

Report of the Senate Select Committee on the Institutional Response to the Climate Emergency (CIRCE)

Committee Charge

CIRCE was established in December 2019 for the purpose of facilitating discussion of all aspects of global warming and climate change as they pertain to faculty at the University of Pennsylvania. Specifically, CIRCE will consider the following categories of faculty interest as they pertain to the climate emergency at Penn:

1. Education, including classroom instruction as well as extra-curricular educational activities
2. Research, including as well scholarship, practical expertise, and artistic expression
3. Operations of the University, including decarbonization, energy efficiency, and sustainability
4. Flourishing of community, both within Penn, and between Penn and its regional and international stakeholders

Sub-Committee Organization

It was recognized in its formulation that the charges to CIRCE could not be completed successfully by a single committee. As a result, four sub-committees were formed, specifically: Operations; Research & Education; Community & Policy; and University of Pennsylvania Health System (CIRCE:UPHS). Partly as a result of the pandemic, some of the committees were more active than others.

Operations

The CIRCE Operations sub-committee held 4 meetings throughout the academic meeting. The committee was charged with reviewing several issues including review of the University's responses to the committee's 2020 recommendations regarding Climate and Sustainability Action Plan (CSAP) 3.0, develop and enhance the University of Pennsylvania Health System Climate Emergency and Sustainability Group, explore and advise the University regarding plans to offset remaining carbon emissions beyond those addressed by Solar Power Purchase agreement to meet the 100 x 42 goal, and explore and advise the University regarding plans to offset remaining carbon emissions beyond those addressed by Solar Power Purchase agreement to meet the 100 x 42 goal including air travel. The operations sub-committee also discussed issue concerning Green Banks, sustainability issues related to universities' food and catering services, and met with potential local offset groups that the University was considering in developing its Air Travel Offset program.

University Responses to CIRCE's Operations Sub-Committee's Recommendations Concerning CSAP 3.0

1. The operations sub-committee reviewed the University's responses to the committee's 2020 recommendations regarding the Climate and Sustainability Action Plan (CSAP) 3.0, CIRCE had requested that the University explain the sources of campus utilities, and the role played by the new Solar Power Purchase Agreement for electricity and the purchase of summer steam for chilling. All energy use, emissions, and offsets should be fully reported. The University reported that the Power Purchase Agreement was signed in spring 2020. Eleven enhanced recommissioning studies of buildings are complete and awaiting funding. A thirty-seven percent reduction in overall emissions has been achieved since 2009, and 75% of campus electricity demand will be offset by the Power Purchase Agreement. Prof. Braham, whose research group performs the carbon accounting for ESAC, described the "waterfall chart" that shows how Penn is working towards its carbon neutrality goal. Two big reductions in emissions are projected to be achieved through the power purchase agreement and the offsetting of air travel. Prof. Braham noted that many other peer institutions do not address air travel as part of their carbon emissions. The operations sub-committee is pleased with progress being made on carbon neutrality but feels additional measures will need to be taken to achieve the University's commitment to carbon neutrality by 2042. This will require a commitment and development of Carbon Action Plans from individual schools. In addition, CAP 1.0 declared that the plan would be extended to all of the University's facilities, so CIRCE recommends that action plans be developed for the Health System and for the non-campus real estate holdings of the University.

2. CIRCE's previous recommendation that the University consider a solar installation within the main campus to make the achievement of the new Solar Power Purchase Agreement more visible was not addressed in CSAP 3.0 update. The sub-committee feels strongly that solar installa-

tions should occur on the main campus to demonstrate Penn's commitment to addressing the climate emergency and its commitment to carbon neutrality.

3. CIRCE recommended that the CSAP should explain the energy and carbon performance standards for all new buildings and all renovations, benchmarking them against national standards. The University responded that under physical environment guidelines, 27 buildings are LEED certified, a pilot guideline is being developed to ensure that glass buildings are "bird-friendly," and the development of an Ecological Landscape Stewardship Plan (ELSP) is underway. On a question of whether LEED Silver certifications (which are not carbon neutral) meet Penn's 2042 neutrality goals, the University suggested that LEED has continued to raise its requirements to meet standards over time. Penn did not want to add a significant premium to construction costs, which are already very high in the City of Philadelphia. The Vagelos building costs approximately \$1,500 per square foot for construction. The buildings are not the only element contributing to Penn's carbon footprint, but the University agreed to take a second look at the standards and reconsider undertaking efforts to meet higher standards given the existing funding limitations.

