

# COOL

THE MOVEMENT FOR CAMPUS CLIMATE ACTION DESERVES HIGH GRADES, BUT A GREATER EFFORT IS NEEDED TO ADDRESS THE GROWING CLIMATE CRISIS

BY WALTER SIMPSON, CEM, LEED AP

# Campuses?!?



# W

hen I am invited to speak about climate change, I always make these four basic points:

- Climate change is real and occurring
- It's principally caused by burning fossil fuels, which releases the greenhouse gas (GHG) carbon dioxide
- The consequences are serious
- It's not too late to do something about it

These points are well established by the Intergovernmental Panel on Climate Change, the largest international peer-reviewed scientific exercise in history, as well as by the U.S. National Academies of Sciences and virtually every other prestigious scientific organization. But while we still have time to act, it's very late.

This past December the United Nations climate conference in Durban, South Africa, failed to produce a binding agreement committing the 200 participating nations to reduce GHG emissions, even though conference experts acknowledged that we are on a path to at least 3.5°C (6°F) warming. This is nearly twice the 2°C (3.6°F) threshold most climatologists say we must remain under to avoid runaway catastrophic climate change.<sup>1</sup>

The United States' cumulative CO<sub>2</sub> emissions are far greater than any nation—three times China's, for example, even though China's annual emissions exceeded U.S. annual emissions a few years ago.<sup>2</sup> Meanwhile, the U.S. has yet to enact even minimal national climate protection legislation.

As the Durban conference drew to a close, Canada abandoned its claim to climate responsibility by announcing its withdrawal from the Kyoto Protocol, the 1997 international climate agreement ratified by 191 nations. The United States never ratified the accord.

All of this weighs heavily. Our species is running the risk of irrevocably damaging the natural world, causing massive social, economic, and political upheaval, and leaving a far less hospitable planet to our children and grandchildren.

The good news is we know what to do. According to leading climatologist James Hansen, director of NASA's Goddard Institute for Space

Studies, these policies will put the brakes on global warming:

- Stop burning coal, and leave tar sands in the ground
- Put a price on carbon so price signals strongly encourage clean energy
- Accelerate energy conservation, efficiency, and renewable energy

But knowing what to do is not enough. We need to act. We need to quit our extravagant use of fossil fuels and by mid-century be living in a much more resource-conserving world powered by solar, wind, and other carbon-free renewable energy sources. We can meet this challenge but in truth it is of epic proportions.

#### HIGHER EDUCATION TO THE RESCUE?

Who will lead this energy revolution? One hopeful possibility is higher education. As one example, many institutions of higher education are already involved through the American College & University Presidents Climate Commitment (ACUPCC).

ACUPCC participants promise to develop climate action plans to achieve net-zero greenhouse gas emissions or "climate neutrality" at the "earliest possible date" while comprehensively addressing climate change and sustainability in academic and research activities. This effort has been supported by APPA, the Association for the Advancement of Sustainability in Higher Education (AASHE), the National Association of College and University Business Officers (NACUBO), and other organizations. Other support and involvement comes from the member associations of the Higher Education Associations Sustainability Consortium (HEASC).

An impressive 674 college and university presidents have signed the ACUPCC agreement by the time of this writing (January 2012). As a result, 1,509 GHG inventories and 446 climate action plans have been submitted, and aggressive compliance activities have begun on some campuses. Over 75 percent of participants have adopted new construction green design policies and over 35 percent now meet at least 15 percent of their electric needs

with purchased or self-generated renewable energy. These are landmark achievements.

Each year, the ACUPCC recognizes stand-out efforts. In 2010 and 2011 these included:

- **University of Maryland – College Park.** Anticipated a 20 percent reduction in GHG emissions in just three years. Supports 12 different research centers investigating energy, environmental, and sustainability issues.
- **UC Irvine.** Reported eight new LEED gold buildings, on-site solar annually generating 24 million kilowatt hours of electricity, a cogen plant with 53,000 ton-hours of thermal storage, and an impressive transportation demand management program.
- **Ball State University.** Replacing its coal-fired plant with a giant ground source heat pump system—which could eventually be powered by renewable electricity—serving 45 buildings on its campus.
- **Cornell University, Ithaca College, and Tompkins Community College.** Working with an extensive coalition of community organizations to promote clean energy and address the climate issue throughout the region.

These ACUPCC success stories and many others are inspiring and give us hope. But, in light of the magnitude and urgency of the danger we face, is higher education through the ACUPCC doing enough to demonstrate real leadership and make a critical difference?

