

Climate Action Plan



WASHINGTON STATE
 UNIVERSITY

World Class. Face to Face.

greenhouse gas inventories
green development
energy conservation
transportation
carbon offsets



I am pleased to present the Washington State University Climate Action Plans, the result of a collaborative planning process that has brought student, faculty, and staff representatives from across our university's campuses together in pursuit of a common goal.

In forging a more sustainable future, a major research university must play many roles. First, we as an institution must act as a good steward of our environment.

This fall we opened the first new residence hall we have built on our campus in nearly four decades. The project is anticipating a LEED Silver rating. Innovative "green" strategies are incorporated in its construction and operation, including geothermal heating and cooling, natural day lighting, natural habitat and vegetation, water efficient landscaping, use of regional and recycled materials where possible. The opening of this structure comes one year after the opening of our first LEED certified building, the renovated Compton Union Building that serves as the center for student life on campus.

Constructed in 2003-2004 on our Pullman campus, the Grimes Way Steam Plant replaced an existing coal-fired power plant that had been in service since 1936. Changing fuels from coal to natural gas as a primary fuel allowed us to find cleaner and more efficient ways to heat our university. Both in 1988 and 2004, WSU received the Governor's Energy Team Award for Excellence in Energy Management.

WSU has a history of excellence in the fields of electric power and energy systems. Researchers in the College of Engineering and Architecture are working to develop and incorporate new technologies aimed at improving the efficiency and reliability of the power grid. WSU Extension faculty members develop and provide education to the public on energy and environmental issues. Through our research on renewable energy sources, sustainable agricultural practices and the effects of global climate change, WSU is helping chart the course to a more sustainable future. Through the education and research carried out in our Institute for Sustainable Design and our Center for Sustaining Agriculture and Natural Resources, we are encouraging environmental leadership. We are proud of how far we have come at WSU and are fully aware that our initiatives must continue. This climate action plan will assist us in those efforts.

Elson S. Floyd, Ph.D.
President



Climate Action Plan Goals and Strategies

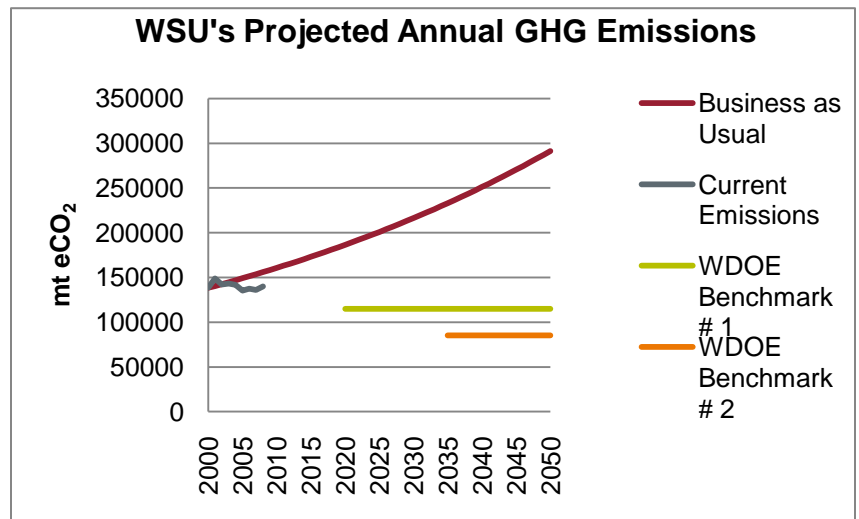
Washington State University's (WSU) Sustainability Initiative - Executive Policy # 24 vision is for "WSU to seek to provide an exemplary teaching, research, and outreach environment that fosters the conservation of natural resources, supports and enhances social responsibility, addresses community and economic development, and follows environmental, social, and economic practices."

The Climate Action Plan (CAP) helps to implement WSU's Sustainability Initiative and will also help WSU attain **three major goals**:

- Goal 1** **Support and implement WSU's strategic plan goals and mission**
- Goal 2** **Meet the American College and University President's Climate Commitment (ACUPCC)**
- Goal 3** **Meet Environmental Protection Agency (EPA) and Washington Department of Ecology (WDOE) greenhouse gas and climate change regulations**

This Climate Action Plan provides a framework for WSU's faculty, students and staff to work together and make short and long range decisions that will result in real, measurable reductions in greenhouse gas (GHG) emissions. Progress will be tracked using a recognized greenhouse gas inventory tool using metric tons of carbon dioxide equivalents (mt eCO₂).

Benchmarks will include meeting the requirements passed into law by the Washington State legislature in April 2009. These benchmarks are reducing our greenhouse gas emissions by 15% of 2005 levels by 2020 (WDOE benchmark # 1) and by 36% of 2005 levels by 2035 (WDOE benchmark # 2).





Climate Action Plan Goals and Strategies

While climate neutrality is not a requirement of Washington legislation, as a signatory to the American College and University President's Climate Commitment, WSU has pledged to work towards net climate neutrality. Given the long time line for this CAP, the technological advances that will occur and an uncertain budgetary future, WSU cannot, at this time, predict or commit to a specific date to achieve net climate neutrality. WSU's innovative research will help to accelerate achieving net climate neutrality at WSU, in the state, and beyond.

To achieve our greenhouse gas reduction goals, WSU will implement four major strategies.

- **green development**
- **energy conservation**
- **transportation**
- **carbon offsets**



This CAP will be a living document. It will be continually modified to react to changing technologies, opportunities, innovations and a changing regional and world climate.

