



WHITMAN COLLEGE™

CLIMATE ACTION PLAN 2016



Authors and Contributors.....2

Executive Summary.....3

Introduction4

Reduction Goals6

Mitigation Strategies7

A. Operations..... 7

B. Transportation..... 8

C. Solid Waste and Purchasing.....10

D. Curriculum and Research..... 11

E. Community Outreach11

Measurement and Verification..... 13

Emissions Offsets..... 13

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Executive Summary

The Sustainability Working Group has developed a Climate Action Plan for Whitman College to become climate neutral. This goal is approached in two major steps. Initially, the College will focus on climate neutrality of central operations. These sources account for half of the College's gross emissions. After achieving operational neutrality, Scope III neutrality is targeted. These emissions result primarily from purchased services or goods.

Favoring quick action, the Working Group recommends initially offsetting emissions from electricity and natural gas by 2020, while continuously working to minimize emissions. Operating a college campus inherently results in greenhouse gas emissions, so offsets are an inevitability for climate neutrality. Approved for FY2017 is the purchase of Renewable Energy Credits to offset 100% of forecasted electricity. Staff are working with ASWC to generate student support to fund the offset of the College's natural gas. This offset-first approach does not diminish prioritization of emissions mitigation through efficiency improvements and work on behavior change. The Working Group concluded that there was no compelling reason to delay offsetting until mitigation efforts are maximized. Meaningful investment in energy efficiency or production on campus require substantial planning and funding, and therefore can only be implemented so quickly.

The Working Group engaged the College's engineering provider, PAE to devise recommended building lifecycle upgrades from their January 2016 report for the College are generally aligned with the College's lifecycle forecast. Total estimated cost for these recommendations is \$43 million by 2050. Solar collection is also core to their proposal, and is estimated to cost \$9.5 million before any incentives. All told, PAE's recommendations are estimated to cost \$52.5 million by 2050 through lifecycle replacement and retrofitting as current hardware requires replacement.

Alongside continuous facility upgrades, Scope III emissions will be addressed. Many of these emissions result from the nature of the College's business or desired learning outcomes. The initial goal is to establish means of measurement and evaluation for things like air travel, then targeting wasteful practices. Scope III emissions are approximately 50% of the College's 'footprint.'

The path forward breaks down as follows:

1. Offset natural gas and electricity GHG emissions by 2020, cutting net emissions in half;
2. Continuously improve campus facilities via efficiency upgrades and maximizing solar collection to minimize gross emissions;
3. Develop better means for measuring and tracking Scope III emissions from sources such as commutes and paid travel;
4. Minimize Scope III emissions;
5. Offset Scope III emissions to achieve climate neutrality by 2050.
6. Continue to refine and re-evaluate carbon mitigation and offset goals and strategies via CAP updates

Introduction

At the request of the Board of Trustees, a Sustainability Working Group was formed in the summer of 2014 to write a Climate Action Plan (CAP) for Whitman College. The primary objective is to provide a roadmap for Whitman achieving carbon neutrality within a reasonable time period.

The Intergovernmental Panel on Climate Change (IPCC) warns against a global average temperature increase of 2°C above pre-industrial levels or an atmospheric concentration of CO₂ in excess of 400ppm, with the goal of keeping concentrations under 350ppm. The most recent Assessment Report by the IPCC predicts average global temperatures are likely (>66% probability) to exceed pre-industrial levels by at least 1.5°C by 2100. However, the World Meteorological Organization Statement on the Status of the Global Climate in 2015 sees the future more bleakly. 2015 was hottest year on record, 0.76°C above 1961-1990 global averages, 3/8ths of the way to the 2°C mark. CO₂ levels reached 400ppm in spring 2015 in the northern hemisphere.

Many other colleges and universities have climate action plans and established carbon neutrality target dates. Thus, the Working Group benefits from the work done by others. The Greenhouse Gas (GHG) Inventory done for Whitman in 2013 utilized the Clean Air – Cool Planet Carbon Calculator v. 6.9, the standard for higher education GHG inventories at the time. Additionally, the Working Group has benefitted from reviewing the model for climate action planning associated with the American Colleges and Universities Presidents' Climate Commitment.

This plan identifies the various areas of college activity that produce carbon emissions, the magnitude of the emissions in each such area, and potential actions that might be taken to mitigate such emissions. The areas include general operations (i.e., heating, cooling, and powering buildings), transportation, and solid waste and purchasing, curriculum and research, and community outreach.

