

ECU Strategic Energy & Water Plan (2018-2019)

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EXECUTIVE SUMMARY

General

The preparation of the 2018 - 2019 ECU Strategic Energy Plan involved consolidating the responses by the departments in Campus Operations related to procedural changes or projects that contributed to the conservation of energy or water. This year's plan documents Campus Operations' successes related to energy or water conservation based on the availability of funding sources, be they operating, repair and renovation, or energy savings carry forward.

Analysis

Through the continued efforts of Campus Operations and the East Carolina University community, the institution has realized a 22% decrease in its energy consumption and a 31% reduction in water consumption in 2017-2018 from the FY 2003 baseline. When compared to the previous year, electrical consumption decreased 6.7% while natural gas usage saw a 2.2% decrease. Propane gas - used at the West Academic campus - saw a 28% reduction from the previous year.

Whenever national demand for natural gas threatens utilities' capability to provide sufficient volumes to the northeast US, both ECU steam plants are required to switch to #2 fuel oil for a limited - curtailment - time. This year's winter temps were significantly colder than usual resulting in an extended natural gas curtailment period. As a result, #2 fuel oil use at our steam plants increased 277.1% over the previous year. Although the energy content of fuel oil compares favorably with natural gas, it is significantly more expensive and has a greater negative impact on ECU's "carbon footprint".

This immediate past year saw cooling degree-days drop 5.5% from FY2017 accounting for some - but not all - of the decrease in electrical consumption. However, the winter months were much colder and resulted in a 19.6% increase in heating degree-days. Despite the much colder winter, the combined (natural gas, propane and fuel oil) heating fuels usage saw only a 3.3% increase in energy consumed.

The energy consumption data included in this report is "raw" metered data (i.e., it does not take temperature variations into account). To better appreciate ECU's effort to improve energy efficiency, the top chart on page 4, "ECU Annual Energy Consumption" includes a weather-normalized view of the total energy usage per square foot. The last three years indicate an improving trend despite higher total degree-days in each of those years. Specifically, the weather-normalized EUI (Energy Utilization Index) was decreased by 18.9% in that short span.

During FY2018, ECU continued upgrading campus interior lighting in Fletcher Music, Speight and Ward Sports Medicine to LED. In addition, Fletcher Music had fluorescent fixtures with integral HVAC ducting. HB1292 funds were used to install separate ductwork and new LED fixtures which will save on HVAC - in addition to - lighting energy. Several smaller buildings (Grounds Offices, Belk Annex, Central Stores, Surplus Warehouse and the Harris Print Shop) were upgraded by electrical shop personnel using fixtures purchased with HB1292 Energy Carry Forward (ECF) funds.

The Coastal Studies Institute Research facility had energy saving thermal window film installed to further reduce building heat load. ECF funds were also used to replace a very large and aging chilled water coil in the Brody School of Medicine.

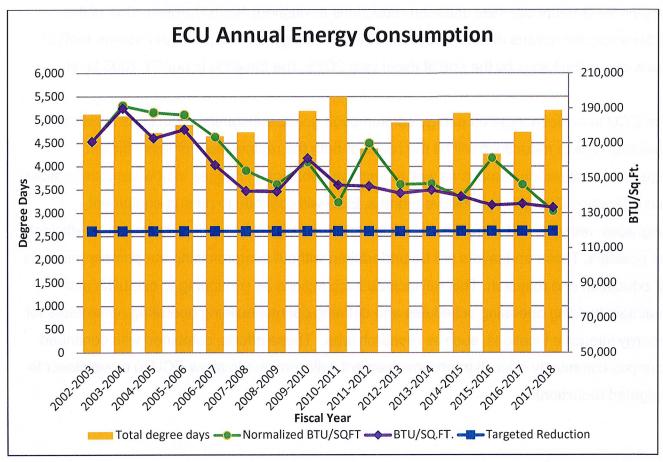
ECU water usage surged upward by 40% compared to the previous year. The Health Sciences Campus, which has a main water Point-of-Delivery (POD) rather than individual lines from the utility, saw a 71% increase from 22,626 to 38,708 kGallons. On the main campus - where facilities are individually served by GUC - water usage at E&G buildings increased 56.3% while the remainder (athletic facilities, residence and dining halls, etc.) saw a 36.8% increase. Although the cause of the increases is still being investigated, substantial water usages have already been noted in irrigation, residence halls (including Clement which was off-line being refurbished the previous year). In addition, there are several buildings on main campus where steam condensate is no longer returned to the central plant due to failed condensate return piping - causing an increase in the need for make-up water. As noted in the attached Water Management Strategies & Tactics (page 11), a root cause analysis will fully analyze and identify where these increases are occurring and develop recommendations to address the causal factors.