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green development

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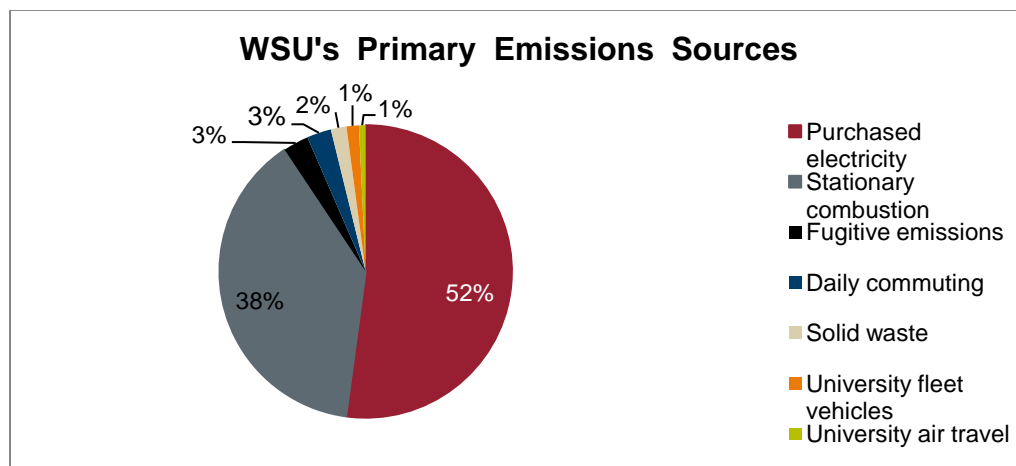


Greenhouse gasses (GHG) include carbon dioxide (CO₂), nitrous oxides, methane, refrigerants, and other chemicals, each with a different global warming potential (GWP).

Carbon dioxide is the standard by which all other GHG are normalized; carbon dioxide's GWP is 1. For instance one metric ton of methane has the global warming potential of 21 metric tons of CO₂. The following table shows the GWP of the various types of greenhouse gasses.

Carbon Dioxide (CO ₂)	GWP = 1
Methane	GWP = 21
Nitrous Oxide	GWP = 310
Hydrofluorocarbons	GWP = 12 – 11,700
Perfluorocarbons	GWP = 6,500 - 9,200
Sulfur Hexafluoride	GWP = 23,900

Total greenhouse gas emissions from an entity are reported in equivalent metric tons of CO₂ (eCO₂)

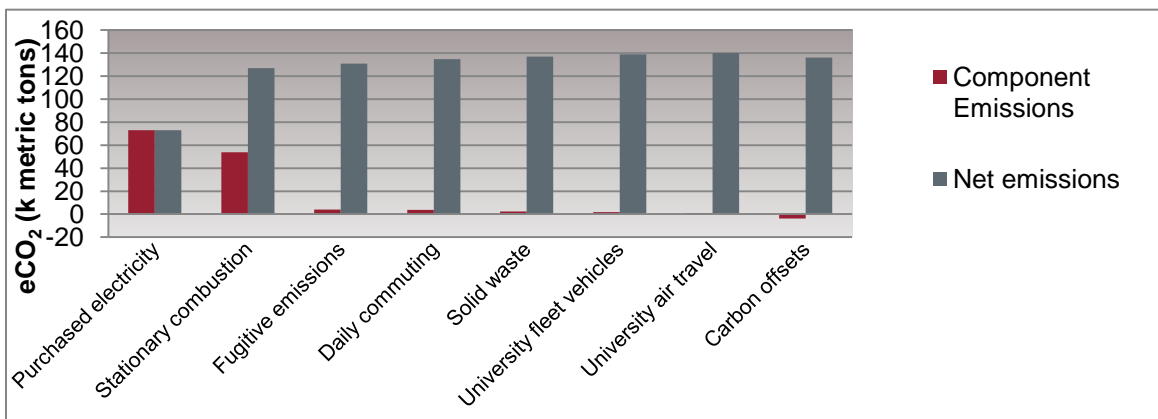




Greenhouse Gas Inventories

WSU - Pullman Greenhouse Gas Sources 2008

	<u>Equivalent Metric Tons- eCO₂</u>	<u>Percent</u>
1. Purchased electricity (With transmission and distribution losses)	72,988	52%
2. Stationary combustion (Fuel burned in the steam plant, incinerator, and other boilers)	53,922	38%
3. Fugitive emissions (Refrigerant losses and livestock)	3,965	3%
4. Daily Commuting (Faculty, staff, and students)	3,764	3%
5. Solid Waste (eCO ₂ in incinerated waste, Methane from Landfill)	2,417	2%
6. University Fleet Vehicles	1,918	1%
7. University Air Travel	<u>1,030</u>	1%
<u>Gross Metric Tons eCO₂</u>	140,004	
8. Carbon Offsets - (Composting)	<u>-3,838</u>	- 3%
<u>Net Metric Tons eCO₂</u>	136,166	





