

University of Idaho

**PREPARED BY CORE 175: EARTH AND OUR PLACE ON IT
TAUGHT BY: ED KRUMPE
SPRING 2011**

**UI MOSCOW CAMPUS
SUSTAINABILITY ASSESSMENT**

Energy

- 1 Per Capita Energy Consumption
- 2 Energy supply efficiency
- 3 Green House Gas Emissions
- 4 Energy Mix

Energy System



PER CAPITA ENERGY CONSUMPTION

One simple way to measure indications of how we are doing is the simple math. We can check to see how we are doing based on how much energy is used total divided by the student population and compare them to other schools.

How Are We Doing?

The UI also currently gets all of its electricity from Avista.

While the UI has steadily been decreasing its energy use, student enrollment has also been decreasing. This affects the overall per capita numbers.

Did You Know?

The UI is using 5% less energy than it did in 2003.

Energy System



PER CAPITA ENERGY CONSUMPTION

Recent Accomplishments

LEED silver building policy – This is a policy adopted in 2008 that requires all new buildings and major remodels meet this building standard which is designed with green building methods.

Energy savings performance contract - UI hired McKinstry Co. to implement \$35 million in energy conservation improvements. Some of these improvements involve upgraded lighting and HVAC systems. The goal of this contract is to reduce total energy consumption by 25%

Educating and informing the campus – General information provided to the public around campus has become a goal to inform students of the vital role sustainable energy plays.

Sustainability Revolving Loan Fund – This is basically a loan that is meant to go into sustainable projects, to be repaid with the savings the projects produce.

Energy System



PER CAPITA ENERGY CONSUMPTION

Opportunities

NEXT FEW YEARS

Public Awareness Campaign - Educate individuals on energy consumption per person at the UI, and provide specific steps detailing how individuals can reduce their energy consumption at UI and at home.

ENERGY STAR purchasing standards - Implement a university-wide purchasing policy that mandates that all electronic devices purchased are ENERGY STAR approved.

Electricity Conserving Technologies - Assess opportunities for electricity conserving technologies to build upon the infrastructure changes being implemented under the Performance Contract. Examples include motion detector lighting switches, day lighting controls and more aggressive energy saving settings in computer labs.

Increasing the Revolving Loan Fund –Recruit additional funding for the Revolving Loan Fund to provide long-term funding for additional energy efficiency and renewable energy projects.

Opportunities

LONG TERM

Monitoring Resources – In order for all UI personnel to better understand energy usage and the environmental impacts of each building, stations should be placed in each building that include a screen displaying the resource metrics of the building. These screens would provide details about the electricity, natural gas, and steam being used by the building and give some indication of how efficiently the building is performing. Also, the display would show the amount of greenhouse gases being released as a result of building operations in a given day.

Additional energy conservation projects – Long-term goals to reduce energy usage must also focus on behavioral changes. An example behavioral change to reduce unnecessary energy usage is having custodial staff turn off lights in bathrooms and other areas after cleaning.

Energy System



GREENHOUSE GAS EMISSIONS

How Are We Doing?

In September of 2008, UI published a greenhouse gas inventory providing emissions data for 2005-2007. The report can be found at the University of Idaho Sustainability Center website, uisc.uidaho.edu. In accordance with the Greenhouse Gas Protocol UI reports its emissions in three distinctive categories referred to as scopes. Scope 1 emissions include direct GHG emissions from sources owned or controlled by UI: natural gas usage, UI owned vehicle fuel usage, and refrigerant leakage. Scope 2 accounts for GHG emissions associated with the generation of purchased electricity. Scope 2 emissions physically occur at the facility where electricity is generated. Scope 3 allows for the treatment of all other indirect emissions. Scope 3 emissions include those from sources not owned or controlled by the university, or other sources not included in Scopes 1 and 2: waste, commuters, air travel, and animals. Figure 1 shows a breakdown of emissions by scope. Electricity related emissions dominate the UI GHG Inventory making up 67% of emissions in 2007.

Did You Know?

The University of Idaho is one of the leading sustainable universities in the northwest.



Recent Accomplishments

Publication of GHG Inventory – To meet its obligation under the American Colleges and Universities Presidents Climate Commitment (ACUPCC) the University of Idaho published a greenhouse gas inventory in September, 2008.

UI Joins CCX – UI is one of 8 Universities worldwide who are members of the Chicago Climate Exchange. Through its voluntary membership in CCX, UI is legally bound to reduce GHG emissions through emissions trading and offsets. UI is committed to reduce greenhouse gas emissions by 6% by 2010 from a fiscal year 2001 baseline. To reach this target, cumulative annual reduction goals of 1.5% from the baseline must be met starting in 2007. If the university fails to meet annual targets it will buy carbon credits to make up the shortfall; on the other hand, if the university exceeds reduction targets, it can sell credits on the carbon market.