Most carbon emissions arise directly or indirectly from the combustion of hydrocarbons. To reduce such emissions requires either elimination or mitigation of the combustion of fossil fuels. Sometimes that can be accomplished through increased utilization of renewable energy or through a change in the way energy is consumed—e.g., the College might change from burning natural gas for heat to the use of solar or wind energy; alternatively, Whitman might, through changes in human behavior, rely less frequently upon gas-powered vehicles by riding bicycles, carpooling, using public transportation, or walking.

This document provides a roadmap by which the College can reach a goal of climate neutrality. Climate neutrality means that the institution, through its operations and activities, does not contribute any net GHG emissions to the atmosphere. Carbon neutrality can be achieved by: (1) eliminating all GHG emissions (an impossible goal); (2) mitigating the level of emissions to a reasonable degree and purchasing or creating offsets to bring the College to carbon neutrality; or (3) only purchasing offsets to cover all carbon emissions. The Working Group strongly recommends option 2 — the combination of mitigation and

offsets. The Group believes this makes the most sense both because it should reduce the overall cost of the Plan and because a broad consensus of the College's alumni, faculty and staff expect the College to be a model citizen making a significant effort to reduce its gross GHG emissions rather than become dependent on offsets.

The Working Group recommends the College initially focus on mitigating and offsetting emissions from core operations, termed Scopes I and II in the greenhouse gas inventory. Scope I includes the central steam plant, direct transportation, refrigerant usage, and agriculture. Scope II is solely purchased electricity. These two sources together make up approximately 50% of the College's GHG emissions. Scope III is the remaining 50%. Emissions from this Scope stem from purchased goods and services, electricity line losses, and others. Offsets are counted outside of these Scopes.

Offsets are achieved through College-owned renewable energy production or the purchase of Renewable Energy Credits (RECs). Rollout of solar production on campus buildings and potentially trust properties is a central recommendation of this plan. Starting July 1, 2016, Whitman will purchase certified RECs sufficient to offset all forecasted campus electricity usage. The College is also working with ASWC to build student support for the purchase of RECs to offset the College's natural gas consumption.

In order to mitigate emissions, decisions will have to be made both as to physical changes and changes in human behavior. Physical operational changes include sources of renewable energy make the most sense in terms of magnitude of carbon emission reduction, net cost per unit of carbon reduction, and practicality, given the educational goals of the institution. Human behaviour change includes the implementation of travel policies, vehicle utilization, and other alternatives. In order to make such decisions, high quality information is required.

Methods of emissions mitigation are broken down into five overarching categories: operations, transportation, solid waste and purchasing, curriculum and research, and communication and outreach. These categories were chosen based upon research from Whitman's peer institutions and the recommendations of Second Nature, the American Colleges and Universities Presidents' Climate Commitment (ACUPCC), and the Association for the Advancement of Sustainability in Higher Education (AASHE). Some objectives bridge multiple categories, especially those under communications and outreach, which is largely the intersection of operations and human behavior change.

The Working Group also recommends that once the CAP is adopted by the College, progress toward neutrality be tracked with periodic greenhouse gas inventories. This will provide feedback for revisions to the CAP. Revisions to the CAP should be set at four year intervals to provide checkpoints for changes to the College's overall plans, the energy market, and technological advancement.

PAE, the College's engineering provider, developed a proposal and guiding document for carbon neutral technologies for campus this winter. Three proposals with a shared backbone were provided: a geothermal loop in Ankeny Field, a biomass fueled central plant, and distributed heat generation via high-efficiency boilers. The common backbone

proposed efficiency standards for new buildings and major renovations, maximizing onsite solar, and companion offsite solar to balance remaining emissions offsetting. The new building standards can be incorporated in the College's lifecycle planning process and therefore be taken for granted somewhat from a budget standpoint. The Working Group concluded the heating and cooling proposals were too expensive or otherwise fraught with risks and uncertainties. However, the Working Group strongly supported increasing building efficiency, maximizing onsite solar, and creating an offsite solar farm.

It is almost certain that future campus developments, such as new buildings, would increase emissions. Mitigation measures would need to be continuously expanded to balance this growth. PAE's provided projection of a business-as-usual (BAU) model forecasts and provides a metric for mitigation projections.