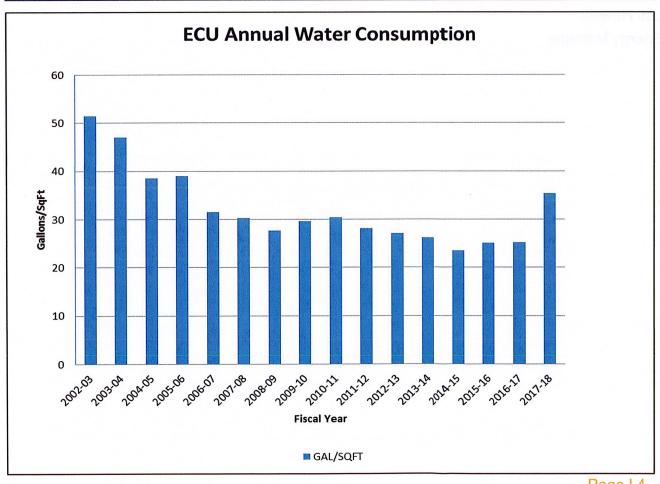
On October 29, 2018 Governor Roy Cooper signed Executive Order No. 80 establishing new targets for Greenhouse Gas emission reductions throughout North Carolina. One of the order's specific actions directs a 40% reduction in energy consumption (per square foot) at state-owned buildings by the end of fiscal year 2025. The baseline is our FY 2003 level.

For ECU to achieve targeted energy consumption goals, substantial reductions must still be realized. These reductions will be the result of both the replacement of less efficient equipment utilized on campus as well as making behavioral changes in how campus facilities are operated. Over the next twelve months, ECU will continue to pursue equipment upgrades, retrofits, and conversions, while also ensuring the campus is operated as efficiently as possible. These endeavors will be undertaken without compromising our primary missions of education and research. This will include such actions as continuing to establish and maintain building operating schedules and defining optimal building operating parameters for energy intensive locations, such as research labs. These efforts, combined with continued campus community education and involvement, will continue to allow ECU to move closer to targeted reductions.

Les Hewlett Energy Manager

Summary of referenced data





ENERGY PERFORMANCE SUMMARY

(Data is not weather-normalized)

Fiscal Year	Total Utility Costs	Cost / MMBTU	Cost / GSF	BTU / GSF	% Change from 2003
2002-2003	\$11,021,822	\$12.50	\$2.13	170,724	<u> </u>
2003-2004	\$12,661,561	\$12.32	\$2.33	189,287	10.9%
2004-2005	\$14,277,138	\$14.29	\$2.47	172,569	1.1%
2005-2006	\$17,129,124	\$16.66	\$2.96	177,567	4.0%
2006-2007	\$17,297,153	\$16.30	\$2.56	157,404	-7.8%
2007-2008	\$17,569,897	\$17.14	\$2.44	142,573	-16.5%
2008-2009	\$18,924,248	\$19.16	\$2.72	142,207	-16.7%
2009-2010	\$19,658,784	\$17.71	\$2.86	161,238	-5.6%
2010-2011	\$18,392,943	\$17.84	\$2.61	146,059	-14.4%
2011-2012	\$18,151,180	\$17.58	\$2.56	145,433	-14.8%
2012-2013	\$17,942,582	\$17.15	\$2.42	141,416	-17.2%
2013-2014	\$17,883,685	\$17.13	\$2.43	141,752	-17.0%
2014-2015	\$18,628,334	\$17.97	\$2.51	139,480	-18.3%
2015-2016	\$16,361,605	\$15.93	\$2.14	134,410	-21.3%
2016-2017	\$15,864,576	\$15.35	\$2.08	135,262	-20.8%
2017-2018	\$15,364,652	\$14.88	\$1.98	133,158	-22.0%

SUPPLY

Strategies

- Continue to implement programs and initiatives to make University's energy management more effective.
 Strive to obtain reasonable cost of interruptible natural gas from local provider.