Opportunities

NEXT FEW YEARS

Update GHG Inventory – The GHG Inventory needs to be updated annually. In addition, student projects are determining the GHG footprint of several satellite facilities, which need to be added to the inventory. Finally, once the CCX audit is completed, CCX information needs to be added in as well.

Develop GHG Reduction Plan – Development of a plan outlining steps for UI to become carbon neutral is underway, and expected to be completed by September 2009.

Determine offset potential of UI owned lands – UI owns over 8,000 acres of forested lands. These lands should be inventoried for their potential to offset UI emissions.

Complete GHG Inventories and Plans for all Satellite Campuses – Determining emissions from satellite campuses is necessary to get an accurate

Energy System



ENERGY MIX

How Are We Doing?

The University of Idaho uses electricity, biomass, natural gas and vehicle fuel to provide a comfortable environment for students, faculty, and staff and for transportation. Most electricity comes from Avista Utilities via two metered feeds located at the east and west edge of campus. A number of buildings are separately metered by Avista, but these account for less than 2% of campus electricity use. The majority of the campus heating and cooling needs are met by burning wood chips in the UI Steam Plant. The steam plant burns wood chips in a biomass boiler to generate steam. The steam is distributed throughout campus by a comprehensive steam tunnel system that heats and cools about 75% of buildings on campus. The rest of campus heating and cooling needs are met by a source of energy used at UI: natural gas. A natural gas boiler in the UI steam plant provides steam at high use times when the biomass boiler cannot meet the load requirements. Natural gas is also used to heat building connected to the steam tunnel system and in research laboratories. A fourth energy source is fuel for UI own and operated machinery and vehicles.



Recent Accomplishments

Solar lights – UI recently installed solar lights along a high use pedestrian path on the north side of campus (Figure 1). The solar lights are visible from the major highway that runs along the north end of campus, making them visible to travelers passing through Moscow.

Vandal trolley – The vandal trolley is a motorized trolley that utilizes B20 biodiesel fuel. The trolley began operations in spring 2000 as a vehicle available for special events on campus. Starting in 2008, the trolley is used as a shuttle service during Vandal football home games.

Vandal access shuttle – This shuttle became operational in 2007 to increase mobility for disabled students on campus. This shuttle runs on B5 biodiesel, increasing mobility while reducing emissions.

Electric vehicles – In September 2008, UI Facilities and Management Operations purchased 2 electric vehicles. These electric vehicles will be used for transporting facilities employees around campus.

Energy savings performance contract - UI recently hired McKinstry Co. to implement \$35 million in energy conservation improvements. The installation of a new chiller tower will enable less dependence upon carbon intensive energy sources to cool and circulate chilled water at UI.

Energy System



ENERGY MIX

Opportunities

NEXT FEW YEARS

Renewable energy feasibility studies – All university of Idaho property needs to be analyzed to determine the feasibility of building different renewable energy facilities. In order for UI to reach carbon neutrality it must reduce the amount of energy from carbon-intensive fuel sources.

Clean Energy Implementation Plan – Developing a clean energy implementation plan will enable UI to have a clear vision of how it will reduce its energy related emissions into the future.

Public awareness campaign – Disseminate information to the campus and community as a whole concerning the benefits of renewable energy. An educated public is more likely to support renewable initiatives on and off campus.

Opportunities

LONG TERM

Expand steam tunnels and biomass capabilities of UI steam plant– Currently the biomass boiler does not provide steam for all buildings on campus. The biomass boiler does not generate enough steam during peak times to meet the demand of buildings connected to the steam tunnels. Also about 25% of the campus buildings are not connected to the steam tunnels. Expanding the capacity of the biomass boiler and increasing the percentage of buildings connected to the steam tunnels will reduce emissions related to energy usage. Also, supplementing woody biomass with other biomass sources will ensure the long term feasibility of the biomass boiler.

Increase renewable energy generation – UI should depend less on Avista generated power, and instead investing in or developing our own renewable generation facility.

Co-generation Plant – Transform the existing UI steam plant into a cogeneration facility. The plant would produce electricity and still generate steam that could continue being used to heat and cool the campus.

Energy System



ENTER "SYSTEM" NOTES

Staff interviewed in the assessment of this system (bold indicates primary contributors):

NAME	CAMPUS ROLE	INDICATOR(S) OF RELEVANCE
Insert name here	i.e.: manager, Campus Recycling & Refuse Services	Enter "indicator" i.e.:Wastewater