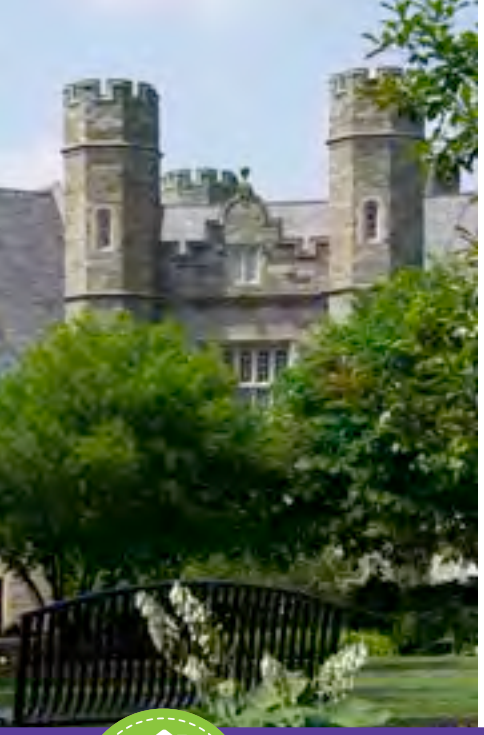


ENERGY AND BUILDINGS

INTRODUCTION

Scope 1 emissions – those directly controlled by WCU – result from fuels used for WCU Fleet vehicles and to provide heat for space and water. Within Scope 1, coal burned in the steam plant accounts for almost 2/3 of emissions. Excluding fuels for vehicles, WCU consumed 4000 tons of coal, 41,000 gallons of fuel oil, and 69,514,000 cubic feet of natural gas in FY 2012. Scope 2 emissions at WCU resulted from purchased electricity, which was used to provide lighting, energy for equipment and appliances (incl. air conditioning), and to run the geoexchange heating and cooling system (also known as geothermal). Electrical consumption was 35,062,000 kWh in FY 2012.

GOALS

Achieve significant annual reductions in greenhouse emissions associated with energy consumption and production by a) implementing appropriate policies, financing, and planning strategies b) reducing consumption and improving efficiency; c) producing renewable energy; c) buying green power; and d) offsetting the rest.

SUMMARY OF PROJECTS AND INITIATIVES

1. Energy & Building Policies, Planning, and Financing
    - Objective 1.1 – Develop/Implement a Campus Energy Policy & Strategy
    - Objective 1.2 – Develop/Implement a Green Building Policy
    - Objective 1.3 – Formalize an Integrative Planning Process
    - Objective 1.4 – Internalize a Price for Greenhouse Gas Emissions
    - Objective 1.5 – Establish a Green Revolving Fund
2. Reduce Consumption & Improve Energy Efficiency
    - Objective 2.1 – Transition to Lower Emission Fuel Sources for Heating & Cooling
    - Objective 2.2 – Install Web-Based Utility Dashboards in Campus Buildings
    - Objective 2.3 – Implement an Energy Use Fee/Rebate for Student Housing
    - Objective 2.4 – Implement Energy Savings Retrofits for Residence Halls
    - Objective 2.5 – Install Solar Hot Water Heating for Appropriate Buildings
    - Objective 2.6 – Install LED lighting in Parking Lots and Selected Indoor Spaces

Objective 2.7 – Continue to Implement Green Information Technology Initiatives
3. Produce Renewable Energy
Objective 3.1 – Install Small-Scale Photovoltaics on Campus
Objective 3.2 – Install Large-Scale Photovoltaic Array(s) on Campus
4. Buy Green Power
Objective 4.1 – Buy Green Power/Purchase Renewable Energy Credits (RECs)
5. Purchase & Develop Carbon Offsets
Objective 5.1 – Buy Carbon Offsets for Unavoidable Emissions
Objective 5.2 – Develop Carbon Offset Projects with Research and Educational Value