DAOT 40 Marshall Astronomy	Measure	ment	Savi	ngs	Cost	Jobs	Assigned to	Funding Source	
PAST 12 Months' Activities	Expected	Actual	Expected Actual		Cost	3005	Assigned to	T driding Codico	
Obtain BTU and water consumption data at Auxiliary Gym	Begin data collection of domestic & heating hot water usage	Water meter installed but not connected. Heating hot water BTUs now being recorded	\$0	\$0	\$10,000	0	Tony Yamada	East Campus operating budget	
Schneider Electric PME Technical Support	Subscription renewed	Subscription renewed	\$0	\$0	\$9,863	0	Les Hewlett	FY 2018 HB1292 Funds	
Install additional electrical meters on CCP1 and CCP2	Ability to calculate chiller plant kW/Ton	Meters installed; connection to PME in progress	\$0	\$0	\$30,057	0	Tony Yamada	FY 2018 HB1292 Funds	
Obtained necessary EPA permitting to allow operation of Brody enerators for peak shaving		Permit approved	0	0	\$5,000	0	Mike Rowe		
Establish position for retro-commissioning engineer	Positon approved	Position approved	0	0	0	0	Griff Avin	N/A	

NEXT 12 Months' Activities	Measure	ment	Savi	ngs	Cost	Jobs	Assigned to	Funding Source
NEXT 12 WORLDS ACTIVITIES	Expected	Actual	Expected	Actual	Cost	3003	Assigned to	T unumg cource
Obtain domestic water consumption data at Auxiliary Gym	Begin data collection of domestic water usage	Awaiting IT connection	\$0		\$10,000	0	Les Hewlett	East Campus operating budget
Schneider Electric PME Technical Support	Subscription renewed	Renewed	\$0		\$13,365	0	Les Hewlett	FY 2019 HB1292 Funds
Utility Manager utility data collection	Subscription renewed	Renewal in process	\$0		\$10,331	0	Les Hewlett	FY 2019 HB1292 Funds
Calibrate WAGES meters on HSC to ensure data accuracy	Accuracy of all WAGES meters verified	In process	\$0		\$4,054	0	Les Hewlett	HSC Energy Budget
Implement kW peak demand reduction procedure	Procedure implemented	Testing in process	\$70,000	\$24,000 (YTD)	\$0	0	Mike Rowe	
Prepare job description / Hire retro-commissioning engineer	Position filled		\$0		\$70.000	0	Les Hewlett	

DEMAND

Strategies

O Continue to implement programs and initiatives, install equipment, and renovate buildings to make University buildings more efficient.

DAGT 40 March at Anticities	Measure	ment	Savi	ngs	Cost	Jobs	Assigned to	Funding Source
PAST 12 Months' Activities	Expected	Actual	Expected	Actual	Cost	3005	Assigned to	r driding Source
Upgrade HSC wall-pack lighting fixtures to LED	Exterior wall packs replaced with LED	Completed	\$150	\$150	\$5,000	0	David Bennett	HSC Electrical Budget
Boiler upgrade to reinsulate doors; Install new studs and dog ears	Upgrade completed	Completed	\$2,300	TBD	\$4,505	0	James Roberson	HSC Steam Budget
Upgrades to control of S&T AHUs	Improved operational efficiency	Completed	\$24,100	TBD	\$137,994	0	Ray Schmit	FY 2018 HB1292 Funds
Replacement of Athletics steam line life cycle cost analysis	Justification for future method of steam supply to 3 facilities	Completed	\$0	\$0	\$16,500	0	Les Hewlett	FY 2018 HB1292 Funds
M&V of FY2017 Joyner Library HVAC upgrades	Verification of energy savings	Completed	\$0	\$0	\$19,300	0	Les Hewlett	FY 2018 HB1292 Funds
Lighting upgrade to Fletcher Music	LED lighting installed	Completed	\$33,352	\$1,655 (YTD)	\$225,000	0	Randy Howard	FY 2018 HB1292 Funds
Lighting upgrade to Ward Sports Medicine	LED lighting installed	Completed	\$40,055	\$3,300 (YTD)	\$248,000	0	Randy Howard	FY 2018 HB1292 Funds
Lighting upgrade to Speight	LED lighting installed	Completed	\$26,953	\$636 (YTD)	\$200,000	0	Randy Howard	FY 2018 HB1292 Funds
Install thermal window film at CSI	Window film installed	Completed	\$37,669	\$5,522 (YTD)	\$118,469	0	Ricky Hill	FY 2018 HB 1292 Funds
Convert HSC Chiller Plant from Constant Volume to Variable Volume Primary	Chiller Plant converted	Nearing completion	\$45,000	TBD	\$27,258	0	Ken Yarnell	FY 2018 HB 1292 Funds
Building energy assessment conducted on Biotechnology	Assessment completed	Report issued	N/A	N/A	\$0	0	Les Hewlett	N/A

DEMAND (Continued)

Strategies

o Continue to implement programs and initiatives, install equipment, and renovate buildings to make University buildings more efficient.