Greenhouse Gas Inventories

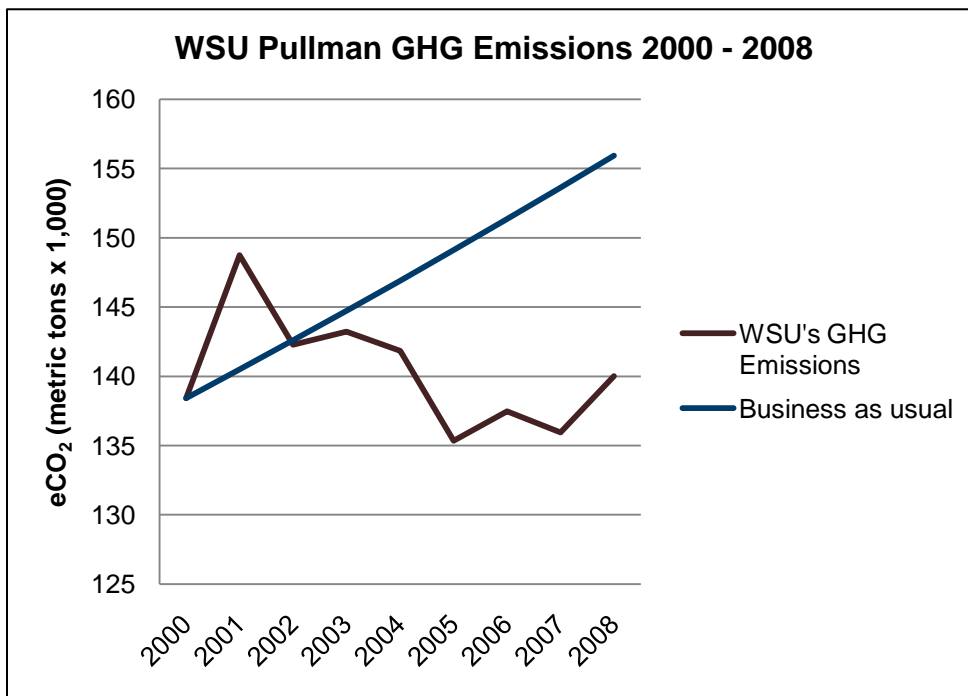
From 2000 to 2003 WSU's emissions grew an average of 1.5 % per year. A growth rate of 1.5% was used to project WSU's emissions into the future.

The jump in emissions in 2001 was from two temporary diesel boilers that were brought on to campus to backup the boilers at the old steam plant; they used almost 400,000 gallons of diesel fuel.

Design and construction of the new steam plant began in 2000. The new steam plant uses natural gas and diesel fuel to produce steam for the University instead of coal.

In 2004, WSU began part-time operation of its new steam plant. In 2005 WSU's greenhouse gas emissions dropped over 9% compared to "business as usual" projected emissions as the new steam plant went into full time operation.

From 2005 to 2008 increases in the quantity of diesel burned and campus growth accounts for the increase in greenhouse gas emissions.



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Background

Each year the built environment consumes significant amounts of the nation's raw materials (40%), total energy produced (33%), and fresh water (17%). The challenge is to design intelligent, economically prudent projects that use a minimum of non-renewable energy, produce a minimum of pollution and wastes, and are generally environmentally benign; all the while increasing the safety, comfort, and health of the people who live and work in them.

In 2005 the State of Washington legislature passed Senate Bill 5509 which stated all state funded buildings over 5,000 square feet of conditioned or occupied space, should meet at least the United States Green Building Council's Leadership in Energy and Environmental Design's Silver Standard. There are four levels of project Certification (from lowest to highest): Certified, Silver, Gold, and Platinum.

Washington State University has been a member of the U.S. Green Building Council (USGBC) since 2006. The Leadership in Energy and Environmental Design (LEED) green building rating system is a nationally accepted benchmark for the design, construction, and operation of high performance green buildings.

The philosophy of building construction here at WSU has long been one of building sustainable facilities. Because of our nature we want our buildings to last 100 years or more. This is even more important in a time of dwindling resources and construction money.

Strategies

Washington State University campuses promote innovative, sustainable design and construction principles that improve safety,



functionality, and energy efficiency that mirrors our respect for campus culture and heritage.

Several innovative “green” strategies are incorporated into WSU's new buildings, including geothermal heating and cooling, natural day lighting, sun shading

devices to minimize heat load, site restoration with natural habitat and vegetation, water efficient landscaping, stormwater collection and reuse for irrigation, high reflective roof to reduce heat island effect, reduction of light pollution, educational signage system, water-use reduction in the building, construction waste management, use of regional materials, recycled materials and certified wood where possible.

More than twenty years ago Washington State University (WSU) built one of the first green roofs in the State of Washington over Terrell Library.

In the late 1970's and early 1980's WSU, in collaboration with Gear Powers developed a campus-wide building automation system. With this system we were able to remotely monitor and manipulate the heating, ventilation, and air conditioning of the building. This technique was ultimately acquired by Siemens, which is recognized as one of the premier suppliers of building automation systems worldwide.

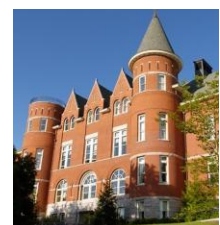
At WSU, we are proud of our record in water conservation. Water consumed annually on the Pullman campus over the last two decades has decreased by thirty-one percent, from 681 million gallons in 1986 to 478 million gallons in 2006. During that same time, the enrollment increased by nearly 2,500 students and the square footage of campus facilities increased by twenty-six percent. The real story about WSU water conservation is one of innovation, progress, and social responsibility demonstrated by initiatives such as:

- Construction of a more water efficient steam plant that saves WSU approximately 30 million gallons per year.
- Aggressive efforts in leak detection and repair resulting in water savings of 11.5 million gallons per year,
- Elimination of water wasting equipment garnering another 10 million gallons annually in water savings.

Past

It has been said the most sustainable building is one that is already built. At 115 years old Thompson Hall is truly a fine example of a sustainable building. Built in 1894 it is the oldest extant building on campus, and was constructed for less than \$50,000 using local red brick made from clay deposits taken one block away. Until 1968, it served as the Administration building as well as housing a number of other university functions. During the next 30 years, dozens of buildings were constructed as the college grew, including 20 that are still in use today as classrooms, offices, and dormitories.