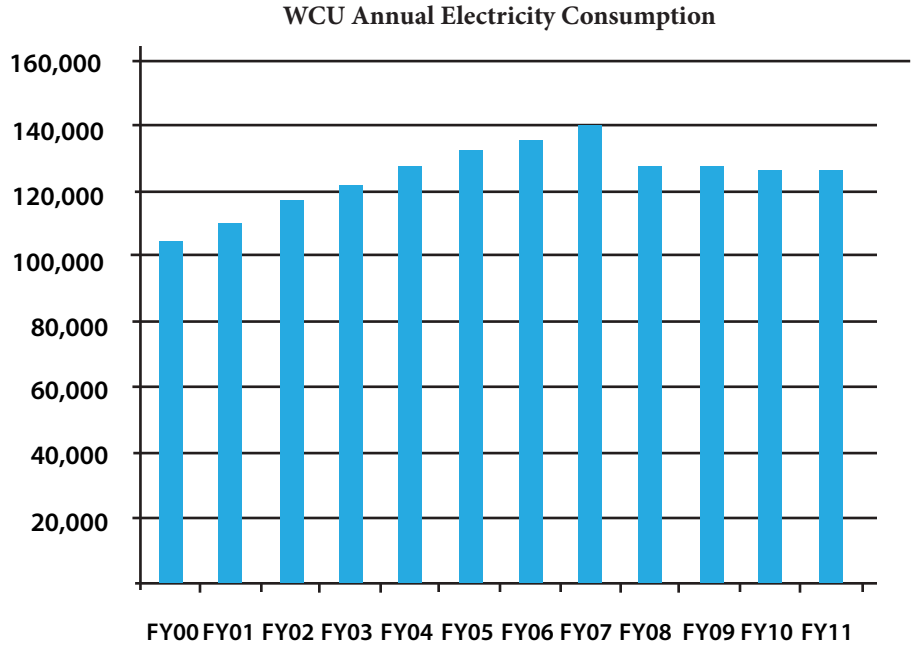
BACKGROUND

West Chester University has already taken significant steps towards energy efficiency. From 2005 to 2009, WCU's Energy Performance Project, or Guaranteed Energy Savings Plan (GSEP) led by Honeywell Building Solutions, instituted a range of measures that are currently yielding significant cost and emissions reductions. WCU also has Green Buildings on campus. The Swope music building has been awarded the Silver LEED (Leadership in Energy and Environmental Design) certification. Significant LEED features area also included in 25 University Avenue and the new Student Recreation Center. Above all, WCU is most proud of its ongoing commitment to building one of the largest district geoexchange systems in the world. Though largely hidden from view, the University's investment in geothermal wells is enabling it to significantly reduce carbon emissions while also reducing energy costs.

STATISTICS: IMPROVEMENTS AND REGRESSIONS FROM 2000 TO 2011

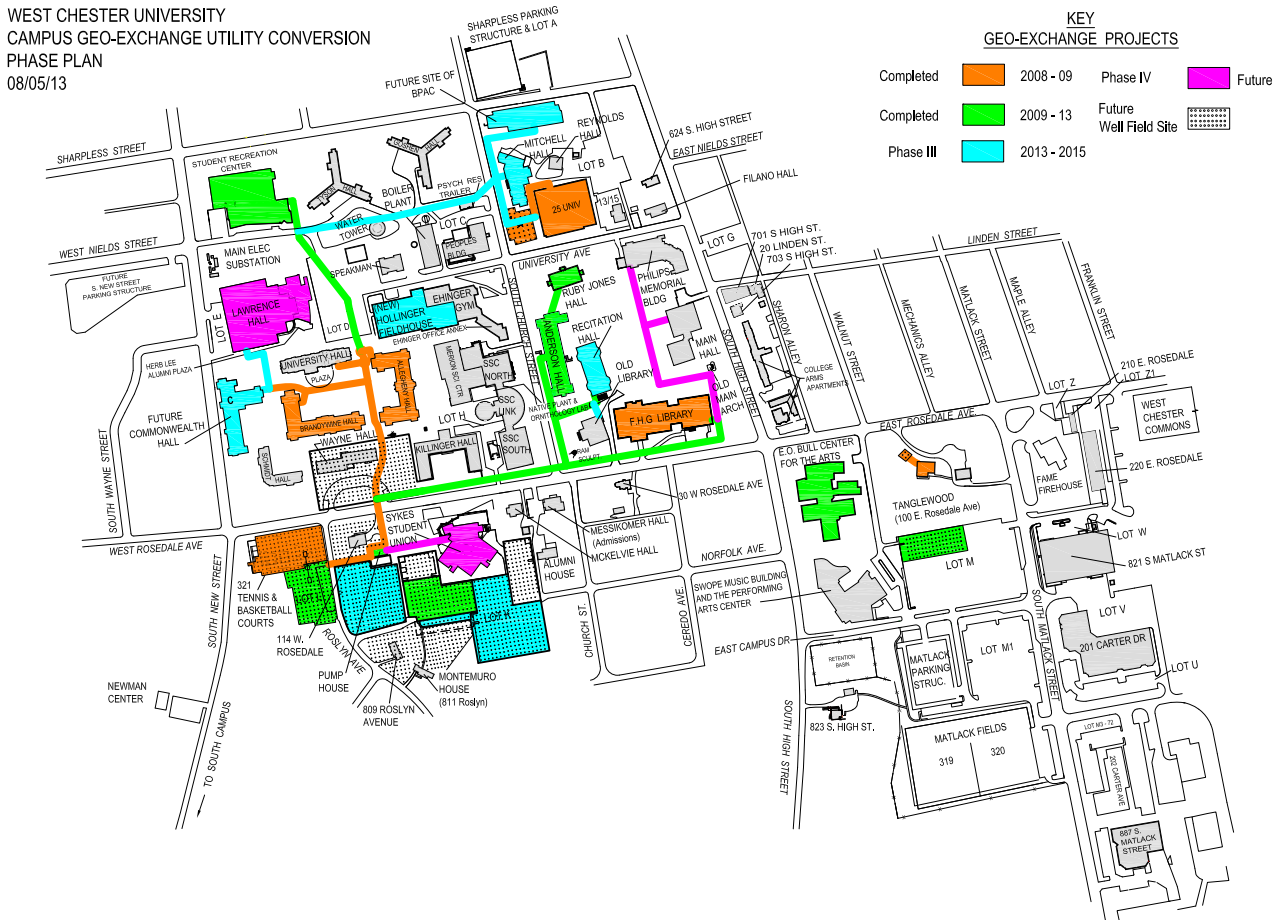
Electricity

Electricity accounts for about one-third of the University's total energy consumption (WCU Greenhouse Gas Inventory Report). Fifty nine percent of this electricity is generated from local coal burning plants (WCU Sustainability Efforts). Renewable processes produced only 34% of the electricity used by WCU in FY 2012. In FY 2012, the University consumed a total of 119,219 MMBtu (British thermal units used to measure energy) of electricity. WCU's annual electricity consumption has seen a decline of more than 15% since the peak of electrical use in 2007, even with the addition of new buildings. In FY 2007, the University consumed almost 140,000 MMBtu of electricity (WCU Facilities 2012). The chart above illustrates this pattern.



