD, BA, AX, AU, AS, AG, AD, AB, Z, W, T, Q, AJ, AM, AP) – Therms |
| HE |  Natural Gas Usage in Mbtu – (only for Abbott Power Plant) |

The previous version of the iCAP Target Template did not account for natural gas use in U of I buildings separate from that used at Abbott Power Plant – an oversight which has now been corrected. This represents a between 6%-9% addition to campus gas consumption, separate from Abbott power plant. This is a different metric from that used in the CACP calculator or apparently in previous carbon emissions tracking which only accounted for column BL data usage for campus building natural gas use.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | Abbott Gas Use (MMBTU) (HE) | Abbott Gas Cost (HE\*BI) | % Abbott Use Change from FY08 | Abbott Carbon Emissions (tons) - not in FY file | Total Gas Use (MMBTU) = (BN/10) | Total Gas Cost (BM) | % Total Use Change from FY08 | Total Carbon Emissions (tons) - not in FY file |
| FY 2006 | 3,586,895 | $30,690,209 | -6.2% | 190,903.1 | 3,823,791 | $33,417,246 | -6.9% | 143,831,012 |
| FY 2007 | 3,673,463 | $25,437,920 | -3.9% | 195,510.5 | 3,958,718 | $28,005,197 | -3.7% | 122,767,424 |
| FY 2008 | 3,822,913 | $31,682,686 | 0.0% | 203,464.6 | 4,109,010 | $34,529,855 | 0.0% | 144,418,473 |
| FY 2009 | 3,156,770 | $31,063,692 | -17.4% | 168,010.9 | 3,378,623 | $31,609,201 | -17.8% | 145,808,263 |
| FY 2010 | 3,518,247 | $25,363,170 | -8.0% | 187,249.5 | 3,778,270 | $27,612,700 | -8.0% | 139,717,455 |
| FY 2011 | 3,290,567 | $21,693,786 | -13.9% | 175,131.9 | 3,575,603 | $23,904,285 | -13.0% | 139,918,719 |

**Electricity Use**

The iCAP target template file lists total electricity use (in kWh), purchased electricity use (in kWh) and purchased electricity use converted to Million BTUs. There are no iCAP specific targets for any of these quantities. Purchased electricity use in Million BTUs is calculated via a conversion factor of 1 kWh = 0.003412 Million BTUs.

The carbon footprint of purchased electricity is taken from the average footprint of the MISO electric grid area (comprising 12 states and one Canadian province). The average footprint of a million BTUs of input energy from purchased electricity (estimated from previous U of I data, estimated from Terry Ruprecht) is 0.221294 tons of CO2 (0.0007551 tons of CO2 / kWh) which is 237% the footprint of energy derived from coal. The actual purchases are handled at the University administration level through a corporation known as Prairieland Electric.

The emissions value used was back calculated using UI reported emissions for FY06-FY10 and purchased electricity information from the FY Utility Summary file (the carbon footprint number instead of the total number. However the intensity number used does not match up with the newest EPA data, which should be used instead. The carbon intensity of purchased electricity averaged over all generation in states served by MISO is 0.000771242 tons of CO2/kWh while the carbon intensity of the SERC Midwest service area (representing downstate Illinois and Missouri) is 0.000811423 tons of CO2/kWh (as it has a more coal-heavy generation mix).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | Total Electricity Use (kWh) (HC = GV+HB) | Generated Electricity Use (kWh) (HB) | Purchased Electricity Use (MMBTU) (HA) | Purchased Electricity Use (kWh) (GV) | Purchased Electricity Cost (GU) | Official Purchased Electricity Carbon Emissions | % Total Use Change from FY08 | Purchased Electricity (Carbon Footprint Usage estimate) from FY File (GZ) |
| FY 2006 | 421,296,728 | 272,721,151 | 506,940 |  148,575,577  | $11,789,001 | 108,762.0 | -7.22% | 143,831,012 |
| FY 2007 | 438,585,450 | 311,150,547 | 434,808 |  127,434,903  | $11,908,560 | 92,749.0 | -3.41% | 122,767,424 |
| FY 2008 | 454,091,364 | 304,595,521 | 510,080 |  149,495,843  | $8,161,909 | 109,143.0 | 0.00% | 144,418,473 |
| FY 2009 | 449,874,602 | 299,194,693 | 514,120 |  150,679,909  | $9,993,044 | 110,077.8 | -0.93% | 145,808,263 |
| FY 2010 | 432,886,537 | 288,350,074 | 493,158 |  144,536,463  | $8,558,850 | 105,198.0 | -4.67% | 139,717,455 |
| FY 2011 | 431,115,446 | 286,104,156 | 494,779 |  145,011,290  | $8,129,092 | 105,646.7 | -5.06% | 139,918,719 |