#### A REALITY CHECK

Five years ago James Hansen said we had a ten-year window of opportunity to reverse GHG emissions trends and begin seriously addressing climate change, or else we will leave a severely damaged world marked by runaway catastrophic climate change.<sup>3</sup> That window is rapidly closing and we still are not seeing the kind of action Hansen said was necessary.

As the ACUPCC completes its fifth year, its accomplishments—and those of its individual campus champions—are remarkable. But measured against the “inconvenient truth” of the extreme danger we face and the short time we have for effective action, the ACUPCC, like everything else we are doing, is grossly inadequate. How can this campaign be strengthened to provide vastly greater impact and more effective leadership in this time of urgent need? Perhaps by attending to these critical issues:



## Consequences of Climate Change

- Higher temperatures, more frequent heat waves
- More droughts and fires but also heavier downpours and flooding due to intensification of the hydrologic cycle
- Melting of ice sheets, ice shelves, and glaciers, raising sea levels and inundating coastal areas worldwide
- Decreased fresh water supplies, especially in subtropical regions and large areas dependent on runoff from mountain glaciers
- More powerful storms driven by latent heat, including hurricanes and thunderstorms, and thus increased storm damage
- Migration of tropical diseases and pests toward the poles
- Shifting of ecological niches threatening massive species extinction
- Disruption of agriculture and increased risk of famine
- Exacerbation of eco-refugee problem
- Increasing political strife and risk of war

### Climate neutrality is the right goal but its challenge should not be understated or undertaken lightly.

Given the excitement and rightness of participating in the ACUPCC, there may have been a tendency nationally and on individual campuses to soft-peddle the difficulty and cost of achieving climate neutrality. Now, to get this critically important job done, everyone must recognize the magnitude of the challenge and campus leaders—hopefully with the assistance of government agencies and private sector donors—must provide the abundant support and resources needed.

### Climate neutrality dates for most ACUPCC participants are far too late.

Given that our entire society must slash GHG emissions by 80 to 90 percent or more by 2050 (with deep cuts in emissions needed very soon), genuine campus leadership means achieving climate neutrality very quickly—say, by 2020 or 2025—through vastly accelerated climate action programs. However, the vast majority of neutrality dates are well past that, many at 2050 or beyond. If these late dates are the best ACUPCC participants can offer, they should stop talking about climate leadership. Leadership demands a much greater effort.

### Short-term interim emissions goals must be strengthened.

While the climate neutrality date is important, right now we need rapid, significant short-term emissions reductions. Many campuses have structured their climate action plans to postpone the largest reductions to near the end of their plan—exactly the opposite of what is needed.

### Deep energy conservation in existing buildings is essential.

The cleanest BTU or kWh is the one we don't consume. Thus, deep energy conservation should be the top priority in campus

climate action plans. However, most plans project modest conventional retrofits of existing buildings paired with larger-than-necessary purchases of renewable energy credits (RECs) and carbon offsets to eventually mop up the remaining energy waste. Paying someone else somewhere else to reduce emissions for you—as is the case with carbon offsets—does not model a strategy consistent with the task at hand, essentially quitting fossil fuels within a few short decades. That goal can only be achieved if energy users are successful at sharply curtailing and eliminating to whatever extent possible fossil fuel use on-site. Many tools and strategies are needed to achieve this objective, including submetering of buildings and even of individual building energy systems, so that the real effectiveness of conservation measures is accurately assessed and understood. The cost of submetering can be made up many times by the additional savings it allows facilities managers to achieve.

**The LEED Silver standard for new construction should be abandoned.** LEED Silver gives the illusion of green building and climate responsibility when neither exists. ACUPCC participants should exceed both LEED Silver and Gold and commit to zero-energy or LEED Platinum new buildings (with maximum Energy and Atmosphere LEED points) while recognizing that the greenest building may be the one not built at all.

**Much wider community involvement is needed.** ACUPCC participants must dramatically catalyze change as widely as possible or we are cooked. In addition to accelerating and expanding local community initiatives, colleges and universities must lobby for strong climate protection laws, policies, and programs that will help get our country on track while providing ACUPCC schools with the outside support and resources they need to curtail their own emissions.

**Scope 3 emissions deserve special treatment.** The ACUPCC pledge commits signatories to establishing climate neutrality for three classes of GHG emissions including those associated with campus commuting.<sup>4</sup> The latter disproportionately impact community colleges and other commuter schools which may have no way of mitigating these emissions other than through the purchase of carbon offsets. More schools (including reluctant Ivy Leaguers) might join the ACUPCC if Scope 3 emissions were addressed via a separate commitment.

