

Campus Sustainability at the University of Oregon

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UO Footprint Quiz

Approximately how many paper cups are used at the UO annually?

Half a million

The UO uses enough water annually to cover the Autzen football field to a depth of ___ feet.

~ 450

The UO business-related annual vehicle mileage equals ___ trips around the earth.

104

Each year the UO consumes enough electricity to power ___ Eugene houses

~ 5,400

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

"Sustainable development is a dynamic process in which communities anticipate and accommodate the needs of current and future generations in ways that (balance) social, economic, and ecological systems, and link local actions to global concerns."

Teaching

The diagram consists of five overlapping circles arranged in two rows. The top row contains three circles labeled 'Teaching', 'Research', and 'Public Service'. The bottom row contains two circles labeled 'Operations' and 'Athletics'. The top row circles overlap with each other and with the bottom row circles. The bottom row circles overlap with each other. The top row circles have black outlines, while the bottom row circles have yellow outlines.

Research

Public Service

Operations

Athletics

UO Mission

The UO must

“accept the challenge of
an evolving social, political, and
technological environment by
welcoming and guiding change
rather than reacting to it”

The National Scene

- Over 4,000 institutions of Higher Ed
 - enrollment: 17 million
 - Employees: 3.2 million
 - Revenues: \$270 billion
- 15% of all LEED certified buildings
- 2nd largest sector to buy wind power

UO is no stranger to sustainability

- Oldest Recycling Program
- First Environmental Policy
- LEED Buildings
- Nationally recognized transportation programs
- Curriculum full of opportunities to learn about and practice sustainability
- Strong sustainability research agenda
- Recognized leader in the field

Past projects

- [Sustainability database](#)
- [ECAFF](#)
- Earth tub
- [Surplus property database](#)
- [Sustainability assessment](#)

Sustainability Indicators Report



Energy



Buildings



Transportation



Landscape



Water



Food



Materials
Management



Governance



Endowment
Investment



Greenhouse Gas
Emissions



Academics
& Culture

Assessment Structure

Indicator 7: Energy

Indicator Definition

The energy indicator examines the use of energy at the University of Oregon. There are four main areas of measurement for this indicator: electricity, natural gas, mmBtus (million British thermal units), and renewable energy.

Measurements

Three of the main measurement areas - electricity, natural gas, and mmBtus - are normalized for both campus users and campus square footage. This allows better comparisons over time and between institutions.

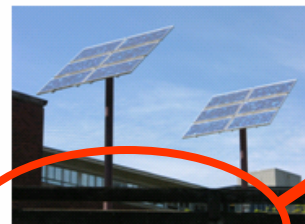
Electricity: Electricity used on campus comes from three sources: it is purchased from the Eugene Water and Electric Board (EWEB), generated at the University's Central Power Station, or generated on campus through photovoltaic arrays. However, only the electricity purchased from EWEB and generated on-campus by solar power is included for this measurement. Up to 30% of electricity can be generated by the Central Power Station but the amount changes from year to year depending on natural gas and electricity prices. Therefore, this indicator by itself is not fully indicative of the electricity use on campus.

Natural Gas: Natural gas used on campus is purchased from NW Natural. The primary use of natural gas is to power the University's Central Power Station. The power station primarily burns natural gas, although on occasion, distillate oil is used as fuel. The power station cools and heats all of campus and can create enough electricity through cogeneration to power up to 30% of the campus.

MmBtus: Btus, or British thermal units, is a common measurement of energy and allows direct comparison of different forms of energy, such as electricity and natural gas. Calculations for this measurement used the following standard conversions: 1 kWh is 3,413 Btus, and 1 therm of natural gas is 100,000 Btus. One mmBtu is 1,000,000 Btus.

This is the best measurement to use when comparing energy use between years.

Renewable Energy: The measurement of renewable energy includes both on-site generated energy from renewable sources (solar) and wind power tags purchased from EWEB. It does not include the renewable energy included within EWEB's standard



Indicator Measurement

Electricity	
kWh/campus user	8,926
kWh/square foot	13.2
Natural Gas	
Therms/campus user	587
Therms/square foot	0.5
mmBtus	
mmBtus/campus user	88.2
mmBtus/square foot	0.13
Renewable Energy	
Percent of electricity used on campus from on-site solar and wind power tags	3.64%
Percent of total energy used on campus from on-site solar and wind power tags	1.25%
On-site generated renewable electricity (solar)	0.09%
Purchased wind power	3.55%

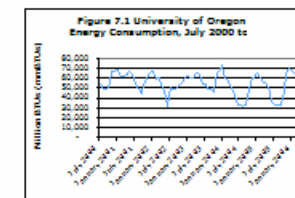
Data for FY 2005/2006

Indicator 7: Energy

service (3% wind, 71% hydropower*) because the goal is to benchmark the University's commitment to renewable energy, independent of what the utility supplies.

University Performance

The University of Oregon's use of electricity and natural gas has become more sustainable since fiscal year 2000-1. Table 7.1 shows that, although electricity use has increased in the last five years, natural gas use has decreased, leading to a 19% percent overall decrease in the mmBtus used per campus user. Figure 7.1 shows total University energy consumption (including natural gas and electricity) over the last five years.



There are a few reasons that might help explain the drop in mmBtus per campus user. First, the number of campus users increased by 7.6% during this period, yet the square footage of campus buildings only increased 4.25%. This indicates that the University square footage did not increase as fast as the number of users, which would lower the mmBtus/square foot also decreased by 21%, which likely indicates that the University's use of energy is more efficient in 2005/2006. Many efficiency upgrades, such as updating fluorescent lighting and installing awnings and fan timers, have occurred in the last five years.

