

## **Goal 2 Initiative 2a: Climate Action Plan**

### **Introduction/Background – What will you do?:**

In September of 2007, ISU's 10<sup>th</sup> university president, Dr. Lloyd Benjamin III, solidified ISU's interest in becoming a sustainable campus by signing the American College & University Presidents Climate Commitment. Our 11<sup>th</sup> president, Dr. Dan Bradley, reinforced our commitment to sustainability and directed the Sustainability Team Members to explore a climate action plan. In Spring 2010, ISU completed its first Climate Action Plan through the work of 60 faculty, staff, and students. This action plan identified 86 individual recommendations to help ISU reach carbon neutrality by 2050. In Spring and Summer 2011, we completed our second Carbon Footprint Analysis and found that we are at 53% of our 1990 carbon emission levels. This is close to a 10% reduction in two years and shows that we are advancing towards our goal of carbon neutrality. One of the main recommendations that came out of the sustainability efforts is to incorporate all work to obtain carbon neutrality through our classes and course work. By doing so, ISU can involve students in our efforts to become carbon neutral and make campus a model for alternative energy technologies and sustainability projects.

With funding from the Strategic Plan for Fiscal Year 2011, ISU established an Office of Sustainability at ISU that promotes our current efforts towards sustainability and applies for grants to promote sustainability at ISU. These two efforts tie in well with goals 4 and 5 of the strategic plan. The main purpose of the Office of Sustainability is to engage our students in sustainability efforts on campus and to provide meaningful education that the students can use to better living conditions around the world. This work will contribute to the benchmarks in goal 1 to increase enrollment and student success. During the last fiscal year, we applied for a \$100,000 grant through the Indiana Office of Energy Development to incorporate more alternative energies on campus, but we were not successful in obtaining that grant. We also submitted a \$200,000 grant to the National Science Foundation TUES grant opportunity to develop a Cognitive Fellowship of faculty that could teach sustainability in an interdisciplinary fashion through a sustainability minor. We plan to continue these grant efforts in the coming year. Besides our contributions to benchmarks in goal 2, we are also working towards benchmarks in goal 4 to diversify revenue funds.

### **Proposal/Purpose/Justification – Why will you do it?:**

Sustainability is one of the most important topics to many college age students today and has become a buzzword for many corporations as well. The basic definition of sustainability that has been adopted by the President's Sustainability Council is "to meet the needs of the present without compromising the ability of future generations to meet their own needs". This concept is simply good business practice and is the basic foundation for best practices at colleges and businesses alike.

According to the Intergovernmental Panel on Climate Change (IPCC), the earth's temperature is increasing due to a combination of natural and anthropogenic causes so that average temperatures will be from 6-8°C warmer (similar to the increase in temperature since the last ice age) than they are today by 2100 across the world (IPCC 2007, Solomon *et al.* 2007). Our landfills are ever growing landmarks

that are now some of the larger geographic features in the area (such as outside of St. Louis, many times larger than Monk's Mound at Cahokia, the largest prehistoric structure in North America) and visible from space (New York's Freshkills landfill). According to geologic records of newly found petroleum deposits each year, we passed peak production of oil in the United States in the 1970s and worldwide in 2004 (Deffeyes 2009). This means that fuel prices and the cost of petroleum products (which are most of our modern day products and the basis for our agricultural system) will gradually rise as petroleum becomes scarcer. We have an exponentially growing human population and are already using more resources than can be sustained into the future. If we want our children to have anything close to the standard of living that we enjoy, we need to determine how to live sustainably within the earth's resources.

These dire issues also provide an opportunity to find new and innovative ways for our communities to become sustainable. Funds from the strategic plan are requested for the following goals:

1. Bring more alternative energy sources to campus. Specifically, we would like to invest in solar power and energy monitoring of our residence halls.
2. Work to organize sustainability efforts at ISU and to integrate sustainability into our curriculum.
3. Continue to have a strong Student Leadership Team that promotes the actions of the Climate Action Plan on campus.
4. Present findings from our sustainability efforts at national conferences.
5. Work with our students to make them aware of sustainability issues, to get them excited about green initiatives, and to better prepare them for a job market where green skills are a basic requirement in many workplaces.
6. Bring together private industry, governmental officials, and higher education to develop a sustainability plan for the Wabash Valley (Green Town Conference November 16 & 17).

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## **Work Plan – Action Steps –**

### **How will you do it – brief work plan – please point to Benchmark Goals?**

This last year, we have been successful in studying wind speeds around campus, locating a site for an energy producing wind turbine, and are currently in the bid process for procurement and installation of the wind turbine. The energy output from the turbine will be automatically reported on a website so that the ISU community can track its energy production. Our intention for this coming year is to add a solar array on campus that is also monitored on the web so that we can compare this energy production. The alternative energies will be working laboratories for the College of Technology as well as the College of Arts and Sciences. Students from classes in both colleges can study these devices to examine their efficiency and determine their utility in scaling up to solve broad scale energy demands. The curricular efforts mesh well with Goal 2 Initiative 2: Applying the science of learning to the learning of science (SENCER program). Specifically, this work is adding to the benchmarks to increase the experiential learning opportunities in the foundational studies and major classes for all students on campus.