The guaranteed energy savings plan (GESP) was designed to reduce the amount of total electricity consumption as well as reduce university spending. The GESP included installing solar film on the windows of four buildings that experienced high solar heating, boiler plant controls modifications, HVAC improvements, and installation of a campus wide energy management and controls system. An earlier series of modifications to the campus high voltage distribution system, including expanding the 15kv grid to cover additional buildings, has yielded savings in electricity cost as well.

The GESP is expected to yield substantial savings over the next 15 years. By the end of the plan, the University is expected to save $36.1 million (WCU Sustainability Efforts). Annually, the plan is expected to save 12,400,000 kWh of electricity, 155,000 gallons of fuel oil, 37,000 MMBtu of steam, 20 million gallons of water and sewage, and 500 tons of coal (WCU Sustainability Efforts). Pollution emissions are expected to be reduced as well. By the end of the plan, 5300 tons of sulfur dioxide, 7800 tons of carbon dioxide, and 19 tons of nitrogen dioxide emissions will be reduced (WCU Sustainability Efforts).



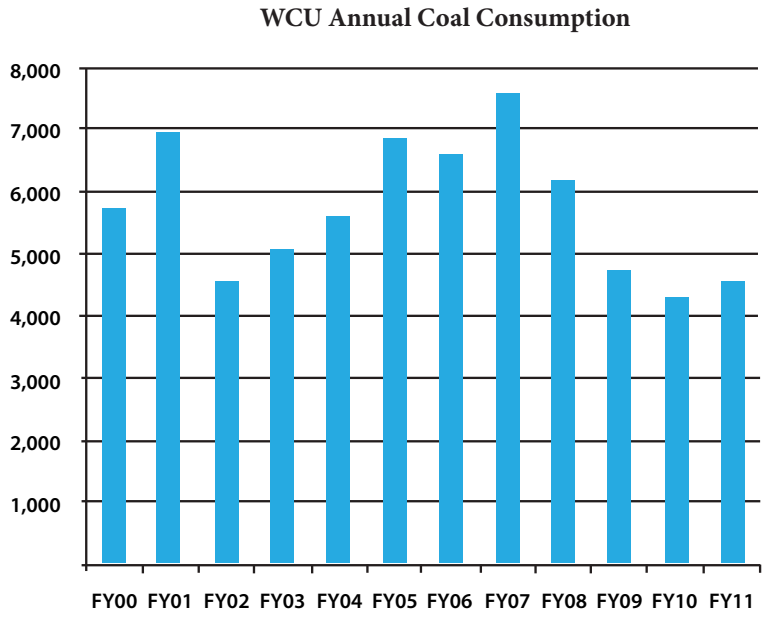
Coal

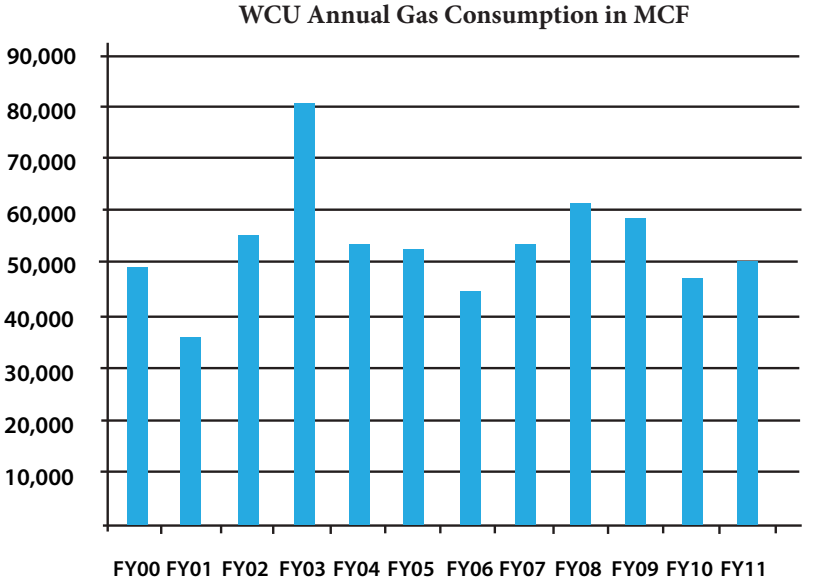
West Chester University has for many years relied on a 1960s vintage coal burning central steam heating plant, which accounts for just about half of the school's energy usage (WCU Facilities 2008). The plant is designed to burn coal in order to create steam to be used in heating of campus buildings. While the plant is reasonably efficient, it is becoming costly to maintain the outdated technology. The consistent use of this plant has led to increased environmental awareness, and the implementation of the geoexchange heating and cooling system. The University plans to shut down the central heating plant before the 2014-15 heating season.

West Chester University's system was first implemented as a stand-alone system for 25 University Avenue. Following this project, it was decided to build a district geoexchange system, with all the wells at a common location and a central pumping station supplying the geothermal water to the buildings that are added or converted, beginning with the new residence halls and a number of academic buildings across north campus that were converted to use geothermal HVAC systems such as the FHG Library, Ruby Jones Hall, and Anderson Hall (WCU Facilities 2008). Eventually it is expected there will be 24-26 buildings on North Campus served by this system. Stand-alone geoexchange systems were installed on East Campus at Tanglewood in 2009 and the E.O. Bull Center for the Arts in 2011.