NEXT 12 Months' Activities	Measure	ment	Sav	rings	Cost	Jobs	Assigned to	Funding Source
NEXT 12 WORLDS ACTIVITIES	Expected	Actual	Expected	Actual	Cost	3005	Assigned to	Fullding Source
Convert Fletcher Music Steam to DHW converter with Natural Gas heater	Water heater installed		\$324		\$60,000	0	Derrick Anderson	FY 2019 HB 1292 Funds
Install thermal window film in Flanagan Building	Window film installed		\$42,940		\$125,040	0	Chris Jones	FY 2019 HB 1292 Funds
Install thermal window film in Biotechnology Building	Window film installed		\$7,500		\$26,444	0	Chris Jones	FY 2019 HB 1292 Funds
Lighting upgrade to Flanagan Building	LED lighting installed		\$34,246		\$347,100	0	Randy Howard	FY 2019 HB 1292 Funds
Lighting upgrade to Biotechnology Building	LED lighting installed		\$11,700		\$70,375	0	David Bennett	FY 2019 HB 1292 Funds
Lighting upgrade to Warren Life Sciences Building	LED lighting installed		\$37,750		\$226,578	0	David Bennett	FY 2019 HB 1292 Funds
Replace Wright Auditorium stage lighting	LED lighting installed		\$29,535		\$263,050	0	Randy Howard	FY 2019 HB 1292 Funds
Wireless thermostats installed at Human Resources, Material Management and Financial Services	New controls installed		\$4,886		\$90,683	0	Ray Schmit	FY 2019 HB 1292 Funds
Install 6 energy valves on S&T MAUs	Valves installed/operating		\$13,937		\$82,913	0	Ray Schmit	FY 2019 HB 1292 Funds
Install 6 energy valves on Howell Science AHUs 1-6	Valves installed/operating		\$10,874		\$75,052	0	Ray Schmit	FY 2019 HB 1292 Funds
Install boiler steam blankets to improve efficiency (Design only)	Design completed		\$0		\$30,000	0	Mike Deyoc	East Campus Steam Budget
Install VFDs on feedwater and condensate pumps on each of 3 boilers. (One VFD already on-hand)	VFDs installed		N/A	-	\$45,000	0	Mike Deyoc	
Install boiler steam blankets to improve efficiency (Design study only)	Design completed		N/A	-	\$30,000	0	Mike Deyoc	East Campus Steam Budget
Steam trap station changeout - Phase I	Longer-life, warranted steam traps installed		N/A	-	\$60,000	0	Mike Deyoc	TBD

AWARENESS & TRAINING

Strategies

 Continue to focus efforts on developing and expanding resources of the ECU Sustainability Committee. Expand efforts to recognize and document efforts to reduce energy consumption and realize savings.

DACT 40 Manualtonia Anativitina	Measure	ement	Sav	rings	Cost	Jobs	Assigned to	Funding Source
PAST 12 Months' Activities	Expected	Actual	Expected	Actual	Cost	3008	Assigned to	Fullding Source
University - Participate in the Appalachian Energy Summit	Attend Energy Summit	Several ECU faculty, staff and students attended	N/A	N/A	\$0	0	Chad Carwein	N/A
University - Participate in the Mid-Year Energy Summit	Attend Mid-Year Energy Summit	Attended Mid- Year Summit at Wake Forest University	N/A	N/A \$0 0			Les Hewlett	N/A
University - Hold campus Sustainability Fair to publicize sustainability initiative, opportunities, and involvement	Hold Sustainability Fair during Earth Week	Sustainability Fair held in April 2018	N/A	N/A	\$0	0	ECU Sustainability Committee	N/A
Begin development of first ECU Sustainability Plan	Development underway	In Process	N/A	N/A	N/A	0	Chad Carwein	N/A
University - Participate in the Sustainability Alliance Meeting	Attended Alliance Meeting	Participated in Alliance calls and annual meeting during the App Energy Summit	N/A	N/A	\$0	0	Griff Avin / Chad Carwein	N/A
University - Participate in AASHE Conference	Attend AASHE Conference in Oct 2017	Attended and presented in San Antonio, TX	N/A	N/A	\$1,500	0	Chad Carwein	State Funds - HSC Sustainability
University - Attend Campus and Community as a Living Learning Lab for Sustainability	Attend workshop in Aug 2017	Attended workshop at Furman University	N/A	N/A	\$1,000	0	Chad Carwein	State Funds - HSC Sustainability
Complete Greenhouse Gas Inventory	Completed report	Completed in Fall 2017	N/A	N/A	N/A	0	Chad Carwein	N/A
Establish ECU presence on social media	Web presence established	Weekly activity on Facebook, Twitter & Instagram	N/A	N/A	N/A	0	Chad Carwein	N/A
Prepare / Distribute monthly newsletter	Newsletter distributed	Completed monthly until Feb 2018	N/A	N/A	N/A	0	Chad Carwein	N/A
Install solar charging tables on Health Sciences Campus	Tables installed	Tables installed in Jun 2018	N/A	N/A	\$28,000	0	Chad Carwein / Eddie Johnson	Build a Better Brody Grant
mount of anyting dates of the data deterioes compus	Tables installed		1471	1307	\$20,000		Johnson	Suite a Seller Stody Graffit

AWARENESS & TRAINING

Strategies

 Continue to focus efforts on developing and expanding resources of the ECU Sustainability Committee. Expand efforts to recognize and document efforts to reduce energy consumption and realize savings.