## BARRIERS TO CAMPUS CLIMATE ACTION

The biggest barrier to creating an effective campus climate action plan—with an appropriate near-term climate neutrality date—is just how difficult and mindboggling this undertaking is in the first place!

But anyone in the trenches—e.g., facilities managers, energy officers, and sustainability staff—knows that doing campus climate action work involves a myriad of other specific barriers, any one of which can damage or sink a program. While a comprehensive discussion of barriers can be found elsewhere,<sup>5</sup> here are some major monkey wrenches that must be addressed for campus climate action to succeed:

**Inadequate Top Level Support.** This is the most fundamental barrier because significant, visible, heart-felt top level support is absolutely essential to developing and implementing a credible, effective, strong climate action plan. Only the president and board of trustees can insist that climate action become a genuine top campus priority and give it the generous staffing, funding, and empowerment it needs. Yet the vast majority of presidents are not committed environmentalists anxious to provide leadership and full backing. They do not have sleepless nights worrying about the climate crisis. In reality many presidents probably signed the ACUPCC agreement without fully understanding its import or implications. And many will say they are supportive but their support is modest-to-non-existent. There are no easy solutions, though a modest program can be salvaged if the chief business officer and director of facilities are fully on board and can encourage some presidential support.

**Inadequate Facilities Support.** Nothing less than full support from the facilities director and staff will suffice since climate neutrality involves massive retrofitting of existing buildings and infrastructure. A reluctant facilities director can be pressured from above or below, but if his or her heart is not into it, the program will fail.

### **Greenwash over Substance.**

Administrators now understand the public relations value of sustainability. That's good, but it can result in waving the feel-good sustainability banner in lieu of providing real support. And well-intended sustainability program propaganda can convince an entire campus community – including facilities and the sustainability staffs themselves! – that GHG emissions and other environmental impacts are being adequately addressed when in reality

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nowhere near enough is being done. Truth-telling, which can be risky, is a corrective.

**Politics of Control and Exclusion.** Are those most knowledgeable and motivated participating in and leading your campus climate action effort? Is the process open, engaging, dynamic, and exciting? Or has a restrictive process been imposed to control and limit the outcome? Rallying criticism of the process or campaigning for more enlightened leaders may be the only antidotes.

“A serious climate action plan will identify sources of funding including creative options like performance contracts, utility incentives, solar leasing, special grants, and the creation of sustainability endowments.”

**Campus Speed Up.** As budgets get slashed, remaining staff must “do more with less.” That sounds good but eventually it erodes organizational esprit de corps and capacity. For example, a shrinking facilities staff may be unable to optimize the operation of existing buildings let alone assume substantial additional responsibilities associated with credible, effective climate action. Facilities managers must adapt by accepting reduced staffing in some areas while lobbying to increase positions that serve the climate commitment. While consultants can fill gaps, the best climate plans are owned by the institution.

**Lack of Money.** Climate neutrality is going to be costly. This truth and challenge may seem insurmountable for public schools facing huge budget cuts or private schools already on shaky ground. A serious climate action plan will identify sources of funding including creative options like performance contracts, utility incentives, solar leasing, special grants, and the creation of sustainability endowments. Fund-raisers will need to pitch funding for deep energy retrofits of existing buildings.

**Commitment to Short Paybacks.** To achieve climate neutrality with adequate on-campus emissions reductions, energy conservation and renewable energy projects with long paybacks will be necessary. These paybacks will shrink somewhat when avoided costs from reduced carbon offset purchases are factored in. Nonetheless, ACUPCC participants need new decision-making paradigms for evaluating potential projects given institutional commitments to climate neutrality.

**Students Not Engaged Enough.** Given the difficulty and costs associated with achieving climate neutrality, success demands constant pressure from students who can ignore bureaucratic constraints and insist that real, transformational action be taken to protect their futures. Unlike staff, students can raise their voices without fearing retaliation, and their enthusiasm can be contagious. But even on campuses where many students are involved, most are not. A much larger student climate movement is really needed.

#### **SOLAR WON'T WORK WITHOUT DEEP CONSERVATION**

My last major campus project was a 73 kilowatt photovoltaic array that covered nearly the entire roof of a large classroom building. However, the array met less than 10 percent of the building's electrical needs. That was embarrassing but also instructive. It made clear that a transition to solar energy will require not only much more efficient solar panels and a lot more solar arrays than most of us thought but also much more energy efficient buildings than we now have so the available solar goes further.

