

Center for a Sustainable Society
Annual Report
October 13, 2014
Draft

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This report covers the first two years of the Center's operations. Accomplishments are outlined below, along with a list of ongoing projects. Projects overseen by other offices are included because they contribute in major ways to the University's overall sustainability efforts. To give a more complete picture of the University's sustainability efforts, also included are projects that occurred prior to the Center's start. This report does not cover all university sustainability efforts.

1. Mission, Goals, & Strategic Planning. The Center's main goal is to make the university more sustainable, in partnership with faculty, staff, and students. Another major goal is to work with external and internal partners to help Forest Grove and Washington County become more sustainable.

As part of the university's strategic planning process, we submitted a draft plan for sustainability in February 2013 that expands upon the Center's goals. As you can see from the plan (included as an attachment), some goals are general because specific elements need to be vetted by various constituencies.

The plan includes a proposed Mission Statement, since then modified slightly:

The Center embraces the sustainability component of the Pacific University Mission. The Center—working with its Advisory Council, faculty, staff, and students—seeks to help all areas of university operations use resources more efficiently; increasing efficiency of resource use also greens the university bottom line. The Center advises academic programs on incorporating sustainability themes into the curriculum. It also works with external partners to help Pacific University, Forest Grove, and Washington County become more sustainable.

Elements of the strategic plan are covered below.

2. University Sustainability Committee & Sustainability Center Advisory Council. After discussion in spring 2013, the University Sustainability Committee proposed disbanding the committee and recommended that the Sustainability Center establish an Advisory Council that would include members from a wide array of campus constituencies. The proposal was submitted to the Provost and to the University Council in fall 2013 and approved in December 2013.

3. Staffing. John Hayes is the half-time director. Several students have worked part time for the Center and have been a great help on myriad projects that really moved sustainability forward, and they are responsible for much of the progress reported below. John Hayes is retiring from this position in June 2015, and the university needs to decide how to organize its sustainability efforts in the future. The Advisory Council should aid the decision-making process.

4. Earth Week. Students from the Center helped organize and conduct Earth Week projects in 2013 and 2014. Included were carrying out the [Wild & Scenic Film Festival](#) and a raffle of a mountain bike provided by the Center, the purchase of which was partially subsidized by [Olson's Bicycles](#).

5. STARS Rating. Pacific is a member of the Association for the Advancement of Sustainability in Higher Education (AASHE). AASHE sponsors the STARS rating program that tracks college and university sustainability efforts in about 80 operational areas. Through the diligent efforts of the Sustainability Committee, the Institutional Research Office, and many staff and faculty members, we submitted a STARS report in February 2012. As a result, Pacific was awarded a [Bronze rating](#). Because of a tight timeline and the huge effort involved in generating the necessary data, we did not get all of the points that we could have gotten, although it is unlikely that we would have been elevated to a Silver rating with the additional points.

For our next submission in early 2015, we hope to obtain a Gold rating. The center is working with staff, faculty, and students throughout the university to garner the necessary points. Some of those efforts are outlined below; there are too many efforts underway to include all of them in this report.

6. Presidents' Climate Commitment. A group of college and university presidents started an organization, the American College & University Presidents' Climate Commitment (ACUPCC), that now includes [684 signatory institutions](#). (interestingly, only 11 new institutions have signed on in the last 12 months). In December 2012, President Hallick signed the commitment, adding Pacific to the list. [Earlier, President Creighton had signed Pacific onto the [Talloires Declaration](#), an international commitment. Only 169 U.S. institutions have signed on.]

The ACUPCC requires signatory institutions to conduct a greenhouse gas inventory (see #7 below), to name a date by which they would become climate-neutral, and to submit climate-action plans. Among the more than 4,000 U.S. institutions, only 2 have reached climate neutrality. Most signatories expect to become climate-neutral in 20 to 40 years from now. Because of special circumstances, Pacific could choose to become climate-neutral immediately, which would generate a lot of positive press (see #8 below).

7. Greenhouse Gas Inventory. Institutional operations generate carbon dioxide and other greenhouse gases (GHG). Toting those up provides the institution's carbon footprint, which needs to be known to determine what would be required to reach carbon neutrality. Calculating emissions increases our STARS rating. The standard protocol requires calculations of Scope 1, 2, & 3 emissions:

- Scope 1. Direct GHG emissions. Includes primarily natural gas combustion to heat buildings.
- Scope 2. Indirect GHG emissions. Purchased electricity.
- Scope 3. Other indirect GHG emissions. This broad category includes air and commuter travel, embodied energy in purchased materials, waste and sewage disposal, and a lot more. Whereas Scope 1 & 2 emissions are relatively easy to determine, Scope 3 emission calculations tie people in knots.

We submitted our [greenhouse gas inventory](#) to the Presidents' Climate Commitment in May 2014.