*Thompson
Hall
1894 and
today*





Energy Plant

The new central steam plant on Olympia Avenue has been providing steam since 2005 and replaced the old coal-fired steam plant on College Avenue. The two new packaged-unit boilers at the existing plant (Boilers 1 and 2) have been retained as a satellite facility, and together the two plants supply 100 percent of the campus' steam needs. Primary equipment at the new central plant includes three boilers (capable of producing up to 83,000 lb/hour steam supply each) and three each Reciprocating Internal Combustion Engine-Generators with a combined generation capacity of approximately 2.7 megawatts. The fuel resource for the new boilers is natural gas with diesel backup. Certain steam system upgrades were implemented to support the new facility, including: upsize of approximately 900 linear feet of existing piping on Grimes Way from the new plant to Quad-Services Road; rework of condensate handling facilities at the existing plant; and conversion of the two pressure (60 and 200 psi) distribution system to a single 100 psi system. This project is in response to both safety and reliability concerns expressed through an Emergency Declaration made by WSU in August 2000. New facilities assure WSU's goal in assuring plant safety, reliability, increased fuel and operating efficiencies, energy conservation and environmental quality. In meeting both current and future needs for steam and electricity, the completed project limits WSU's exposure to fluctuations in utilities pricing, thereby offering potentially substantial savings in future operating costs.



Present

Compton Union Building (CUB)

Built in 1951 and first renovated in 1968 this building was in need of mechanical and electrical upgrades of inefficient systems and a cosmetic face-lift including insulated glazing. The most recent renovation was begun in 2006. Sustainability and energy efficiency are primary objectives of the renovation. For example, chilled beams were used to provide radiant heating and cooling to much of the building. Also, low VOC paints and adhesives were used for the finishes.

During the renovation the bulk of the existing building was demolished, retaining only the core structure and exterior shell. The building was expanded slightly at the ballroom and lower levels to total 235,000 square feet. Major architectural improvements include a stair and elevator tower from field level at the north, an associated pedestrian bridge to the first floor, and revised exterior entry and landscape elements on Terrell Mall. Mechanical, electrical, and plumbing systems have been replaced in their entirety.





The renovated CUB is now fully air conditioned.

The renovated CUB project was completed in August 2008. The USGBC awarded the CUB LEED Silver Certification in 2009, thus making it the first LEED certified WSU facility.

Olympia Avenue Student Housing

The first dormitory built on campus since 1972, this project is anticipating LEED Silver Certification while maintaining WSU's distinctive materials palette. Several innovative



sustainable strategies are incorporated into this 76,000 square foot building housing over 230 students including geothermal heating and cooling, natural day lighting, sun shading devices to minimize heat load, site restoration with natural habitat and vegetation, water efficient landscaping, stormwater collection and reuse for irrigation, high reflective roof to reduce heat island effect, reduction of

light pollution, educational signage system, water-use reduction in the building, construction waste management, use of regional materials, recycled materials and certified wood where possible. Olympia Avenue Student Housing was opened for student occupation in August 2009.

Clubhouse at Palouse Ridge Golf Club

The Clubhouse at Palouse Ridge Golf Club (PRGC) is not a LEED registered project. However, several sustainable features are incorporated in the design of the Clubhouse. They include polished concrete floors, large overhangs, and the first closed loop ground source heat pump for heating and cooling of any WSU facility. Located in the center of PRGC, the Clubhouse provides expansive views of the Palouse hills, and is becoming



a destination for alumni and visitors to Pullman. The 7,150 square foot Clubhouse serves students, faculty/staff, and community users, and has the capacity to host 80-100 guests for special events. Construction began in September 2007, and was completed in August 2008.



East Campus Chilled Water Facility

This was a design-build project utilizing the Energy Services Performance Contracting (ESPC) process to provide additional production and supply of chilled water for the campus. Chilled water is used for the cooling of building environments during the year. Washington State University currently utilizes central chilled water production and distribution system to supply cooling for various buildings and facilities on campus. The use of a central system in lieu of individual chiller plants at each building saves considerable energy, operational, and maintenance resources. This project will enhance these resource savings and support the current and future demands for cooling throughout the campus.



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The project will initially provide for 3,000 tons of cooling capacity. The building is designed and constructed such that additional cooling capacity up to a total of 9,000 tons can be added in the future as demand growth dictates. The project also provides an expansion of the 13.2kV electrical distribution system from the Terra View Road substation to the new chilled water plant and to other areas of campus to meet the current and future needs for electrical energy on the Pullman campus. Construction was completed in 2009 and the facility is online producing chilled water to meet the cooling needs of the campus. The close-out phase of the project includes verification of energy savings during the peak of the cooling season.

Future

Veterinary Medical Research Science Building

The Veterinary Medical Research Science Building will provide approximately 128,000 gross square feet located within the Research and Education Complex on the Pullman campus. The building will provide properly equipped and environmentally controlled, state-of-the-art biomedical research and support space for the health science teaching and research programs. A vivarium is also included to provide modern animal holding facilities for gene targeted and knockout animals, as well as to provide essential quarantine space and specialized environmentally controlled space for biomedical research.

