



Guilford Technical Community College

USI Case Studies - GTCC

USI Performance Report

Year	Name	Total Utility \$	Total Energy \$	Total Energy mmBtu	kWh	kWh \$	N Gas therms	N Gas \$	Water mgal	Water-Sewer \$	Total gsf	New Constr gsf	Renov gsf
2005-06	GTCC	\$1,540,756	\$1,381,444	80,965	16,579,991	\$1,022,545	243,937	\$358,899	15,202	\$159,312	900,198	158,169	0
2006-07	GTCC	\$1,561,759	\$1,374,267	79,578	16,725,027	\$1,083,238	225,124	\$291,030	16,457	\$187,492	1,058,367	8,990	0
2007-08	GTCC	\$1,533,235	\$1,308,246	74,240	16,263,854	\$1,060,507	187,474	\$247,739	18,619	\$224,989	1,066,458	72,730	0
2008-09	GTCC	\$1,622,814	\$1,401,401	79,816	16,918,993	\$1,086,116	220,879	\$315,285	16,331	\$221,440	1,240,723	38,625	0
				energy evaluation				water/sewer evaluation					
		Energy \$ / gsf	\$ / mmBtu	\$/mmBtu %Change	Btu / sf	Btu/sf %Change	\$ / mgal	\$/mgal %change	gal/sf	gal/sf %change		\$ / kWh	\$ / Therm
2005-06	GTCC	\$1.53	\$17.062		89,941		\$10.48		16.89			\$0.0617	\$1.471
2006-07	GTCC	\$1.30	\$17.269	1%	75,190	-16%	\$11.39	9%	15.55	-8%		\$0.0648	\$1.293
2007-08	GTCC	\$1.23	\$17.622	3%	69,613	-23%	\$12.08	15%	17.46	3%		\$0.0652	\$1.321
2008-09	GTCC	\$1.13	\$17.558	3%	64,330	-28%	\$13.56	29%	13.16	-22%		\$0.0642	\$1.427

4/21/10

Lee DuVall GTCC Ass't Director Physical Plant

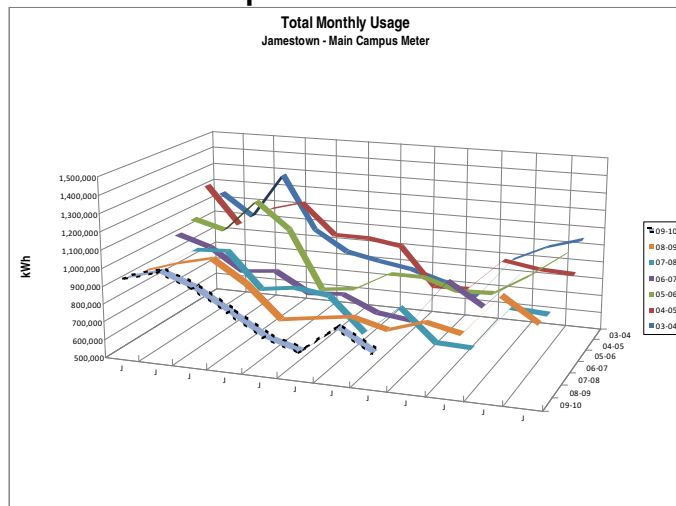
1



Guilford Technical Community College

USI Case Studies - GTCC

USI Performance Report



4/21/10

Lee DuVall GTCC Ass't Director Physical Plant

2



USI Case Studies - GTCC

Key Strategies (2009 Strategic Energy Plan)

4. Energy Supply Management

a. Review all accounts with utility providers to ensure lowest cost Rate Schedule is in effect for each facility.

2008-2010 Planned Activity	Measurement	Savings Actual/Est'd	Cost	Funding Source
Duke Energy & High Point review all electrical rates	Written confirmation from utility	TBD	Salary	County
Piedmont Natural Gas review of all gas rates	Written confirmation from utility	TBD	Salary	County
Cities of Jamestown, High Point, and Greensboro Water Depts review water rates	Written confirmation from utility	TBD	Salary	County

Results:

- Jamestown campus – savings approx \$6,000/yr
- Greensboro campus – save approx \$3,000/yr
- High Point campus – savings approx \$9,000/yr



USI Case Studies - GTCC

Key Strategies (2009 Strategic Energy Plan)

5. Energy Use by Facilities

- a. GTCC has and will continue to adopt US Green Building Council / LEED energy standards in the design, construction, operation, and maintenance of all new major facility construction projects which will reduce future energy consumption.
- b. Continue internal Energy Audits of HVAC, lighting equipment, and building envelope factors to identify energy waste sources. Develop projects and processes to implement any energy savings opportunities identified.
- c. Develop more effective Planned Maintenance processes to ensure HVAC, lighting, and potable water using equipment is operating at optimum efficiency.
- d. Benchmark energy use standards with EPA and other state institutions to guide future equipment replace and upgrade projects:
 - i. HVAC
 - ii. Lighting
 - iii. Roofing
 - iv. Fleet Vehicles
 - v. Large Motors
 - vi. Appliances, Vending
 - vii. Computers
 - viii. Curriculum / other misc equipment