DACT 10 Manually Anti-string (Combined)	Measure	ement	Sav	ings	Coot	laha	A :	F
PAST 12 Months' Activities (Continued)	Expected	Actual	Expected	Actual	Cost	Jobs	Assigned to	Funding Source
Initiate a "Shut the Sash" campaign in university labs	Stickers posted / Flyers distributed	Main Campus / CSI Complete	N/A	N/A	\$700	0	Chad Carwein / Eddie Johnson	State Funds - HSC Sustainability
Host Sustainability Film and Discussion Series	Screenings held	Monthly screenings held in Fall 2017 & Spring 2018	N/A	N/A	\$1,000	0	Chad Carwein	State Funds - HSC Sustainability
Installation of electric vehicle charging station at Austin	Station installed / operable	Complete	\$0	\$0	\$5,500	0	Randy Howard	Hardware: GUC Gift / Installation: FY 2018 HB 1292 Funds
	Measur	ement	Sa	vings				
NEXT 12 Months' Activities	Expected	Actual	Expected	Actual	Cost	Jobs	Assigned to	Funding Source
University - Participate in the Appalachian Energy Summit	Attend Energy Summit		N/A	N/A	N/A	0	Chad Carwein	N/A
University - Participate in the Mid-Year Energy Summit	Attend mid-year meeting		N/A	N/A	N/A	0	Les Hewlett	N/A
Publish and begin implementation of first ECU Sustainability Plan	Publish and begin implementation of first ECU Sustainability Plan		N/A	N/A	\$28,000	0	Chad Carwein	State Funds - Phase 2 FY2019
University - Hold campus Sustainability Fair to publicize sustainability initiative, opportunities, and involvement	Hold Sustainability Fair during Earth Week - April 2019		N/A	N/A	N/A	0	Chad Carwein and campus partners	N/A
Attend APPA Supervisors Toolkit	Attend at UK in Fall 2018		N/A	N/A	\$1,000	0	Chad Carwein	HSC Training Budget
Attend and present at AASHE Conference	Attend & Present at AASHE Conference	Attended / Presented in Pittsburgh, PA	N/A	, N/A	\$1,500	0	Chad Carwein	HSC Training Budget
Shut the Sash Campaign	Continue putting up stickers and finish HSC by Dec 2018		N/A	N/A	N/A	0	Chad Carwein	Sustainability Account
Modify/Update Sustainability website	Transition to WordPress		N/A	N/A	N/A	0	Campus Operations ITCS Staff	Sustainability Account
Host Sustainability Film and Discussion Series	Monthly screenings in fall 2018 and spring 2019		N/A	N/A	\$1,000	0	Chad Carwein	Co-curricular grant from Student Affairs

WATER MANAGEMENT

Strategies

o Continue to implement programs, initiatives, and equipment that conserve water resources.

	Measurement		Sav	Savings		Jobs	Assigned to	Funding Source	
PAST 12 Months' Activities	Expected	Actual	Expected	Actual	Cost	3005	Assigned to	FY 2018 HB1292 Funds	
Study hot water system redesign/rebuild for Wright, Ragsdale and Whichard	Analysis completed	Analysis complete	N/A	N/A	\$16,000	0	Derrick Anderson		
Upgrade existing irrigation zones to IQ "smart" system	Systems upgraded	Multiple systems upgraded	\$5,000	N/A	\$10,500	0	John Gill	NR Funds	

NEXT 12 Months' Activities	Measur	ement	Sav	rings	Cost	Jobs	Assigned to	Funding Source	
NEX! 12 Months Activities	Expected	Actual	Expected	Actual	Cost	3005	Assigned to	r unung source	
Convert distributed HW system from Ragsdale to individual building water heaters	Decentralized HW system		\$15,058		\$80,000	0	Derrick Anderson	FY 2019 HB1292 Funds	
Perform root cause analysis of water consumption increases on ECU campuses	Report issued		N/A		\$0	0	Les Hewlett	N/A	
Capstone engineering team investigating uses for excess Ross Hall ground water	Report issued		N/A		\$0	0	Griff Avin	N/A	
Additional irrigation zones added to IQ irrigation system	Multiple gation zones added to IQ irrigation system areas added		N/A		N/A	0	John Gill	NR Funds	

DECLARATION

I have read the 2018-2019 Strategic Energy & Water Plan for East Carolina University. The plan, as presented, supports the reductions required in Senate Bill 668.