Oil, Natural Gas and Biodiesel

The remaining energy consumed by West Chester University comes from oil, natural gas and biodiesel. Fuel oil and natural gas are used to create steam or hot water. Additionally, school vehicles run on gasoline, compressed natural gas, or biodiesel fuel (WCU Facilities 2008). Compressed natural gas is cheaper than gasoline and 80% more environmentally friendly. To date, the University has not implemented hybrid vehicles that run on renewable energy. Over the past decade, the university has not seen any dramatic decrease in the amount of natural gas consumed. Since 2000, the average annual natural gas consumption is 53,612 mcf (WCU Facilities 2012). In 2011, the university consumed 50,000 mcf of natural gas, only 3,000 mcf below the annual average (WCU Facilities 2012). However, the school has made slightly better progress in boiler fuel oil consumption. The average annual oil consumption since 2000 is 234,851 gallons of oil. In 2011, the school consumed only 184,189 gallons of boiler fuel oil (WCU Facilities 2012). More can be done to shift to lower emissions. The new geoexchange system decreases boiler fuel oil consumption. Buildings that will not be converted to geothermal in the immediate future are being converted from central plant steam heat to local high efficiency natural gas boilers, which will cause a planned increase in natural gas usage as coal burning is eliminated at the central plant.





SUMMARY

The University has made considerable progress. The challenge is to make even greater gains. In the year 2011, the University spent $3.3 million on electricity, $523,912 on gas, $575,332 on boiler fuel oil, and $522,523 on coal (WCU Facilities 2012). These numbers are all the lowest we have seen over the past few years. Further savings including both building project costs and lowered cost of ownership will continue to play a role in driving decision making. Nonetheless, it must be recognized that in a system that does not monetize the true costs of carbon emissions, the price of a building or renovation does not encompass the true cost to the University. To maintain leadership and progress toward climate neutrality, some decisions will have to be made (whether they be to buy offsets or to choose more expensive upfront cost items), which have long term payoffs or which are intended to demonstrate commitment to lowering the University's environmental impact.

West Chester University has in the past relied on conventional, inefficient sources of energy. However, the University has made great progress to change its fuel mix and to change the way the school consumes energy. The current plan is designed to reduce the cost of energy usage and improve energy efficiency in years to come with increased implementation of low emissions technologies.

PROJECTS AND INITIATIVES

1. Energy & Building Policies, Planning, and Financing

OBJECTIVE 1.1 – DEVELOP/IMPLEMENT A CAMPUS ENERGY POLICY & STRATEGY

Energy Policy Outcomes: Develop and implement a campus energy policy and strategy that includes the following: 1) actions to improve energy efficiency, reduce consumption, and transition to low carbon and renewable energy sources; 2) strategies to promote behavioral and cultural change on campus that further the educational mission of the University; 3) an integrative planning process that involves faculty and student researchers with all phases of facilities planning, design, and construction; 4) a process for internalizing a price for greenhouse gas emissions (i.e. carbon) associated with WCU's activities and operations; and, 5) a **Green Revolving Fund** to finance energy efficiency and renewable energy projects.

- Action Step: Establish a Campus Energy Strategy task force that is charged with developing, implementing, and assessing the University's energy strategy. The task force will include students, staff, and faculty.
- Action Step: Establish a foundation of good faith and success by implementing an Indoor Pool Cover Policy and a Campus Wide Indoor Temperature Policy *(see Addenda)*
- Implementation Time Frame: By 2015

OBJECTIVE 1.2 – DEVELOP/IMPLEMENT A GREEN BUILDING POLICY

Green Building Policy Outcomes: Develop a Green Building Policy that mandates that major renovations, new construction, and operations and maintenance achieve a minimum of LEED Silver standards.

- Action Step: Write and seek approval for the Policy.
- Implementation Time Frame: By 2015: Incorporate LEED standards in design parameters and encourage donors to support the costs associated with implementation and certification.

OBJECTIVE 1.3 – FORMALIZE AN INTEGRATIVE PLANNING PROCESS

Integrative Planning Outcome: Increase student and faculty involvement (i.e. participation and research) in facilities design and construction by formalizing a process for information sharing in early planning stages.

- Action Step #1: Establish protocols for information sharing and involvement.
- Action Step #2: Include "coordination of integrative facilities planning" in the job description of the full-time Director of Sustainability.
- Implementation time frame: By 2015 – Connections will be made between facilities and interested faculty and students (individuals and groups).

OBJECTIVE 1.4 – INTERNALIZE A PRICE FOR GREENHOUSE GAS EMISSIONS

Carbon Valuation Outcome: Many of WCU's activities and operations produce carbon emissions that are not currently accounted for in decision-making processes. Establishing policies and procedures for assigning monetary costs to carbon emissions will facilitate campus-wide adoption of low-emission projects that are currently not economically feasible. The phased process will begin with a relatively low cost for carbon, but will eventually reach voluntary carbon market rates for a ton of carbon (currently ~$20 per metric ton of CO_2).

- Action Step #1: Establish policy that includes a mechanism to contribute to the Green Revolving Fund (see below) with the carbon dollars set by the voluntary carbon pricing.
- Action Step #2: Build carbon costs into project budgets
- Implementation time frame: By 2015 – Establish the policy and procedure and begin the first phase
- By 2020 – Cost of carbon emissions fully integrated into planning and decision making.

