

Climate Action Plan Status Update

April 2015

Background:

The 2010 Climate Action Plan presented four overarching goals for Western:

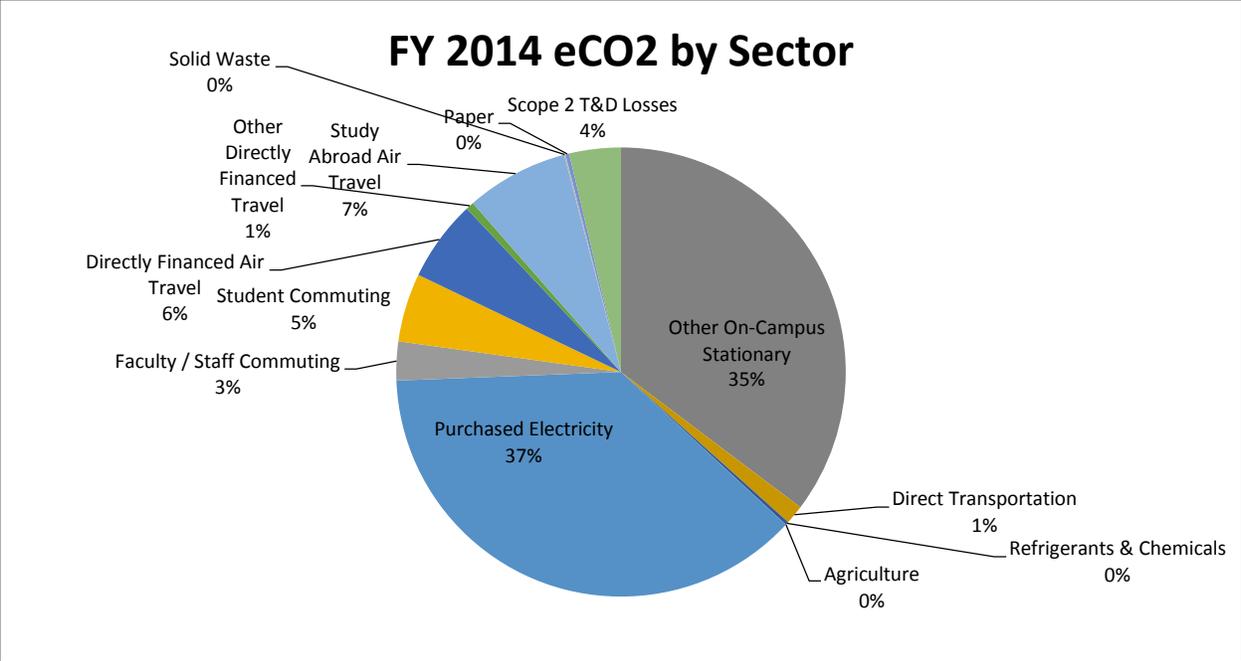
1. Commit to reducing net greenhouse gas emissions to 36% below 2005 levels by 2020, achieving climate neutrality as a campus by 2050. This commitment would ensure Western exceeded legislatively mandated goals set in RCW 70.235:
 - a. 15% reduction by 2020
 - b. 36% reduction by 2035
 - c. 57.5% reduction by 2050
2. Commit to long term climate neutrality by researching system-wide opportunities for energy conservation and efficiency.
3. Provide a model to the campus to incorporate greenhouse gas reduction criteria and sustainability into institutional decision making processes.
4. Support the continuation of the Climate Action Plan through allocation of resources for permanent sustainability staff and creation of a CAP Implementation Team to research reduction and funding opportunities, and report progress on a cyclical basis.

The Sustainability Advisory Committee has recommended that the University's Climate Action Plan, which addresses Energy Conservation and Carbon Footprint Reduction, be incorporated into the more comprehensive Sustainability Action Plan. That comprehensive plan will contain numerous sections and chapters, each of which will provide an analysis of the current condition, with short, medium, and long term goals/objectives/metrics for action or consideration in future resource planning.

Executive Summary:

Energy conservation and carbon footprint reduction have been an integral aspect of operations for many years, beginning before the Climate Action Plan which was published in 2010. Since Western began reporting its carbon emissions footprint in 2006, the largest emissions sources have been natural gas and electricity, comprising over two-thirds of overall emissions. This is followed by transportation, which accounts for about one-fifth of emissions, with the largest share of that coming from air travel. The balance is comprised of procurement, food, and other operations. Clearly, our most likely places to focus conservation efforts lie in electrical consumption and heating demand (natural gas at the Steam Plant).