Guilford Technical Community College

USI Case Studies - GTCC

Key Strategies (2009 Strategic Energy Plan)

2008-2010 Planned Activity	Measurement	Savings Actual/Est'd	Cost	Funding Source
Include LEED Silver level equivalent design criteria in construction of new buildings: JT HT; new Parking Deck; HP H-5; GSO GCC; new NW Campus	LEED Silver certification, reduced energy usage PSF vs ASHRAE baseline	Est \$1 PSF of annual energy usage \$125k-\$175k	Est 3-4% construction cost \$900k-\$1,200k	County Bonds

Results:

- Jamestown campus – avoided cost approx \$70,000/yr
- Greensboro campus – avoided cost approx \$45,000/yr
- High Point campus – avoided cost approx \$35,000/yr



Guilford Technical Community College

USI Case Studies - GTCC

Key Strategies (2009 Strategic Energy Plan)

6. Equipment Efficiency

2008-2010 Planned Activity	Measurement	Savings Actual/Est'd	Cost	Funding Source
Replace incandescent EXIT signs with LED college-wide	Upgrades completed	Est \$10k	Est \$20k	SEO bulk purchase
Finish replacement of sodium vapor exterior light fixtures with metal halide college-wide	Upgrades completed	TBD	TBD	Maintenance Budget

Results:

- LED Exits Signs – 350 replaced, savings @ \$20 ea = \$7,000/yr (cost \$8,000, DE EEI rebate \$3,500, net cost \$4,500, simple payback 0.5-1 yr)
- MH Walk Lights – 150 @250W replaced @175W, savings approx \$3,500/yr (cost \$22,500, simple payback 7-8 yrs)



Guilford Technical Community College

USI Case Studies - GTCC

Key Strategies (2009 Strategic Energy Plan)

6. Equipment Efficiency

2008-2010 Planned Activity	Measurement	Savings Actual/Est'd	Cost	Funding Source
Complete converting T-12 fixtures to T-8's, complete replacing incandescent lamps with CFLs college-wide	Upgrades completed	Est \$0.02/gsf \$20k	Est \$10k	Maintenance Budget

Results:

- Converted most T12s to T8s over 6-8 yrs – cost & savings ?
- Convert F32T8s to F28T8s – 22,000 lamps @4W+2W, savings approx \$15k/yr including AC savings, extra lamp cost (cost \$52k, DE EEI rebate \$11k, net cost \$41k, simple payback 3-4 yrs)
- Installing Occupancy Sensors in 22 buildings, savings approx \$35k/yr (cost \$45k, DE EEI rebate \$10k, net cost \$35,000, simple payback 1-2 yrs)

4/21/10

Lee DuVall GTCC Ass't Director Physical Plant

7



Guilford Technical Community College

USI Case Studies - GTCC

Key Strategies (2009 Strategic Energy Plan)

Past Year Activities	Measurement	Savings Actual/Est'd	Cost	Funding Source
Implement Vehicle Upgrade Program to replace old large gasoline Fleet & GTCC operated trucks, vans, cars with hybrid or electric vehicles	Vehicle replacements completed	TBD	TBD	State

Results:

- Replaced '93 & '97 F-250s with '09 F-150s; Replaced '01 Windstar van with '09 Traverse crossover; Replaced '04 Stratus with '10 Prius; Replaced '02 Crown Vic with '10 Impala; Purchased 4 golf carts to reduce pickup truck usage at JT
- Estimated net gas savings 5,000 gal/yr, \$12,000/yr

4/21/10

Lee DuVall GTCC Ass't Director Physical Plant

8



Guilford Technical Community College

USI Case Studies - GTCC

Key Strategies (2009 Strategic Energy Plan)

2008-2010 Planned Activity	Measurement	Savings Actual/Est'd	Cost	Funding Source
Replace older restroom urinals and commodes with low/ultra low flush units	Upgrades completed	TBD	TBD	Maintenance Budget

Results:

- Replaced 100+ commodes & urinals
- Approx water use avoided 2,000,000+ gal/yr, \$10,000/yr
- Planted drought resistant shrubs,trees - removed three irrigation meters turned off 4-5 yrs ago during drought, basic meter charge savings \$15,000

4/21/10

Lee DuVall GTCC Ass't Director Physical Plant

9



Guilford Technical Community College

USI Case Studies - GTCC

Projects underway or under investigation:

- *Build new NW Campus to LEED Gold-Platinum standard, Renovate seven 30+ year old buildings on Jamestown campus to LEED Silver standard*
- *Build new Parking Deck on Jamestown campus to LEED Silver standard (a 1st for UNC / NCCCS systems?)*
- *Replace 75 HPS street lights with LED heads, convert to solar where feasible using PV roof arrays?*
- *Implement Peak Demand control capabilities available in DDC software to control large chillers*
- *Clean/tune all 16 boilers, 8 chillers annually*
- *Replace pneumatic controls on 3 buildings with DDC*
- *Replace all Desktop/CRT PCs with Laptops+LCD monitors*

4/21/10

Lee DuVall GTCC Ass't Director Physical Plant

10