



*2007-2008 Sustainability Indicators Report*  
Willamette University

Willamette University Sustainability Council  
October 22, 2008

# Introduction

Willamette University defines itself by its service to the local and global community. From its inception as an educational institute on the frontier in 1842 to its present role as one of the nation's top liberal arts colleges, the students, faculty, and staff have "walked the talk" of the school's motto, "**Not unto ourselves alone are we born.**" Over the past several years, students, faculty, and staff have had an ongoing and constructive conversation regarding ecological and social sustainability, and significant steps towards sustainability have already occurred. As we approach the future, ecological and social sustainability are a focal point for re-conceiving not only our educational mission but also our service to and responsibility for our city, state, and world.

But are we living the values that we espouse? We hope that the following indicators report will provide a starting point to engage the Willamette community in evaluating this important question.

## What is an indicators report?

According to the organization Sustainable Measures:

*An indicator is something that helps you understand where you are, which way you are going and how far you are from where you want to be.*<sup>1</sup>

This report presents a collection of discrete pieces of information that, in a variety of ways, characterize our community, its structure and impact during one year. These pieces of information are our sustainability indicators, selected by the Willamette community and calculated by the Sustainability Council.

As the quote above suggests, we hope that tracking these values over time will help indicate whether we are moving closer to becoming a model of what it means to live and work sustainably.

## How were the indicators selected?

In August 2005, a group of approximately forty Willamette students, staff, faculty and administrators met for the inaugural Sustainability Retreat. The goal of this meeting was to begin constructing a vision of sustainability that meshes with Willamette's distinctive culture. Participants produced a set of discussion papers that articulated some basic principles of sustainability<sup>2</sup>.

Building on this vision, participants at the second Sustainability Retreat (August 2006) developed an institutional assessment process fitted to Willamette's unique circumstances. This group identified a set of over 150 potential indicators<sup>3</sup>, from which the Sustainability Council later selected twenty-one to be measured and reported on each year:

1. Sustainability policies and procedures
2. Carbon footprint
3. Electricity consumption
4. Heat energy consumption
5. Parking area
6. Water consumption
7. Percent local food
8. Percent sustainably/produced harvested food
9. Printer/copier paper consumption
10. Waste paper consumption
11. Total solid waste

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<sup>1</sup> <http://www.sustainablemeasures.com/Indicators/WhatIs.html>

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<sup>2</sup> <http://www.willamette.edu/councils/sustainability/archives/retreat2005.htm>

<sup>3</sup> <http://www.willamette.edu/councils/sustainability/archives/retreat2006.htm>

12. Recycling rate
13. Hazardous cleaning chemicals
14. Hazardous cleaning grounds chemicals
15. Workplace injuries
16. Hazardous materials spills
17. Employee wage distribution
18. Student body diversity
19. Faculty diversity<sup>4</sup>
20. Course with sustainability theme or component<sup>4</sup>
21. Willamette faculty presentations/papers sustainability research<sup>4</sup>

### **Why did we choose these indicators?**

Willamette is not satisfied to conceive of “sustainability” as merely an ecological or economic concept. Without marginalizing the significance of achieving ecological and economic sustainability, the Willamette community is dedicated to advancing a more just society, both now and for future generations. Thus, Willamette University’s sustainability initiative, as outlined by President Lee Pelton, incorporates the “four Es” of sustainability: Equity; Environment; Economics; and Education.

Of these four areas, the economic health of the university is most carefully and consistently tracked<sup>5</sup>. Thus, we chose indicators that cut across a broad range of University activities and will help us think carefully about our equity, environmental, and educational impact. The body of the report includes a more detailed explanation and justification of each individual indicator.

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<sup>4</sup> These indicators were not measured for the first report, but will be measured in future reports.

<sup>5</sup> Through the budget/expenditure reporting cycle.

### **On the limitations of this report**

It is useful to prepare the reader for some of limitations of this report. Firstly, in order to keep the report to an accessible length, we have consciously chosen to focus on university-wide aggregate indicators. Thus, for example, we do not present information about how and where printer/copier paper is being used, just the total amount used over the course of the year. Secondly, although Willamette has a second, smaller campus in Portland, many indicators (all the utilities indicators, for example) focus only on the Salem campus.

In addition, several indicators were not calculated for this initial report. Indicators 19-21 (covering faculty diversity and sustainability education) are missing from this report but will be included in future iterations.

More generally, it might accurately be said that the list of indicators leaves out much that is important. By its nature, *no* set of indicators could ever be comprehensive. It would not be possible to completely characterize the structure and impact of our community no matter how many indicators we include, nor how many pages we devote to the report. Rather than a comprehensive characterization, we hope that we have selected our indicators thoughtfully enough for them to be indicative of our current state and our progress over time.

Finally, this report does not include performance goals or recommend specific changes. In this first report, we simply present information and a context in which to understand and evaluate it.

We recognize that, due to its limitations, this report may raise more questions than it answers. However, we would not regard that as an unfortunate outcome. After all, encouraging the Willamette community to ask whether we are moving in the right direction is one of our primary goals!

## **Thanks and Acknowledgements**

The report was written on behalf of the Sustainability Council by Nathan Sivers Boyce (Economics department and Council Chair) and Wendy Petersen-Boring (History department and Council Member).

Completing the report would have been impossible without the active involvement of many people and departments on campus. For their help collecting data, we would particularly like to thank:

- Jim Bauer, Vice President of Auxilliary Services;
- Gary Grimm, Mike Ryan, and Dan Craig from Facilities;
- Jim Andersen from Grounds;
- Kindra Jordan and Mika Yamanaka from the Travel Center;
- Stacy West from the Office of International Education;
- Keith Grimm and Suzie Torre from Human Resources;
- Ross Stout and Rich Dennis from the office of Safety;
- Marc Marelich from Bon Appetit;
- Jeremy Sparks from WITS;
- Mike Moon from Institutional Research; and
- Laura Westmeyer and Hannah Wells undergraduate EES majors.

The production of this report was truly a community project!

# Indicator #1: Willamette policies & procedures

## Definition

Policies and procedures in place in the following areas:

- Purchasing
- Construction, remodeling, and renovation
- Equipment maintenance
- Indoor air quality
- Water quality
- Workplace injury reporting
- Hazardous materials (spills, storage & disposal)
- OSHA compliance

## Why this indicator?

We begin with a snapshot of Willamette policies and procedures because these provide a framework that shapes many of the important community outcomes.

## What is happening at Willamette?

1) *Purchasing*: Purchasing at Willamette is highly decentralized and is not guided by a general purchasing policy. Individual departments or purchasing officers make their own decisions.

There are a few notable exceptions to this decentralized scheme. Printer/copier paper is purchased primarily through the central purchasing office, which purchases paper certified by Forest Stewardship Council and the Rainforest Alliance to be sustainably produced. Carpet that contains recycled fiber and is designed to be easily recycled is also centrally purchased. However, these purchasing decisions are not part of formal policy statement or a written commitment.

2) *Construction, remodeling, and renovation*: In 2003, the Willamette Board of Trustees endorsed green building for all

new construction and renovations. We will design and construct to LEED silver standards or better on all future projects, however we may not seek certification.

- 3) *Equipment maintenance*: Equipment maintenance occurs on what might be described as a “semi-formal” basis. Maintenance is performed as needed or proactively at the discretion of facilities department. Spreadsheet records of maintenance dates and activities are maintained by supervisors. However, there is currently no formal schedule for preventive equipment maintenance.
- 4) *Indoor air quality*: Willamette’s indoor air quality standards are dictated by OSHA<sup>6</sup> and ASHRAE<sup>7</sup> standards as well as building and energy codes. WU does not identify or enforce any targets independent of these standards.

Standards are enforced through the design and commissioning process. Architects and engineers are employed to design systems that will meet these standards. Before a building can be occupied, the systems are audited to assure that they are performing as expected. However, there currently no system in place to test air quality periodically after a building is commissioned.

- 5) *Water quality*: Willamette obtains water from City of Salem Public Works (CSPW). Water quality standards for drinkable water are set by the federal government via the Clean Water act, and the CSPW is responsible for monitoring water quality and

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<sup>6</sup> Occupational Safety and Health Administration < <http://www.osha.gov/>>

<sup>7</sup> American Society of Heating, Refrigeration, and Air Conditioning Engineers < <http://www.ashrae.org/aboutus/>>

ensuring that it meets federal standards.<sup>8</sup> WU does not identify or enforce any targets independent of these standards, nor does it independently monitor the quality of water coming from CSPW.

- 6) *Workplace injury reporting:* Workplace injuries are either reported directly the Human Resources office or reported to a supervisor and then passed on to HR. Information about reporting procedures along with the forms needed to file an incident report and/or workers compensation claim can be found in the HR office or online at:

<http://www.willamette.edu/dept/hr/safety>.

7) *Hazardous materials:*

- a. *Inventory & Storage:* Safe storage of hazardous materials is regulated by the Oregon State Fire Marshal's office. Willamette University via the Office of Campus Safety is required to report the type and quantity of each product containing hazardous materials to the Marshal's office. The Marshal's office uses this information to determine which of the storage arrangements to review, inspects them, and either certifies them as safe or recommends changes to the arrangements.

While the Office of Campus Safety reports on all hazardous materials of which it is aware, there is no policy or procedure in place for performing periodic campus-wide audits to collect this information. The OCS relies on individual departments to voluntarily submit the quantity, location, and material safety data sheet (MSDS) for any product they are using and storing. This expectation is not expressed in writing, and it is unclear that all departments are aware they

should be providing such an inventory. Thus, it is unclear that a comprehensive inventory is compiled and presented to the Marshal's office.