4. CIRCE requested that the updated CSAP should explain the carbon emissions associated with each form of waste, especially the tradeoffs between landfill and waste to energy. The University responded that under waste and recycling, Penn has achieved a 23% solid waste reduction, which will be improved in the current year because of the depopulated campus. The sub-committee feels the University's progress on this issue has been adequate.

Carbon Offsets: Air Travel Working Group, Travel Sustainability Fund, Climate Offset Fund, Local Carbon Offsets, and Green Banks

1. The operations sub-committee met with members of an Air Travel Working Group and received updates regarding developing optimal solutions for achieving carbon neutrality for air travel at Penn. A formal plan to address Penn's carbon footprint regarding air travel has been developed and was implemented on July 1, 2021 (<https://cms.business-services.upenn.edu/penntavel/green-travel.html>). The sub-committee continues to receive additional updates on this issue from Office of Sustainability, including the progress being made from establishment of a Travel Sustainability Fund that will invest in best-fit sustainability projects to fully offset the carbon impacts of the University's air travel. The Travel Sustainability Fund is supported by a Climate Impact Offset charge (CLIO), which is applied to air travel, whether booked or expensed through Concur Expense. These charges will be used to generate funding to offset Penn's airfare carbon emissions through purchased offsets given today's market. The CLIO is subject to change as offset markets shift and other avenues for offsetting are explored. It is the hope of the committee that these funds will be used for local carbon offset projects that will impact Penn's commitment to its community and social justice. The local offset project is being developed in association with the Netter Center. The plan also contains recommendations regarding how individuals can make an impact on their air travel carbon footprint. The committee met with the Philadelphia Energy Authority regarding the potential to develop local carbon offsets in association with them and to discuss their Green Bank program. The development of a University-associated green bank could enable faculty and staff to fund personal initiatives to lower their individual carbon footprint such as solar installations or weatherization. The sub-committee will continue to explore the potential of green banks in future meetings. The sub-committee is pleased with the progress the University has made on these issues related to carbon offsets.

Sustainability and The University of Pennsylvania's Dining and Catering Services

1. The operations committee met with Pam Lampitt of Business Services and was given updates on the progress of Penn Dining regarding sustainability and recycling. Under purchasing, Penn Dining has achieved 20% of its purchasing from locally sourced vendors, a new catering website that includes sustainability criteria in its vendor ranking, and new contracts for managed print services. It has also made significant progress on food donations (4.19 tons to Philabundance in 2020), composting, and novel recycling techniques in its facilities (<https://university-ofpennsylvania.cafefonappetit.com/penn-wellness/#sustainability>).

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Business Services has made significant impact in taking single use plastic water bottles out its waste stream with its Green2Go program and creation of water filling stations. Plastic water bottle sales have been reduced from 12% of total sales to 8% since 2012. This still represented about 148,000 single use bottles being sold on campus in 2019. The sub-committee was pleased with the progress made by Business Service in sustainability and recycling in regards to Penn Dining but CIRCE will recommend that the sale of single use plastic bottles be eliminated from campus.

Health System

1. The operations sub-committee received updates throughout the year from CIRCE members associated with the Health System's climate and sustainability movement. The sub-committee did make progress in this charge including establishing a relationship with faculty from the Children's Hospital of Pennsylvania and the formation of a formal sub-committee of CIRCE to address issues related to the University's Health System. The sub-committee will recommend that the University Health System develop and implement CSAP to ensure the University's goal of carbon neutrality.

The CIRCE operations sub-committee makes the following recommendations:

1. Extend the Carbon and Sustainability Action Plan (CSAP 3.0) to include the University of Pennsylvania Hospital system, Children's Hospital of Philadelphia and the University's real estate holdings
2. Require each of the University's schools and centers to develop individual carbon action plans, aligned with the goals of CSAP 3.0 with reporting of their progress toward the goal of carbon neutrality by 2042
3. Develop on-campus solar photovoltaic installations to signal the University commitment to climate change
4. Eliminate the sale of single use plastic bottles by University of Pennsylvania facilities, catering, and food services.