As can be seen from the above data, approximately two-thirds of the campus electricity use (in 286,104,156 kWh in FY2011) is generated on campus. Most of the remainder (122,135,214 kWh in FY2011) is imported via a central substation. The last fraction (22,876,076 kWh in FY2011 – 5.3%) is utilized at campus facilities not on the central electric grid.

The average cost of MISO purchased and centrally imported electricity in FY2011 was 5.14¢/kWh ($15.064 per million BTUs) – down from 7.91¢/kWh in FY2007. The cost of the remaining imported electricity in FY2011 was 8.09¢/kWh.

While the apparent contribution of purchased electricity to the U of I’s site energy use is small (9.2% of total site energy), its impact on energy related carbon-emissions is much higher (26.17% of total energy carbon emissions). Its impact on total campus source energy use (if calculated) would be roughly equivalent.

|  |  |
| --- | --- |
| **Column** | **Description** |
| DB | IP DS4 On -peak Demand – Unknown what metric of peak demand this is |
| DC | IP Main Sub DS4 Scaled Usage – Purchased electricity for use on campus grid |
| DE | Total Estimated ABBOTT Electric Cost - Sum of various campus grid electricity costs, demand charges, Prairieland costs etc |
| DF | Est Abbott Electric Rate – DE/DC |
| GU | Total Purchased Electric Cost – Sum of Abbott purchased electricity usage and other electricity (e.g. airport, Dixon Springs, etc) |
| GV | Total Purchased Electric Usage - SUM Columns **DC**, **DI**, **DL**, **DO**, **DR**, EY, **FB**, FE, FH, **FK**, **FN**, FQ, FT, **GL**, FW, **GR**, FZ, GO, GI, GF, GC). Bold Columns are used below in energy use for carbon emissions calculations |
| GW | Total Purchased Electric Rate – GU/GV |
| GX | Excess Generation Electric Credit – Electricity purchased in excess of campus consumption |
| GY | Excess Generation Electric Production – Sale value of excess electricity |
| GZ | UIUC Carbon Footprint Total Purchased Electric Usage – SUM Columns DC (Electricity Imports at Abbott) , DI (IP Big Group Usage), DL (IP Small Group Usage), DO (IP Residential Electricity Usage), DR (IP Night Lite Usage), FB (CIPS LOC), FK (CIPS SOY), FN (CIPS LOC), GL (Eastern Illini LOC), FR (CIPS LOC) – Primary exclusions are Willard Airport, Dixon Springs and some other minor facilities. |
| HA | Total Purchased Electric Usage in Mbtu – Conversion of GV to Million BTUs |
| HB | Generated Electric Usage in kWh – Electricity cogenerated at Abbott powerplant |
| HC | Total Electric Usage in kWh – GV + HB |

On-site generation of steam to meet campus demand enables the generation of electricity through combined heat and power. While at most times, this power is less than campus demands resulting in purchases, at certain times, especially during winter months, campus generates more electricity than needed and sells this surplus electricity. This is however at a very low average cost of 2.98¢/kWh in FY2011 (calculated by summing column GX and dividing by summing column GY) as a result of which it would be highly beneficial to the campus to reduce steam consumption to the level where this surplus generation no longer takes place.

