**Implementing and Evolving the Climate Action Plan for Reducing the Carbon Footprint of the University. Draft 4:30 am, on April 13**

**Major findings of the March 30 Workshop with regard to our specific topic.**

* The implementation and evolution of the Climate Action Plan (hereinafter referred to as “the project” should be considered a Living Laboratory; i.e., a resource that will be used to advance relevant education and research in technology, basic science and engineering, and dynamics and organization of socio-economic systems. While it will be important for the project to succeed in the goal of carbon reduction, it will be even more important for it to succeed in producing knowledge and educated and trained people who can carry that knowledge to other institutions and communities. One of the key questions at the leading edge of research, education, and implementation in this area is that of “externalities”; i.e., in energy accounting, how much to adjust the cost of production for each energy source, and the cost of implementation for each energy saving strategy, for its impact on the rest of the world. The cost to the world of climate change due to carbon emission is the main externality considered in this project, but it is not the only one.
* The overall project is complex. It has many components, and the components can’t be properly considered in isolation from each other. Since the Facilities & Services division must ultimately implement carbon reduction plans, it seems appropriate for F & S to be central to the overall coordination of the project (with direction of the project being determined by the Chancellor). Morgan Johnston of F & S, who co-led this workshop and has a good overview of all of the carbon reduction activities, would be a resource for this aspect of the project.
* A cyberinfrastructure, specific to this project, should be constructed that would facilitate all aspects of the project. The Climate Action Plan (iCAP), embedded in this cyberinfrastructure, would become a living electronic document rather than a static printed document, capable of evolving as the carbon reduction effort moves forward and is inevitably confronted with changing conditions in the form of changing energy and materials prices, evolving technologies, external social forces, etc. This cyberinfrastructure should include capabilities for communication and collaboration between administration, academic units, students, campus operations, and the community outside the university. The cyberinfrastructure should also include modeling and analysis tools, and information and resources pertaining to energy issues worldwide. The cyberinfrastructure should be a resource for research and teaching about the problem of climate reduction. The Chancellor should use this cyberinfrastructure as a decision-making tool for planning and investment in meeting the iCAP goals. It should allow administrators and researchers to predict the impacts of planning and investment scenarios, and it should enable all interested people to continually track the University’s progress in meeting the iCAP goals. Use should be made of cyberinfrastructure tools developed at the National Center for Supercomputing Applications with initial support from the National Science Foundation,and subsequent support from many sources, as these have been proven in a variety of applications (e.g., in support of the Mid America Earthquake Center). Terry McLaren, Project Manager of the Cyberenvironments and Technologies Group at NCSA, can be a particular resource in this aspect.
* A process of developing trust and transparency between all stakeholders in carbon reduction should be developed and implemented. There is a large community, both within and around the University, who are motivated to solve the carbon footprint problem, and who have relevant expertise to contribute. There should be a process by which the interests and potential contributions of each of these stakeholders are identified, and they are brought into a community working towards the same goal. Joel Cutcher-Gershenfeld, Dean and Professor in the School of Labor Relations and Employment, can be a particular resource, as he has a long history of public service and scholarship relevant to this aspect of the project.
* Implementation of the University’s Climate Action Plan should be integrated into the research and teaching missions of the University. Courses and student research projects should be tied into the cyberinfrastructure of the project. Faculty members Brian Deal and Barbara Minsker are examples of particularly good faculty resources for this aspect of the project. In addition to students engaged in technical and scientific research related to this project, student groups such as the Student Sustainability Committee should be part of the project.
* Dynamic modeling of the University as a carbon emitting system could be used from the outset as an educational, community building, and planning tool. A relatively simple and accessible modeling language such as STELLA, or its public domain counterpart VENSIM, could be used to construct first-draft models based on our best current knowledge of energy costs, construction costs, etc. This would enable the trade-offs of various strategies to be readily understood, and would have the added advantage of educating the community on dynamical systems in general, which are involved in many different interdisciplinary problems. Dr. Bruce Hannon has experience in constructing such models of systems that combine environmental and economic aspects and using them in this fashion.
* Citizens of the surrounding communities and representatives of local governments are stakeholders in the efforts to mitigate carbon increase in the atmosphere, and should be part of the project. Dr. Eric Jakobsson, who is on the Urbana City Council, can be a bridge to local government. Tim Montague, of the Beckman Institute staff, a dedicated volunteer with CCNet, the community group concerned with these issues, can be a bridge to the local community of interested citizens.
* The carbon mitigation effort needs a significant and stable budget. It was beyond the capabilities of a one-day workshop to firmly specify a dollar amount, but the order of magnitude is millions of dollars per year, perhaps $10-15 million per year. This investment in a well-organized carbon mitigation strategy will more than pay for itself in reduced energy costs, will provide a foundation for applying for related government and foundation grants, and will establish the University as a leader in this important effort at the intersection of social science, technology, basic science, and public service. It is well aligned with the mission of the University of Illinois as a land grant university. The students have continually voted to provide funds for Sustainability efforts. The campus as a whole should match that with a significant sustained commitment to the project, commensurate with its resources.
* The Chancellor should appoint a campus leader with the charge of coordinating sustainability efforts across and around campus. The efforts to meet our goals can continue to be very widely distributed, but it is essential for those efforts to be focused and that a single leader (champion) be charged with overseeing the effort. This leader should report to the Chancellor.
* Incentives to solve the carbon footprint problem should be built into many aspects of how the university does business, for example by tying the energy use of academic units to their budgets; i.e., providing rebates for reductions in energy use.
* In addition to the individuals mentioned above, all the workshop attendees can be expected to participate in, and contribute to, ongoing work in support of the Climate Action Plan. These include administrators, local government officials, community members, students, faculty, staff, and academic professionals. In order to facilitate such broad participation, we recommend the creation of a formal membership organization, the University of Illinois Sustainability Network, open to all but with classes of membership based on the degree and nature of the individual’s or unit’s commitment to working for University of Illinois carbon footprint reduction.

**Major findings of the workshop with respect to interdisciplinary research and education overall.**

We find that there are at present significant impediments in the current university organization and culture to the implementation of the climate action plan along the lines we suggest. These impediments include:

* Relative lack of value placed by departments on faculty interdisciplinary work, as opposed to work within an established discipline.
* Lack of transparency with respect to relevant University decision-making processes.
* Lack of an institutional framework to provide interdisciplinary problem-centered training and education for graduate students.

We recommend addressing these issues directly as part of the process by which the stakeholders in the carbon problem come together to form a community with the purpose of implementing the climate action plan and achieving its goals.