8. Carbon/Climate Neutrality. The three essential paths to climate neutrality include undertaking cost-effective energy conservation measures, using renewable energy sources where feasible, and purchasing carbon offsets to cover the rest.

- Energy conservation. We are developing a comprehensive program to implement all cost-effective energy conservation strategies, investing in measures that, on average, have a 5- to 7-year payback. We could use a dedicated green investment fund or rely on leftover year-end funds. Investment in energy conservation makes good business sense because it has a guaranteed 14 to 20% first-year return on investment (ROI), amounts rarely exceeded by investment instruments. Any reduction in energy consumption would increase our STARS rating.

We are replacing archaic boilers, working with the Energy Trust of Oregon on an incentive program to pay some of the replacement cost. For example, the Marsh boiler, an old oil burner converted to natural gas, the only thing that survived the Marsh fire in 1975, operated at about 70% efficiency. In summer 2013 we installed two HydroTherm KN-6 condensing gas boilers to replace the old burner. We chose the Marsh boiler because we were facing an \$8,500 repair cost on top of \$11,000 spent earlier. The installed cost after the incentive payment and after deducting what we would have spent on immediate repairs was \$72,000. Efficiency went from 70% to 95%, saving \$6,700/year, providing a 9.3% first-year ROI. That also removes 35.6 metric tons of CO₂ from the atmosphere annually and reduces the amount of carbon offsets needed to reach neutrality.

With future boiler replacements, we hope that in-house labor would substantially reduce replacement costs (roughly half of the boiler replacement cost was labor; we were temporarily without an in-house boiler engineer), which could boost first-year ROI to as high as 15%.

We also replaced the Stoller Center heat pumps, which use electricity to provide both heating and cooling, with more efficient models. We should realize a 23% energy savings, or about 400,000 kWh/year. If we got electricity straight off the Northwest power grid, that would save about 160 metric tons of CO₂/year; however, because Forest Grove uses much more hydropower than the average Northwest grid delivery, the amount of CO₂ saved would be substantially less.

In terms of overall energy use, it is instructive to compare Gilbert Hall, which uses 0.500 therms per square foot of floor area per year (therms/sqft-yr; one therm is 100,000 Btu), with the Murdock chemistry building, our least efficient, which uses 6 times as much energy or 2.919 therms/sqft-yr. There are two main equipment differences. Murdock has its original, very

inefficient, 32-year-old boiler. Gilbert has a super-efficient condensing gas boiler. Also in Gilbert, stale exhaust air is channeled through a heat-recovery ventilator that exchanges heat with fresh incoming air, preheating it, transferring about 75% of the energy in the outgoing air to the incoming air. Murdock has a much higher air-exchange rate, mandated by building codes, of four complete building air changes per hour, and there is no heat-recovery ventilator, so 100% of the interior air's added heat is lost when exhausted to the outside. Replacing the boiler and adding a heat-recovery ventilator would reduce Murdock's natural gas energy use by about half, saving 20,000 therms or about \$20,000 per year and also saving 106 metric tons of CO₂ annually.

When we reroof buildings, we also insulate them better. For example, when we reroofed Scott Hall in July 2012, we included a tapered layer of Styrofoam with minimum thickness of 12 inches, attaining a minimum R-value of 40.

In terms of electricity consumption, one strategy that we are undertaking is replacing exterior lighting with LEDs. LEDs often last for decades, produce more lumens per watt than other lights, are mercury and lead free, and do not produce ultraviolet radiation. In the University Center refresh, we switched to all LED interior lighting. We have much more to do with electricity energy conservation.

- Renewable energy. Pacific can achieve carbon neutrality more easily than many other institutions for two main reasons: about 80% of our electricity already comes from renewable sources, namely hydropower; we have a relatively mild climate that requires less energy for heating and cooling. We have investigated using on-site renewable energy sources, such as solar photovoltaic panels to produce electricity and solar hot water panels. However, because Forest Grove has its own municipal utility and the 80% of electricity from hydropower is cheap, solar photovoltaic panels would not pay for themselves over their lifetimes. We also looked at installing solar hot water panels on Cascade Hall, which would displace cheap natural gas consumption, but the payback came in at 20 years so was not implemented; indeed, any maintenance or panel or component replacement would boost the payback period beyond 20 years. Investment in renewable energy beyond hydropower would probably have to be off-site.

In Forest Grove, we could, however, invest in a small solar demonstration project for education purposes. In Hillsboro, the Intermodal Transit Facility, which Pacific helped pay for, is equipped with solar photovoltaic panels, and we might install more panels in Hillsboro because our electricity provider, PGE, charges about twice what we pay in Forest Grove, making panels there about twice as cost-effective. Investment in renewable energy production would increase our STARS rating.