It should be noted that this plan is focused on GHG emissions only, and therefore is a significant element of, but is not a complete sustainability plan. All goals and objectives of this Plan aim to reach the singular goal of climate neutrality, which is an important step toward becoming a sustainable institution. To be sustainable is to balance economic, environmental and social needs created by the College's operation over time while being both resilient and adaptable to changes. While this informs and motivates the Climate Action Plan, the Plan should be seen as only one portion of Whitman's journey toward sustainability. Additionally, sustainability should be seen as an ongoing pursuit with no finish line.

Reduction Goals

- Minimize energy consumption of campus buildings
- Maximize onsite and offsite renewable energy production
- Minimize emissions of vehicles owned or operated by the College
- Minimize emissions from paid campus travel
- Minimize emissions associated with goods and services purchased by the College
- Minimize landfill-bound waste from the College by diverting as much as possible through reduction, reuse, recycling, and composting
- Integrate climate action and learning together to create positive behavior change that reduces emissions among students, staff, and faculty alike, as well as campus visitors
- Become a beacon of sustainability and climate action in the region

Mitigation Strategies

Mitigation strategies are the specific methods for achieving the established goals. They are broken down by category, then by timeframe. Prioritization of mitigation strategies is determined by several factors: whether it is immediately possible, the presumed or estimated cost effectiveness, and whether it is compatible with the mission and other future plans of the College.

Operations

Campus operations makes up the single largest source of Whitman's emissions, totaling 54.5% of gross emissions based on the 2013 GHG inventory. Contributing sources include purchased electricity, on-campus stationary sources (the steam plant), electricity transmission and distribution losses, wastewater, and refrigerant fugitive emissions. Operations contributed 6,788.5 metric tons CO₂e to the College's GHG footprint in total. The task force recommends the College prioritizes emissions reductions over the purchase of offsets as a more genuine and confirmable means of GHG mitigation. The primary recommendations are improving energy efficiency and greatly expanding College-owned renewable energy generation. The biggest challenge to reducing operational emissions is any potential growth to campus.

Goal: Minimize energy consumption of campus buildings

Objectives:

Immediate:

- Standardize building efficiency measures for new construction and retrofits, including the adoption of resource conservation technologies such as LED lighting, daylight harvesting, low-flow faucets, dual-flush toilets, etc. As recommended by PAE, this proposal would cost an estimated \$43 million by 2050.
- Set universal heating and cooling set points for campus buildings, with some exceptions - Penrose Library, Baker Ferguson Fitness Center, etc. The Department of Energy recommends a heating setpoint of 68F and a cooling set point of 78F. Pair with an energy conservation campaign to build building occupant buy-in.

Short-term:

- Install utility sub-metering and building dashboard systems into residence halls, and then roll out to all other campus buildings. Piloted by Olin Hall, residence halls will follow. Standard Plumbing Heating Control's proposal for the residence halls and library cost an estimated \$150,563.

Long-term:

- Sub-meter all utilities on all major campus buildings and tie into publicly-accessible building dashboard interfaces both onsite and online to provide better operational data and means for decision-making, as well as leverage for occupant behavior change.

Goal: Maximize onsite and offsite renewable energy production

Objectives:

Immediate:

- Increase purchase of renewable energy credits to 100% of our electricity consumption and then purchase GHG offsets related to natural gas emissions mitigation for campus natural gas usage

Short-term:

- Pursue engineering studies for campus solar productivity no later than 2020. PAE's proposed solar power plan for campus would cost \$9 million prior to incentives.
- Install solar thermal collectors on campus buildings to augment heat and hot water

Long-term

- Continue to explore wind and solar power production on campus agricultural holdings in partnership with power companies
- Develop strategies for continuously funding renewable energy projects on campus
- Based on engineering studies of campus solar productivity, establish a goal for percentage of power from solar or total solar nameplate capacity.

Transportation

Emissions from transportation to, from, and around the College amounted to 3,375.6 metric tons CO_{2e} in 2013, which is 25.6% of gross emissions. This includes direct transportation by campus vehicles, directly financed travel such as flights or car rentals, and study abroad flights. Paid travel flights and study abroad emitted the most GHGs in this category and also present the largest challenge. Much of this travel is the nature of the business, and study abroad is a desired learning outcome of the College, so it is difficult to reduce emissions from these sources. The College must do what it can to trim excess from travel, but better tracking these sources so that appropriate offsetting can be done down the line is likely to be the ultimate result. Commuting will be measured outside of the definition of climate neutrality due to the perception of commuter responsibility. However, smarter commuting will still be supported in line with the greater educational effort in Community Outreach.