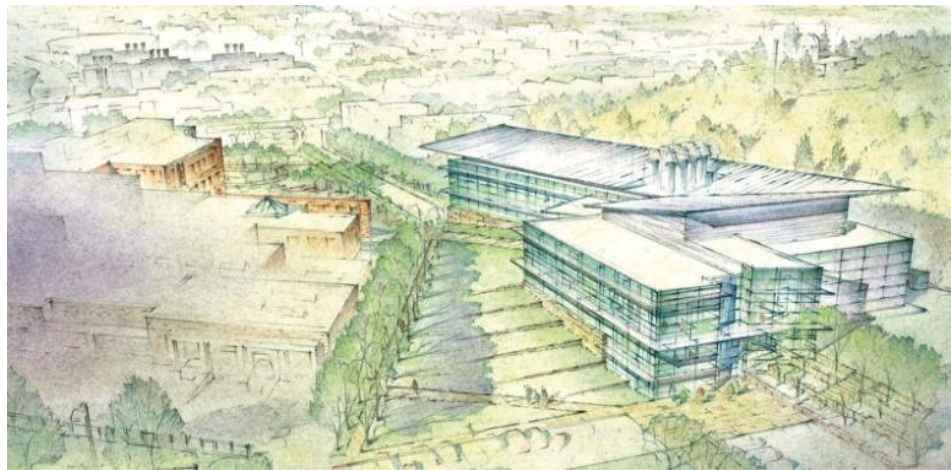




Because this is a research facility it is not mandated by the State of Washington to meet LEED standards. However, WSU strives to design all buildings with sustainable goals in mind. To that end, a one day eco-charette was held to brainstorm sustainable concepts that could be incorporated into the building. Some of those concepts included pervious concrete, building mounted photovoltaic panels, motion/light sensors, heating and cooling with ground source heat pump system.

Global Animal Health

WSU's College of Veterinary Medicine's September 2004 Precinct Master Plan and subsequent updates identified building facilities in support of the WSU's School for Global Animal Health missions. Key is development of new facilities that



support the School's infectious disease research and diagnostic programs. Planned at approximately 40,000-45,000 gross square feet, the Phase I building program currently includes biological safety levels 2 and 3 research laboratories for 12-15 principal investigators. A Phase II building, planned at approximately 75,000 gross square feet, includes biological safety level 2 and 3 large and small animal necropsy laboratories, offices for faculty, DVM residents, and staff; and the School's diagnostic program administrative space. These new facilities will be sited near the existing Animal Disease Biotechnology Facility (ADBF) and the Veterinary Teaching Hospital, within the College of Veterinary Medicine Precinct on the WSU Pullman campus.



WSU Pullman Master Plan

A new Master Plan Study of the Pullman campus will take place in 2010. The study will incorporate a number of sustainable components. Washington State University is engaged in a



regular exercise of updating and expanding upon our Uniform Design and Construction Standards. These standards have an historic reference to and focus upon high performance, sustainable building design.

As we plan for the future, WSU will continue to provide innovative, sustainable design and construction principles that improve safety, functionality and energy efficiency that mirrors our respect for campus culture and heritage.

Pullman Statistics

- Student Enrollment: 18,234
- Total Building Square Footage: 10,532,164
- Total Pullman Campus Acreage: 1,675

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WSU has a long history of pursuing energy and resource conservation opportunities which have reduced greenhouse gas emissions.

Steam Plant

In 2004 a new steam plant went into operation. This eliminated the use of coal on campus. This reduced steam plant greenhouse gas emissions from approximately 93,000 mt eCO₂ in 1990 to approximately 55,000 mt eCO₂ annually today.

High Efficiency Appliances

137 high efficiency clothes washers have been installed in residence halls and campus apartments. Each washer saves 40 gallons of water per load saving water and energy. Another 80 washers are scheduled for replacement in the near future.

Energy Services Performance Contracting (ESPC) Projects

Since 2001, WSU has been partnering with an energy/resource consultant to evaluate and pursue ESPC projects that save energy/resources and are cost effective. These projects include:

- Campus-wide lighting upgrades
- Heating, Ventilation and Air Conditioning upgrades
- Chilled water system upgrades including a new central chilled water plant
- Greenhouse lighting and controls upgrades

In 2008, the completed ESPC projects reduced WSU greenhouse gas emissions by over 10,000 mt eCO₂ annually. New projects are being evaluated and funded if they are economically feasible.





Bio-fuel source steam plant

The use of bio-fuels for steam generation on campus could significantly reduce WSU's greenhouse gas emissions. WSU is located in the heart of the Palouse, one of the most productive wheat growing regions in the world. More than 425,000 metric tons of wheat straw is produced within fifty miles of the campus annually. This resource could provide the fuel for a new steam plant providing baseline steam for the University (estimated at 88,000 mt of straw) annually supplemented with natural gas in times of high demand.



Optimize space utilization

Innovative management of WSU's building spaces could slow campus growth, reduce the cost and materials required for building new buildings and improve building space efficiency.

Renewable energy credits - RECs – (i.e., wind farm generated electricity)

RECs are available for purchase and they certify that a certain quantity for electricity has been generated from a qualifying type of renewable technology. "Green Tags" represent the environmental attributes of one megawatt hour of renewable energy that is physically metered and verified. RECs are not offsets.

Photovoltaic

Pullman offers an opportunity for the use of photovoltaics. As new buildings are being designed the addition of building integrated photovoltaics will be evaluated and pursued when cost effective.

Light Emitting Diode (LED) lighting

LED technology could greatly reduce the energy consumption for lighting. As this technology becomes cost effective WSU will incorporate it into appropriate campus locations.

Future technology improvements

As the world moves toward carbon neutrality new technology will emerge that can assist the University in its goal of becoming climate neutral.

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At WSU Pullman approximately 40% of the students live on campus and the majority of students live within a few miles of campus. Most of the faculty and staff live within 15 miles of campus.

Daily commuting, University owned fleet vehicles, and directly financed air travel are responsible for approximately 5% of WSU Pullman's greenhouse gas emissions.