We have acquired a quote from Lucid Designs to install remote metering on our residence halls and to report this output on to a web platform. We plan have these residence halls monitored so that we can watch energy consumption in those areas, give real-time feedback to the students, and encourage our students to save energy for themselves and for campus. We plan to participate in a nation-wide energy conservation competition in the Spring semester that can help encourage students to conserve energy. The Compete for the Green competition this last year saved the university \$22,000 in one year and all indications are that with real-time monitoring of energy use, students will save even more. Also, research has found that students continue their sustainable practices that they have learned even after the competition has ended (Patersen *et al.* 2007).

Many sustainability projects are already very active on campus through the recycling center, grounds maintenance, and Sodexo food services. We plan to help coordinate and advertise the good work that is already being done around campus in sustainability.

We will hire a student leadership team to help us connect with the student body and to advance our sustainability goals on campus. One of our undergraduate students (Julie Whitaker) from last year, is ready to continue her work this year. She is a Human and Environmental Systems major and hopes to find a job in working on sustainability issues after she graduates. This hands-on experience in sustainability will give her an edge when she starts to apply for jobs in this coming year. This leadership experiences for students on campus help to recruit and retain great students which contributes to the benchmarks in goal 1.

We plan to apply for more grants that are available for sustainability efforts which contributes to benchmarks in goal 4. We will submit at least one more large grant to enhance alternative energy sources at ISU in the coming year. Many grant opportunities exist for sustainability efforts and as our efforts and our reputation in sustainability grow, we have a greater opportunity to acquire these funds.

Princeton Review and Sierra Club maintain separate lists of Green Campus around the United States. We will work on filling out the paperwork to be listed as a green campus which will help to promote

ISU and to bring in some of the top students around the county that are interested in sustainability. This will help to recruit and retain great students contributing to benchmarks in Goal 1.

The Earth Day Celebration was originally started by Dr. Rusty Gonser in Biology and was then taken over by Anita Gabbard who is the Associate Director for the Hulman Memorial Student Union. This event has been growing each year and has become one of ISU's larger festivals, but has not benefited from planned institutional support. We are applying for funding to help support this event.

ISU will be hosting the Green Town Conference on November 16 & 17 in 2011. This conference will bring together private industry, governmental officials, and higher education to develop a sustainability plan for the Wabash Valley. This is the sixth year that the Green Town conference has been occurring and this will be the first year that it will be held in Indiana. Plans are to hold this conference on ISU's campus which will bring much attention to ISU's sustainability efforts.

## **Reporting and Deliverable Schedule – When?:**

### **Summer 2011**

We will report on our Sustainability SENCER classes at the SENCER Summer Institute from July 21-25. This is a national conference and ISU will be prominent in the number of presentations and the size of the team that it is sending this year.

Julie Whitaker (one of our undergraduate students) has been accepted to the Byron Fellowship which is a national conservation and sustainability conference which will be held in August.

### **Fall 2011**

Host the Green Town conference at University Hall from November 16<sup>th</sup> to 17<sup>th</sup>. This will focus regional attention on ISU's sustainability efforts and result in a sustainability plan for the Wabash Valley.

Apply for a program of distinction called the Institute for Community Sustainability through the Unbounded Possibilities Initiative. If this Institute is funded, it will become the nexus for sustainability efforts at ISU, incorporating sustainability into coursework, become a laboratory to identify best practices in sustainability for communities, and function as a revenue generator for ISU.

Have the metering installed for the residence hall energy conservation monitoring program. Lucid Designs will build the web interface and have the hardware installed during the Fall semester.

## **Spring 2012**

Compete in the national energy conservation competition. This will show how ISU is doing compared to hundreds of other schools around the nation and provide incentive for our students to conserve energy on campus, which will save the university money.

Refine the Climate Action Plan to focus on some achievable goals and next steps for ISU.

Hold a larger Earth Day event in April 2012. This event has been growing over the past years and we hope that some institutional support for Earth Day will help to make this an even better event.

### **Budget – How Much will it cost?:**

The entire budget that we are requesting for this year is \$166,841. The majority of the budget goes to student wages (graduate and undergraduate) along with capital equipment such as a solar array and the Building Dashboard automated energy monitoring system for the residence halls.

### **Management Plan – Who (by name if possible) will do the work?:**

Dr. Jim Speer is in charge of overseeing this initiative and with the work of the students has been the PI or co-PI on multiple grant applications to bring more funds to the University through sustainability efforts. Many of these Requests for Proposals have to show matching funds being spent by the campus, and the funds requested in this grant application to the strategic plan can constitute those matching funds.