- b. *Disposal:* Current policy assumes that it is the responsibility of employees to know the characteristics of the chemicals with which they are working and dispose of them safely and appropriately. In cases where the employee does not know how or is unable to do so, he or she should contact the Office of Campus Safety for assistance. This policy is not expressed in writing, and there is no policy or procedure in place to make a record of these disposals.
- c. *Spills:* Current policy states that "it is the responsibility of employees to know the characteristics of the chemicals with which they are working and take the proper precautions to protect themselves and the community by containing a spill." It also states that any chemical spill should be reported to the Office Campus Safety. This policy is made available in Campus Directory and Emergency Reference Guide. A paper copy of this guide is distributed to all students, faculty and employees each year. The Emergency Reference Guide is separately available for download from the Office of Campus Safety website:

<http://www.willamette.edu/dept/safety>.

- 8) *OSHA compliance:* Determination of Willamette's compliance with OSHA health and safety regulations is handled by the Office Campus Safety (OCS). Safety officers check buildings and public areas for obvious safety hazards and can arrange to have an OSHA consultant examine a particular area and make recommendations (free of charge). Inspections of this kind occur irregularly upon request. University Center, Gatke Hall, the Bush Park Stadium have all been recently reviewed and the Bistro soon will be. Currently there is no policy or practice of undertaking routine, campus-wide compliance audits.

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<sup>8</sup> CSPW makes this information publically available at:  
[http://www.cityofsalem.net/departments/spubwork/operations/water\\_services/index.html](http://www.cityofsalem.net/departments/spubwork/operations/water_services/index.html)

## Indicator #2: Willamette's carbon footprint

### Definition:

The total quantity of greenhouse gases emitted as a direct or indirect result of operating Willamette University.

### Why this indicator?

Greenhouse gas emissions are one of the primary sources of impact that Willamette University has on the environment. Once emitted these gases concentrate in the earth's atmosphere creating a gas blanket that threatens to disrupt climates on a global scale. The more gases emitted, the thicker the blanket, the greater the risk of disruption. The consequences of this disruption are likely to be experienced most intensely by future generations in some of the poorest parts of the world. So the size of our carbon footprint has both environmental and equity implications.

Willamette's (or any other institution's) carbon footprint in a given year is determined by a variety of factors, including the number of people (faculty, staff, and students) associated with University operations and activities—especially the number of students we are serving, the number and size of buildings to which we are providing heating, cooling and electricity, and the way in which we choose to spend money. To emphasize these connections and provide a useful means of comparing between schools, we present emissions per person (faculty, staff, and students), emissions per student, emissions per 10,000 squarefeet of building space, and emissions per \$10,000 of operating expenditure in addition to the total emissions.

**17,934 MT eCO<sub>2</sub> total**

- 5.52 MT eCO<sub>2</sub> per person
- 7.06 MT eCO<sub>2</sub> per student
- 12.8 MT eCO<sub>2</sub> per 1000 squarefeet
- 1.89 MT eCO<sub>2</sub> per \$10,000 spent

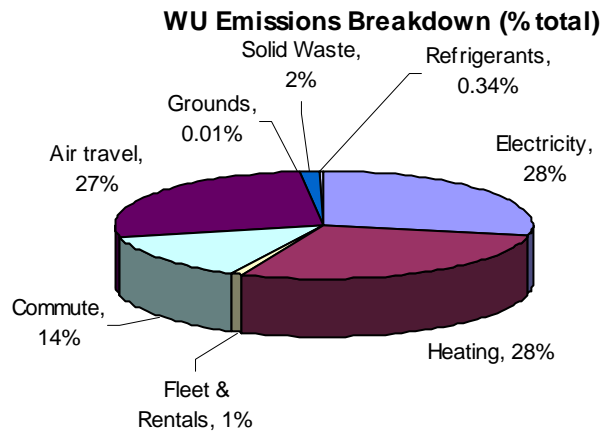
### How was it measured?

Data were collected on:

- electricity and natural gas consumption;
- gasoline and diesel consumption by campus fleet and rental vans;
- solid waste sent to landfills;
- refrigerant releases;
- fertilizer use;
- university related air travel including travel to and from off campus study locations;
- local commuting by faculty, staff and students.

These data were entered into the Clean Air-Cool Planet Carbon Calculator, which translated the activities into emissions of the six internationally-recognized greenhouse gases.

In order to add-up different gases, each gas was translated into its "carbon equivalent," the amount of carbon dioxide emissions required to produce the same climate disruption risk. Results are expressed in metric tons (1000 KG) of carbon equivalent or MT eCO<sub>2</sub>.



### What does it tell us?

- Willamette’s footprint is comparable to (perhaps smaller than) those of other schools of similar size and structure.<sup>9</sup>
- The vast majority of emissions come from three sources: electricity consumption (28%); heating (28%); and transportation (41%).
- Local commuting is a significant source of emission (14%) but generates only half the emissions of long-distance air travel (27%).
- The largest source of air travel emissions was travel by faculty and staff (17% of total) followed by student travel to and from off-campus study locations (8% of total) and other student travel (2% of total).
- The impact of local commuting by students is about the same as the impact of student travel to and from off-campus study locations (roughly 8% of total emissions each).

### What is happening at Willamette?

- In 2003, the board of trustees endorsed green building guidelines to be used for all new construction and renovations. All new building will be built to LEED silver standards at a minimum.
- Photovoltaic panels on were installed on Kaneko Hall, and a 40-kilowatt photovoltaic system will be installed on the new Ford Academic Building. Small-scale hydroelectric generation on the campus stream is also being explored, as is wind power. We are beginning retro-commissioning process for HVAC and lighting control systems that will restore or raise levels of efficiency.
- Gas-powered work vehicles are being replaced with electric vehicles and hybrids are used for campus security vehicles.
- A campus bike shop provides free services to the community including free long and short term bike “rentals,” rider safety training and equipment, and maintenance and repairs. All university employees and students can ride on the city transit system for free, and the university also provides an a “emergency ride home” service for all mass transit and non-auto commuters. A car-sharing program is available to all students, faculty, and staff. A rideshare webpage connects carpoolers, and the university provides a “qualified mass transit subsidy” for those car-pooling or using inter-city mass transit.
- In April of 2007, President Lee Pelton signed the American College and University Presidents Climate Commitment, committing the University to become climate neutral. During the coming year, the Sustainability Council will coordinate the development a strategic plan to reach this goal.

<sup>9</sup> For more detail, please see the 2007-2008 GHG Inventory report.

## Indicator #3: Electricity consumption

### Definition and measurement:

Total electricity use, measured in kilowatt hours per square foot of building space.

### Why this indicator?

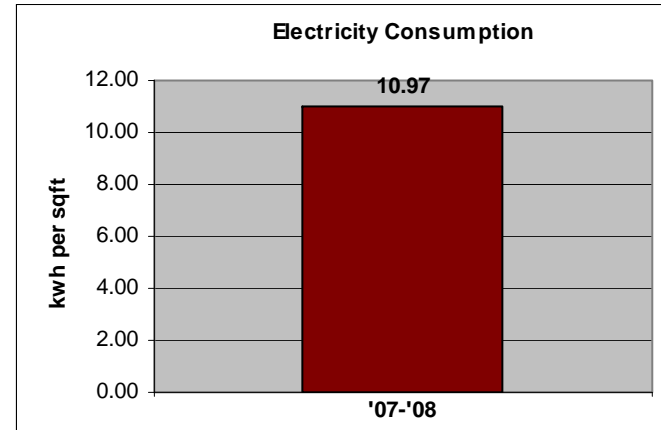
28% of Willamette's carbon emissions come from electricity consumption. Reducing electricity use is a key step towards becoming carbon neutral in compliance with Willamette's commitment to the American College and University Presidents Climate Commitment (ACUPCC). Per ft<sup>2</sup> indicates efficiency changes as well as total use changes. In addition per ft<sup>2</sup> data is what planning and construction companies use and is therefore a more practical measurement.

### What are other colleges doing?

Eighteen U.S. colleges and universities have offset 100 percent of their greenhouse-gas emissions from electricity through renewable energy certificates. Western Washington University, the University of Central Oklahoma, Evergreen State College, Concordia University Texas, and Unity College use 100 percent renewable energy to power their operations. In 2007, Warren Wilson College in North Carolina purchased renewable energy credits that offset 100 percent of campus electricity use.<sup>10</sup>

The University of Washington's overall energy use has decreased (by 10 percent between 2000 and 2005) despite campus growth. All the university's energy comes from renewable sources (including hydropower), and 14 buildings are

<sup>10</sup> Sierra Club, Sept/Oct 2008, "Cool Schools."  
<http://www.sierraclub.org/sierra/200809/cool-schools/cool-ideas-list.asp>



slated for construction or renovation in compliance with LEED standards.<sup>11</sup>

St. Olaf College is constructing a 1.6 MW wind turbine to power its campus. The turbine's total cost will be \$1.9 million, but \$1.5 million will be funded through grant money from Xcel Energy. Generating 6 million kilowatt hours annually, the turbine will supply one third of St. Olaf's energy requirements. The associated emission offsets are expected to bring the college into compliance with the Kyoto Protocol.<sup>12</sup>

<sup>11</sup> Sierra Club, Sept/Oct 2008, "Cool Schools."  
<http://www.sierraclub.org/sierra/200809/cool-schools/cool-ideas-list.asp>