Research & Education Sub-committee Membership 2020-2021

Herman Beavers (English/Africana Studies)
Bill Braham (Design), *Senate Chair-Elect, CIRCE Chair*
Daniel Aldana Cohen (SAS/Sociology)
Caroline Cox (PSOM/OBGYN)
Thomas Daniels (Design)
Jane Dmochowski (SAS/EES, Senior Lecturer), *non-voting member*
William Fleming (The McHarg Center), *non-voting member*
Kathleen Hall Jamieson (Annenberg), *Senate Chair*
Andrew Huemmler (SEAS/CBE, Senior Lecturer), *non-voting member*
Steve Kimbrough (Wharton), *Senate Past-Chair*
Howard Kunreuther (Wharton)
Irina Marinov (SAS/EES)
Eric Stach (SEAS/MSE)
Michael Weisberg (SAS/Philosophy), *Sub-committee Chair*

CIRCE:UPHS Sub-committee Membership 2020-2021

Caroline Cox (PSOM/OBGYN)
Kathleen Fink (UPHS), *non-voting member*
Erum Hartung (CHOP/Pediatrics)
Farah Hussain (PSOM/Clinical Medicine)
Kirstin Knox (PSOM/Clinical Medicine)
Michael McGarvey (Penn Medicine/Neurology)
Anne Reilly (PSOM/Pediatrics)
Misha Rosenbach (PSOM/Dermatology), *Sub-committee Co-Chair*
Hari Shankar (Penn Medicine/Pulmonary), *non-voting member, Sub-committee Co-Chair*
Michelle Walker (Penn Medicine/Endocrinology), *non-voting member*
Jan-Michael Klapproth (PSOM/Clinical Medicine)

Policy and Community

Climate Week at Penn has codified a durable leadership structure that includes CIRCE. The Climate Week core planning team consists of faculty, staff, and students: one member from CIRCE, the director of the Penn Office of Sustainability, the senior director of the Environmental Innovations Initiative (EII), and two leaders from the Student Sustainability Association of Penn (SSAP).

Together with the Kleinman Center for Energy Policy, the CIRCE sub-committee on policy and community will co-organize a webinar on all aspects of e-mobility to help inform decisions by Penn faculty, staff, and administration.

In response to the shift to the single TIAA platform for Penn faculty and staff retirement investments, CIRCE continues to engage the administration and TIAA with the goal of providing clear pathways for fossil free and green investing. The short-term goal is to produce a video or a webinar that will help faculty and staff navigate the brokerage option. The ultimate goal is to have a reliable green choice option similar to the current social choice option on the basic menu.

CIRCE and Kleinman produced a short explainer video to help faculty and staff navigate the PA PowerSwitch website which offers Pennsylvania residents the opportunity to choose renewable electricity. <https://www.youtube.com/watch?v=8dQQdNVwu-U&t=28s>.

CIRCE conducted a webinar called, How Penn Faculty and Staff Can Reduce Their Carbon Footprint at Home, during the 2020 Climate Week at Penn. You can watch it here: <https://climateweek.provost.upenn.edu/event/how-penn-faculty-and-staff-can-reduce-their-carbon-footprint-home-0>.

Community and Policy Sub-committee Membership 2020-21

Anne Berg (History)
Bill Braham (Design), *Senate Chair-Elect, CIRCE Chair*
De'Broski Herbert (Penn Vet)
Andrew Huemmler (SEAS/CBE, Senior Lecturer), *non-voting member*
Kathleen Hall Jamieson (Annenberg), *Senate Chair*
Steve Kimbrough (Wharton), *Senate Past-Chair*
Michael McGarvey (Penn Medicine/Neurology)
Eric Orts (Wharton)
Benjamin Pierce (SEAS/CIS)
Simon Richter (SAS/German), *Sub-committee Chair*
Akira Drake Rodriguez (Design)
Bethany Wiggin (SAS/German)

Operations Sub-committee Membership 2020-21

Bill Braham (Design), *Senate Chair-Elect, CIRCE Chair*
Alison Buttenheim (Nursing)
Jared Farmer (SAS/History)
Andrew Huemmler (SEAS/CBE, Senior Lecturer), *non-voting member*
Kathleen Hall Jamieson (Annenberg), *Senate Chair*
Steve Kimbrough (Wharton), *Senate Past-Chair*
Kirstin Knox (PSOM/Clinical Medicine)
Michael McGarvey (Penn Medicine/Neurology), *Sub-committee Chair*
Howard Neukrug (SAS/EES), *non-voting member*
Anne Reilly (PSOM/Pediatrics)
Misha Rosenbach (PSOM/Dermatology)
Hari Shankar (Penn Medicine/Pulmonary), *non-voting member*
Franca Trubiano (Design)
Michelle Walker (Penn Medicine/Endocrinology), *non-voting member*