Peak electrical demand is not recorded in the FY Utility Summary file, though it takes place during the summer months due to cooling demand. The maximum monthly consumption during 2011 was 41,289,187 kWh in July 2011 which was 9.677% of total campus usage. This is reduced by 11.16% from 46,478,642 kWh in August 2007; our highest monthly consumption in the past five years. The ratio of maximum monthly demand (July 2010) to minimum monthly demand (March 2011) in FY2011 was 1.4417 representing the fraction of cooling energy use.

The peak demand during 2011 was 67.6 MW on Tuesday July 19 when the heat index was in excess of 115F. This peak demand compares to a peak demand for 2007 of 77.2 MW on August 29th, 2007.

**Steam Consumption**

Steam is a secondary utility tracked in the iCAP target template file, but for which no direct targets exist. Generation of steam to meet campus demand is the primary responsibility of Abbott power plant - cogeneration of electricity is an ancillary benefit of meeting campus demand for steam.

Campus has been very successful at reducing emissions of steam, with a 23.46% reduction of “steam to campus” from FY2008 to FY2011. Total generated steam has fallen the more (27.48%) than steam to campus. The difference between these quantities represents steam use at Abbott power plant, parasitic losses and auxillary steam. Steam usage is reported in the FY Utility Summary file in kilopounds (klbs) which are to be converted into Millions of BTU using the formula 1klb = 1 Million BTU. The actual energy density of steam is dependent on the pressure and temperature of the steam.

Continued reduction of campus steam demand is necessary in order to help meet demand without using Abbott power plants coal-burning boilers. This especially relates to reduction of peak demand, as the campus’s coal boilers must be run in base-load operation mode when utilized. Peak monthly demand (traditionally in January) has fallen slightly less fast with a reduction of 20.71% since FY2008. Significant variation of campus steam demand from month to month exists with the ration of maximum monthly demand in FY2011 (January 2011) to minimum monthly demand (June 2011) being 2.1347, though a small secondary peak in steam consumption takes place each summer due to steam demand for steam-driven chillers and in HVAC systems that use reheat.

Individual campus building steam consumption is tracked in the EBS billing system in Millions of BTU. In FY2010, the total campus building usage of steam (tracked at individual buildings or estimated) was 1,747,438 Million BTUs.

|  |  |
| --- | --- |
| **Column** | **Description** |
| IO | Generated Steam [Total Steam Produced] |
| IP | Steam to Campus |
|   | GENERATED STEAM [Total Steam Produced] klbs | STEAM TO CAMPUS (klbs) | Peak Winter Demand (Steam to campus) | % Steam to Campus | % Total Use Change from FY08 |
| FY 2006 | 3,239,165 | 2,756,252 | 291,939 | 85.09% | 13.96% |
| FY 2007 | 3,444,041 | 2,609,588 | 266,064 | 75.77% | 7.89% |
| FY 2008 | 3,208,471 | 2,418,664 | 299,934 | 75.38% | 0.00% |
| FY 2009 | 3,027,257 | 2,062,436 | 261,536 | 68.13% | -14.73% |
| FY 2010 | 2,580,177 | 1,921,472 | 240,801 | 74.47% | -20.56% |
| FY 2011 | 2,326,883 | 1,851,318 | 237,803 | 79.56% | -23.46% |

**Chilled Water**

Chilled Water is a secondary utility generated using steam and electricity at various chiller plants on campus. Central chilled water is used as it allows for the use of larger more-efficient chiller systems, removes the need for individual systems at each building, offers more redundancy and allows the system to operate at higher efficiency.

It is not tracked in the FY Utility Summary file or in the iCAP Target Template File. Chilled water use for buildings on the campus chilled water loop can be obtained via the EBS system. In FY10, 902,935 Million BTUs of heat rejection was provided by chilled water.