<sup>12</sup> New Energy for Campuses: Energy-Saving Policies for Colleges and Universities. The Apollo Alliance  
[http://www.sustainability.ucsb.edu/\\_client/pdf/pr/NewEnergy.pdf](http://www.sustainability.ucsb.edu/_client/pdf/pr/NewEnergy.pdf)

The University of Vermont supplies 60 percent of campus power needs with renewable energy.<sup>13</sup>

Despite a 27% increase in students since 1988-1999, the University of British Columbia has reduced energy in core and ancillary buildings by 14%, representing a financial savings of \$3.4 million, and CO2 emissions from buildings by 13%. Since 1990, they have reduced CO2 emissions per square meter of building area by 30%. The energy reduction was achieved through ELECTrek lighting upgrade, ECOTrek infrastructure upgrade, green buildings, the Sustainability Coordinator program, and student and staff efforts.<sup>14</sup>

As an educational component of its comprehensive energy plan, The University of British Columbia, Vancouver maintains a webpage calculator on its Sustainability Office webpage that displays running totals indicating real time use for kWh of electricity used and saved, sheets of copy paper used and saved, litres of water used and saved, tones of green house gas emissions reduced, and dollars saved.<sup>15</sup>

The Oregon Institute of Technology has been tapping geothermal energy since 1964. OIT's direct use system uses three geothermal wells between 1,300 feet and 1,800 feet deep. These wells supply all heating needs for the 11 building, 600,000 square feet campus. Additionally, the wells meet some of the campus cooling requirements. OIT's geothermal system costs \$35,000 to operate each year. This is considerably better

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<sup>13</sup> Sierra Club, Sept/Oct 2008, "Cool Schools."

<http://www.sierraclub.org/sierra/200809/cool-schools/cool-ideas-list.asp>

<sup>14</sup> University of British Columbia, Sustainability Office, Annual Report, 2006, <http://www.sustain.ubc.ca/>

<sup>15</sup> University of British Columbia, Sustainability Office, Annual Report, 2006, <http://www.sustain.ubc.ca/>

than the operational cost of a natural gas fed boiler at \$250,000 to \$300,000 per year.<sup>16</sup>

The University of Vermont electricity usage in 2000 included 20% renewables (small-scale hydroelectric, wood, wind and landfill methane), 11% natural gas, 10% hydroelectric, 9% fuel oil, 2% coal and methane, and 48% nuclear power.<sup>17</sup>

Students at Tulane University equip dorm rooms with energy star appliances as part of a demonstration of what individual students can do to save energy.<sup>18</sup>

The footprint of higher education in the U.S., a \$317 billion industry, is growing: enrollment between 2000 and 2013 is expected to increase by 23%. If every one of the 4000 campuses in the U.S. used 100% clean energy, it would nearly quadruple the current renewable electricity demand in the U.S.<sup>19</sup>

The University of British Columbia purchases enough Green Power Certificates to power two major campus buildings. For each Green Power Certificate the University purchases, BC Hydro ensures that an equal amount of new "green electricity" enters the grid. The green electricity is produced in BC at facilities such as small hydro

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<sup>16</sup> New Energy for Campuses: Energy-Saving Policies for Colleges and Universities. The Apollo Alliance

[http://www.sustainability.ucsb.edu/\\_client/pdf/pr/NewEnergy.pdf](http://www.sustainability.ucsb.edu/_client/pdf/pr/NewEnergy.pdf)

<sup>17</sup> Tracking UVM: An Environmental Report Card for the University of Vermont for the years 1990-2000.

<sup>18</sup> Energy Efficient Dorm Room Appliances, Tulane University, 5 October 2004. <http://www.nwf.org/campusEcology/files/Tulane> University. pdf

<sup>19</sup> New Energy for Campuses: Energy-Saving Policies for Colleges and Universities. The Apollo Alliance

[http://www.sustainability.ucsb.edu/\\_client/pdf/pr/NewEnergy.pdf](http://www.sustainability.ucsb.edu/_client/pdf/pr/NewEnergy.pdf)

projects and landfill-gas recovery projects that meet social and environmental impact criteria.<sup>20</sup>

- Replacement of old single glazed windows with high efficiency, low-E, argon filled double glazed windows.

### **What is Willamette doing?**

- Throughout the campus, energy reduction and management technologies have reduced total energy costs per square foot from \$1.98 in 2001, to \$.78 in FY 2003-2004, despite significant increases in per unit energy costs.
- Willamette's average energy consumption for buildings over 5000 square feet (sqft) is now less than 11.8kwh/sqft/year-below the national "EnergyStar" efficiency standard of 12Kwh/sqft/year, and significantly below the national average of 19.6Kwh/sqft./year.
- Replacement of gas-powered work vehicles with electric vehicles
- Adding additional insulation when a roof is replaced.
- High efficiency boilers and chillers are installed in new construction and retrofits.
- DDC energy management system that is installed throughout campus includes capabilities of night setbacks, building night flushes, free cooling, occupancy scheduling, and early problem detection.
- Capacitor banks installed on motor control centers to improve power factor.
- Exit lights have been retrofitted to high efficiency LED's.
- Lighting controls have been installed in all new construction including lighting sweeps, occupancy sensors, ambient light sensors and dimming, photo controls, and motion sensors.
- Lighting upgrades to electronic ballasts and T-8 tubes in campus buildings.

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<sup>20</sup> University of British Columbia, Sustainability Office, Annual Report, 2006, <http://www.sustain.ubc.ca/>

# Indicator #4: Heat energy consumption

## Definition

Total natural gas consumption measured therms per square foot of building space.

## Why this indicator?

Natural gas used for heating accounts for 28% of Willamette's carbon footprint. If Willamette is to become climate neutral, this is a primary area in which consumption must be reduced or the impact from consumption must be offset. Per ft<sup>2</sup> indicates efficiency changes as well as total use changes. In addition per ft<sup>2</sup> data is what planning and construction companies use and is therefore a more practical measurement

## What are other universities doing?

The University of British Columbia, Vancouver Okanagan campus has begun construction of a geo-exchange heating and cooling system that will replace the existing natural gas plant. Using groundwater as an energy source, the geoexchange system will be used to heat and cool \$400 million worth of new buildings planned, preventing the emission of more than 38,000 tonnes of CO<sub>2</sub> into the atmosphere over two decades, equivalent to the electricity consumption of 4, 850 homes.<sup>21</sup>

Almost one quarter of colleges and universities meet some of their energy needs from renewable sources.<sup>22</sup> However, only about 80 campuses in America purchase clean energy.<sup>23</sup>

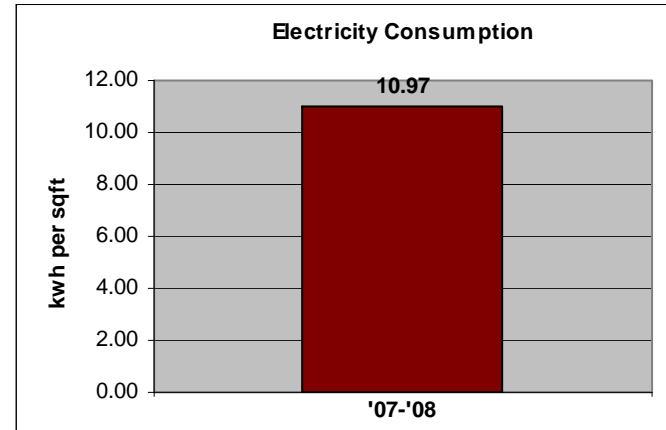
<sup>21</sup> The UBC Sustainability Report, 2006-07. <http://www.sustain.ubc.ca/>

<sup>22</sup> James, R. 2002. Colleges are already taking the 'green' path. Syracuse on-line, September 1, 2002.

<http://www.hws.edu/news/update/showwebclip.asp?webclipid+289>

<sup>23</sup> New Energy for Campuses: Energy-Saving Policies for Colleges and Universities. The Apollo Alliance

[http://www.sustainability.ucsb.edu/\\_client/pdf/pr/NewEnergy.pdf](http://www.sustainability.ucsb.edu/_client/pdf/pr/NewEnergy.pdf)



At Berea College, the SENS House in the Ecovillage uses a photovoltaic panel to produce as much electricity as it uses. Through net-metering, the SENS House draws on the grid at night and exports electricity during the day. The SENS House also uses a solar water heating system.<sup>24</sup>

Tufts publishes an eco-map of places where students can find such greenery as free compact fluorescent lightbulbs, recycling bins, and Zipcars. Oberlin College students put on a Ecolympics each spring to compete to reduce.<sup>25</sup>

## What is Willamette doing?

- In 2003, the board of trustees endorsed green building guidelines to be used for all new construction and renovations. A residential building achieved LEED Gold certification and a new academic building is in construction toward LEED Gold

<sup>24</sup> Berea College: Ecological Indicators of Sustainability, Fall, 2004

<sup>25</sup> Sierra Club, Sept/Oct 2008, "Cool Schools."

<http://www.sierraclub.org/sierra/200809/cool-schools/cool-ideas-list.asp>

certifications. All future buildings will be built to LEED Silver standards or better. Double-glazed windows are being used in a pilot project in two buildings.

- The university has signed a green power purchasing commitment and installed photovoltaic panels on Kaneko Hall.
- A 40-kilowatt photovoltaic system will be installed on the new Ford Academic Building.
- Small-scale hydroelectric generation on the campus stream is also being explored, as is wind power

## Indicator #5: Parking area

### Definition:

Amount of campus surface area devoted to parking, measured in percentage terms and .

