

FIU Energy Performance FY08-13

2013 SUS Energy Report



2013 SUS Energy Performance Report Background

- May 2010 HB 5201 Section 30
 - “Each Florida college and state university shall strive to reduce its campus wide energy consumption by 10%... The reduction may be obtained by either reducing the cost of the energy consumed or by reducing total energy usage, or a combination of both.”
 - **FY07-08 as base year**
- Dec. 2010 SUS BOG prepared common reporting template & consolidated report/response
- Jan. 2011 University system responded to Governor & Legislature
- Jan. 2014 BOG published the FY12-13 update

2013 SUS Energy Conservation Report Analysis & Highlights

- Key Metrics

- Energy Performance Indicator (EPI): kBTU/sf/yr (EPA Energy Star Program)
- Cost Unit Index (CUI): \$/sf/yr

	<u>kBTU/sf</u> <u>(12-13 vs Base Yr)</u>	<u>\$/sf</u> <u>(12-13 vs Base Year)</u>	<u>Total Reduction</u>
FAU	16%	42%	58%
FGCU	16%	37%	53%
FSU	8%	38%	46%
NCF	16%	18%	34%
FIU	3%	24%	27%
USF	5%	22%	27%
UCF	10%	14%	24%
UF	7%	11%	18%
UWF	8%	8%	16%
FAMU	-14%	24%	10%
UNF	-3%	-22%	-25%

SUS Energy Performance Report

Energy Performance Indicator (EPI) (kBTU/sf/yr) ^(a)

FY08 thru FY13

You can't compete if
you don't keep score!

FIU Tops SUS in Energy
Efficiency 6 consecutive years

Rank	Inst.	FY07-08	FY08-09	FY09-10	FY10-11	FY11-12	FY12-13	6 Yr. Avg.
1	FIU	62.5434	61.7255	61.6081	57.8005	58.6867	60.4090	60.4622
2	UCF	68.8894	66.8623	66.2602	66.5383	65.4222	62.2860	66.0431
3	FGCU	71.0253	75.4651	73.7984	67.1765	59.3399	62.3815	68.1978
4	UNF	70.8205	77.5205	73.9260	75.1166	72.8725	72.7322	73.8314
5	NCF	94.2446	72.4715	80.2173	77.7310	78.7387	79.4595	80.4771
6	FAU	103.2071	99.8266	95.7704	92.2594	96.3401	86.6301	95.6723
7	UWF	107.0459	98.9120	103.6523	101.5168	92.7575	98.0128	100.3162
8	FAMU	111.9451	119.7811	108.8060	104.1176	107.4416	127.3753	113.2445
9	FSU	120.6798	117.6840	119.5335	117.1786	114.3395	110.7335	116.6915
10	USF	138.5052	130.4274	124.2659	125.6657	129.5618	131.4070	129.9722
11	UF	137.1336	132.1314	135.1238	133.0343	127.5511	127.3938	132.0613
SUS Avg		108.7584	106.2725	105.5055	103.0540	100.7266	100.6069	104.1540

(a)The Environmental Protection Agency (EPA) established kBTU/sf/yr as the key performance indicator for energy efficiency as part of its Energy Star rating program.

Source: State University System of Florida Board of Governors 2013 Energy Report received January 13, 2014.

What KBTU/SF Means in Dollars - Savings/Cost Avoidance

FIU beats #2 UCF by \$6MM*

FIU beats SUS average by \$40MM**

Rank	Inst.	FY07-08	FY08-09	FY09-10	FY10-11	FY11-12	FY12-13	Cost Avoidance
1	FIU	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	UCF	\$1,174,258	\$1,009,468	\$785,302	\$1,585,279	\$1,202,590	\$322,351	\$6,079,249*
3	FGCU	\$1,569,475	\$2,700,044	\$2,057,787	\$1,701,065	\$116,627	\$338,750	\$8,483,747
4	UNF	\$1,531,582	\$3,103,960	\$2,079,326	\$3,141,607	\$2,532,787	\$2,116,326	\$14,505,587
5	NCF	\$5,865,949	\$2,111,758	\$3,141,322	\$3,615,929	\$3,580,142	\$3,271,644	\$21,586,744
6	FAU	\$7,524,365	\$7,487,472	\$5,766,764	\$6,251,769	\$6,722,760	\$4,503,086	\$38,256,217
7	UWF	\$8,234,695	\$7,307,723	\$7,097,254	\$7,931,317	\$6,083,110	\$6,457,892	\$43,111,992
8	FAMU	\$9,141,235	\$11,408,846	\$7,967,234	\$8,403,173	\$8,704,850	\$11,500,470	\$57,125,809
9	FSU	\$10,757,498	\$10,996,715	\$9,778,082	\$10,772,785	\$9,936,419	\$8,642,488	\$60,883,986
10	USF	\$14,055,908	\$13,500,995	\$10,576,927	\$12,312,576	\$12,654,261	\$12,192,845	\$75,293,512
11	UF	\$13,802,091	\$13,835,869	\$12,409,797	\$13,649,430	\$12,295,265	\$11,503,641	\$77,496,093
SUS Roll-up		\$73,657,055	\$73,462,851	\$61,659,795	\$69,364,930	\$63,828,811	\$60,849,493	\$402,822,935
Average (excl. FIU)		\$7,365,706	\$7,346,285	\$6,165,979	\$6,936,493	\$6,382,881	\$6,084,949	\$40,282,294**