William E. Bagnell

Associate Vice Chancellor for Campus Operations

East Carolina University Energy and Water Consumption Data 2017 - 2018)

\$0

\$0 \$0

\$0

\$0 \$0 \$0 \$0 \$0 \$0

30,174

9.003

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6,022

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io	d ye	ear	name	tot	al utility\$	total energy \$	total btu	kwh	kwh \$	ng therms	ng \$	2oil gals	2oil\$	6 oil gals
6000		02-03	East Carolina University		11,021,822	\$9,902,208	791,875,817,767	109,985,914	\$7,189,460	3,310,785	\$2,167,238	616,666	\$545,510	0
6000		03-04	East Carolina University		12,661,561	\$11,528,667	936,015,163,858	119,267,875	\$7,928,536	2,656,887	\$1,885,347	1,899,088		0
6000		04-05	East Carolina University		14,277,138	\$13,116,966	917,882,912,624	118,713,800 127,541,706	\$7,991,764	3,879,272	\$3,965,406	900,600		0
6000 6000		15-06 16-07	East Carolina University East Carolina University		17,129,124 17,297,153	\$15,982,362 \$16,169,203	959,569,678,473 992,276,625,512	136,340,808		4,009,835 5,000,621	\$4,909,959 \$5,515,870	889,854 194,821	\$1,556,586 \$296,958	0
6000		07-08	East Carolina University		17,569,897	\$16,405,060	957,302,809,520	137,597,235	\$10,350,375	4,558,211	\$5,513,870	230,730	\$391,088	0
6000		18-09	East Carolina University		18,924,248	\$17,759,453	.926,813,234,254	127,507,877	\$11,201,911	4,717,022	\$6,312,431	144,597	\$245,112	0
6000		9-10	East Carolina University		19,658,784	\$18,391,832	1,038,209,248,224	146,053,032		5,296,665	\$4,956,110	73,616	\$95,762	0
6000		0-11	East Carolina University		18,392,943	\$16,991,634	952,245,056,990	130,723,115	\$12,266,014	5,027,271	\$4,694,627	25,169	\$30,994	0
6000		1-12	East Carolina University		18,151,180	\$16,671,718	948,122,748,234	132,927,022	\$12,258,122	4,934,672	\$4,404,444	7,993	\$9,151	0
6000	5008 201	2-13	East Carolina University	\$	17,942,582	\$16,434,614	958,421,842,446	131,203,218	\$12,256,099	5,062,869	\$4,141,425	32,227	\$37,090	0
6000		3-14	East Carolina University	\$	17,883,685	\$16,426,694	959,194,280,326	129,603,483	\$12,213,822	4,873,135	\$3,986,050	213,957	\$226,822	0
6000		4-15	East Carolina University		18,628,334	\$17,173,534	955,773,199,883	131,113,985	\$12,964,920	4,743,840	\$3,932,161	225,416	\$242,708	0
6000		5-16	East Carolina University		16,361,605	\$14,708,103	923,165,595,835	133,239,189	\$11,657,520	4,522,260	\$2,949,229	111,777	\$94,424	0
6000		6-17	East Carolina University		15,864,576	\$14,414,319	939,157,138,141	133,668,444	\$11,287,728	4,727,171	\$3,059,361	69,196	\$58,320	0
6000	5008 201	7-18	East Carolina University	\$	15,364,652	\$13,753,707	924,549,691,760	124,688,491	\$10,385,136	4,623,688	\$3,127,684	260,955	\$232,800	0
					pormus I		energy ev	raluation		btu/sf		water/s	ewer evaluation	n I
					nergy \$ avoided	energy \$/gsf	\$/mmbtu	\$/mmbtu %change	btu/sf	%change	water \$ avoided	\$/kgal	\$/kgal %change	gal/sf
6000		02-03	East Carolina University			\$2.13	\$12.50		170,724			\$4.69		51.43
6000		03-04	East Carolina University	<u>-</u>	\$1,130,619	\$2.33	\$12.32	-2%	189,287	11%	\$105,628	\$4.87	4%	47.04
6000		04-05	East Carolina University		-\$140,266	\$2.47 \$2.96	\$14.29 \$16.66	14% 33%	172,569	1% 4%	\$388,649	\$5.66	21% 16%	38.52
6000 6000		15-06 16-07	East Carolina University East Carolina University	<u> </u>	-\$615,896 \$1,368,245	\$2.56	\$16.30	30%	177,567 157,404	-8%	\$365,955 \$709,569	\$5.44 \$5.67	21%	38.99 31.57
6000		07-08	East Carolina University		\$3,239,094	\$2.44	\$17.14	37%	142,573	-16%	\$815,644	\$5.74	22%	30.25
6000		18-09	East Carolina University		3,561,260	\$2.72	\$19.16	53%	142,207	-17%	\$997,608	\$6.45	37%	27.70
6000		9-10	East Carolina University		\$1,081,983	\$2.86	\$17.71	42%	161,238	-6%	\$931,172	\$6.64	41%	29.64
6000		0-11	East Carolina University		\$2,869,387	\$2.61	\$17.84	43%	146,059	-14%	\$969,942	\$7.07	51%	30.39
6000		1-12	East Carolina University		\$2,899,180	\$2.56	\$17.58	41%	145,433	-15%	\$1,220,903	\$8.05	72%	28.18
6000	5008 201	2-13	East Carolina University		\$3,405,995	\$2.42	\$17.15	37%	141,416	-17%	\$1,349,254	\$8.20	75%	27.14