### Why this indicator?

While convenient parking is viewed as an important benefit for many faculty, staff and students, emissions from local commuting generate about 2,510 MT eCO<sub>2</sub>, 14% of Willamette's total GHG emissions. Moreover, area devoted to parking cannot be used in other ways at the same time. So, parking area is an indication of Willamette's land use priorities and vehicle dependence.

### How was it measured?

GIS technology was used to analyze a satellite photograph of the Willamette campus. Designated parking areas were identified and their areas measured. These measurements were compared to the total campus area.

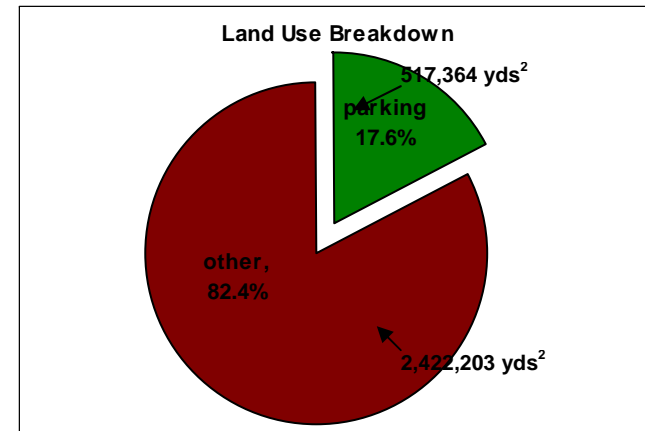
### What does it tell us?

Willamette devotes 17.6% of its surface or approximately 12.5 acres to parking. This much land could also be used to:

- house 10 football or soccer fields;
- feed 50-90 people;
- support approximately 20 new academic buildings the size of the new Ford Academic Building; or
- support approximately 10 new residence halls the size of Kaneko Commons.

### What is happening at Willamette?

As noted above (see Indicator #2), Willamette has vigorously promoted alternative modes of transportation:



- A campus bike shop provides free services to the community including free long and short term bike “rentals,” rider safety training and equipment, and maintenance and repairs.
- All university employees and students can ride on the city transit system for free, and the university also provides an a “emergency ride home” service for all mass transit and non-auto commuters.
- A car-sharing program is available to all students, faculty, and staff.
- A rideshare webpage connects carpoolers, and the university provides a “qualified mass transit subsidy” for those car-pooling or using inter-city mass transit.
- We are collaborating with public transportation providers to increase route usability for employees.
- Finally, we include materials promoting alternative transportation resources in the orientation materials for new students.

However, it is also true that parking is cheap and readily available. In 2007-2008, a total total of 2,248 parking permits were issued to 1922 different people. So, more than half the population of Willamette purchased a permit!

## Indicator #6: Water use

### Definition and measurement:

Total annual water consumption measure in:

- kgals (1000 gallons),
- kgals per squarefoot of building space, and
- kgals per person, including faculty staff and students.

### Why this indicator?:

Consumption of water, though a renewable resource, should be sustainable for ecological and economic reasons. Tracking water use raises awareness of Willamette's participation in and responsibility towards watershed.

### What does it tell us?

Willamette's water consumption is similar to that of other schools.

- Berea College reports water consumption ranging between 23 and 37 kgals per person between 2000 and 2004;<sup>26</sup>
- At the University of Oregon, the average person consumed 22.6 kgals.

### What are other colleges doing?

Despite a 27% increase in students since 1998-99, University of British Columbia's ECOTrek project has reduced water use in core and ancillary buildings by 31%, enough water to supply 15, 2000 Vancouver residents for one year. A few highlights from their efforts include: a closed-loop drain system designed to use well water for drought-tolerant gardening (the closed loops

**74,737 kgals total**  
**0.53 kgals per ft<sup>2</sup>**  
**23 kgals per person**

consists of a deep drainage system around the outside of the underground parking structures; the water drains into the aquifer and becomes a large pond of stored water which is then used for irrigation and creek generation); a parking lot with permeable surface for peak storm water mitigation; a "Sustainability Street" which is designed to be the world's first closed-loop system integrating stormwater management, wastewater treatment, and ground source heat pumps that illustrate how water can be slowed and treated in small spaces.<sup>27</sup>

At the University of North Carolina-Chapel Hill, 300 water-free urinals were installed to reduce campus water use by 12 million gallons annually. Closed loop systems have also been installed to cool distilled water in the five largest water-consuming labs on campus and save millions of gallons annually. An infiltration bed and 70,000 gallon cistern for stormwater is used for irrigation.<sup>28</sup>

Indiana University dorm residents compete to conserve water and electricity in the monthlong Energy Challenge. This year students

<sup>26</sup> Berea College. 2004. Ecological Indicators of Sustainability

<sup>27</sup> University of British Columbia, Sustainability Annual Report, 2006

<sup>28</sup> University of North Carolina at Chapel Hill. Campus sustainability initiative. <http://sustainability.unc.edu/Documents/SOSAwardApp2003.doc>

saved nearly 614,000 gallons of water and more than 400,000 kilowatt-hours of electricity.<sup>29</sup>

At Berea College, a rainwater collection system was installed to provide water for all toilets, urinals, and landscaping. Water collected from the roof is stored in a 12,000-gallon underground cistern. The Sustainability and Environmental Studies House uses all of its bathroom greywater to grow plants in attached greenhouse. The house is designed to meet its water needs with rainwater. The Berea College Ecovillage is designed for a 75% reduction in water use with low flow showers, low flush toilets, high efficiency washing machines, and waste-water recycling.<sup>30</sup>

### **What is Willamette doing?**

- Water efficiency technologies are employed throughout campus, including drip irrigation and low flow showerheads, toilets, and faucets. Waterless urinals are being explored.
- Sensor operated lavatory faucets are used

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<sup>29</sup> Sierra Club, Sept/Oct 2008, "Cool Schools."

<http://www.sierraclub.org/sierra/200809/cool-schools/cool-ideas-list.asp>

<sup>30</sup> Berea College: Ecological Indicators of Sustainability, Fall, 2004

## Indicator #7: Percent local food

### Definition:

Percentage of food budget spent on products that travel less than 150 miles on their way to Willamette.

### Why this indicator?

Locally produced food reduces the energy used for transportation and helps to sustain the local economy. Emissions from the transportation of food (or any other purchased product) are not figured into WU's carbon footprint.

### What does it tell us?

Local food accounts for 65% or \$1.17 million of Willamette's total \$1.8 million food budget. By comparison to other institutions, this is a very high percentage. For example:

- Middlebury College has relationships with 30 local vendors and 10% of its food is grown or processed in Vermont.<sup>31</sup>
- 30-40 % of the food purchased Bates College is local and organic.<sup>32</sup>
- 11% of the food purchased by Berea College was produced in-state in 2004.<sup>33</sup>
- Wheaton College buys at least 20 percent of its produce from vendors within a 150-mile radius and promotes an online calculator ([www.EatLowCarbon.org](http://www.EatLowCarbon.org)) that lets diners see the impact of their meals.<sup>34</sup>

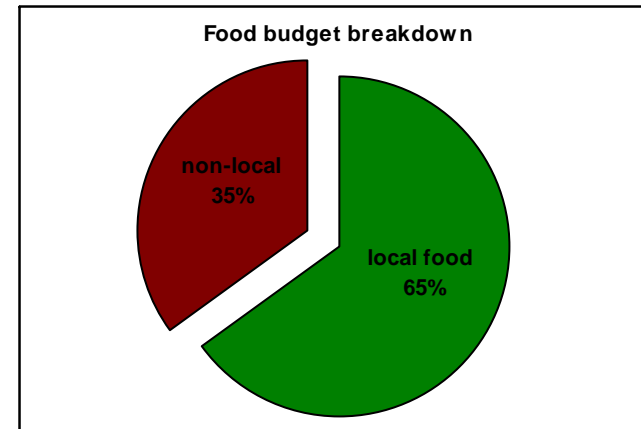
<sup>31</sup> Middlebury College, 2002. Know Your Food.

<sup>32</sup> The New Rules Project, 2004.

<http://www.newrules.org/agri/collegefood.html>

<sup>33</sup> Berea College. 2004. Ecological Indicators of Sustainability

<sup>34</sup> <http://www.chicagotribune.com/features/lifestyle/green/chi-cow-gas-31-jul31,0,4233617.story>



### What is Willamette doing?

Partnering with Bon Appetite Management Company, Willamette has made great strides in purchasing food from local sources.

- Food items such as meat and vegetables are purchased from local, organic farms using socially just labor practices whenever possible.
  - All dairy is from farms within 70 miles of campus.
  - All pork is from farms within 150 miles of campus
  - All beef is from Oregon, Idaho, or Washington
  - All chicken is raised in Oregon and processed in California
  - 50-75% of produce is local
  - All seafood is from west coast.
- Bon Appetite visits the farms to check on sustainable practices, such as composting, stewardship of land, recycling, and use of chemicals.
- Food miles figure prominently in purchasing decisions.

# Indicator #8: Percent sustainably produced or harvested food

## Definition:

Percent of budget spent on food that is sustainably produced or harvested.