Goal: Minimize vehicle-miles travelled to campus during commutes. These emissions are excluded from the neutrality definition.

Objectives:

Immediate:

- Continue to support the revitalized Bike Share program run by the Sustainability Coordinator in cooperation with Penrose Library and the Outdoor Program Bike Shop.

Short-term:

- Increase bicycle parking and bike safety on campus. Offer bike registration with Walla Walla Police Department on campus. Increase secure parking for staff and faculty bike commuters.
- Align support for active commuting with campus wellness programming.
- Utilize a more efficient rideshare social network, such as ZimRide, to assist carpooling both for daily commutes and for longer distance travel.
- Provide an EV charging station in a visible location on campus to incentivize use of EVs. Seek partnerships with the City of Walla Walla and PacificPower to accomplish this.
- Continue to explore a car-share program for students, staff, and faculty to reduce car ownership and support active commuting. ZipCar is one such example.

Goal: Minimize emissions of vehicles on campus

Objectives:**Immediate:**

- Institute a no idling policy on campus, excepting warming up vehicles in winter for snow, ice, and condensation removal.

Long-term:

- Switch campus vehicles to less carbon-intensive fuels as appropriate by vehicle task - biodiesel blends for diesel mowers, tractors, etc., hybrid or EV drivetrains for light duty sedans, EVs for campus golf carts and side-by-sides, compressed natural gas (CNG) for maintenance trucks, etc. Select vehicles based on replacement needs.
- Consider producing biodiesel onsite through an academic pursuit, providing hands-on experience with the technology to students.

Goal: Minimize emissions from paid campus travel

Immediate:

- By July 1, be capable of tracking air travel via dollars and ground travel via miles with the intent of reducing unnecessary flights and eventually offsetting remaining flights.

- Encourage departments and offices to thoroughly consider the necessity and utility of all travel, and support efforts to teleconference instead
- Strongly discourage flights to Portland and Seattle and instead encourage driving, especially carpooling or renting a hybrid from Enterprise. A single-occupancy vehicle getting 25mpg matches the GHG emissions of flying to Seattle from Walla Walla and greatly reduces the emissions of flights to Portland from Walla Walla via Seattle. To carpool or increase fuel efficiency of the car would reduce GHG emissions even further.

Short-term:

- Create an educational program for staff and faculty about direct flights to reduce the number of layovers, and improve data collection of flights. Takeoff is the most intensive part of flight, making direct flights much more efficient choices. Third party software solutions exist.

Solid Waste and Purchasing

Quantifiable emissions from solid waste are a small portion of Whitman's net emissions, but the role of a zero waste program and good purchasing practices is important to teaching campus constituents their own impact and supporting the recycling and compost economies. Emissions from solid waste and paper in 2013 totaled 74.2 metric tons CO_{2e} - 0.6% of Whitman's gross emissions.

Goal: Minimize landfill-bound waste from the College

Objectives:

Immediate:

- Reduce printing across campus by continuing to transition to digital distribution
- Communicate clearly to students what they do and do not need before move-in
- Continue to strengthen the campus recycling program
- Create an independent solid waste management plan to guide waste reduction efforts even further

Short-term:

- Organize a campus rummage sale in alignment with spring move-out and coordinate with Physical Plant surplus sale
- Create a sustainable events guide in cooperation with Conferences and Events
- Establish sustainable purchasing criteria and a universal process
- Develop a food waste compost system

- Expand programmatic support of reusable containers on campus in coordination with Bon Appetit, such as rolling out a reusable to-go box system
- Continue to work with Bon Appetit to increase the presence of locally-produced food in the dining halls and campus catering.
- Participate in the Real Food Challenge to publicly commit to increasing local food consumption
- Continue to increase recycled content, especially from post-consumer waste (PCW), in purchased products such as paper towels, toilet paper, printer paper, recycling bins, bin liner bags, etc.
- Create a preferred office supplies list
- Require all wood and paper products are FSC-certified

Curriculum and Research

Climate change is arguably the defining issue of our time, and will soon be addressed in past tense, making it a critical course of study. To pursue climate neutrality without utilizing the core purpose of the institution, education, would be severely lacking. The risks of a changed climate need to be understood by all to motivate adoption of best means for mitigating these risks by reducing our impact and adapting to changes.