We need to hire a new graduate student to oversee the student leadership team and to enter information into Task Stream.

Julie Whitaker is the senior undergraduate student who will be continuing on this project. She helped extensively the last year, especially in announcing the results for the Compete for the Green event through the spring semester and getting student involvement in sustainability.

We plan to hire Steven Flowers later in the summer. He is a past Student Government Association president and has connections across campus. He has a good track record for sustainability as he was one of the few student representatives on the climate action plan working groups prior to becoming the SGA president. He also continued to help our sustainability efforts on campus during his term as president.

Dr. Tom Steiger, Dr. Tom Derrick, Dr. Greg Bierly, and Dr. Eric Anderson have been working together with Dr. Jim Speer on grants to the National Science Foundation and through the Unbounded Possibilities to create the infrastructure needed on campus for the long-term benefit of sustainability on campus. This team will continue to work together on the sustainability minor and the Institute for Community Sustainability.

Anita Gabbard has been the leader of the Earth Day celebration at ISU for the past two years. She will continue to organize this event, but we are applying for funds through the strategic plan to provide some economic support for the event.

## **Outcome Assessment & Future Testing – How Well did we do?**

### **How will we know that we have moved us toward our benchmarks goals?**

We are committed to applying for external funds to help fund sustainability on campus, which contributes to benchmarks in goal four to diversify revenue funds. We are making the increased expense to include web monitoring of all of the technology that we plan to purchase for alternative energies on campus so that we can keep an exact tally of the energy that was produced so that we can calculate time to pay-back on all of the equipment that we purchase. Sustainability is an integral part of our SENCER program at ISU, so this work contributes to the benchmarks in Goal 2 to increase experiential learning on campus. Also these courses are integrated into our foundational studies program as well as majors classes so students from all across campus are benefitting from these efforts.

## **Budget Narrative for Goal 2 Initiative 2a**

### **Graduate Student Tuition Waiver and Stipend**

We are requesting funds for a graduate student tuition waiver and stipend to hire a graduate student to oversee undergraduate work on this project. We have identified an potential incoming graduate student who worked on the Climate Action Plan for Willamette University, which is why we have identified an out-of-state tuition waiver. This student has past experience at another institution working on a Climate Action Plan and can bring valuable information to this position. We have also requested a basic research assistantship salary for this student for the academic year as well as funds for the summer.

### **Undergraduate Wages**

We hope to hire two undergraduate students to work on this project. Their roles will be to engage the student body and get it excited about sustainability at ISU, work on registering ISU in multiple green listings, which will help to advertise ISU to potential students, and to run the daily operations of engaging the campus community about sustainability.

### **Supplies/Expenses**

We are requesting \$10,000 in supplies, advertising, and promotional items to encourage people to save energy and recycle on campus. Also, some of these funds will be used to fund the Earth Day Celebration at ISU which is held every spring.

The Green Town conference will be held on ISU's campus on November 16 & 17. This is a \$100,000 conference that will bring together private industry, governmental officials, and higher education from around the region. It will bring attention to ISU's sustainability efforts and result in a sustainability plan for the Wabash Valley. This is one way that ISU will be seen as a leader in the community for

sustainability and green initiatives. This will be a large media event which will bring much good publicity to ISU.

### **Travel Funds**

Travel funds are requested so that faculty and students can travel to national conference to learn more about sustainability efforts going on at other institutions. Funds will also be used to travel to other local sustainability offices to talk to the people in charge of those centers and find out ways that ISU can work better at sustainability and bring more revenue to our institution.

### **Capital Equipment**

Another large portion of this budget is the capital equipment that we are requesting. This year, we have been successful in bringing an energy producing wind turbine to campus (the turbine will be purchased during this fiscal year, but will probably be installed in July). With this proposal, we are requesting funds to add a 5.4 kW solar array that will also produce energy and tie into the grid. Both the solar array and the wind turbine will have automated energy monitors that will be accessible to the public through a website so that others can see our efforts to use alternative energy and students can collect data to analyze the efficiency of these tools.

We have also requested \$50,000, which will be used to install remote feed metering in the residence halls and create a Building Dashboard to display energy use in the residence halls in real time. Facilities Management personnel agree that this is the first step to getting a handle on our energy use at ISU. We do not monitor any of our energy use in real time. This system has the added benefit that we can use it to run a competition between residence halls, which will engage our students in sustainability and further reduce our electrical bills. In a two month Compete for the Green competition that included energy conservation and recycling in the Spring, ISU was able to save \$22,000 just in that two month period. Real-time monitoring of energy use has been shown to generate even greater savings and with these monitors in place, we could run this competition every semester.