As measured against the Climate Action Plan goals, results have been mixed. We have made notable progress on energy conservation and emissions reductions, but the scale of reductions places Western more in line with the legislative goals than the more ambitious CAP goals. Energy consumption is down and overall emissions have been reduced by 12.3% since 2007.



While Western undoubtedly has a long term commitment to climate neutrality, identifying and reporting specific research activities is challenging to report. There are however, significant achievements:

- In 2012, Western entered into a \$3 million dollar energy savings contract – the largest such initiative ever undertaken by Western.
- We have also investigated the possibility of bio-fuels for the central heating plant and have initiated a study to evaluate other possibilities for improvement in the steam system.
- Resources have been allocated to conservation activities, most significantly the creation of a campus Energy Manager position and the establishment of a revolving energy project fund to invest in additional conservation projects.

We do need to improve on the frequency and content of our reporting of such actions and achievements to campus.

Progress to Date:

The Built Environment

The new **Energy Manager** is charged with developing the Energy Conservation section of the Sustainability Action Plan. While the plan itself is intended to be a living document, the first version of that plan is expected to be in place for the start of the Fall Quarter 2015. In general, that plan will clearly define the baseline for benchmarking Western's progress toward energy conservation and carbon footprint reduction, and establish reporting expectations to track our progress.

Our recent conservation measures have been primarily focused on building electrical consumption. These measures have clearly started to have significant impact, even in the face of rising commodity costs. Given the impact of those conservation efforts, we estimate the University utility budget will not require increased funding next fiscal year as our conservation results are outpacing inflation!

The first annual **revolving energy fund** report is due for publication in early May. While still under development, that report will:

- Report on activities completed during the past several years.
- Report on planned conservation projects based on expected cash flow and payback estimates. These activities will include extending the successful building controls programming initiative to other campus buildings. By all measures, electricity consumption across campus is on a downward trend. This trend is especially notable when considered in the context of increased building footprint and increased enrollment over the same period

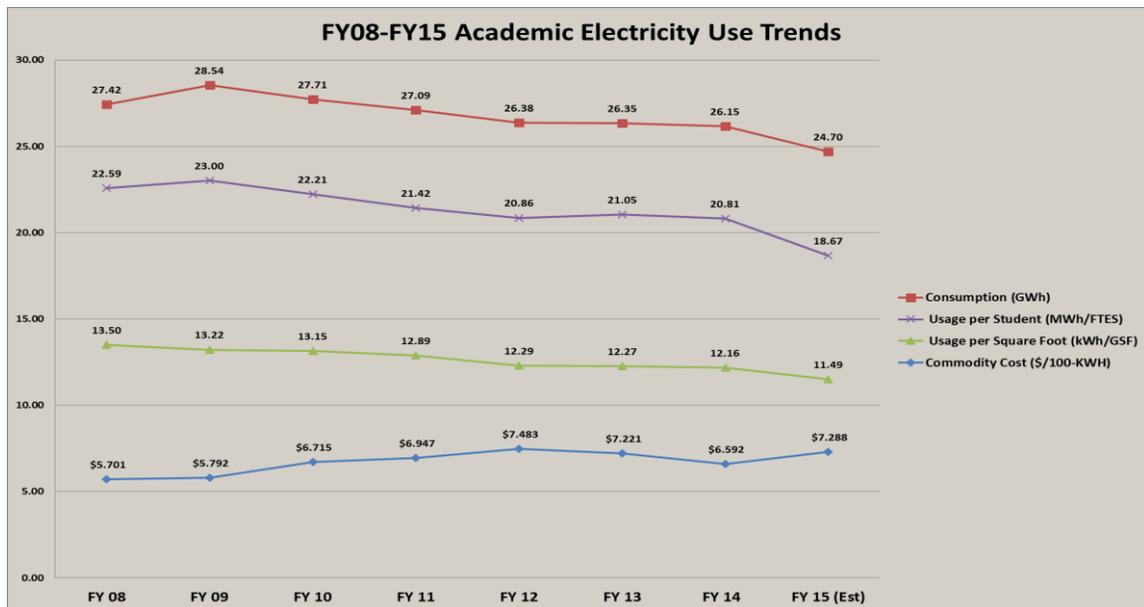
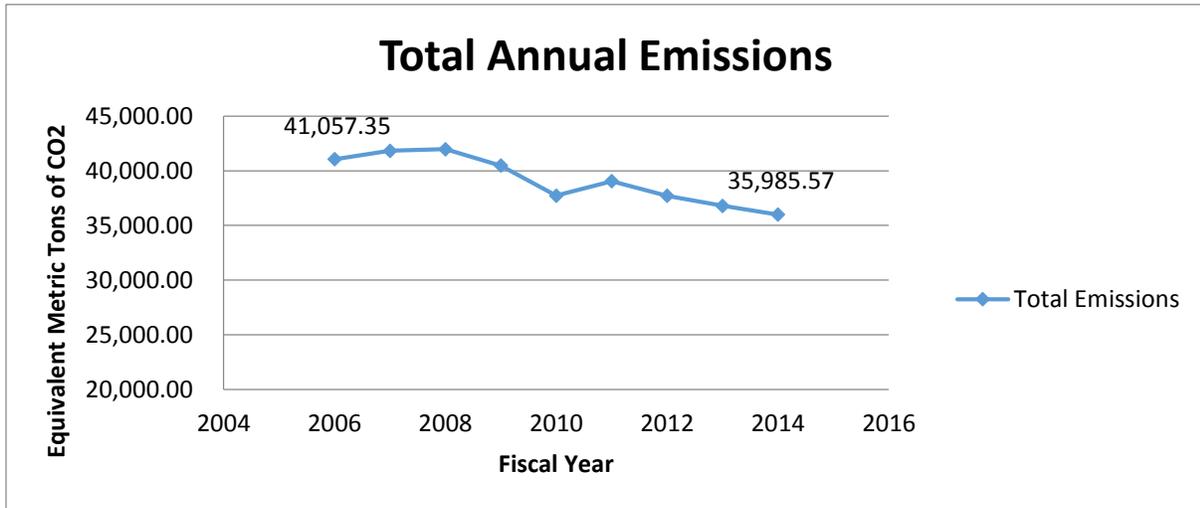


