



# **WATT We're Doing**

*Energy Conservation , Carbon Footprint, Climate Commitment, Sustainability*

# Overview

- Higher education is facing its **greatest challenge** ever in meeting its responsibility to provide **knowledge**, and **educated** citizenry, that will lead to a thriving **sustainable** society
  - *Human progress has disrupted the stability of climate that makes that progress possible*
  - *25% of the world's population consumes 80% of its resources*
- How will we ensure that current and future populations will be healthy and have economic opportunity
- **Higher education** plays a **critical role** in making a sustainable society and a **stable climate a reality**

# Our Commitment Our Charter

- to promote **conservation of energy** in every possible way, and to promote **sustainability** in all university operations
- provide **leadership** and **engage** our **campus**, and our **community**, in ongoing dialog to bring the sustainability philosophy and function to a **high level of action**

# Key Components

- **To build a sustainable future**
  1. Operate on **renewable energy**
  2. Create a **circular production** economy in which the concept of “waste” is eliminated
    - **Waste products become raw materials** or nutrients for the industrial economy
  3. Live off **nature’s income**, not its capital
    - Manage activities in a way that uses resources only at a rate that they can self-regenerate (sustainable forestry, fishing, and agriculture)

# What If

- **USC Aiken were to take a leadership role by**
  - Providing information, knowledge and skills to students to achieve a healthy, just and sustainable society
  - Doing the same for the community
  - Modeling teaching/learning methods for public schools
- **Because students learn from their environment**
  - We Operate with renewable energy as much as possible
  - We Conserve energy to the point that each year our carbon footprint is reduced by at least 5% - ultimately reaching carbon / climate neutrality using carbon offsets
  - We recycle waste to become raw materials
  - We ensure that university activities form a complex web of sustainability and our graduates carry the message with them

# Begin with Ordered Steps

1. What is our **goal** for energy conservation and **cost savings**?
2. What has our conservation strategy contributed to energy savings so far?
3. What is the prospect for **making our goals and objectives**?
4. What strategies are we using to **reduce energy cost**?
5. What is our **carbon footprint** and how do we reduce it?
6. What can our **Energy Conservation & Sustainability Committee** do?
7. How are we doing with the **American College & Universities Presidents' Climate Commitment (ACUPCC)**?
8. What is **Sustainability for our campus**, and how can we **educate our campus**?
9. **What is our path forward?**



# 1. Energy Cost Savings Goal

- **Section 48-52-620, Code of Laws of South Carolina**, requires universities to develop **energy conservation plans** to reduce energy consumption by **1% annually** during fiscal years **09-13**, and a total of **20% by 2020**
- Electrical energy usage (kWh) for **FY09** was reduced by **5.8%** compared to **FY08**
  - **We expect to maintain at least an annual 5% energy conservation level**

# Energy Conservation Plan

- **USCA Energy Conservation Plan** was approved by **SC Energy Office** on 7/28 and a grant award of \$156,984 was issued on 7/30 – the **first college or university award in the state.**
- The 3 funded projects each conserve more than 18% electrical energy for the assigned buildings, continuing progress toward the goal of 20% savings by FY 2020:
  - **HVAC unit replacements**
  - **Controls replacement**
  - **Lighting replacement**

## 2. Main Campus Energy Savings

- Comparing **Main Campus** KWH Usage and Cost Savings for FY 08 VS. FY 09

Month	KWH Use FY08	KWH Use FY09/10	% Reduction \$
May	782,816	646,415	21.1% = \$12,115
June	850,303	705,742	20.5% = \$15,316
July	950,684	764,674	24.3% = \$19,139
August	874,389	714,950	22.3% = \$16,836
September	1,023,801	806,499	26.9% = \$22,596

- During this 5 month time frame, kWh usage was reduced by approximately **23%** with a savings of **\$86,000**
- A 4 day summer work week contributed significantly for June - July

# 3. Making our Goal

- **Beginning FY 2010 we already exceed our goal of 20% by year 2020, at least for 5 months.**
  - **KWH Usage for July = 24.3% less, Aug = 22.3% less, Sept = 26.9% less**
- **Load Shedding at 15 minute intervals will help us keep the on-peak demand and cost down**

A I K E N

# 4. Tactics to Reduce Energy

- **FY 08 demand peak: 987,766 KWH**
- **FY 09 demand peak: 1,023,801 KWH**
- **FY 10 demand peak: 806,499 KWH**
- The highest monthly demand experienced for the year (peak) becomes the **annual peak** - For USCA that is August /September
- The annual peak is used to ratchet up the monthly demand peaks for the **next 11 months**
- The monthly minimum demand charge becomes **80%** of the **highest demand** in the preceding 11 months
- We must reduce that “students returning” Aug/Sept demand peak for a significant cost avoidance