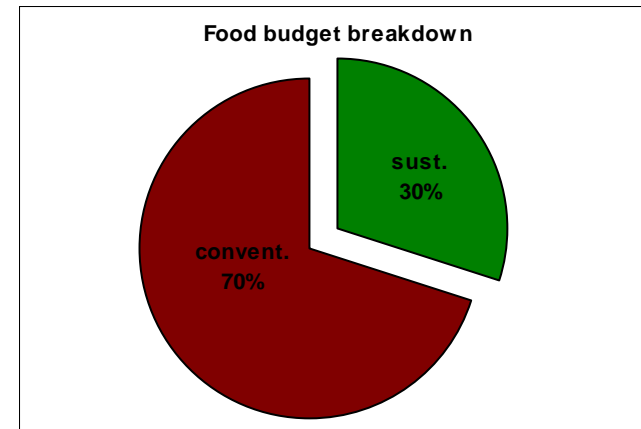
## Why this indicator?

Sustainably grown or harvested food reduces adverse effects to human health and the environment while supporting farmers using production methods that protect environmental integrity. Sustainable techniques improve soil health, prevent topsoil loss, preserve biodiversity, conserve water, and protect water quality.

## What does it tell us?

Willamette spends about 30% or \$540,000 on sustainably produced or harvested food. Again by comparison to many of the schools reporting on sustainably produced food this is large in both percentage and absolute expenditure terms:

- The University of Oregon spent \$16,606 or less than 1% of its food budget on sustainable foods<sup>35</sup>.
- In 2004, Berea College spent \$0 on organic/sustainably produced food<sup>36</sup>.
- At the University of Minnesota, Morris, spending on sustainably produced food went from zero in 2000 to \$20,000 in 2006. In just the first five months of the 2007-2008 school year, spending was up to \$48,000.<sup>37</sup>
- 42% of food at the Evergreen State College comes from local and organic sources<sup>38</sup>.



There are many innovative programs in place at other institutions.

- The University of British Columbia has Sprouts, Canada's first storefront university co-op selling organic and fair-trade products. It also has an in-vessel composter that enables UBC to compost its food wastes along with its yard clippings in a closed-loop system and uses this compost directly on campus landscaping.<sup>39</sup>
- Evergreen State College has a Center for Ecological Living and Learning that includes an organic farm.

## What is Willamette doing?

Partnering with Bon Appetite Management Company, Willamette has made great strides in making food ecologically and socially sustainable. Highlights include:

<sup>35</sup>University of Oregon. 2007. Campus Sustainability Assessment.

<sup>36</sup>Berea College. 2004. Ecological Indicators of Sustainability

<sup>37</sup><http://www.startribune.com/lifestyle/26423049.html?page=1&c=y>

<sup>38</sup><http://www.evergreen.edu/sustainability/sustainablefood.htm>

<sup>39</sup>UBC Sustainability Office Annual Report, 2006

- All dairy is rBST free
- Willamette complies with the Monterrey Bay Aquarium’s conservation guidelines for seafood and the Seafood WATCH sustainable guidelines.
- Bon Appetite buys Cage Free shell eggs, and offers fair trade coffee.
- A vegan station is available in the main cafe every evening. Vegan options are present at breakfast and lunch.
- The use of plastic clamshell “to go” containers and adoption of biodegradable and compostable products made from beet derivatives is ready to implement. No styrofoam products are used.
- Bon Appetite actively partners with campus events highlighting world poverty and starvation (e.g., OxFam America), consumption and food waste on campus, and the working conditions of farmworkers.
- Bon Appetite’s “Circle of Responsibility” provides an educational tool regarding the carbon footprint of food, [www.circleofresponsibility.com](http://www.circleofresponsibility.com)

## Indicator #9: Printer/Copier paper consumption

### Definition:

The amount of printer/copier paper consumed per person (including faculty, staff, and students) over the course of the year, measured in pounds.

### Why this indicator?

As an academic institution, printer/copier paper is necessarily a significant portion of our consumption bundle both literally and symbolically. Thus, our use of paper is an important determinant of our impact on the environment. Polluted water generated by pulping and bleaching processes has been linked to human health concerns. Conventional forestry methods that support paper production put survival many species of plants, fish and animals at risk through habitat destruction, fragmentation and rising water temperatures. And the disposal of paper products accounts for approximately 40% of waste going to landfills in the United States<sup>40</sup>.

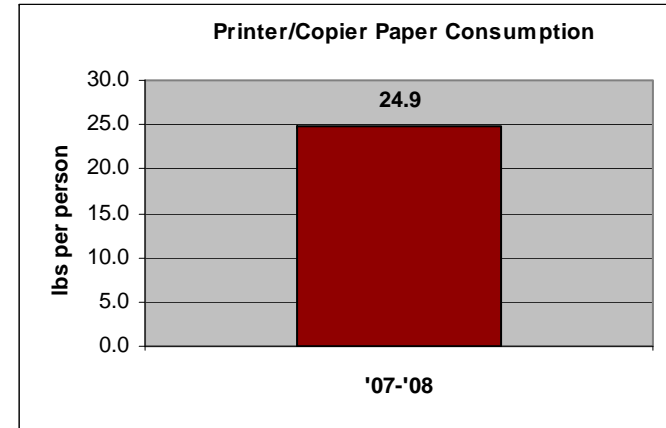
### How was it measured?

Paper consumption in reams was determined from expenditure reports via the Colleague data base. Since most of the paper consumed was 20lb weight, we assumed one ream equates to 20lbs of paper.

### What does this tell us?

WU's printer/copier paper consumption per person:

- is equal to approximately 2,491 sheets of paper per person over the year



- is approximately 3.7% of the annual per person consumption of *all paper products* in the US<sup>5</sup>;
- *exceeds* the per person annual consumption of *all paper products* in over 100 countries, including Peru, Bolivia, and Iran<sup>41</sup>; and

Producing printer/copier paper to supply WU's annual total consumption:

- consumes about 971 trees<sup>42</sup>;
- generates over 770,000 gallons over waste<sup>42</sup>;
- generates 104 metric tons of CO<sub>2</sub><sup>42</sup>; and
- generates more than 46 tons of solid waste<sup>42</sup>.

<sup>40</sup> Sierra Club  
<[http://www.sierraclub.org/sustainable%5Fconsumption/factsheets/forestproducts\\_factsheet.asp](http://www.sierraclub.org/sustainable%5Fconsumption/factsheets/forestproducts_factsheet.asp)>

<sup>41</sup> World Resources Institute <<http://danmahony.com/paperpercapita.htm>>

<sup>42</sup> Env. Def. Fund Paper Calculator. <<http://www.papercalculator.org>>.

WU would have to set aside about 20% of total campus area (14.7 acres) just to supply itself with the raw materials and process the waste stream of this consumption<sup>43</sup>.

**What is happening at Willamette?**

Currently printing is free and unrationed. Students are assigned a nominal limit and pages printed in computer laboratories are deducted from this allocation. In addition, printers are installed so that double-sided printing is the default in most printing locations. Thus, total consumption is made visible and efficient printing is encouraged. However, students are neither prevented from exceeding the limit nor charged if they do so. Faculty and staff are not assigned a limit.

By contrast, there is a per page charge for photocopying that applies to students, faculty, and staff. The rate of charge varies by location.

In order to limit the impact of paper consumption, all paper ordered through central purchasing is Domtar Earthchoice paper, which carries both Forest Stewardship Council and Rain Forest Alliance certification.

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<sup>43</sup> EPA Victoria. 2005. "EPA Ecological Footprint Calculators." Publication 972.

# Indicator #10: Waste paper consumption

## Definition:

The amount of waste paper (toilet tissue, paper towels) consumed per person (including faculty, staff, and students) over the course of the year, measured in pounds.

## Why this indicator?

As a provider of residential services, Willamette generates a significant amount waste paper. As with printer/copier paper, the consumption of these products is an important determinant of our impact on the environment. Polluted water generated by pulping and bleaching processes has been linked to human health concerns. Conventional forestry methods that support paper production put survival many species of plants, fish and animals at risk through habitat destruction, fragmentation and rising water temperatures. And the disposal of paper products accounts for approximately 40% of waste going to landfills in the United States<sup>44</sup>.

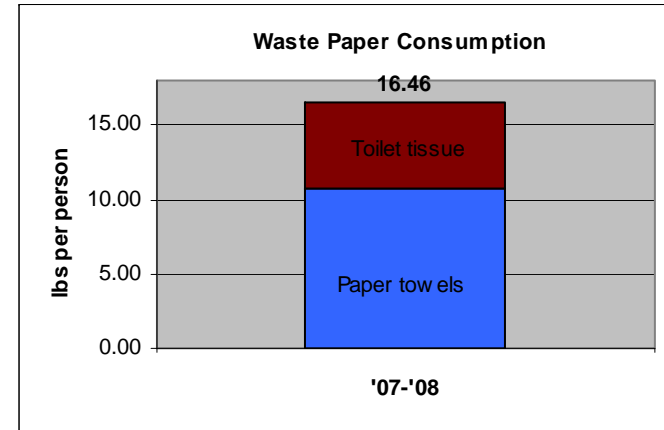
## How was it measured?

Consumption (in rolls of toilet paper and rolls of paper towels) was determined from expenditure reports via the Colleague data base. Rolls were then converted to pounds and then summed.

## What does it tell us?

WU's waste paper consumption per person:

- is equal to slightly more than 9 rolls toilet paper and slightly less than 3.5 rolls of paper towels over the year



- *exceeds* the per person annual consumption of *all paper products* in over 100 countries, including Vietnam, Ivory Coast, Sri Lanka, and Senegal<sup>45</sup>; and

Producing waste paper to supply WU's annual total consumption:

- consumes about 390 trees<sup>46</sup>;
- generates over 270,000 gallons over waste<sup>46</sup>;
- generates 76 metric tons of CO<sub>2</sub><sup>46</sup>; and
- generates more than 26 tons of solid waste<sup>46</sup>.