WSU Parking and Transportation Services offers several transportation alternatives that encourage the use of mass transit, the use of car and van pools, and coordinates the WSU trip reduction and emergency ride home programs.

These programs reduce WSU greenhouse gas emissions and help to achieve climate neutrality by reducing the combustion of fuel and release of greenhouse gas emissions.

Wheatland Express

Wheatland Express operates a commuter bus between Moscow and Pullman. WSU faculty, staff and students can use the Wheatland Express for cross-listed courses, daily commutes, or for sight-seeing, shopping, or visiting in Pullman and Moscow.

Wheatland Express also provides transportation for group charters, tours of the Palouse, and is a link between Pullman, Colfax, and the Spokane International Airport.



Pullman Transit

Pullman Transit was established in 1979. Ridership the first year was approximately 300,000.

The remainder of the 1980's saw changes to the bus service that increased ridership to over 600,000 riders per year.

In 1991 WSU students voted to give Pullman Transit additional operating funds to increase service and allow students, staff, and faculty to ride free. Ridership on the bus service increased to over 900,000.

In 2003, WSU Students passed a measure to charge every student \$15 per semester to improve bus service. As a result Pullman Transit ridership exceeded 1,000,000.



In 2009, WSU students voted to increase their student transit fee from \$15 to \$25 per semester. Bus ridership is expected to top 1,300,000 rides.

the country.

Pullman Transit is considered to be one of the most cost effective and efficient systems in

Carpool - E-Mail List

WSU-Carpool is an e-mail list sponsored by WSU Parking and Transportation Services. The WSU-Carpool e-mail list was created to facilitate the exchange of carpool information for the WSU community. The list is for Washington State University Staff, Faculty and Students to post and review carpool information about rides needed as well as carpool openings.

Vanpools

WSU Coordinated Vanpools

WSU Motor Pool coordinates vanpools from Palouse, Colfax, Colton, Uniontown, and the Lewiston/Clarkston Valley.

Whitman and Asotin County Public Transportation Area Vanpools

Whitman County and Asotin County operate a public transportation vanpool that is available to WSU faculty, staff and students.



Other Resources

PalouseRideshare.org

The Palouse Rideshare project is a web-based system designed to connect riders with drivers in the Palouse region and beyond. Palouse Rideshare is intended to provide rider and driver connections for those who commute or travel the same routes on a regular basis.

RideshareOnline.com

The state of Washington has a source of ride share information that can be found at the web site of RideshareOnline.com. This site offers a ride matching service for the entire state.

CarpoolWorld.com

Another source of ride share information can be found at the web site of CarpoolWorld.com. This site offers a ride matching service for the entire planet. There are often people looking to share the expense of a commute to school or work or even to Seattle for the weekend, and beyond.

[Palouse Clearwater Environmental Institute](http://PalouseClearwaterEnvironmentalInstitute.org)

The Palouse-Clearwater Environmental Institute, a nonprofit environmental organization, serves as a regional clearinghouse for car and vanpool information and provides Van Pool services for students and commuters on three different routes in the Palouse-Clearwater region. The routes include the following: Moscow-Lewiston, Lewiston-Moscow, and Moscow-Lapwai.

[Commute Trip Reduction](http://WashingtonState.com)

Washington's Commute Trip Reduction (CTR) Law seeks to identify and establish commute alternatives that could reduce employee single-occupant vehicle use. Reducing single occupant vehicle use in turn will reduce greenhouse gasses.

[Emergency Ride Home](http://WashingtonState.com)

In order to promote alternatives to commuting in single-occupant vehicles, the University supports the Emergency Ride Home program. This program provides assurance of a ride in an emergency for those who use alternative commute methods.



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After implementation of the green development, energy conservation, and transportation strategies to reduce greenhouse gas emissions, WSU may still not be able to achieve its climate action plan goals. To reach regulatory mandated goals and, ultimately, the goal of net climate neutrality the use of carbon offsets may be required.

A carbon offset is a way to mitigate GHG emissions that cannot be eliminated at WSU Pullman. Offsets are typically achieved through financial support of off-site projects that reduce the emission of greenhouse gases. Offsets may be less expensive than reducing WSU Pullman GHG emissions.

Examples of typical carbon offsets that WSU may consider if necessary include off-site:

- Renewable energy projects (e.g. wind farms or photovoltaic system)
- Energy efficiency projects
- Destruction of industrial pollutants (e.g. CFC capture and destruction)
- Destruction of landfill methane
- Composting agricultural/biological material
- Land use changes (e.g. reforestation or afforestation)
- Purchase of carbon offsets from recognized climate exchanges





If WSU purchases carbon offsets, they will be:

- Real and measurable
- Additional (emission reductions that would not have occurred otherwise)
- Permanent
- Verifiable

Present Offsets

The WSU Compost Facility supports Washington State University's missions by managing the Universities organic waste stream in an efficient, effective and safe manner.

The Compost Facility began operations in October 1994. The facility was the first university based compost facility to process all campus generated organic waste. Approximately 25,000 cubic yards are composted annually on 4 acres of asphalt surface. Research has been conducted



at the facility to determine how feed stocks affect quality and effectiveness of inoculants and additives. The site is extensively toured by WSU compost classes, local K-12 schools and other universities.

Feed stocks are mixed and composted for 12 weeks. Piles are monitored for temperature and turned weekly. The final product is screened to remove any residuals larger than 3/4" and moved to curing piles.