As a result of a student project, we retrofitted 7 exercise machines in the fitness center to generate electricity to feed back into the grid. While the amount of energy produced is really minimal, the project serves as a demonstration that each one of us can make better choices that would reduce our environmental footprint.

- Carbon offsets. Purchasing carbon offsets should be the last adopted option, mainly because that does not precipitate any university energy savings and would not pay back the invested money that would otherwise support our educational mission. It makes sense, then, to invest in energy conservation and any available cost-effective renewable energy sources before purchasing offsets. Ultimately, to become climate-neutral, we would need to purchase some offsets.

The value in becoming climate-neutral in the near future lies in the large amount of favorable publicity that we would garner from being the first university west of the Mississippi to become climate-neutral.

We have worked with Renewable Choice Energy to determine the cost of purchasing certified natural gas and electricity consumption offsets. At current consumption rates, it would take about \$25,000/year to offset our entire carbon footprint, but that would drop as we implemented conservation measures.

Renewable Choice Energy has several available investments. Cheapest for us would be investing in methane capture from landfills, burning it to generate electricity. This keeps that methane—a greenhouse gas 25 times more potent than CO₂—out of the atmosphere.

Scope 3 emissions also include the embedded energy in purchased products. Currently, Pacific purchases offsets for [Dell computers](#). One could also choose to purchase relatively cheap certified carbon offsets for air travel, available [here](#) and [here](#) (about \$9 to \$12 for non-stop, round-trip flight from Portland to New York).

9. Office Greening. Several years ago, a group of volunteer staff members undertook an office-greening initiative with many wonderful benefits, including wider use of recycled-content paper and double-sided printing. The center convened a group of staff members to expand this initiative; Windy Stein was the group's chair. Tangible results include, for example, a draft policy that would mandate purchase of Energy Star appliances, where available, which is in the approval process.

Prior to this initiative, about half of our purchased office paper had 30% or more recycled content. We moved to mandatory minimum 30% recycled-content office paper, which we now purchase from Office Depot for the same cost as virgin paper. We are currently working with Office Depot on mandatory 50% recycled content, and we will move in this direction as soon as we get the 50% paper cost down a little.

Both of these initiatives will increase our STARS rating.

10. Campus Landscape Plan. The center has developed a comprehensive landscape maintenance plan that uses scientific principles to help guide the University on a sustainable path. Many of our landscaping practices do not meet sustainability norms, which is a major impetus for instituting a landscape plan. The plan outlines appropriate practices and sets up an advisory committee to oversee the landscape plan and to advise the Director of Facilities on campus landscape maintenance.

The landscape plan, a proposed draft of which is included as an attachment, follows the tenets of the [Sustainable Sites Initiative](#), a partnership of the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center at the University of Texas, and the United States Botanic Garden.

11. Transportation. The Sustainability Committee partnered with Zipcar, placing two cars in February 2014 on the Forest Grove campus that may be rented by the hour or day. Ryan Aiello and others worked hard to make this a reality. A third car will be added in Hillsboro. One of the first two cars is a 50-mile-per-gallon Prius, and we will work with Zipcar to add more hybrid vehicles. Zipcars promote ride-sharing and we hope will cause some students not to bring cars to campus. You can sign up [here](#) (cost is \$25, but you get \$35 worth of free driving).

The university provides a substantial subsidy for TriMet passes. Unfortunately, ridership is relatively low, which means that dollar subsidy per individual is quite high. We have until spring 2015 to sort this out.

The university also owns two motor pool hybrid Ford Focuses and will be purchasing an all electric vehicle soon.

12. Model Room. With Student Life, the Center has set up a residence hall room that is a model for sustainable living practices. It is used to help students make good choices about resource use in

their living situations. This will become part of the Center's video series in order to reach a wider audience. We achieve a higher STARS rating by setting up this room.

13. Outreach. The center sponsored the making of two videos in spring 2013, one an overview of Pacific's [sustainability efforts](#), the other about [moving into residence halls](#). These are the first in what will be a series of informative videos. Student Life, Facilities, and Marketing departments helped produce the videos. Student Life uses the Arrive & Bring video to help tutor incoming freshmen on bringing less stuff to the residence halls.

The [Give & Go program](#), coordinated by the Center for Civic Engagement, continues to grow in size. Students moving out of the residence halls in May donate unwanted items and support community organizations, such as CREATE, Family Bridge, Family Resource Center, Adelante Mujeres, HomePlate, St. Vincent de Paul, Community Action, Goodwill, and others. Donations included eighty-two 44-gallon bags of clothes, 12 bags of shoes, 34 bags of towels and linens, 329 pounds of food, and many bins of household items, books, and electronics. Give & Go also diverts much of what heretofore ended up in the landfill, and that diversion saves the university tipping fees.