WU would have to set aside about 11% of total campus area (7.7 acres) just to supply itself with the raw materials and process the waste stream of this consumption<sup>47</sup>.

<sup>44</sup> Sierra Club

<[http://www.sierraclub.org/sustainable%5Fconsumption/factsheets/forestproducts\\_factsheet.asp](http://www.sierraclub.org/sustainable%5Fconsumption/factsheets/forestproducts_factsheet.asp)>

<sup>45</sup> World Resources Institute <<http://danmahony.com/paperpercapita.htm>>

<sup>46</sup> Env. Def. Fund Paper Calculator. <<http://www.papercalculator.org>>.

<sup>47</sup> EPA Victoria. 2005. "EPA Ecological Footprint Calculators." Publication 972.

## What is happening at Willamette?

- In academic buildings Willamette currently uses Georgia Pacific toilet paper and paper towels:
  - We use two different GP paper towel products.
    - GP bleached enMotion account for about 37% of consumption in academic buildings. This product is not EPA compliant, meaning that it is comprised of less than 40% post consumer waste.
    - GP unbleached Towlmastr Series 2000 towels account for the other 63% of consumption in academic buildings. These towels are comprised of at least 95% recycled materials and at least 85% post consumer waste.
  - We use GP Rollmastr in toilet paper in all academic buildings. This product is not EPA compliant, meaning that it contains less than 20% post consumer waste.
- In residential buildings Willamette currently uses Bay West toilet paper and paper towels:
  - All the paper towels (roll and tri-fold) are Ecosoft Greenseal certified products made up of a minimum of 73% or 80% post consumer waste.
  - The toilet paper is Ecosoft (12300), which 100% recycled material with a minimum 20% post consumer waste.

# Indicator #11: Compacted waste per person

## Definition:

The portion of waste generated by normal daily operations over the course of the year that is compacted on campus before being sent the landfill. Measured in pounds per person (including faculty, staff, and students).

## Why this indicator?

Tracking solid waste captures Willamette's environmental impact in two important ways. It quantifies our draw on the raw materials needed to produce the waste as well as our demands on natural systems to absorb our waste stream.

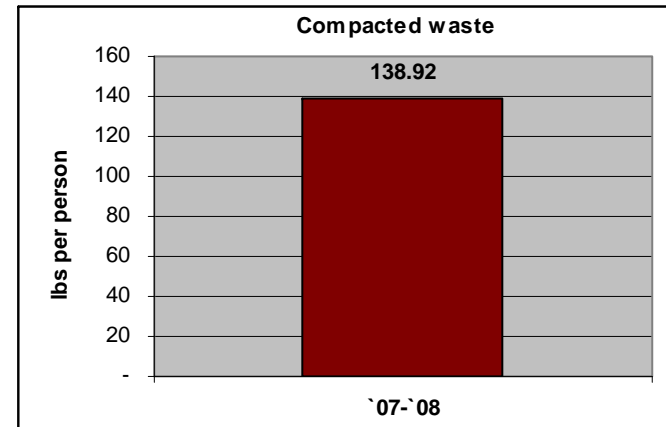
*Why report only compacted waste rather than total municipal solid waste?* Willamette's garbage is either emptied into the campus compactor or collected loose from the dumpsters at regular intervals. While Allied Waste charges by the pound for compacted waste, it charges by the volume of the container to empty the dumpsters. So, a significant part of our waste stream (perhaps as much as 60%<sup>48</sup>) is never weighed. Compacted waste is the largest portion of the total stream for which it is possible to obtain accurate measurements. While this won't allow us to precisely measure the *total amount* of garbage we dispose of each year, it should allow us to track *changes* from year to year.

## How was it measured?

Data on the price per pound of waste and total charges for compacted waste were used to determine the weight of compacted waste.

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<sup>48</sup> This estimate is based on volume to weight conversion estimates from the College and University Recycling Council and the assumption that dumpsters are 80% on average when they are emptied.



## What does it tell us?

- Median 16 year boy weighs almost 140lbs
- 8.27% of US average total MSW per person.
- Equivalent to total MSW of 103 average families in the US

## What is happening at Willamette?

- Student and staff led initiatives seek improvements in campus waste reduction. For example, in the spring of 2007, the ASWU committee on sustainability sponsored a Waste Reduction Competition amongst residence halls on campus.
- Bon Appetit has provided important ongoing leadership in reducing or diverting food wastes from the waste stream:
  - About 35% of food waste is composted or converted to feed and used at local farms through the "Farm to Fork" program.
  - Post-consumer food waste was reduced by 35% in 2007-2008 using a variety of measures such one-component meal

stations that encourage guests to create one plate with exactly what they want and can eat.

- Cooking oil is recycled to be converted into biodiesel.
- Further, Bon Appetite actively partners with campus events highlighting world poverty and starvation (e.g., OxFam America), consumption and food waste on campus, and the working conditions of farmworkers.

## Indicator #12: Estimated recycling rate

### Definition:

Total recycled waste as a percentage of the total waste generated by normal daily operations over the course of the year.

### Why this indicator?

There is no "away" in which to throw things. All material waste returns to the natural environment sooner or later, often in forms or concentrations that are unnatural and thus present a significant challenge to the absorptive capacity of the natural world. Thus, we believe that significant material recycling must be part of any attempt to work and live sustainably. Recycling reduces demand for virgin raw materials and decreases the environmental impact of waste disposal.

### How was it measured?

To precisely measure the recycling rate, the weight of all waste and recycled materials must be determined. Unfortunately this was not possible. Although compacted waste was weighed by the Allied Waste disposal company, a significant portion of waste sent to landfills and all waste sent to recycling facilities was never weighed. The weight of these components had to be *estimated* based on assumptions about: i) how full the dumpsters were on average before being emptied; and ii) the conversion of volume to weight for different materials.

Because the final calculation is sensitive to these assumptions made, three estimates were constructed. In all three, dumpsters were assumed to be 80% full on average, but the volume to weight conversions differed:

36%	46%	54%
<i>Low</i>	<i>Medium</i>	<i>High</i>

- The *high* estimate was constructed using conversions obtained from the College and University Recycling Council (CURC)<sup>49</sup>;
- The *medium* estimate was constructed using conversions that were 46%<sup>50</sup> as large as those recommended by the CURC; and
- The *low* estimate was constructed using CURC conversions for waste and using the reduced conversion (46% of CURC) for recycled materials.

### What does it tell us?

- The low estimate (36%) is slightly higher than the 2006 US national recycling rate of 32.5%<sup>51</sup>.
- The medium and high estimates compare favorably to what is reported at many other schools. For example:
  - The University of Oregon reports recycling rate of 45%<sup>52</sup>;
  - The University of British Columbia reports 46%; and
  - Kalamazoo college won the Recyclemaniacs competition in Spring of 2008 by averaging a recycling rate of approximately 60% over a 10 week period<sup>53</sup>

<sup>49</sup> <http://www.nrc-recycle.org/curc.aspx>

<sup>50</sup> Estimate derived from single load weight taken on 9/8/08

<sup>51</sup> <http://www.epa.gov/epaoswer/non-hw/muncpl/facts.htm>

<sup>52</sup> <http://sustainability.uoregon.edu/indicators/>

<sup>53</sup> [http://www.recyclemaniacs.org/university\\_detail08.asp?ID=1601](http://www.recyclemaniacs.org/university_detail08.asp?ID=1601)

## **What is happening at Willamette?**

- A newly redesigned recycling web page<sup>54</sup> provides information and guidelines for the campus recycling program.
- The recycling program at Willamette accepts paper, cardboard, mixed containers, printer cartridges, books, bed mattresses, batteries, and computers/electronics.
- New rules allowing the comingling of different material types makes recycling easier and may help increase recycling rates.
- The program also coordinates donation of unwanted furniture to local nonprofits.
- E-wastes are also responsibly recycled.
- In the fall, leaves are gathered and composted for use on community gardens.
- In cooperation with the county public works officials, the Center for Sustainable Communities sponsors on going, quarterly community-wide styrofoam recycling events
- A campus “Sharecat” website allows community members to sell, trade, recycle and reuse unwanted items, similar to Craig’s List.
- Finally, a plan to collect athletic shoe for recycling is under development.

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<sup>54</sup> <http://www.willamette.edu/dept/facilities/support/recycling/index.html>

## Indicator #13: Volume of hazardous cleaning chemicals

### Definition:

The volume of cleaning chemicals with ingredients that fall into each of four relative risk categories for human and environmental health.

The four relative risk categories are:

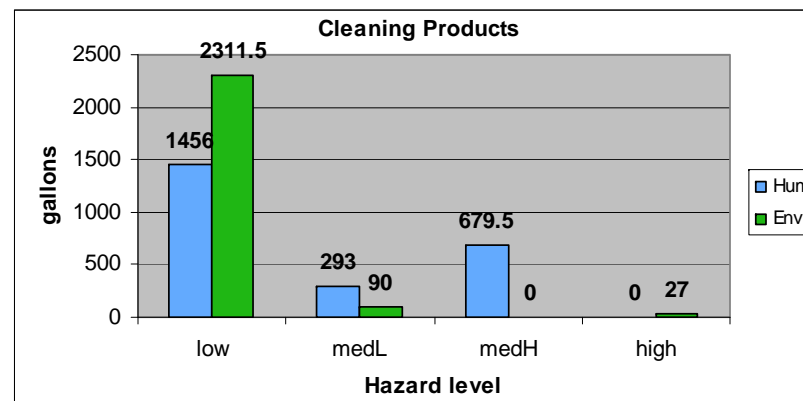
- *low* - less hazardous than 75% of other chemicals;
- *medL* - less hazardous than 50% of other chemicals, more hazardous than 25% of other chemicals;
- *medH* - less hazardous than 25% of other chemicals, more hazardous than 50% of other chemicals;
- *high* - more hazardous than 75% of other chemical.