OBJECTIVE 1.5 – ESTABLISH A GREEN REVOLVING FUND

Green Revolving Fund Outcome: A Green Revolving Fund invests in energy and sustainability projects that decrease resource use, thereby lowering expenses. These operational savings are returned to the fund and then reinvested in additional projects. The Sustainable Endowments Institute reports consistent annual returns ranging from 29% (Iowa State University with $3.0 million fund size and 11 projects) to 47% (Western Michigan University with $365,000 fund size and 101 projects). Other examples are Harvard University ($12 million fund size, 185 projects, ROI 30%), Oberlin College ($40,000 fund size, 9 projects, ROI 31%) and California Institute of Technology ($8 million fund size, 13 projects, ROI 33%). Funds must be "loaned" based on well-executed business cases involving measurable, trackable financial benefits. To ensure accountability, a clear baseline cost must be established (to measure post-project run rates against). The funds must revolve. Savings generated by reducing operating costs are tracked and used to repay the fund (thus providing capital for future projects). To ensure this happens, a commitment must be made to provide the required financial oversight.

- Action Step #1: Seed the fund and establish a management structure and procedures
- Resources Needed: To initiate the process, the fund needs to be "seeded" which requires commitment and belief in the concept. The identification and sourcing of funds can be seen as a fund-raising opportunity or as an endowment investment opportunity.
- Implementation time frame:
- By 2015 – Seed the Fund: Funds range in size from $5000 at the College of Wooster (OH) to $24.5 million at Stanford University, with an average size of $1.4 million.
- By 2020 – Continued development
- By 2025 – Continued development

2. Reduce Consumption & Improve Efficiency

OBJECTIVE 2.1 – TRANSITION TO LOWER EMISSION FUEL SOURCES FOR HEATING & COOLING

Lower Emission Heating & Cooling Outcomes: The transition to lower emission fuel sources for heating and cooling is completed.

- Action Step #1: Continued expansion of geoexchangel system
- Action Step #2: Replacement of central station fuel oil boilers with high efficiency gas boilers
- Implementation time frame:
  - By 2015: Continued expansion of geothermal system and shut down central heating plant
  - By 2020: Replacement of fuel oil boilers with natural gas boilers

OBJECTIVE 2.2 – INSTALL WEB-BASED UTILITY DASHBOARDS IN CAMPUS BUILDINGS

Building Dashboard Outcomes: "Campus building energy dashboards monitor the energy consumption of a facility. Energy dashboards can present the data to users in an interactive way. They may be physically available as touchscreens installed at kiosks in or near the facility being monitored, or made available online as a website" (AASHE).

- Action Step #1: Purchase software and displays
- Action Step #2: Install and commission software and displays
- Resources Needed: Approximately $15,000 per building
- Implementation time frame:
  - By 2015 – Initial implementation in high priority buildings
  - By 2020 – Campus wide adoption

OBJECTIVE 2.3 – IMPLEMENT AN ENERGY USE FEE/REBATE FOR STUDENT HOUSING

Energy Use Fee/Rebate Outcome: To ingrain low-energy-consumption behavioral patterns in students and to assist the University in achieving its energy consumption reduction objectives, an energy use fee/rebate system will be established for all students living in university accommodations. A portion of student room and board fees will be specifically denoted an energy use fee. At the end of the semester, the student will receive a rebate based on the actual energy consumption in that university residence.

- Action Step #1: Install appropriate residence hall specific metering.
- Action Step #2: Implement billing and rebate procedures.
- Resources Needed: University Energy Dashboard infrastructure, as explained above.
- Implementation time frame:
  - By 2015 – Implement fees or rebates as standard room and board policy

OBJECTIVE 2.4 – IMPLEMENT ENERGY SAVINGS RETROFITS FOR RESIDENCE HALLS

Energy Savings Retrofit Outcome: Energy savings retrofits for residence halls are implemented.
- Action Step #1: Commission study
- Action Step #2: Act on study findings
- Resources Needed: Capital money to seed energy saving renovations.
- Implementation time frame:
  By 2015 – Commission study
  By 2020 – Implementation

OBJECTIVE 2.5 – INSTALL SOLAR HOT WATER HEATING FOR APPROPRIATE BUILDINGS

Explanation: "The best buildings for solar hot water systems are those with large hot water requirements, e.g. residence halls, food service, and athletic facilities. Note: indoor swimming pools require year-round heating" (AASHE).
Solar Hot Water Outcome: Install solar hot water systems on campus buildings with hot water requirements that best match the system's supply capabilities.
- Action Step #1: Commission study
- Action Step #2: Installation
- Resources Needed: Financing for the solar hot water systems.
- Implementation time frame:
- By 2015 – Commission study
- By 2020 – Installation

OBJECTIVE 2.6 – INSTALL LED LIGHTING IN PARKING LOTS AND SELECTED INDOOR SPACES

LED Lighting Outcome: LED lights are installed in parking lots as well as other selected exterior and hard to reach interior spaces.
- Resources Needed: Capital purchase LEDs.
- Implementation time frame: By 2015 – Commission study

OBJECTIVE 2.7 – CONTINUE TO IMPLEMENT GREEN INFORMATION TECHNOLOGY INITIATIVES

Background: Information Services has been in the forefront of "Green IT" programs in IT and has made great strides in the past few years. Major Labs have implemented double sided printing to cut paper waste. WCU's Data Center was designed for energy efficiency, using cold aisle cooling, blade servers, and server virtualization which reduced energy consumption by 50% in comparison to the previous data center. Digital Signage is installed in most campus buildings, thereby reducing printed information. WCU cut 100 Metric Tons of Carbon Emissions (associated with energy consumption in data network closets) by going all-wireless in new residence halls.