The standard mixture in 2008 generally included feed stocks in these proportions:

- 84% Animal manure and bedding
- 7% Wood/paper waste
- 5% Plant waste and soil
- 2% Laboratory animal waste
- 2% Dining center food waste



Past

The faculty interested in environmental science began a process of establishing a strong foundation for their work almost a decade ago, motivated primarily by the broad recognition that while there were many faculty members involved in environmental research, education and outreach work at the university – including faculty located on the main campus in Pullman, and on WSU campuses in Spokane, Vancouver, the Tri-Cities and throughout the WSU Extension system – these faculty members were scattered across many different academic, research and outreach units. In 2002 serious, persistent faculty-driven efforts were initiated to create a focal point for these faculty members to coalesce around in order to facilitate a more coherent approach to environmental studies at the university. In due course these faculty members succeeded in convincing a cadre of five deans to support their efforts and succeeded as well in creating a formal proposal to create the Center for Educational Research, Education and Outreach [CEREO]. That proposal was accepted by the WSU Faculty Senate in 2006, and the university's administration recognized the new unit and allocated funds for its operations. At the present time more than 150 faculty members from throughout the university are participating members of CEREO, and many of those faculty are actively engaged in the promotion of sustainability through the research, education and outreach work in which they engage. The creation of and the activities of CEREO (see website) have resulted in three major accomplishments:



- The creation of “roadmaps” for both undergraduate and graduate studies at WSU, allowing students and faculty alike to locate and take advantage of environmental offerings at the university.
- Support for the preparation of large, multi-disciplinary grant proposals to the National Science Foundation [NSF] (e.g., IGERT, NEON, ULTRA) and other funding sources to support research into sustainability.
- The facilitation of outreach education and applied research in local communities seeking to promote sustainability through policy adoption and operational programs.

Present

A number of faculty members involved in CEREO are in the process of carrying out the implementation of the first large NSF grant secured with CEREO support. In August of 2009 the NSF awarded WSU a \$3,000,000, 5-year grant entitled Nitrogen Systems: Policy-Oriented Integrated Research and Education (NSPIRE) designed to support the graduate education of 30 PhD students in Engineering and the Biological and Physical Sciences who are dedicated to the interdisciplinary study of the nitrogen cycle with regard to the dynamics of global climate change. In addition to carbon, reactive nitrogen in the environment represents a major problem for ozone depletion and other environmental and public health hazards.

CEREO is currently supporting five other multi-disciplinary groups of faculty engaged in constructing other grant proposals such as the one formulated by the faculty members who achieved NSF funding for NSPIRE. All of these efforts fit under the specific rubric of environmental and societal sustainability.



Recently, the Department of Energy announced that a group of Washington State University researchers will be working with Avista on a demonstration project that hopes to make the city of Pullman the region's first smart grid community. The Pullman project is part of a Department of Energy regional smart grid demonstration project throughout the Northwest that is designed to expand upon existing electric infrastructure and test new smart grid technology. Using smart grid technologies, the Pacific Northwest Smart Grid Demonstration Project will test new combinations of devices, software and advanced analytical tools that enhance the power grid's reliability and performance.



Future

It is anticipated that at least some of the faculty members involved in CEREO will focus their own work, and that of their students, on the following topics of direct interest to Washington State University. It is anticipated that grant applications and doctoral dissertation projects will be directed toward the following areas related to:

- The study of carbon-generating, automobile-centered transportation systems at WSU, particularly with respect to the development of park n' ride, bike, pedestrian and pooled conveyance modes of person transport and movement about the campus. The campus master plan for the next 10 years places a heavy emphasis upon ridding the central campus of automobile traffic.
- The study of the possibility of a rail connection between Pullman and Spokane. This 75-mile corridor is increasingly heavily travelled, and the amount of future travel between these two parts of the WSU main campus is likely to continue to increase. The Health Sciences focus of the Spokane campus make it likely that the Interdisciplinary Design Institute's doctoral students will continue to scope out the feasibility of a rail connection between Pullman and Spokane which would connect to the several small rural communities along the route, all of which have given formal endorsements to the project. Preliminary studies indicate a strong interest in this possible future mode of travel between these two campus centers.
- The promotion of distance learning, teleconferencing, and telecommuting has been an established set of initiatives for some time at WSU; however, as the nation approaches the likelihood of the serious tracking of carbon emissions, some WSU faculty and graduate students will very likely initiate studies designed to document the emissions avoided by the adoption of alternatives to automobile and/or air travel to classes, meetings, and work.

Conclusion

The Climate Action Plan for WSU will most certainly gain support from the many faculty members who carry out research, education and/or outreach related to sustainability. With the creation of CEREO it is likely that these efforts will be well-supported and coordinated, and that the President's Climate Commitment will reach fruition at WSU.



Past

In 1975, Associated Students of Washington State University (ASWSU) appointed a student committee named the Environmental Task Force (ETF). Over the years ETF has focused its efforts on many different environmental issues including air pollution and energy conservation.

In the past few years ASWSU and the student body have been very supportive of green initiatives on campus. They firmly stand behind the ethics and principles of LEED certified building policies and alternative modes of transportation. In 2008, students signed a petition backing the Green Fund, which essentially gives each student the option to add an additional charge on their semester fee to go towards green initiatives on campus.



In 2008, ASWSU allocated resources and supported the Environmental Wellbeing Coordinator (EWC) position within the Wellbeing program. The EWC's job duties focus on sustainability, including the development of a bike share program. The ultimate goal of the Green Bike program is to encourage a bike friendly culture on campus and to decrease air pollution and green house gas emissions. The program launched

in 2009 and continues to be well received by the WSU community. Additionally, the EWC, along with students in ESRP 490 Environmental Management Systems and Sustainability course, also created the WSU Green Living Guide which gives students information and tips about energy conservation and alternative modes of transportation. The EWC also continues to provide educational programming that encourages students to decrease energy consumption by purchasing local products, weatherizing rooms/homes, and taking energy audits.