Campus CUI (\$/SQFT/yr)

Cost Unit Index

Rank	Inst.	FY07-08	FY08-09	FY09-10	FY10-11	FY11-12	FY12-13	6 Year Average
1	FIU	\$1.65	\$1.71	\$1.45	\$1.32	\$1.30	\$1.26	\$1.45
2	FGCU	\$2.01	\$2.46	\$2.00	\$1.54	\$1.28	\$1.27	\$1.76
3	UCF	\$1.56	\$1.68	\$1.63	\$1.56	\$1.52	\$1.35	\$1.55
4	FAU	\$2.63	\$2.30	\$1.89	\$1.74	\$1.76	\$1.53	\$1.98
5	UWF	\$1.81	\$1.89	\$1.96	\$1.96	\$1.86	\$1.67	\$1.86
6	UNF	\$1.38	\$1.83	\$1.71	\$1.80	\$1.76	\$1.69	\$1.69
7	NCF	\$2.08	\$1.90	\$1.78	\$1.72	\$1.77	\$1.72	\$1.83
8	FAMU	\$2.35	\$2.66	\$2.21	\$2.02	\$1.84	\$1.78	\$2.14
9	FSU	\$2.99	\$3.01	\$2.51	\$2.38	\$2.10	\$1.87	\$2.48
10	UF	\$2.36	\$2.50	\$2.47	\$2.34	\$2.27	\$2.11	\$2.34
11	USF	\$2.80	\$2.75	\$2.48	\$2.33	\$2.33	\$2.33	\$2.50
SUS Avg (excl. FIU)		\$2.27	\$2.37	\$2.15	\$2.02	\$1.93	\$1.77	\$2.08

Cost Unit Index Using FIU cost as base

For every dollar that FIU spends on energy, other universities spend:

Ranking	Institution	Cost	Compared to FIU
1	FIU	\$1.00	
2	UCF	\$1.07	+7%
3	UNF	\$1.17	+17%
4	FGCU	\$1.21	+21%
5	NCF	\$1.26	+26%
6	UWF	\$1.28	+28%

Ranking	Institution	Cost	Compared to FIU
7	FAU	\$1.36	+36%
8	FAMU	\$1.48	+48%
9	UF	\$1.62	+62%
10	FSU	\$1.71	+71%
11	USF	\$1.72	+72%
	SUS Average	\$1.44	+44%

Note: Calculations are based on six year averages.

FIU Carbon Footprint Reduction (6 year)

2007	2008-2013 Avg.	Annual Savings	Total Savings
128,177,651 kwh	123,059,349 kwh	5,118,302 kwh	25,591,509 kwh

Over a six year period FIU has saved the equivalent of:



18,056 Tons of CO₂



462,977 Trees



2,024,225 Gallons of Gasoline

Source: Greenhouse Gas Equivalencies Calculator, Environmental Protection Agency, www.epa.gov/cleanenergy/energy-resources/calculator.html

FIU “Worlds Ahead” performance

- 1) Chilled water plants provide cooling to most buildings on campus
 - High efficiency chillers (result in lowered KW/Ton consumption)
 - Recently completed satellite chiller plant in AHC quadrant with back-up power & high efficiency equipment
- 2) Meters & Measurements
 - Electrical and chilled water sub-meters on buildings approximately 70% of buildings provide real-time monitoring to achieve efficiency and reduce waste
 - Monthly reporting focus on kBTU/sf performance
- 3) On-line Energy Management System (EMS)
 - Central EMS balances temperatures in 95% of buildings, and also monitors general lighting areas such as hallways in main buildings
- 4) Building design focused on efficiency. All new buildings are LEED certified with a goal of Silver rating.

FIU “Worlds Ahead” performance

5) Culture of energy conservation

- Chilled water temperature synchronized with environmental conditions
- Motion-sensor switches throughout majority of the campus
- Replacement of T12 with T8 lighting fixtures
- Temperature set point raised from 72 to 75°F during daylight hours, and 75 to 80°F during night hours
- Replacement of liquid propane gas with natural gas in Summer 2009 on MMC resulted in savings of more than \$355K over each of the last four years. Additionally, switching to a new provider of natural gas in FY 13-14 should result in an additional 15-20% savings in the price currently paid for natural gas each year.
- Installation of low-flow water fixtures such as sinks, showers, toilets and urinals (these use about 30% less water than conventional counterparts)
- Landscape irrigation with captured rainwater at MMC, and with graywater at BBC

6) Craftsman’s approach & lunch-bucket work ethic

Staying #1 – Continuous Excellence

- 1) Finish chilled water and electrical metering on all buildings
- 2) Expand chilled water loop as campuses grow and continue automation of the central chiller plants
- 3) Increase operational efficiency of chiller plants & chilled water loop by utilizing computer-controlled chiller sequence operation
- 4) Transition to LED Lighting where appropriate & feasible (Streets, Walkways, Garages, etc.)
- 5) Work side-by-side with the Sustainability office to maximize “green” goals and increase our current Silver rating in the Sustainability Tracking, Assessment, & Rating System (STARS) program by implementing energy initiatives that directly impact sustainability performance
- 6) Research ... Benchmark ... Listen ... Learn ... Advance