Figure 1

Impact on Emissions: Nearly all of our electric conservation initiatives reduce carbon emissions through reduced electrical consumption plus concurrent impacts on natural gas consumption arising from reduced heating load. Overall, through numerous operating changes, physical modifications and behavioral changes, campus has reduced Western’s carbon footprint by over 5,000 tons (12.3%) over the past 8 years.



Electrical conservation efforts alone have accounted for 1,500 tons of reduction. For context, the most recent energy conservation project, which involved innovative programming in 4 academic buildings (Academic Instruction Center, Communications, SMATE, and Haggard Hall) will have demonstrated savings of over 640,000 kWh per year valued at \$45,000 per year. These measures are also expected to realize a 239 metric ton reduction in Western’s annual carbon footprint.

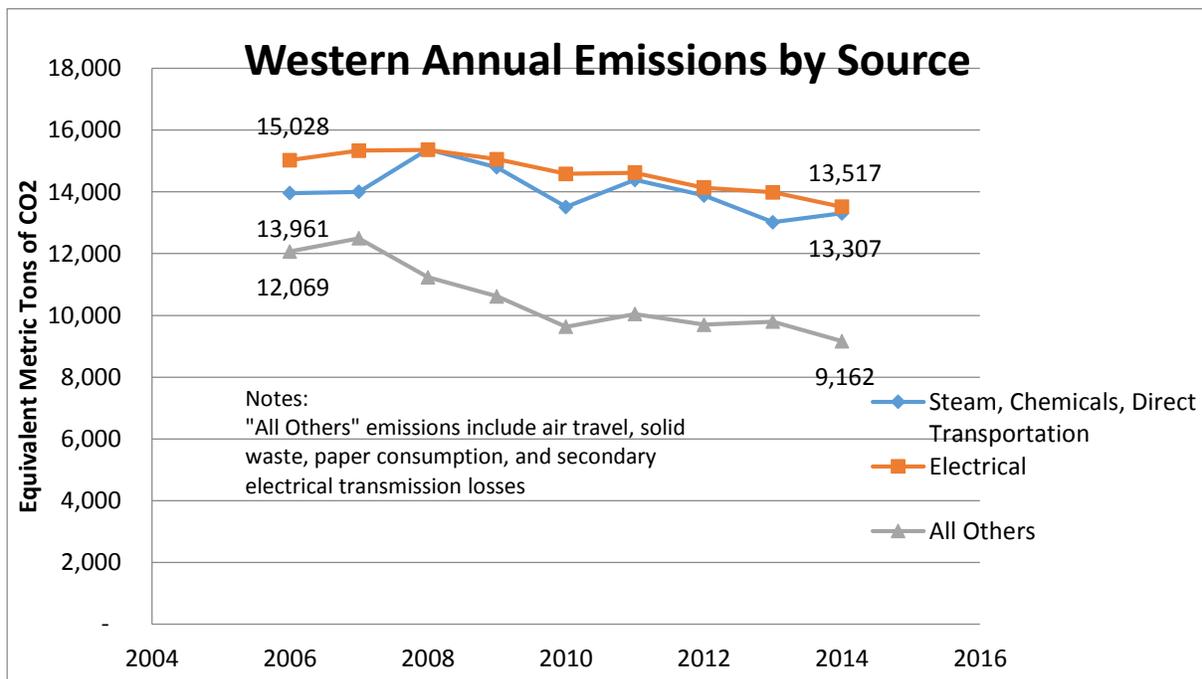


Figure 2

Transportation and Other Emissions Sources

As seen in figure 2, non-operational initiatives have had an even greater impact on Western's carbon footprint, accounting for roughly 2,800 tons of eCO₂ reduction. Most progress occurred during the early years of measuring our footprint, highlighted by significant reductions in paper consumption, solid waste reduction, student commuting and air travel.

1. Student Commuting – We have seen an 8% decrease in carbon emissions from student commuting since 2006 as our Sustainable Transportation program has focused on moving students out of personal vehicles and into more sustainable modes of transportation like buses, bikes, and walking.
2. Paper Recycling – Since 2007, we have seen a 70% decrease in the carbon emissions impact of campus paper usage. This improvement is due to reduction in overall paper use and an increase in recycled paper usage.
3. Air Travel – By far the most significant decrease in other emissions sources was in the area of air travel – down 33%, or roughly 2,400 tons of eCO₂ from a 2006 baseline. This category encompasses both travel for business, operations & training, as well as travel for study overseas.

Initiatives in Progress:

1. Built Environment – Sustainability Action Plan. Although still in its formative stages, and without widespread campus engagement, we envision the Built Environment section to be a roadmap for our way forward. The content will include strategies that can or will move Western forward in its aspiration to attain a zero carbon footprint. The emissions graphic shown earlier will be extended outward over several decades to illustrate the general time frame for attainment of key milestones in the zero carbon footprint journey.