Green IT Goals: Reduce wasted printing resources; utilize energy efficient desktop and server computer equipment; build more energy efficient Data Centers; build more energy efficient campus networks.
- Action Step: Continue to investigate options for reducing waste and improving efficiency

3. Produce Renewable Energy

OBJECTIVE 3.1 – INSTALL SMALL-SCALE PHOTOVOLTAICS ON CAMPUS

Explanation: Rooftop solar panels can be used for both renewable energy production and for educational/awareness purposes. Note: A cost benefit analysis will help determine whether, for example, purchasing offsets may be a more cost effective method of reducing emissions than investing in solar PV. Even so, small-scale PV have significant educational and public relations benefits.
Small-Scale Photovoltaics Outcome: Install rooftop panels in several high visibility locations and increase student awareness of solar photovoltaics.
- Action Step #1: Publicize the function of the solar panels installed on the Rec Center and obtain real time and cumulative data on their function.
- Action Step #2: Identification of prime locations and installation in these areas.
- Resources Needed: Funds to purchase the photovoltaics.

- Implementation time frame:
- By 2015 – Identification of prime locations
- By 2020 – Installation in identified locations

OBJECTIVE 3.2 – INSTALL LARGE-SCALE PHOTOVOLTAIC ARRAY(S) ON CAMPUS

Explanation: Demand reduction and the purchase of RECs can only go so far in reducing the University's need for low emission/ renewable energy. At some point WCU will have to either sign up to a project such as Keystone Solar or build its own large-scale solar arrays. Covering a parking lot rather than a field would be a better use of land area as the area would have a double use (parking and electricity generation).

Large-Scale Photovoltaics Outcome: Install large-scale photovoltaic arrays.

- Action Step #1: Undertake implementation study.
- Action Step #2: Installation
- Resources Needed: Initial capital for solar array installation.
- Implementation time frame:
  - By 2015 – Report feasibility study
  - By 2020 – Installation

4. Buy Green Power

OBJECTIVE 4.1 – BUY GREEN POWER/PURCHASE RENEWABLE ENERGY CREDITS (RECS)

Background: WCU has been purchasing renewable energy credits for several years. These RECs offset the kwh we purchase that come from conventional fuel power plants.

Explanation: "Producing on-campus carbon-free, renewable electricity is difficult and producing enough of it to make a real difference is even harder. That is why many campuses have begun purchasing green power. Institutions striving for carbon neutrality will eventually need to generate electricity on-site with carbon-free sources and shift purchased electricity to green power purchases, or buy carbon offsets to mitigate the carbon emissions embodied in continued conventional power generation and purchases. Green power purchasing typically involves buying renewable energy credits or certificates, referred to as "RECs" or "green tags." These are purchased in increments of 1,000 kilowatt hours (1 REC = 1,000 kWh or 1 megawatt hour) and represent the "environmental attribute" associated with renewable power. RECs are certified by an independent agency (e.g. Green-e) to guarantee their actual production from a qualifying renewable energy source and to insure that they are not double-counted. Qualifying sources include solar electric, wind, geothermal, and certain types of hydro, biomass and hydrogen fuel cell-derived power."

Green Power Outcome: Renewable energy credits (RECs) will be purchased to offset emissions associated with Scope 2 (purchased electricity). These RECs will be purchased at the state level, thereby supporting the development of a clean energy economy in Pennsylvania. All purchased RECs will meet the criteria for offsets defined by the ACUPCC. Specifically, offsets must be "real, additional, transparent, measurable, permanent, verified, synchronous, account for leakage, registered, not double-counted, and retired" (ACUPCC 2008).

- Action Step #1: Compare RECs with the existing price for electricity or gas plus the added cost of carbon pricing (Objective 1.4) to determine which is less expensive.
- Action Step #2: Purchase RECs
- Resources Needed: Agreed upon price of carbon (Objective 1.4), percentage of carbon in source energy, existing fuel source pricing.

5. Purchase & Develop Carbon Offsets

OBJECTIVE 5.1 – BUY CARBON OFFSETS FOR UNAVOIDABLE EMISSIONS

Explanation: Ultimately, WCU may achieve climate neutrality by generating energy from renewable sources on its own land. Until this is economically feasible, we can sponsor projects at other locations that will eliminate as many GHG emissions as we emit at WCU. This is "offsetting." From an atmospheric perspective, offsetting is a viable strategy because a net reduction in GHG emissions to the atmosphere will have the same effect, regardless of where on the Earth's surface the reduction occurs. However, as we consider purchasing carbon offsets (as they are known in the marketplace), it is critical that these offsets are consistent with the ACUPCC guidelines and within WCU's vision for sustainability.

WCU will target offset purchases toward projects that store carbon through biological activity (i.e., forest protection, reforestation, etc.). No carbon offsets will be purchased in support of global development activities such as clean energy generation (i.e., solar, wind) in the developing world. This decision has been made because with development comes a risk of increased future GHG emissions as demand for consumer goods rises. By targeting "biological offsets" WCU will have a higher likelihood of meeting the "real" criterion specified by ACUPCC, in that the University's purchase of offsets will lead to a net reduction in global GHG emissions. One of the greatest challenges WCU will face in purchasing carbon offsets is the issue of verification. In other words, WCU must determine whether offsets meet the ACUPCC standards.

