Campus Resource Conservation Program

Progress Report
Since 2002

Organization Structure

- September 2002 - Full-time energy conservation officer appointed
- Steering Committee formed for Campus Resource Conservation Committee (CRCC)
  - CRCC meets every other month
  - Steering Committee meets every month
- October 2002, energy conservation hotline established
  - (303) 735-6202 and e-mail: energyconservationhotline@fm.colorado.edu
    - good source of suggestions on areas of energy waste
- Work underway on campus-wide energy conservation web site

Goals and Objectives

- Vice Chancellor Tabolt's goal for the campus is to reduce energy consumption by 5% per-square-foot. Benefits will be derived from dollars savings and the reduction of carbon emissions for the CU-Boulder campus.

Water Conservation Projects

- The Boulder campus is committed to water conservation during and after the current drought condition. The following projects will represent over 10% potable water conservation for the campus.
  - Estimated annual potable water usage is 450-million gallons at a cost of $1.8 million.

Water Conservation Projects:

- July 2002 - The Power House implemented a closed-loop piping network
  - Conserves 21-million gallons/year
  - Saves ~$80,000/year
- Research Building System (RBS) to fund project for Joint Institute for Laboratory Astrophysics (JILA). Will use process chilled water in closed-loop piping to cool laser generators
  - Conserves ~25-million gallons/year
  - Saves $100,000/year
  - Cost ~$215,000

Water Conservation Projects

- Use process chilled water in new closed-loop piping network to cool research microscopes in Porter Biosciences
  - Funded and in implementation phase
  - Savings of 1-million gallons water/year
  - Cost ~$5,000
  - Saves $4,000/year

Water Conservation Projects

- Replace water-driven aspirators in Cristol Chemistry with lab vacuum pumps
  - Conserves 10-million gallons/year
  - Cost ~$55,000
  - Savings ~$40,000/year
- December 2002 - Submitted application to Strategic Environmental Project Pipeline (StEPP) for a water conservation project

Energy Conservation Projects

- Concentrated effort on 12,000 faculty/staff and 6,000 student computers to implement PC monitor sleep mode
  - Typical PC consumes 100-150 watts/hour
  - Active monitor uses up to 70% energy
  - Uses <5% in sleep mode
  - Goal is for everyone to enable monitor sleep mode
  - Takes 10-20 minutes of inactivity and wakes with a keystroke or space bar
  - IT support staff have software tool for sleep mode

Energy Conservation Projects

- PC Labs using sleep mode

- More effort to bring all PCs to compliance
  - Savings of 5-6 million kwh possible
  - 7-million lbs CO_2
  - $300K-$450K/year possible

Energy Conservation Projects

- 2002 - Facilities Management completed lighting upgrade using Electronic Ballast and T-8 Lamps
  - >1-million sq. ft. of campus buildings
  - Result on 4-mos. average for Norlin
    - Consumption reduced ~15%
    - Savings of 80,000 kwh/year
    - Savings of $42,000/year
    - 100,000 lbs less of CO_2/year

Energy Conservation Projects

- Result for Regent Hall
  - 23% due to additional removal of excess lights ("de-lamping")
  - Savings of 43,000 kwh/year
  - Savings of $22,000
  - 57,000 lbs less of CO_2
- Continue to monitor the results of this project
  - 800,000 sq. ft. additional lighting upgrade planned for early 2003

Energy Conservation Projects

- Increase temperatures of ~750 water coolers (from 40° to 50°F with no noticeable impact
  - To be completed January 2003
  - Savings ~50,000 kwh
  - Savings of $6,000
  - Savings 66,500 lbs of CO_2/year
- Opportunity to insulate 1,890 ft. of low-pressure steam pipes from Arnett Hall to the Power House
  - Cost of $16,000 will save ~$2,920/year in energy costs
  - This project is funded

Resource Conservation Projects

- _ FTE or outside contractor to focus on examining building thermostat calibration and replacement
  - Will result in building comfort and energy savings
  - Implementation in first four buildings (over 1000 thermostats) estimated cost $30,000 with similar amount in annual savings
  - Approved for funding

Resource Conservation Projects

- Expect response from Pepsi within 60 days to our request for an energy conservation roadmap for 300 campus vending machines
  - Latest technology vending machines or external occupancy sensors could save ~400,000 kwh, $22,000 and 530,000 lbs CO_2 per year

Resource Conservation Projects

- Student Housing plans major upgrading of their lighting, heating/cooling and other energy-inefficient systems
  - Energy Services Company (ESCO) selected for this project
  - Building energy audit, negotiation and contract review are underway

Education and Awareness Campaign

- 15,000 light switch stickers with the message *"when not in use turn off the juice"* were placed in academic and administrative buildings
  - Similar effort underway in student housing

- Several articles have been placed in campus, Boulder, Denver, Longmont and Loveland media
- Distribution of "PC monitor sleep mode" posters placed throughout campus
- In addition, distribution of guide and tip sheets to save energy at home and office

Education and Awareness Campaign

- The energy conservation roadmap and strategy have now been benchmarked with that of SUNY-Buffalo (impressive 20 years of conservation track record).
- This month, we will start intensive communication efforts
  - Face-to-face with building proctors to enlist support and input on building-specific issues
  - Similar communication planned with Department IT support (tier II) staff to seek support for enabling PC monitor sleep mode throughout campus

Near-Term Initiatives

- Xcel Energy Building Recommissioning (building mechanical systems tune-up)
- Exploring this program for specific buildings
- Office/Classroom occupancy study and motion sensor application
  - Results favor classroom and conference room application over offices
  - Will conclude the study and selectively apply this conservation technology

Near-Term Initiatives

- Outside attached building lights
  - Convert to Compact Fluorescent Lamp (CFL)
    - 75% energy savings
    - Longer life
  - Will complete business case and target four buildings to study illumination level before converting other buildings

Near-Term Initiatives

- Lower hot water temperature in buildings
- Of 53 buildings, data indicates at least 30% of buildings have higher than needed water temperatures
- Establish a systematic approach to maintaining acceptable hot water temperatures

Long-Term Initiatives (2003-2004)

- Make building occupants aware of
  - Relationship of budget to energy usage
  - Conservation benefits
- Explore renewable energy/alternative energy for selected campus applications
- Recent technology breakthroughs that reduce cost
- Make alternative energy applications more practical

Campus Resource Conservation Program

See energy waste at CU-Boulder?
Call (303) 735-6202
or hotmail: energyconservationhotline@fm.colorao.edu

Water waste?
Call (303) 735-6202
Or Repair – (303) 492-5522

Too Bright? Go to http://fm.colorado.edu – click on "Delamp Request"
Or Call (303) 735-6202
Or for Repair – (303) 492-5522