Large ground-mounted campus PV arrays offer the same lesson. They may be eye candy, stretching for acres, yet have annual outputs that are a few percent of campus electrical needs! Only much more energy efficient buildings will allow campus solar energy projects to meet significant percentages of campus electrical needs – and thus play a meaningful role reducing campus GHG emissions while minimizing purchases of RECs and carbon offsets.

Thus, the challenge of climate neutrality requires moving beyond campus energy conservation as generally understood, where building retrofits produce energy reductions of 15 to 25 percent, to deep energy retrofits that minimally cut building energy use by at least 50 percent.<sup>6</sup> For climate neutrality purposes, the target should be 75 percent or more. A “pilot-to-portfolio” program can be used to conduct deep retrofits in a handful of representative campus buildings and then apply the findings to all buildings. These pilots could aim at LEED Existing Building Platinum certification though exceed those requirements. The projects should be highly collaborative involving students, faculty, facilities staff, consultants, and community members to achieve the best outcomes.

We face an unprecedented danger in global climate change. It may sound alarmist and it's certainly inconvenient but the

future of our planet and the world we leave children everywhere is really at stake. For good or ill, the outcome is completely up to us. The choice is ours. Through the ACUPCC some colleges and universities have taken steps in the right direction, but much more needs to be done to demonstrate leadership on a large enough scale to effect the wider change we desperately need. 🌱

## RESOURCES

**American College & University Presidents Climate Commitment**, [www.acupcc.org](http://www.acupcc.org). Site contains full text of the commitment, implementation guide, list of participating schools, greenhouse gas inventories, climate action plans, resource materials, best practices reports, etc.

**Association for the Advancement of Sustainability in Higher Education**, [www.aashe.org](http://www.aashe.org). Site contains most comprehensive campus sustainability resource listing including sections on energy and climate action.

**“Cool Campus! A How-to Guide for College and University Climate Action Planning,”** by Walter Simpson, ACUPCC/AASHE, 2009. [www.aashe.org/files/resources/cool-campus-climate-planning-guide.pdf](http://www.aashe.org/files/resources/cool-campus-climate-planning-guide.pdf). A wiki version is also available on the AASHE site.

**“Educational Facilities Professional’s Practical Guide to Reducing the Campus Carbon Footprint,”** APPA, 2009. [www.appa.org/bookstore/product\\_browse.cfm?itemnumber=519](http://www.appa.org/bookstore/product_browse.cfm?itemnumber=519).

## ENDNOTES

1. The 2°C threshold assumes that the atmospheric concentration of carbon dioxide does not exceed 450 ppm. This can be achieved if annual global GHG emissions are reduced by 50 percent by 2050, with industrial countries reducing their annual emissions by 80 percent during that period. Some climatologists disagree with this analysis and have argued that the “safe level” of CO<sub>2</sub> is only 350 ppm. If they are right, then greater and faster GHG emissions reductions are needed to forestall runaway catastrophic warming. See the organization [www.350.org](http://www.350.org) for more information. The current level of atmospheric CO<sub>2</sub> is 390 ppm.
2. Once released, carbon dioxide molecules remain in the atmosphere for hundreds of years contributing to global warming. According to climatologist James Hansen, during the period 1751 – 2009 the United States was responsible for 27 percent of all global anthropogenic (human activity-caused) GHG emissions.
3. “Warming Expert: Only Decade Left to Act in Time,” MSNBC News Services, Reuters, and AP, September 14, 2006.

4. Scope 1 (all direct GHG emissions, e.g., combustion of fossil fuels on campus), Scope 2 (from purchased electricity), and Scope 3 (from other indirect emissions).
5. See “Accelerating Campus Climate Initiatives” by Michael Kinsley and Sally DeLeon of the Rocky Mountain Institute in cooperation with AASHE.
6. See Rocky Mountain Institute’s Retrofit Depot, <http://retrofitdepot.org>, and “Deep Energy Retrofit of Commercial Buildings: A Key Pathway toward Low-Carbon Cities,” by John Zhai, Nicole LeClaire, and Michael Bendewald, *Carbon Management*, (2011) 2(4), 425–430. This article describes the “pilot-to-portfolio” approach.

Walter Simpson, retired University at Buffalo energy officer, is a three-time recipient of APPA’s Rex Dillow Award for Outstanding Article in *Facilities Manager*. He is editor and contributing author of APPA’s *The Green Campus: Meeting the Challenge of Environmental Sustainability*, 2008, and author of *Cool Campus! A How-to Guide for College and University Climate Action Planning*, ACUPCC/AASHE, 2009. His website is [www.energyreallymatters.com](http://www.energyreallymatters.com).

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