 - a. Energy Management. Near term investment opportunities have been identified and are being analyzed for financial viability. Longer term strategies are also under consideration including, but not limited to:
 - Upgrade Heat Distribution System
 - Explore Geothermal Opportunities
 - Wind Power
 - Solar Power
 - Central Steam Plant Upgrades
 - Campus Smart Metering
 - Innovative Financing Mechanisms
 - Expand the Revolving Energy Fund
 - Ongoing and new Energy Conservation Initiatives
 - Partnerships with Western's Energy Institute
 - b. Buildings. While the planning, design, construction, maintenance and operation of buildings crosses many departments and divisions, the content will surely include:
 - Space Planning and Management

- Energy Use Standards for New Buildings
- Energy Performance Review
- Green Building Education Program
- Building Energy Standards Policy
- LEED Standards for Existing Buildings
- Continuous Commissioning of Existing Buildings

c. Land & Water

- Landscape Management Plan
- Green Infrastructure
- Conservation Measures
- Native Plant Landscaping
- Green Infrastructure

2. Steam Plant Strategic Study. Facility Management’s FY15-17 strategic initiatives include a funding request to study the future of Western’s central steam heating district. The study will evaluate the technical and financial requirements needed to convert the current high pressure steam distribution system to a less carbon intensive model. Lower carbon models could include alternative or renewable fuel options, improved boilers, and variations on the current heating distribution model. Outcomes will be realized over several years, but could ultimately reduce or eliminate our heating system carbon footprint.
3. Behavior Change Programs and Campaigns. Several behavior change activities reduce electrical demand, increase acceptance of building temperature set points, and create a culture of sustainable action. The Sustainable Office Certification program, Residents’ Resource Awareness Program, Sweater Days, and others were recognized by Puget Sound Energy in 2014 as “Best Outreach Campaign” over PSE service territory. 20% of campus offices are certified through the Sustainable Office Certification program.
4. Renewable Energy Credits (RECs). Through Associated Students initiative and funding, Western purchases 40,000 RECs annually, offsetting emissions from electrical consumption. RECs are viewed nationally as an interim measure, used to bridge the gap to deep efficiency and conservation as well as campus-funded renewable energy generation.
5. Green Energy Fee Grant Program. This program funds approximately \$300,000 in sustainability pilot projects annually including energy conservation measures. Earlier this year, the Program funded a \$293,000 LED lighting retrofit in the Performance Hall.