**Campus total energy consumption, spending and Gross square footage and Energy Use Intensity**

This table contains data from a file named “Historical energy use”, created by Terry Ruprecht. Information from FY90 to FY09 was in that file for main campus total energy use (in MMBTU), energy intensity (BTU/GSF/year) and Main Campus GSF. Energy Use Intensity is also reported at the DMI website.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Fiscal Year | **MAIN CAMPUS TOTAL MMBTU** | Main Campus GSF | **BTU/GSF/yr** | Utilities Expenses | Total Energy Use (All Sources) in MMBTU |
| FY90 | **3,946,294**  | 14,408,440 | **273,888**  |   |  |
| FY91 | **4,282,679**  | 14,862,940 | **288,145**  |   |  |
| FY92 | **4,683,924**  | 14,948,290 | **313,342**  |   |  |
| FY93 | **4,686,984**  | 15,142,556 | **309,524**  |   |  |
| FY94 | **4,783,540**  | 16,056,710 | **297,915**  |   |  |
| FY95 | **4,817,347**  | 16,001,515 | **301,056**  |   |  |
| FY96 | **4,983,408**  | 16,643,146 | **299,427**  |   |  |
| FY97 | **4,738,646**  | 16,605,325 | **285,369**  |   |  |
| FY98 | **5,130,627**  | 16,599,242 | **309,088**  |   |  |
| FY99 | **5,123,085**  | 16,576,594 | **309,055**  |   |  |
| FY00 | **4,867,998**  | 17,242,612 | **282,324**  |   |  |
| FY01 | **4,755,544**  | 17,454,160 | **272,459**  |   |  |
| FY02 | **4,201,497**  | 17,780,095 | **236,303**  |   |  |
| FY03 | **4,451,388**  | 18,203,778 | **244,531**  | $26,612,000 |  |
| FY04 | **5,370,302**  | 18,154,510 | **295,811**  | $35,684,000 |  |
| FY05 | **6,218,865**  | 18,905,695 | **328,941**  | $52,282,000 |  |
| FY06 | **5,722,306**  | 19,288,962 | **296,662**  | $70,778,000 | 5,956,965 |
| FY07 | **6,112,739**  | 19,433,439 | **314,547**  | $58,830,000 | 6,368,373 |
| FY08 | **6,107,463**  | 20,113,569 | **303,649**  | $78,449,000 | 6,412,541 |
| FY09 | **5,714,303**  | 20,128,325 | **283,894**  | $77,445,000 | 5,954,977 |
| FY10 | 5,586,756 | 21,457,316 | 260,366 | $82,666,000 | 5,586,756 |
| FY11 | 5,391,873 | 21,971,864 | 245,399 | $84,732,000 | 5,391,873 |
| FY12 |  |  |  |  |  |

Main campus total energy use here is the sum of coal and gas used at Abbott power plant, electricity used and fuel oil used at Abbott power plant – Fy Utility Summary file columns HJ, BN/10, HF, BA. Numbers for FY2010 and FY2011 utilize the FY Utility Summary numbers and use total campus gas and total campus purchased electricity numbers, while back calculating the square footage from the DMI reported Energy Utilization Index.

However this is the protocol used for calculating the Energy Utilization Index that underlies the campus’s non-iCAP energy reduction goals issued by Chancellor Herman. This is a three year goal of 10 percent reduction in overall energy use intensity and a five year goal to return to 1990 levels of energy use intensity, requires 17 percent reduction in usage, and smaller carbon footprint, and a ten year goal of 25 percent reduction in usage intensity.

Translating these goals into direct energy use goals (compared to the iCAP FY2008 baseline), would have implied a FY 2010 goal for a 0.6% absolute reduction (due to increase in space), an FY2012 goal for a 6.08% reduction (assuming no increase in square footage from FY2011 to FY2012) and an FY2017 goal for a 15.13% reduction (assuming no increase in square footage from FY2011 to FY2017). These goals are significantly less aggressive than the current iCAP goals and have already been exceeded for FY2012.