14. Recycling. Thanks to Doug Martin and his able crew, over the last 5 years we have diverted 200 tons of paper and cardboard from the waste stream and have recycled tons of cans and bottles, saving the university over \$500,000 in landfill tipping fees. However, we have a problem with mixed recycling on campus. If too much garbage gets mixed in, the entire batch gets rejected by the recyclers, which then costs the university money and increases the amount we contribute to the landfill. The center is working with Facilities to improve compliance with recycling, especially in the residence halls. We are also working on a 3-bin outdoor container that would bear Pacific logos and be built locally. To gain better separation compliance, we should always use well-signed 3-bin models that receive mixed recycling, glass, and trash.

15. Food Service. The food service operation under [Aramark](#) is a Northwest leader in sustainability. The operation includes 30% of food produced within 200 miles of campus, Fair Trade coffee and tea, local cage-free eggs, rBST-free milk, and lots more. It sends about 2 tons of unused food per year to food banks; by using reusable to-go boxes, has diverted about 150,000 disposable containers from landfills; either composts or sends food scraps to a pig farmer; purchases food from Pacific's B-Street Farm; eliminated sales of bottled water; and implemented trayless dining. As part of the bottled water ban and emanating from a student initiative, Pacific installed hydration stations around the Forest Grove campus.

The Center for Civic Engagement also runs a food rescue program.

16. Technology. University Information Services and the Sustainability Center are partnering on an eCycling program that seeks to keep electronic devices in circulation for as long as possible and then to deliver unusable or unwanted devices to certified recyclers.

UIS also maintains an extensive [sustainability program](#) that includes purchasing carbon offsets for Dell computers, a toner recycling program, recycling of block Styrofoam and cardboard, purchase of Energy Smart equipment, and recycling of batteries.

17. Sustainable Investments. We took a December 31, 2013, snapshot of Pacific's endowment investments and separated the 7,000 spreadsheet lines into sustainable businesses and those that either are not thought to be sustainable or not enough is known to make a determination. We used several sources, including Dow Jones Sustainability Index (we have access to only a portion of the index), TIAA-CREF Social Choice fund, Portfolio 21, Corporate 100/Global Knights, Sustainablebusiness.com, and Green Market Oracle. We also included as sustainable our holdings in Sallie Mae (student loans for lower income students); Ginnie Mae, Fannie Mae, and Freddie Mac

(loans for affordable housing); the green power industry; and socially/environmentally responsible companies that are not listed by various services (e.g. St. Jude Medical). We have a remarkable 43% invested in sustainable businesses. This percentage will boost our STARS rating.

18. Academics. A major component of the STARS rating consists of the percentage of courses that have sustainability components. AASHE recommends that we use [Earth Charter](#) precepts to determine if a course is a sustainability course or a sustainability-containing course. To determine which courses would apply, we used the 2014-15 Catalog and decided to require a minimum of 3 Earth Charter precepts to qualify. We ignored courses that were indeterminate, such as Independent Study. Pacific has an astoundingly high percentage of courses that apply. Of the 1,613 courses for which we could make a determination, 343 were sustainability courses and 477 were sustainability-containing courses, yielding a composite 50.8%.

19. B-Street Living Museum. The B-Street farm offers many programs for students and community members, in addition to producing organic food. Programs can be viewed [here](#).

20. Regional Sustainability Efforts. The Center's students worked closely with the Forest Grove Sustainability Committee to organize sustainability summits where citizens came together to plan a sustainable future for the city. The first and second summits were held on the Forest Grove campus on October 20, 2012, and February 9, 2013. An additional summit occurred off campus on April 20, 2013. In addition, the committee planned the Forest Grove Annual Town Meeting program on January 26, 2013, where the theme was Creating a More Equitable, Safe, Healthy, Sustainable and Prosperous Forest Grove.

The committee developed a climate-action plan. John Hayes authored the section on Energy Conservation and Green Buildings. Deke Gundersen and Johanna Wood helped with the plan, and Kiersten Iwai spent the summer of 2012 conducting a greenhouse gas inventory and developing reports for the city. The plan was presented to the Forest Grove City Council in October 2013.

The Forest Grove City Council established a [Sustainability Commission](#), and John Hayes and Deke Gundersen were appointed in February 2014.

Kiersten's reports on [energy use](#), [water consumption](#), and [socio-economic assessment](#) are linked here from the city's Community Development website.

Faculty member Rich VanBuskirk and John Hayes, as members of the [Fernhill Wetlands Council](#) board, worked with the City of Forest Grove and Clean Water Services on paying for a picnic and bathroom facility and rebuilding a viewing stand at the Fernhill wetlands site. The council also is partnering with Clean Water Services in the installation of an innovative and sustainable natural wetland tertiary sewage [treatment facility](#) there.