6000	5008 201	3-14	East Carolina University	:	\$3,357,400	\$2.43	\$17.13	37%	141,752	-17%	\$1,397,859	\$8.20	75%	26.25
6000		4-15	East Carolina University		\$3,846,835	\$2.51	\$17.97	44%	139,480	-18%	\$1,736,159	\$9.05	93%	23.45
6000		5-16	East Carolina University		\$3,973,665	\$2.14	\$15.93	27%	134,410	-21%	\$1,732,465	\$9.59	104%	25.12
6000		6-17	East Carolina University		\$3,779,065	\$2.08	\$15.35	23%	135,262	-21%	\$1,510,135	\$8.29	77%	25.19
6000	5008 201	7-18	East Carolina University		\$3,880,142	\$1.98	\$14.88	19%	133,158	-22%	\$730,413	\$6.56	40%	35.39
				120	\$/kwh	\$/therm	2 oil \$/gal	6 oil \$/gal	propane	e\$/gal	coal \$/ton	wood \$/ton	steam \$/mlb	chw \$/ton
6000	5008 200	02-03	East Carolina University		\$0.0654	\$0.655	\$0.88	\$0.00			\$0.00	\$0.00	\$0.00	\$0.00
6000	5008 200	03-04	East Carolina University		\$0.0665	\$0.710	\$0.90	\$0.00	\$0.0	00	\$0.00	\$0.00	\$0.00	\$0.00
6000		04-05	East Carolina University		\$0.0673	\$1.022	\$1.29	\$0.00	\$0.0	00	\$0.00	\$0.00	\$0.00	\$0.00
6000		5-06	East Carolina University		\$0.0746	\$1.224	\$1.75	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000		06-07	East Carolina University		\$0.0760	\$1.103	\$1.52	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000		07-08	East Carolina University		\$0.0761	\$1.216	\$1.70	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000 6000		08-09	East Carolina University		\$0.0879 \$0.0913	\$1.338 \$0.936	\$1.70 \$1.30	\$0.00 \$0.00	\$0.0		\$0.00 \$0.00	\$0.00	\$0.00	\$0.00 \$0.00
6000		09-10 0-11	East Carolina University East Carolina University		\$0.0913	\$0.934	\$1.30	\$0.00	\$0.0 \$0.0		\$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00
6000		1-12	East Carolina University		\$0.0922	\$0.893	\$1.14	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000		2-13	East Carolina University		\$0.0934	\$0.818	\$1.15	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000		3-14	East Carolina University		\$0.0942	\$0.818	\$1.06	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000	5008 201	4-15	East Carolina University		\$0.0989	\$0.829	\$1.08	\$0.00	\$1.1	12	\$0.00	\$0.00	\$0.00	\$0.00
6000		5-16	East Carolina University		\$0.0875	\$0.652	\$0.84	\$0.00	\$0.7	77	\$0.00	\$0.00	\$0.00	\$0.00
6000		6-17	East Carolina University		\$0.0844	\$0.647	\$0.84	\$0.00	\$1.0		\$0.00	\$0.00	\$0.00	\$0.00
6000	5008 201	7-18	East Carolina University		\$0.0833	\$0.676	\$0.89	\$0.00	\$1.3	34	- \$0.00	\$0.00	\$0.00	\$0.00
									(100,000 Btu) all E					
6000		02-03	East Carolina University		\$1.92	\$0.65	\$0.63	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000		03-04	East Carolina University		\$1.95	\$0.71	\$0.64	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
		04-05	East Carolina University	-	\$1.97	\$1.02	\$0.92	\$0.00 \$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000 6000)5-06)6-07	East Carolina University East Carolina University	-	\$2.19 \$2.23	\$1.22 \$1.10	\$1.25 \$1.09	\$0.00	\$0.0 \$0.0		\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00	\$0.00 \$0.00
6000		07-08	East Carolina University		\$2.23	\$1.10	\$1.09	\$0.00	\$0.0		\$0.00		\$0.00	\$0.00
		08-09	East Carolina University	-	\$2.57	\$1.34	\$1.21	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
		9-10	East Carolina University		\$2.68	\$0.94	\$0.93	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000	5008 201	10-11	East Carolina University		\$2.75	\$0.93	\$0.88	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000		11-12	East Carolina University		\$2.70	\$0.89	\$0.82	\$0.00	\$0.0	00	\$0.00	\$0.00	\$0.00	\$0.00
		12-13	East Carolina University		\$2.74	\$0.82	\$0.82	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
6000		13-14	East Carolina University		\$2.76	\$0.82	\$0.76	\$0.00	\$0.0		\$0.00	\$0.00	\$0.00	\$0.00
		14-15	East Carolina University		\$2.90	\$0.83	\$0.77	\$0.00	\$1.2		\$0.00	\$0.00	\$0.00	\$0.00
6000		15-16	East Carolina University		\$2.56	\$0.65	\$0.60	\$0.00	\$0.8		\$0.00	\$0.00	\$0.00	\$0.00
6000		16-17	East Carolina University		\$2.47	\$0.65	\$0.60	\$0.00	\$1.		\$0.00	\$0.00	\$0.00	\$0.00
6000	2010 201	17-18	East Carolina University		\$2.44	\$0.68	\$0.64	\$0.00	\$1.4	10	\$0.00	\$0.00	\$0.00	\$0.00