### Why this indicator?

The use of toxic cleaning products exposes workers to the risk of acute and/or long term health problems and may also create environmental hazards if those products are accidentally released or improperly disposed of. The health impact of toxins varies significantly. While some cause moderate inconvenience, like mild skin irritation, others have been linked to severe problems such as cancer (*carcinogens*), disruption of the human hormone functions (*endocrine disruptors*), and birth defects (*reproductive toxins*). Environmental consequences are similarly varied.

### How was it measured?

Products used and the amount of each product consumed were determined from the records of Custodial Facilities Services. The chemical components of each product were determined



from the product's materials safety data sheet (MSDS). The relative risk level for each chemical component was determined with the aid of ranking systems made available by the Environmental Defense Fund on the website <http://www.scorecard.org>. The human health hazard of each component was determined using the IRCH worker exposure hazard score, which considers both toxicity of the component and characteristics that determine the exposure potential. The environmental health hazard of each component was determined by IRCH environmental hazard score, which considers its toxicity and persistence. Finally, a product was assigned the hazard level of its riskiest component.

### What does it tell us?

The majority of products used at Willamette create very little risk to human health or the environment. Nearly 60% (volume) of the products used in '07-'08 contain no known or suspected toxins.

However, Willamette did employ products that could lead to potentially serious health problems:

- 5 products<sup>55</sup> totaling 120.5 gallons contain chemicals suspected to be *endocrine disruptors*, including 63 gallons that contain 2-butoxyethalene<sup>56</sup> a compound that the LEAS<sup>57</sup> organization includes in their “Do Not Use” category.
- 3 products<sup>58</sup> totaling 90 gallons contain suspected *reproductive toxins*, including 69 gallons that contain either 2-butoxyethalene or 1-Methyl-2-Pyrrolidinone both of which show up in the LEAS organization’s “Do Not Use” Category<sup>12</sup>.
- 1 product<sup>59</sup> totaling 0.5 gallons contain silica quartz a suspected *carcinogen* that has been implicated in cases of lung cancer.

Likewise, although vast majority (95%) of cleaning products posed little environmental risk, some did. The most significant of these were acids, phosphoric and hydrochloric, totaling 24 gallons together.

### **What’s happening at Willamette?**

The custodial staff has greatly reduced their use of toxic chemicals overtime, identifying toxic ingredients and substituting nontoxic.

- Notably the general purpose cleaner that accounts for the majority of product use by volume has no known or suspected toxic ingredients at all.
- In addition, the decision has recently been made to cease ordering all products that contain 2-butoxyethalene.

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<sup>55</sup> NonAcid disinfectant, Powerhouse, Knockout, Comet, and Carpet Spotter

<sup>56</sup> NonAcid disinfectant

<sup>57</sup> Labour Environmental Alliance Society, “Cleaners and Toxins Guide.”

<sup>58</sup> NonAcid disinfectant, Powerhouse, Reflection

<sup>59</sup> Comet

## Indicator #14: Volume of hazardous grounds chemicals

### Definition:

The volume of grounds chemicals with ingredients that fall into each of four relative risk categories for human and environmental health.

The four relative risk categories are:

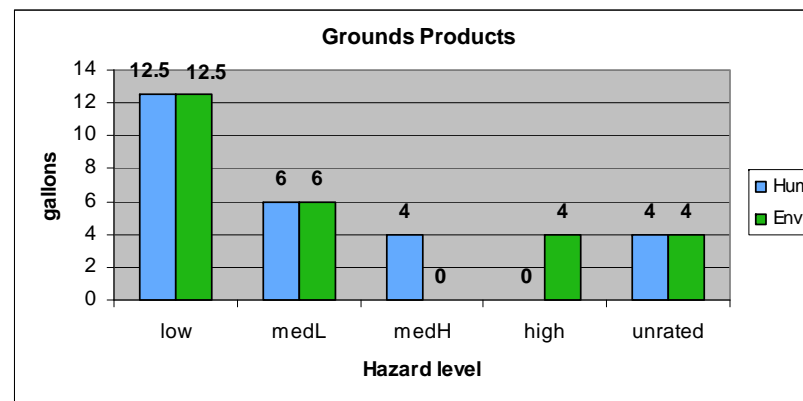
- *low* - less hazardous than 75% of other chemicals;
- *medL* - less hazardous than 50% of other chemicals, more hazardous than 25% of other chemicals;
- *medH* – less hazardous than 25% of other chemicals, more hazardous than 50% of other chemicals;
- *high* – more hazardous than 75% of other chemical.

### Why this indicator?

The use of toxic herbicides and insecticides exposes grounds workers and other campus inhabitants to the risk of acute and/or long term health problems and may also create environmental hazards. The health impact of toxins varies significantly. While some cause moderate inconvenience, like mild skin irritation, others have been linked to severe problems such as cancer (*carcinogens*), disruption of the human hormone functions (*endocrine disruptors*), and birth defects (*reproductive toxins*)

### How was it measured?

The products and amounts used were determined from the records of the Grounds Department. Chemical components of each product were determined from its materials safety data sheet (MSDS). The relative risk level for each chemical



component was determined with the aid of ranking systems made available by the Environmental Defense Fund on the website <http://www.scorecard.org>. The human health hazard of each component was determined using the IRCH worker exposure hazard score, which considers both toxicity of the component and characteristics that determine the exposure potential. The environmental health hazard of each component was determined by IRCH environmental hazard score, which considers its toxicity and persistence. Finally, a product was assigned the hazard level of its riskiest component.

### What does it tell us?

The total use of chemicals by the grounds department was low, only 26.5 gallons over the year, which represents a significant reduction relative to past years<sup>60</sup>. While most of these products employed have been rated as posing only low level hazard to humans and the environment, all of them contain chemicals that are suspected to be toxic to humans, including:

<sup>60</sup> Perhaps as much as 80%.

- two products<sup>61</sup> (8 gallons total) that contain suspected *endocrine disruptors*;
- one product<sup>62</sup> (10 gallons total) that contain suspected *reproductive toxins*; and
- two products<sup>63</sup> (8 gallons total) that contain suspected *carcinogens*.

### **What is happening at Willamette?**

As noted above, Willamette's use of hazardous chemicals is low because of a systematic shift over time in management strategy employed by the grounds crew.

- Most weeding is done by hand;
- Weeds are controlled using beds of wood chips to limit weed growth;
- Lawn areas are mowed frequently to reduce the visibility of invasive weeds;
- Heat (deployed using gas powered torches) has been used as substitute for herbicide over small areas.
- Chemical herbicides are used sparingly and in a carefully targeted ways such as painting roundup directly onto the leaves of invasive weeds.

Similarly the use of chemical pesticides has been intentionally and strategically limited:

- Oils that suffocates insects is used in place of chemical pesticides; and
- Predator insects are intentionally cultivated.

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<sup>61</sup> Rodeo and Surflan

<sup>62</sup> Roundup

<sup>63</sup> Surflan and Amine-2-4-D

# Indicator #15: Workplace injuries

## Definition and measurement:

Number of workplace of injury reports measured in total reports and reports per 100 employees.

## Why this indicator?

Willamette's vision for sustainability encompasses not simply the natural environment, but also extends to the social environment. A sustainable campus is one that ensures the health, safety and well-being of its employees. It is in the community's best interest to prevent staff, student, and faculty injuries, particularly those incurred while using dangerous equipment. Tracking workplace injuries will ensure appropriate reporting, care, and treatment for injury.

## What is Willamette doing?

- Participation in expanded number of trainings coordinated by Empire Pacific, the provider for Oregon Educational Employers Workers Comp. Trust. Also use of Empire Pacific's OSS prevention/safety program visits, and workplace hazard evaluations (walk throughs).
- Invited Oregon OSHA to campus 3-4 times in the last 2 years to conduct free consultations to point out any safety concerns that may cause injuries or are in violation to OSHA regulations. give us 60 days to correct them. Helps in several ways: 1) we reduce the chance of injuries to employees and visitors, 2) this shows OSHA that we are proactive in reducing on the job injuries and 3) when our worker's comp carrier see a reduction in injuries, our rates may be reduced saving the University money. It is a win/win situation.

**17 total**  
**0.021 per 100 employees**

- Currently considering a post-injury investigation process, with the aim of mitigating future injuries, hopefully to be implemented in 2009.
- Currently considering a spot recognition program that rewards safe behaviors.

## What are other universities doing?

Most other universities do not include workplace injuries in their sustainability report, and instead track data and implement changes via their Human Resources department.

One exception: The University of British Columbia, Vancouver, had .85 injuries per 100 people that resulted in time-loss in 2006. From 2005-2006, the frequency of time-loss accidents decreased 15%, contributing to an overall decrease of 44% since 2002. UBC is launching "Focus on People: Workplace Practices at UBC" in 2007, and one of its core goals is developing a sustainable and safe workplace.

## Indicator #16: Hazardous material spills

### Definition:

The total number of hazardous material spills reported to the Office of Campus Safety during the year.

0 reported spills

### Why this indicator?

Hazardous material spills may potentially create human health problems and environmental damage. The number of spills in a year will depend (among other things) on the volume hazardous materials being used and the precautions taken in handling these materials. Thus, tracking the number of spills should allow us to measure part of our environmental impact and help characterize the environment in which our employees work and our students live.