Percent renewable: The University has three solar photovoltaic arrays on campus. A 3 kW system was installed on the EMU in 2002, a 44 kW array was installed on the Lillis Business Complex in 2003, and a 12 kW system was

installed on the Student Recreation Center (SRC) in January 2005. The solar array on Lillis was the second largest in all of Oregon at the time of installation.* For fiscal year 2005/2006, 0.09% of the total electricity used on campus was generated from the Lillis and SRC solar arrays.

Green Spotlight: Energy Efficiency Upgrades

From 2001 to 2003, the University spent \$540,000 on energy efficiency upgrades. These included occupancy sensors, heat pumps, clocks, valve replacements, and, especially, lighting upgrades from T12 to T8 fluorescent lighting. These upgrades save approximately 1.7 million kWh annually, or enough electricity to power 140 average Eugene homes.

The University also purchases wind power through EWEB. A student initiative in 2005 raised student incidental fees by \$0.60 a term to purchase enough wind power to cover the estimated electricity use of the EMU, or 2,280,000 kWh. The University also purchases 100% wind power for the University chancellor's home and 50% wind power for the University president's home. The combination of the solar energy generated on-site and the purchased wind power is 3.6% of the University's electricity use or 1.25% of total energy consumption including natural gas.

Recommendations

- Continue to diversify and expand cost-effective renewable energy production on campus.
- Continue to implement conservation efficiency measures.
- Purchase Surveyor software to centrally power down campus computers.
- Allow students who live in residence halls to buy green power from EWEB.

Key Findings

- Transparent reliable information for: Transportation, Energy, Water, Recycling, & Pesticides
- 1.7 million kWh saved annually
- 45% recycling rate
- 36% of lab chemicals reused
- 4% of electricity is generated by onsite solar and purchased wind power
- 69% of off-campus students and 30% of faculty commute using alternative transportation

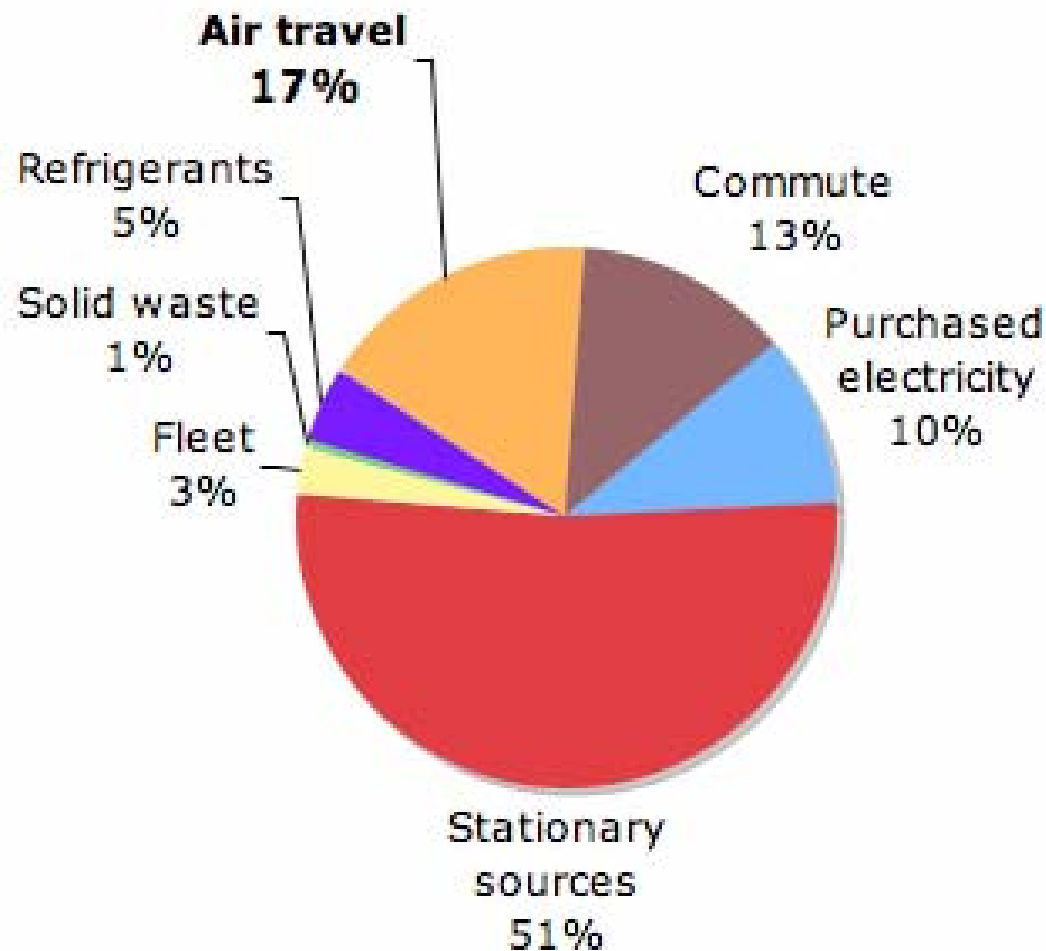
Key Findings

- \$135 million in goods and services purchased last year but no data collected on the “sustainability” of that investment

Current Efforts

- Develop monitoring and reporting procedures
- Communicate the UO story to internal and external audiences
- Identify the proper functions and structure of the Office of Sustainability?
- Plan and host OUS sustainability conference
- Plan UO “Focus the Nation” events
- Develop a Climate Action Plan

University of Oregon Estimated True GHG Emissions, 2004



What's required

- Massive efficiency investments
- Incentives to induce behavior changes
- Purchase carbon offsets for:
 - Natural gas consumption
 - Athletic and academic travel

Pipe dreams?



Pipe dreams?