Carbon Offset Outcome: Reduce WCU's GHG emissions to zero following efforts outlined above.

- Action Step #1: Establish a committee and/or charge courses/students with researching viable offset purchase options.
- Action Step #2: Make a small-scale purchase to get a better understanding of how the offset market works. This will require some seed funding. It could also be tied into a large class project if there's interest.
- Resources Needed: Seed funding for an initial small-scale purchase. More funds as we approach our carbon neutral date of 2025.
- Implementation Time Frame: By 2015 establish committee and make small-scale purchase. By 202 make commitment to offset strategy

OBJECTIVE 5.2 – DEVELOP CARBON OFFSET PROJECTS WITH RESEARCH AND EDUCATIONAL VALUE

Explanation: This objective is aligned with the research and education values of Objectives 2.2, 2.3, and 3.1. In effect, by installing metering for data collection and the means of disseminating this data to researchers and the WCU community, we can bolster the value of Carbon Offset Projects by aligning them with our educational and research objectives.

Carbon Offset Outcome: Implement the Objectives in sections 2 and 3 with data collection and the means to disseminate these data.

- Action Step #1: Implement Objectives in sections 2 and 3 with data collection in mind.
- Implementation time frame:
- By 2025 – All projects will have appropriate means of data collection.

ADDENDA

FACILITIES POLICIES AND PROCEDURES

NUMBER: 110

DISTRIBUTION: Facilities Administrators

ISSUED BY: Executive Director of Facilities Management

EFFECTIVE:

SUBJECT: Temperature Policy

A. Introduction:

West Chester University in FY 2011 spent about $6 million on energy and utilities. This cost is down from a peak of $7 million in FY 2009, largely due to conservation measures recently implemented, including our campus geothermal system. Further conservation of these resources and the corresponding reduction in expenditures then allows the University to reallocate the savings to other University programs. Additionally, conservation helps to reduce our environmental footprint and improves our stewardship of natural resources. West Chester University has established a campus temperature policy to provide conditions that support the University's educational mission while at the same time supports WCU's sustainability efforts. The objective is to balance customer service/ comfort, cost-efficiency and environmental concerns. An identical temperature policy has already been implemented in all Commonwealth-owned buildings by the Governor's Office Management Directive 720.5, implemented in 7/25/2008.

B. Why Conserve Energy:

Energy conservation has been called the "least-cost" energy strategy, and for good reason. Energy conservation measures in 2011 are saving WCU $2 million in energy costs annually and help reduce our exposure to rising energy costs. But energy conservation does more than just save money. It reduces environmental and social costs as well.

Energy conservation mitigates the numerous adverse environmental and social impacts associated with energy production and consumption. These include air pollution, acid rain and global warming, oil spills and water pollution, loss of wilderness areas, construction of new power plants, foreign energy dependence and the risk of international conflict over energy supplies. Energy cost savings of approx. 2% can be achieved with each 1o F change in temperature set-point. A 2o F degree change will result in 4% savings- for FY 2011- this change would represent a cost savings of approximately $120,000.

C. WCU's Heating Policy:

Room Temperature

The University is pursuing increased energy conservation, which will result in both cost savings and decreased environmental impact associated with energy production and consumption.

Target (optimum) Temperature - 67°F (currently 70° F)
Acceptable Operative Temperature Range - 65 to 69° F

- Offices will be heated to a target temperature of 67°F from 8:00am to 5:00pm Monday through Friday and classrooms will be heated to this target temperature from 8:00am to 10:00pm Monday through Friday. For off-hours including weekends and holidays, the temperature will be allowed to drop to 55°F before heating occurs.

- Heating can be provided on weekends and off-hours as needed, see section E.
- Due to an inability to precisely control temperatures, some spaces may be warmer/cooler than others, or it may be that limitations in a particular building's central controls will not permit Facilities to control the temperature in a particular room to the acceptable range of 65-69°F. In those situations where an occupied temperature cannot be maintained at 65° or above, Facilities may consider the use of portable space heaters.
- Portable heaters not authorized by Facilities will be removed.
- Please report overheated or under-heated areas to Facilities Work Control (dial x2444 from any campus phone).

Portable Heaters

Historically, portable heaters have been used to offset problems with the effectiveness of the University's heating and cooling systems. Because the use of such equipment offsets the benefits of the University's energy savings, our goal is to eliminate the need for supplementary heat. As a matter of policy only portable heaters authorized and provided by Plant Operations are to be used on campus – this is a matter of fire safety. Use of space heaters will be considered when occupied temperatures of a space are typically below 64°.

D. WCU's Air Conditioning Policy

Room Temperature

The University is pursuing increased energy conservation, which will result in both cost savings and decreased environmental impact associated with energy production and consumption.

Target (optimum) Temperature - w75° F (currently 74° F)
Acceptable Operative Temperature Range - 73 to 77° F

- Offices will be cooled to a target temperature of 77°F from 8:00am to 5:00pm Monday through Friday and classrooms will be cooled to this target temperature from 8:00am to 10:00pm Monday through Friday. For off-hours including weekends and holidays, the temperature will be allowed to reach 85°F before cooling occurs. In areas controlled by the same thermostat there may be an acceptable temperature variance in the range of 73-77 °F.
- Cooling can be provided on weekends and off-hours as needed, see section E.
- Due to an inability to precisely control temperatures, some spaces may be cooler than others, or it may be that limitations in a particular building's central controls will not permit Facilities to lower the temperature in a particular room to the acceptable range of 73-77°F. In those situations, University Facilities will monitor these spaces as well as special purpose spaces and facilities to determine if modification to the policy is warranted.
- An exception to this policy is granted for rooms containing temperature sensitive instrumentation, as temperatures in these rooms will be maintained in accordance with instrument specifications.