# 'Reduce Peak Demand' Alert

- **ATTENTION CAMPUS – PEAK RATE ALERT**
  - Turn off all lighting in hallways and unoccupied rooms.
  - Turn off any unnecessary lights and equipment not in use
- **BENEFIT:** The cost per KW prior to peak rates is \$4.49 (prior to 1pm)
- The cost per KW after peak rates go into effect is \$14.97 (after 1PM)
- Help us **SAVE** as much as \$20,000 in a given month
  - Raise room thermostat temperature to 76 degrees (Summer)
  - Lower the thermostat to 69 degrees (Winter)
  - **Reduce peak load during on-peak hours**
    - ***Load shedding may be applied in 15 minute increments***

# Strategies to Reduce Energy

- Establish the Energy Conservation and Sustainability Committee
  - Representation from faculty, staff and students
  - Provide ideas, projects, and guidance for conservation
  - Educate campus and community
  - Select and promote “energy conservation heroes”
- Put all Campus buildings on energy management system
- Restrict after hour building usage to 2 buildings vs.14
- Ensure new campus construction meet US Green Building council LEED silver standard
- Ensure that appliance purchasing requires ENERGY STAR
- Use renewable energy (Natatorium water, Crosswalk lights and ATI emergency system solar powered)

# Strategies to Reduce Energy

- Reduce computer energy use with automatic standby mode
- Use infrared motion detectors in classrooms
- Continue lighting retro-fit replacing T-12 with T-8, replace magnetic ballasts with electronic
- Complete campus-wide **HVAC replacements** with energy efficiency units:
  - Child Care Center, Pickens-Salley House, Supply Maintenance, Softball Complex
  - H&SS chillers, Science chiller, Penland cooling tower
- Complete Natatorium heat exchanger efficiency unit

# Strategies to Reduce Energy

- Establish sustainability web page to post campus building energy plans and keep campus aware of sustainability strategies
- **Acknowledge Energy heroes** (recycle mania, energy use reduction, car pooling, hybrid/electric car use, automatic timer hot water heaters etc.)
- Investigate **“renewable energy”** to meet a commitment for purchasing 15% energy from a renewable energy source

## 5. Our Carbon Footprint and ACUPCC

- University membership in American College University President's Climate Commitment (ACUPCC) requires a **Climate Action Plan** Sept. '09
- The USCA Plan was submitted to the ACUPCC Sept. 22
- Our carbon footprint is **10,479 metric tons**
  - Our goal is to reduce and eliminate our footprint and become **Climate Neutral ASAP**
- Our **Greenhouse Gas Emissions** are to be reported every 2 years