### What does it tell us?

There were no reported spills during the 2007-2008 academic year, which is somewhat difficult to interpret. It may indicate that hazardous materials are only infrequently used and are handled carefully when they are employed at all. Thus, there really were not spills. However, it may also indicate that hazardous spills are not being reported to the Office of Campus Safety. This might arise, for example, from a lack of awareness about the reporting policy or out of ignorance of the characteristics of the chemicals being used.

# Indicator #17: Willamette’s employee wage distribution

## Definition:

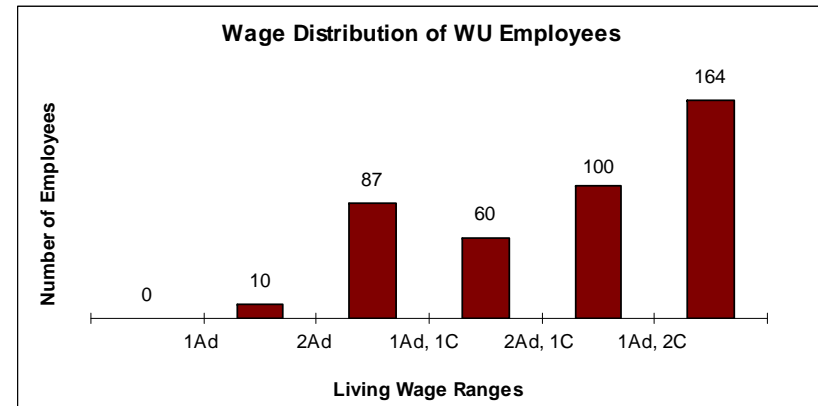
The number of full-time classified and administrative employees whose total compensation averages out to an hourly wage that is:

- i) less than the living wage for 1 adult;
- ii) between the living wages for 1 adult and 2 adults;
- iii) between the living wages for 2 adults and 1 adult, 1 child;
- iv) between the living wages for 1 adult, 1 child and 2 adults, 1 child;
- v) between the living wages for 2 adults, 1 child and 1 adult, 2 children; and
- vi) more than the living wage for 1 adult, 2 children.

## Why this indicator?

The distribution of wages is intended to provide information about how equitable our operations are: *Is Willamette University fairly compensating its employees?* To evaluate this question we start by asking: How many of our employees are paid more than a *living wage*-- “a wage rate required to meet minimum standards of living<sup>64</sup>”?

*Why do we report an entire distribution of wages rather than simply reporting the percentage of employees who make at least a living wage?* The expenditures needed to provide a minimum standard of living vary for different family structures. It costs more (in total) to provide for a family with two adults and one child, than for a family with one adult and one child. So, it is argued that the value of a living wage depends on the family



structure of a particular employee. For example, the Living Wage Calculator estimates that based on in order to provide minimal food, clothing, medical care, child care, transportation and incidental expenses in the Salem Keiser area, a single full-time worker would need to earn:

	1 adult	2 adults	1 adult, 1 child	2 adults, 1 child	2 adults, 2 chdr
<b>Living wage (per hour)</b>	\$6.60	\$10.08	\$13.62	\$15.66	\$19.97 <sup>65</sup>

Since Willamette University does not collect information about the family structure of each employee, it is not possible to determine whether a particular employee is making a living wage or not. Instead, we report the number of employees whose wages fall in the ranges between these values.

<sup>64</sup> <<http://www.livingwage.geog.psu.edu/index.php>>

<sup>65</sup> <<http://www.livingwage.geog.psu.edu/results.php?location=27461>>

**What does it tell us?**

- All full-time employees make at least the living wage value for a single adult (\$6.60/hour).
- All administrative staff and more than half of all classified staff (106 of 203) make enough to support themselves and one child (\$13.62).
- Almost 40% of all employees make enough to support a family of 2 adults and 2 children.
- Almost half of classified employees (97 of 203) do not make enough to support themselves and one child.
- Less than 5% of classified employees (9 of 203) make enough to support a family of 2 adults and 2 children.

**What is happening at Willamette?**

Discussions are underway that might raise wages for the lowest earners at Willamette as early as October of this year.

# Indicator #18: Student diversity

**Definition:**

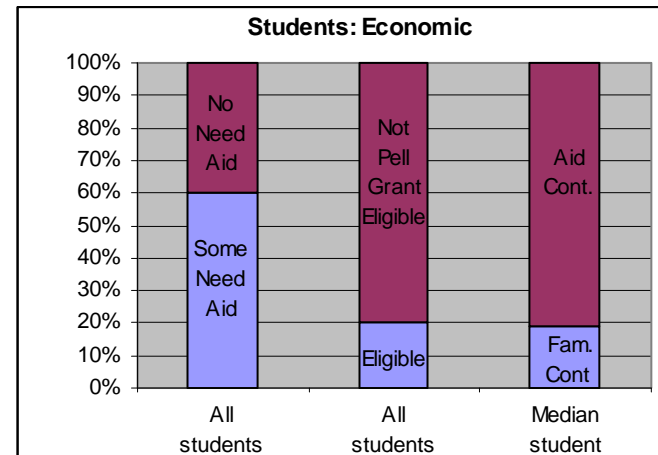
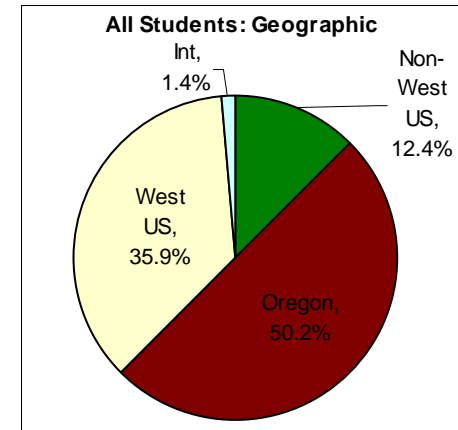
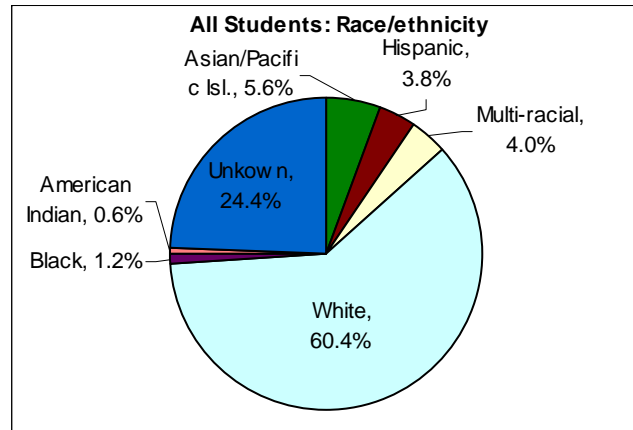
Racial/ethnic diversity of the student body (university-wide) as measured by the percentage of students who fit different racial/ethnic categories.

Geographic diversity as measured by the percentage of students from different points of origin.

Economic diversity as measured by the % of all students receiving some financial aid, % of undergraduates who are pell grant eligible and the median (of all students) family contribution as a percentage of total package price.

**Why this indicator?**

Willamette’s definition of sustainability includes equity, and its vision is for a diverse and healthy social environment. Just as healthy eco-systems are marked by diversity, so a healthy campus community is diverse in its members. Diversity is central to Willamette University’s mission statement. The University’s Long Range Plan, adopted by the Board of Trustees in 2001, states, “Commitment to diversity is needed as a visible expression of our collective worldview and the world in which we live. It is essential to quality education and supports our sense of moral duty to overcome racism, bigotry and discrimination in all forms. Thus, we must invest in people, programs and activities to strengthen our appreciation of and commitment to diversity.” Diversity matters for the core purpose of this community, education. The different points of view that emerge from diverse cultural heritages and ethnic backgrounds enlarge aesthetic horizons, enrich intellectual discourse, sharpen historical perspective and give increased



focus to who we are and what we stand for. These important ends are best met within a context of learning that is multi-dimensional.

### **What does this indicator tell us?**

- Although most students at Willamette in '07 - '08 were white (60%+ across all four schools), there was a significant population of students from historically under-represented groups (15%).
- Likewise although most students arrived from Oregon or one of the other western states (AK, HI, WA, ID, CA) (86%+ across all four schools), a total of 44 states and 15 countries were represented in the student body.
- Finally, although some Willamette students came from families who are able to pay the full package price (40% across all 4 schools), most did not. In fact, for half of all Willamette students in '07-'08, the family contribution covered 20% of the total package price or less.

### **What is happening at Willamette?**

- In response to the Concerned Students for Social Justice students, in November 2006 President Pelton established a Council on Diversity and Social Justice (CDSJ), whose membership broadly represents the faculty, students and staff of the University. The purpose of the CDSJ is to deepen the University's commitment to diversity through a four-point framework suggested in a joint diversity project of the Association of American Colleges and Universities (AACU) and the James Irvine Foundation.
- There has been an almost two-fold increase in the number of students at Willamette from ethnic minority groups.
- Multiple groups on campus actively engage in creating a campus culture that values diversity including: the Office of Multicultural Affairs, Willamette Academy, Tokyo International University of America, Office of International Education, Willamette Study Abroad Blogs, OHANA Jump Start Program, Language Learning Center, ANGLES Queer-

Straight Alliance, SHE, Office of the Chaplain, the Center for Excellence in Asian Studies, and the programs in American Ethnic Studies, Latin American Studies, and Women and Gender Studies.