Please report overcooled or under-cooled areas to Facilities Work Control (dial x2444 from any campus phone).

E. Off-hours Temperature Control

Our Energy Management and Control System cover many of our campus buildings and allow occupied and unoccupied times to be set according to each building/room's unique use pattern. During off-hours, spaces are placed in unoccupied mode which reduces the supplied air conditioning or heating. To meet University needs/special events that occur during off-hours, unoccupied times can be adjusted either temporarily or permanently. Requests for off-hour heating/cooling should be made to Work Control by a work request (via iServiceDesk) 12:00 pm on the preceding business day.

Many office and classroom thermostats are equipped with a "Manual On" (override) feature that allows occupants who need to use a space during off hours to temporarily reset the controls to occupied mode for up to 90 minutes (which can be repeated to extend the time if needed). For off hour users of these spaces, it is unnecessary to make a request to Work Control to adjust the occupied time of

the concerned space. Buildings with "Manual On" thermostats are:

13/15 University Ave	114 W. Rosedale Ave	201 Carter Drive
210 E. Rosedale Ave	220 E. Rosedale Ave	809 Roslyn Ave
811 Roslyn Ave	850 S. New Street	Anderson Hall
Farrell Stadium	Filano Hall	Lawrence Hall
FHG Library I & II	McCoy Farm House	McKelvie Hall
Messikomer Hall	Phillips	Reynolds Hall
Sturzebecker HSC	Sykes Student Union	

F. Please Help Us

If you see any opportunities for energy savings or wish to suggest an energy conservation project, please contact our Energy Projects Manager, Bruce Wilson (dial 2713 from any campus phone), (bwilson@wcupa.edu). Any questions regarding this policy should be directed to The Executive Director of Facilities Management, Greg Cuprak (dial 3200 from any campus phone), gcuprak@wcupa.edu .

G. Some Additional Energy Conservation Tips

Lights
- Turn off unused or unneeded lights.
- Use natural lighting instead of electric lighting.
- Do not use incandescent and halogen fixtures.

Heating and Cooling
- Keep thermostats at 67°F in the winter and 76°F in the summer.

Windows and Doors
- Keep air conditioned and heated areas closed in.
- Use automatic door switches for handicap use only.

Computers, Monitors, and Printers
- Keep off unless in use.
- Enable power management "sleep mode" features.

Other Equipment
- Electric hair dryers are among the most energy-intensive personal items; minimize their use
- Purchase only energy-efficient models.
- Keep off unless in use.
- Unplug idle charging devices.

APPENDIX -- GREEN REVOLVING LOAN FUND

Concept:

Simply stated, a Green Revolving Loan Fund invests in sustainability projects that decrease resource use, thereby lowering expenses. These operational savings are returned to the fund and then reinvested in additional projects.

Who is forming Green Revolving Loan Funds in Higher Education?

Of the 52 colleges and university with Green Revolving Loan Funds, 24 are public and 28 are private. *Note: Among public institutions, most are the flagship campus within the system.*

How big ($) are Green Revolving Loan Funds in Higher Education?

Funds range in size from $5000 at the College of Wooster (Ohio) to $24.5 million at Stanford University, with an average size of $1.4 million.

What level of ROI can be expected on these funds?

The Sustainable Endowments Institute reports consistent annual returns ranging from 29% (Iowa State University with $3.0 million fund size and 11 projects) to 47% (Western Michigan University with $365,000 fund size and 101 projects). Other examples are Harvard University ($12 million fund size, 185 projects, ROI 30%), Oberlin College ($40,000 fund size, 9 projects, ROI 31%) and California Institute of Technology ($8 million fund size, 13 projects, ROI 33%).

Important Considerations

- Funds must be "loaned" based on well-executed business cases involving measurable, trackable financial benefits. To ensure accountability, a clear baseline cost must be established (to measure post-project run rates against).

- The funds must revolve. Savings generated by reducing operating costs are tracked and used to repay the fund (thus providing capital for future projects). To ensure this happens, a commitment must be made to provide the required financial oversight.

- To initiate the process, the fund needs to be 'seeded" which requires commitment and belief in the concept. The identification and sourcing of funds can be seen as a fund-raising opportunity or as an endowment investment opportunity. University funds have been "seeded" by one or a combination of:
    - Administrative and Departmental budgets
    - Student Fees
    - Utilities
    - Pre-existing efficiency savings
    - Rebates, payments or discounts for demand curtailment
    - Donations or Foundation Grants
    - When new capital funds are introduced into an area that historically has been working within tight budget constraints, the capacity of the staff to complete the additional projects may be limited.

- Project business cases are best written by, and project champions are best sourced from within, the most-impacted organizational unit to prevent the perception of needless intrusion and concomitant resentment-driven dysfunction.

ADDITIONAL BENEFITS OF GREEN REVOLVING LOAN FUNDS:

- **Reduction in energy consumption, resource use, waste generation, and pollution levels.**
- **Increased tracking of energy and water use plus other sustainability data on campus.**
- **Increased collaboration among the offices of Finance, Sustainability and Facilities.**
- **Opportunities for interdisciplinary education and research on sustainability and institutional assessment.**