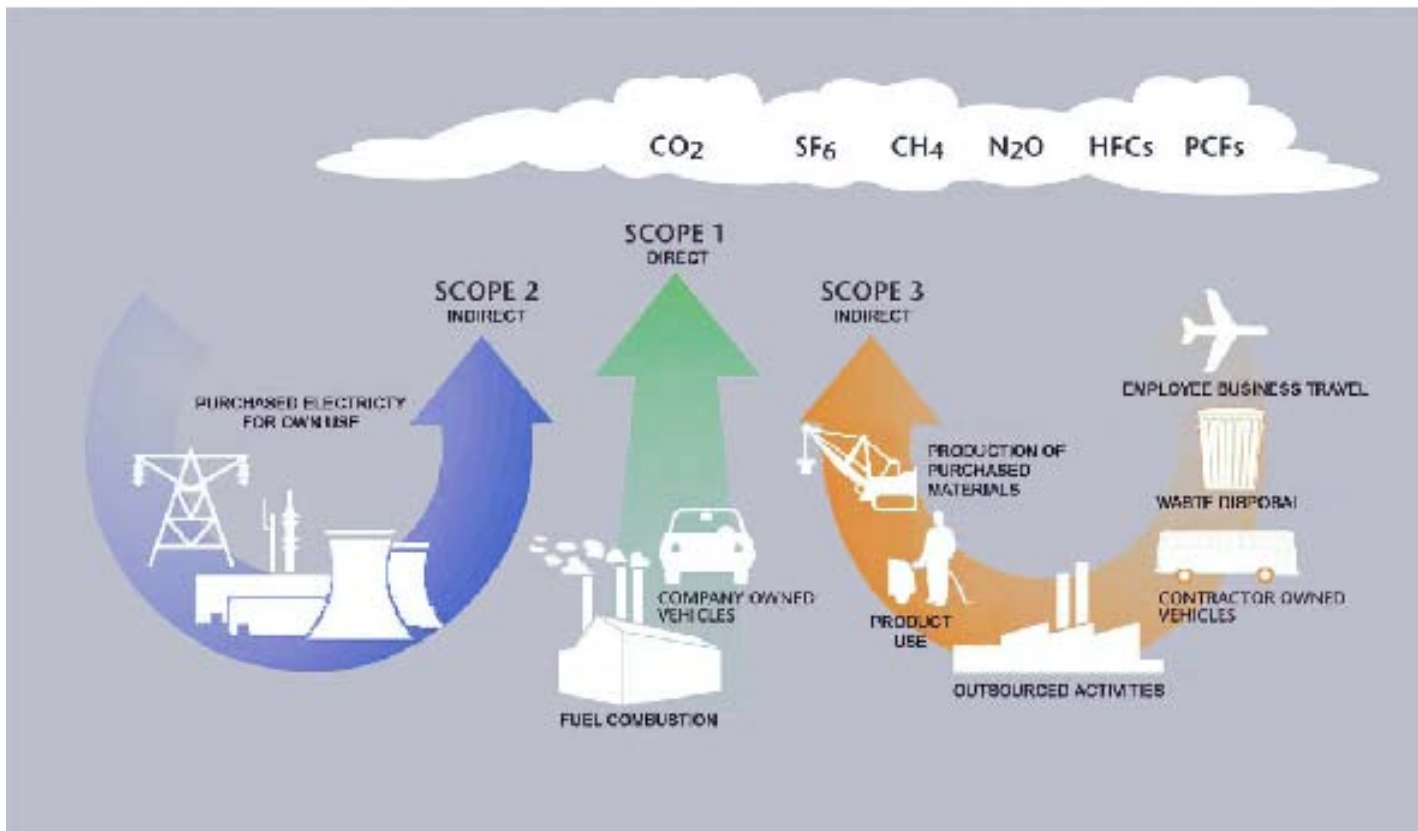
# Reducing Our Carbon Footprint

- Reducing energy purchases (electric) will impact 80% of our carbon footprint
  - Energy conservation is the biggest carbon footprint reducer
- Credits toward reduction will come from “recycle mania,” and reduction of landfill waste
- Reduce Gasoline and Diesel fuel consumption for fleet vehicles – investigate hybrid and later hydrogen fuel
- Take credit for 1000 resident students that no longer need to commute
- Promote car pooling and public transportation
- Educate and involve entire campus

# Carbon Emission Sources

- Purchased electricity
- Purchased heating
- Stationary combustion
- Mobile combustion
- Process emissions
- Fugitive emissions
- Commuting students, faculty, staff
- Air travel, faculty
- Solid waste

# Scope of Carbon Emissions



**Scope 1 Direct:** university vehicles, fuel consumption

**Scope 2 Indirect:** purchased electricity, heat

**Scope 3 Indirect:** employee / student travel, waste disposal

## 6. Energy Conservation & Sustainability Committee

- Given the scope of emissions and our commitment for carbon neutral USCA established the ECSC to:
  - Help gather greenhouse gas emissions data (student commuting, energy use, waste) and monitor/update/reports
  - Brainstorm creative ideas on how to obtain renewable energy sources, reduce waste, conserve energy, go green
  - Educate everyone on campus and enlist their help (students, faculty, staff, visitors)
  - Educate and involve our community – recycle mania, green awareness, business commitments
  - Establish breakout focus groups i.e., waste, dining, electricity conservation, purchasing green, buildings go green, green dorms, renewable energy, carbon offsets (forestry, student and community projects)

## 7. ACUPCC Commitment Includes

- ✓ Initiate the development of a plan to achieve carbon neutrality **ASAP**
- ✓ Create institutional structures to guide plan development
- ✓ Complete a comprehensive inventory of all greenhouse gas emissions
- ✓ Update inventory every other year
- ✓ Develop an institutional Climate Action Plan for becoming carbon neutral
- ✓ Make climate neutrality and sustainability a part of the curriculum and other educational experience for all students

# 8. Sustainability

- *United Nations' World Commission on Environment and Development ...*
- Humanity has the ability to make development **sustainable**
  - Meeting the needs of the present
  - Without compromising the ability of future generations to meet their needs
- ***All energy conservation and carbon neutral projects and activities are sustainable***

# Path Forward

- **Develop a clear concise USCA Policy**
- Establish ECSC focus groups based on **scopes 1, 2, 3** aligned with diverse participant interests
- Provide resources to groups to aid in establishing long and near term goals for conservation (benchmark other universities' conservation tactics)
- List multiple strategies and prioritize
- Focus groups meet, report back to ECSC with objectives and strategies – post info. on web
- ***Thank you for your time, I hope some of these strategies can help with your conservation commitment.***