It is IMPORTANT that the campus adopt a single, unified metric for the tracking of energy consumption and carbon emissions. Using the methodology and metric for tracking energy used in this document, energy use from the FY2008 baseline has declined by 15.92% which is 80% of the 2015 iCAP goal of a 20% decline.

**Carbon Emissions**

Carbon emissions are not calculated in the FY Utility Summary file. Campus emissions can be calculated by summing emissions from coal, natural gas, fuel oil, purchased electricity and other fuels (primarily propane (Columns CS/CT) – not tracked in this work but on the order of 200 tons of CO2e/year). The current reporting protocol for carbon emissions breaks out natural gas use away from Abbott power plant separately, into a category known as other UIUC fuels and combines with Abbott fuel oil use and total U of I propane use.

Total energy related U of I carbon emissions peaked in FY2008 at 495,199.7 MTEs of CO2, and have declined by 15.33%, meeting the campus’s FY2015 iCAP goal (assuming that all other campus CO2 emissions decline proportionately).

|  |  |
| --- | --- |
|  | Energy CO2 Emissions |
| FY06 | 463,343.9  |
| FY07 | 487,723.5  |
| FY08 | 495,199.7  |
| FY09 | 482,265.0  |
| FY10 | 429,026.5  |
| FY11 | 419,280.3  |

**Transportation Emissions**

Transportation Emissions is not recorded in the FY Utility Summary File. It is unclear who tracks and is responsible for compiling transportation emissions. These emissions are derived from three sources: UIUC vehicular emissions (the campus fleet) (~5,000 MTEs of CO2), estimated commuting emissions for faculty/staff (~15,000 MTEs of CO2), and estimated air travel emissions for U of I employee air travel (~15,000 MTEs of CO2).

**Water Use**

Campus water use is tracked in the FY Utility Summary file. More than 95% of this water consumption is centrally received and billed from the Illinois American Water Company, though the rates of other water consumption are significantly higher than for main campus water.

|  |  |
| --- | --- |
| **Column** | **Description** |
| IC | Total Water Cost |
| ID | Total Water Usage |

|  |  |  |
| --- | --- | --- |
|  | Water use (kgal) (ID) | Cost (IC) |
| FY06 | 1,388,379 | $1,804,561 |
| FY07 | 1,262,491 | $1,661,137 |
| FY08 | 1,312,492 | $1,762,819 |
| FY09 | 1,202,497 | $2,287,351 |
| FY10 | 1,095,184 | $2,290,818 |
| FY11 | 1,099,293 | $2,737,445 |
| FY12 | 1,063,156 | $2,686,752 |

While the FY Utility Summary file does not contain a breakdown of main campus water use, or track this breakdown, data received during the preparation of iCAP indicated:

Major Labs - 22%

Chiller Plants - 19%

Abbott Power Plant - 14%

Housing - 14%

Irrigation - 7%

Campus Recreation - 1%

Other (Classroom, Office, etc) - 23%

Since FY2008, campus water consumption has decreased 19% which is just one percent shy of the 2015 goal of a 20% reduction.

**Waste Reduction**

The campus collects and reports waste reduction data only on a five year basis. iCAP requirements on waste involve creation of a zero-waste plan, and achievement of a 75% waste diversion rate by 2020. Current campus waste diversion rate (for FY2009) is 56.4%. A breakdown by type of recyclable can be found in the Waste Reduction plans for 2005 and 2010. An overall target for waste reduction is also needed.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | FY94 | FY99 | FY04 | FY09 baseline |
| Campus Waste (non C&D) - Tons | 10223.6 | 10817.3 | 10027.2 | 10120.5 |
| Campus Waste Recycled (non C&D) - Tons | 4600.6 | 5062.5 | 4893.3 | 5710.5 |