2013-14 ng therms: 4,973,135 decreased to 4,873,135 due to error in Sept 2013 billing by GUC 3074000 - see FY2014 August Notice tab in Verify GUC Gas Billing Rates worksheet.
2013-14 ng \$: \$4,065,050 decreased to \$3,986,050 to reflect \$79,000 credit from error in Sept 2013 billing by GUC 3074000 - see FY2014 August Notice tab in Verify GUC Gas Billing Rates worksheet.
2014-15 KWH \$: As of 07/01/14 sales tax on retail sales of electricity increased from 3% to 7%

chw \$ kgal water

\$0

\$0 \$0

238 550

232.629

180,551

183,960

177,610

172,498

245,693

water sewer \$

\$1,132,894

\$1,127,950

\$1,164,795

\$1,507,967

\$1,456,991

\$1,653,502

174,935 \$1,450,257 6,943,261

\$1,610,946 6,943,261

204,909 \$1,160,173

210,692 \$1,146,762

203,105 \$1,164,836

190,872 \$1,266,953 198,150 \$1,401,308

183,695 \$1,479,462

160,672 \$1,454,800

gsf \$1,119,614 4,638,344

4.944.945

5,318,927

5,404,001

6,304,003 6,714,454

6,517,338

6,438,976

6,519,601

6,519,298

6,777,321

6,766,724

6,852,379

214,000

6.868.261

renovated A/C gsf

148,796

cogen_kWh

wood tons

coal\$

\$0

\$0 \$0

propane \$

\$33,745

\$6,929

\$8,910

\$8,088

steam klbs

wood \$

\$0

2014-15 GSF adjusted by +47,386 to include 6 new CSLCs (now operational)

2014-15 GSF adjusted by +95,460 to include 2 CSI facilities previously omitted

2014-15 kWh adjusted by +1,903,914 for addition of CSI & SLC facilities' consumption 2014-15 kWh \$ adjusted +\$182,081 for addition of CSI & SLC facilities' consumption

2014-15 ng therms adjusted + 17,725 for addition of SLC facilities' consumption
2014-15 ng \$ adjusted + \$22,377 for addition of SLC facilities' consumption
2014-15 kgal water adjusted +257.167 for addition of CSI & SLC facilities' consumption
2014-15 water sewer \$ adjusted + \$3,669 for addition of CSI & SLC facilities' consumption

2014-15 propane usage included w/cost - not previously reported

2015-16 GSF adjusted by +15,882 for addition of Brunswick & Davidson SLCs

2015-16 Energy & Water consumption of CSI & 8 SLCs added to GUC totals 2016-17 GSF adjusted by +75,000 for addition of HSC Student Services Bldg

2017-18 +214,000 GSF under construction for Main Student Services Center