Goal: Integrate climate action and learning together to create positive behavior change that reduces emissions among students, staff, and faculty alike, as well as campus visitors. In effect, evolve the campus into a “living laboratory” of sustainability.

Objectives:

The working group is not recommending specific objectives for Curriculum and Research at this time. The Working Group encourages the faculty to determine how best to integrate these issues into the academic program.

Community Outreach

Human behavior change is critical to creating a campus culture aware of our climate impacts. As an institution of learning, teaching is our primary purpose, both in and out of the classroom, for students, staff, faculty, and visitors alike. By committing to become climate neutral, Whitman has demonstrated leadership, but we must also work to expand the reach of our efforts. The following recommendations are broken down by target audience. The following efforts rarely stand alone and instead are extensions of efforts in the previous categories.

Goal: Become a shining light of sustainability and climate action in the region.

Objectives:

- Retool the Green Leaders club into EcoReps run by the Campus Sustainability Coordinator to educate campus residents about their environmental impact and initiate behavior change. Implement a sustainability pledge or dorm certification process.
- Renew sustainability in new student orientation and campus welcome to establish culture of accountability.
- Continue to coordinate with student groups to cooperate on campus events and efforts.
- Initiate energy conservation competitions between residence halls after the installation of building sub-metering and dashboard technology. Compete each semester in alignment with Campus Sustainability Day and Earth Week.
- Connect students with parents and alumni working in the fields of sustainability, renewable energy, climate change, environmental protection, and more.
- Establish volunteer sustainability leaders in campus offices and departments to bring about peer-to-peer sustainability education.
- Offer sustainability-related workshops for campus employees.
- Leverage building sub-metering for conservation competitions between campus offices and departments.
- Expand education of parents, prospective students, and alumni or Whitman's sustainability initiatives.
- Find direct, meaningful ways for donors to the College to contribute to emissions reductions measures
- Invite parents and alumni to sustainability programming or to be guest speakers, etc.

- Continue to collaborate and build relationships with neighbor institutions and organizations. Leverage these relationships for friendly competition, collective action, and cross-pollination of ideas.
- Invite community members and organizations to connect with students, demonstrate their work or research on campus as guests, and collaborate for mutual benefit.
- Expand outreach of campus initiatives into off-campus partnerships and education.

Measurement and Verification

The College must periodically report on GHG reduction progress to verify that methods are indeed working as expected and to determine whether efforts must be expedited. The Sustainability Coordinator will write annual progress reports detailing updates on the objectives in this Plan. GHG inventorying should be done every few years to quantify progress. This should become simpler, as many objectives include data collection; a prime example is the building sub-metering proposal. Each new inventory should use the most current Clean Air - Cool Planet (CACP) Carbon Calculator, although this is likely to create some drift in results. Version 6.9 was used for the baseline 2013 GHG inventory. Should the calculator become defunct, its successor or the alternative recommended by AASHE and peers shall be used instead.

Not all of the mitigation strategies recommended can be tracked by the CACP calculator currently, which is no doubt problematic, but the calculator is periodically updated. Additionally, some metrics can be difficult to establish, but will become easier with time and effort. A best attempt is necessary to determine these GHG reductions as an external calculation to the CACP calculator. Should some of the strategies still be difficult or impossible to calculate mitigation from, this should be noted in the GHG inventory updates.

Emissions Offsets

Emissions offsets are an inevitability when aspiring for climate neutrality. The Working Group recommends a 'ramp up, ramp down' approach. As previously mentioned, starting July 1, 2016, the College will offset approximately 100% of its electricity emissions. These RECs will be purchased from Renewable Choice, one of Whitman's current providers. Additionally, staff and ASWC are assessing and building student support for offsets for the College's natural gas consumption. Between RECs for electricity and offsetting natural gas, approximately 50% of the College's emissions will be offset. The deadline of 2020 for Scope I and II neutrality is recommended for swift action. However, the Working Group must warn against using offsets as a crutch, as the low expense relative to many energy efficiency measures could cause reluctance to aggressively tackle emissions mitigation.