Present

Currently there are 365 RSO's on the WSU campus among those there are several that have environmentally minded missions that focus on decreasing green house gas emissions and energy use on campus.

Environmental Science Club's purpose is to give Washington State University students who are studying environmental science and regional planning and related fields an opportunity to interact with their fellow peers who are interested in the well being of the environment and to work to improve the environment on campus and in the community. Currently, the club is focusing efforts on decreasing energy consumption by asking academic departments on campus to agree to incorporate double sided



Student Involvement

printing as a policy for all class assignments, the English and History departments have already agreed to this for spring 2010.

Engineers without Borders partners with Builders without Borders WSU in assisting disadvantaged communities across Northwestern America and around the world to improve quality of life through sustainable, environmental, and economically sound engineering projects, all the while developing an internationally responsible student body. Engineers without Borders is designing and implementing a renewable energy system at the WSU Organic Farm. Once the project is completed energy consumption at the Farm will be completely generated by sustainable means, decreasing energy use and ultimately air pollution.



EWB highlights their wind turbine proto type at Spring Fest 2009

Sustainable Ag Club's mission of is to promote and implement sustainable social, economic and environmental agricultural practices by fostering multi-disciplinary relationships across campus and the larger Pullman community through research, education, and advocacy. The clubs major initiative has been to increase composting at individual levels and promote the use of the university composting facilities. They advocate composting as a way to save energy by converting our food scraps to soil.

Students show their support in multiple ways; by allocating their fees to certain projects or by simply participating in initiatives. Below are two current projects that are supported by ASWSU, RSO's, and the student body that specifically target air pollution and alternative green energy initiatives.

Green Bike: This program presently offers for free or at a reduced cost 40 Mt. Bikes for students, staff, faculty and community members to use as an alternative mode transportation. The purpose of this project is to build a bike friendly culture on campus while simultaneously decreasing automobile congestion, noise and air pollution, and greenhouse gases. We also hope to increase physical activity and a sense of place through cycling. In the first semester of the program the bikes collectively traveled 3664 miles. If those miles had been driven in an average car getting 25 miles a gallon, we would have consumed 146.5 gallons of gasoline and emitted 2783.5 pounds of CO₂ into the atmosphere.

Cougar Green Fund: This fund will be supported through an optional \$5 fee, presented at the time of class registration, and will provide wonderful opportunities for all WSU students, student organizations, and faculty to become more involved in research and implementation of sustainability-based projects and initiatives. Projects suggested by the founding group include wind and solar power systems, green roofs, and energy saving initiatives. In 2008 the Cougar Green Fund



Student Involvement

was brought to the ASWSU election ballot and passed unanimously.

Residence Life has also committed to increasing sustainability among the students living on campus. The Sustainability Committee is comprised of two Resident Directors and 8-10 Resident Assistants and this group focuses primarily on energy conservation in the residence halls. The following campaigns are facilitated by the Residence Life Sustainability Committee:

The One Thing Challenge is promoted during the fall semester. During the challenge Washington State University and University of Washington compete to see who can recruit the most students living on campus to commit to doing one thing that will conserve energy. Students from both universities log onto a website to make their commitment. The winner of the campaign is announced at the Apple Cup- a football rivalry between the two schools.



Every spring for the last three years the committee as supported and promoted a sustainability challenge between the 16 residence halls on WSU's campus. The group promotes saving energy, water, and resources through a host of posters, advertisements, programs, and events. Working with Facility Operations the group is given a baseline of energy, water, and steam used to compare the differences after the month long challenge. The hall that saves the largest percentage of resources wins an award.

Future

Students will continue to support movements and issues they find relevant, important, and worthy. As the environmental movement ebbs and flows like it has over the last 30 years student involvement will also ebb and flow. However, in the near future students at Washington State University have clearly showed dedication to reducing green house gases and energy consumption. By supporting the above mentioned programs and projects they are using their voice, choice, and resources to commit to



changing the face of WSU. The Cougar Green Fund is still in deliberations among university administrators, but the support behind the project is still strong as students discuss the importance of green energy at WSU. The Green Bike program will continue to promote biking as a tangible mode of transportation and a substantial method to decrease the burning of fossil fuels. Students will continue to sit on the Environment and Sustainability committee

to discuss how to eliminate green house gas emissions, work with faculty and staff, and how to involve fellow students.



Financing and Tracking Progress

Financing

Funding the strategies that will allow WSU to meet its greenhouse gas reduction goals will be a significant challenge. Current funding sources such as the energy service performance contracting program will continue to be utilized. In addition, WSU will explore the viability of new funding sources to meet the CAP goals such as:

- Pursue short-term and long-term funding from the legislature
- Enhanced Utility Rebate program
- A student supported Green Fund.

Tracking Progress

To ensure that efforts to advance the CAP goals are effective and efficient WSU is developing a centralized project tracking system. For each project this system will track:

Project name
CAP strategy the project supports
Responsible person(s)
Project budget
Expected Emission Reductions
Actual Emission Reductions

This tracking system will also be used in generating reports such as the required ACUPCC biennial reports.



The Climate Action Plan has been developed by the Sustainability and Environment Committee.

Production of this plan reflects Washington State University's commitment to sustainability and the environment. The plan can be viewed on the Campus Sustainability web site at

<http://sustainability.wsu.edu/>



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