

# Climate Action Plan for the University of Saint Thomas

24 May 2010

*Before it's too late, we need to make courageous choices that will recreate a strong alliance between man and Earth. We need a decisive 'yes' to care for creation and a strong commitment to reverse those trends that risk making the situation of decay irreversible.*

-Pope Benedict XVI, *Homily*, Loreto, Italy, 1 Sept 07

## **The University's Mission and Commitment to Carbon Neutrality**

In 2008 Father Dennis Dease, president of the University of Saint Thomas, sponsored a series of campus discussions titled *Great Conversations on Sustainability and Care of the Environment*. In his keynote speech he said, "The greatest moral challenge our students face is the environment." Three months later, Father Dease pledged to achieve carbon neutrality at the University of Saint Thomas and to make campus sustainability a part of the educational experience of all students by signing the American College and University Presidents Climate Commitment.

Achieving carbon neutrality at the University of Saint Thomas is a moral and cultural challenge, and our efforts to create a more sustainable campus will produce a wide range of educational, economic, social and environmental benefits. Several are outlined in the President's Climate Commitment:

- reducing energy costs
- inspiring students
- attracting excellent students, faculty and staff
- attracting new sources of funding
- increasing the support of alumni and the local community
- enhancing the university's educational mission
- actively involving students in service learning projects that benefit the environment
- providing students the knowledge and skills they need to address the critical environmental challenges they face and to benefit from the opportunities arising from the solutions they help develop

These goals are also in accord with the strategic priorities of our university. In 2008, the Board of Trustees approved an "environmental stewardship and sustainability" priority in our strategic planning documents. Strategic Priority 4 reads:

*"The University of St. Thomas will cultivate an ethic of environmental stewardship, and will integrate principles of environmental sustainability across the curriculum and in co-curricular activities in order to educate students to appreciate their roles and obtain tools for leadership and innovation in care for God's Creation."*

Given the Papal leadership of the Church and its interest in sustainability, it is no coincidence that UST trustees placed our new environmental priority under the overarching theme of “Catholic identity” in the university’s planning document. The Vatican’s stated goal is to become the world’s first carbon neutral state; it has begun construction of the largest solar power project in Europe. Pope Benedict XVI has spoken clearly about the need to rethink short-sighted policies that ignore the costs of environmental degradation:

*“It should be evident that the ecological crisis cannot be viewed in isolation from other related questions, since it is closely linked to the notion of development itself and our understanding of man in his relationship to others and to the rest of creation. Prudence would thus dictate a profound, long-term review of our model of development, one which would take into consideration the meaning of the economy and its goals with an eye to correcting its malfunctions and misapplications. The ecological health of the planet calls for this, but it is also demanded by the cultural and moral crisis of humanity whose symptoms have for some time been evident in every part of the world. Humanity needs a profound cultural renewal; it needs to rediscover those values which can serve as the solid basis for building a brighter future for all.”*

...Pope Benedict XVI, “If You Want to Cultivate Peace, Protect Creation,”  
*Message for the celebration of the World Day of Peace, 1 Jan 2010*

In the two years since Father Dease signed the President’s Climate Commitment, the university community has undertaken a wide range of campus sustainability projects. A student grant provided funds for solar panels, the Physical Plant won an Xcel Energy award for saving more gas than any other commercial customer in Minnesota, more than 25 percent of the electricity consumed by the university is now generated by wind turbines, and the new Anderson Student Center is committed to earning LEED silver certification. (Other projects are listed in the Appendix, highlighting progress in the areas of transportation, food services, Residence Life, curriculum, Student Activities, Informational Resources and Technologies, and the Physical Plant.)

Building on this early success, this Climate Action Plan outlines the steps the University of Saint Thomas will take to eliminate net greenhouse gasses by 2035. The plan consists of six sections:

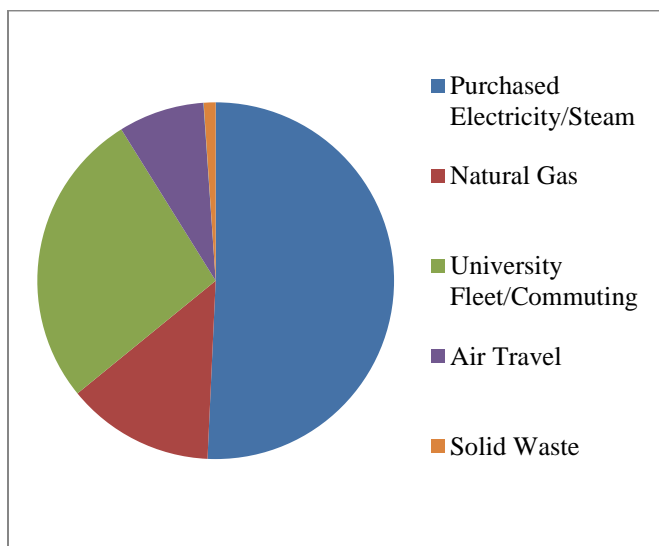
- 1. CAMPUS GREENHOUSE GAS EMISSIONS**
- 2. TIMELINE FOR ACHIEVING CARBON NEUTRALITY**
- 3. STRATEGIES FOR ACHIEVING CLIMATE NEUTRALITY**
- 4. FUNDING EFFICIENCY, RENEWABLES AND OFFSETS**
- 5. EDUCATION, RESEARCH AND PUBLIC ENGAGEMENT**
- 6. CAMPUS CULTURAL CHANGE**

## 1. CAMPUS GREENHOUSE GAS EMISSIONS

The University of Saint Thomas used the *Clean Air-Cool Planet Campus Carbon Calculator* to estimate greenhouse gas emissions. The Clean Air-Cool Planet methodology has been widely used by other educational institutions and is the recommended tool for signatories of the President's Climate Commitment.

In 2007, the University emitted the equivalent of **71,273** Metric tons of CO<sub>2</sub>. This is approximately the amount of greenhouse gasses emitted by 11,880 typical American households. The largest single source of emissions was purchased electricity and steam, followed by transportation (air travel as well as faculty, staff and student commuting), natural gas and solid waste (Figure 1).

**Figure 1. Sources of Inventoried Emissions, 2007**



**2007 Emissions = 71,273 MT eCO<sub>2</sub>**

**Scope 1 Emissions 9,677 MT eCO<sub>2</sub>**

Direct and fugitive emissions including electrical generation, heating, cooling, and fleet vehicles

**Scope 2 Emissions 36,159 MT eCO<sub>2</sub>**

Indirect emissions occurring as a result of purchased electricity consumption

**Scope 3 Emissions 25,437 MT eCO<sub>2</sub>**

Indirect emissions occurring as a consequence of an entity's activities.

### Energy Use Trends

Total building space on campus increased from 2.94 million square feet in 2005 to 3.26 million square feet in 2007. This growth was mirrored by increasing carbon output, which rose from 60,446 metric tons to 71,273 during the same period. Since the 2007 audit, campus building square footage has increased to 3.42 million square feet and construction is currently underway to complete a new student center and athletic and recreation complex.

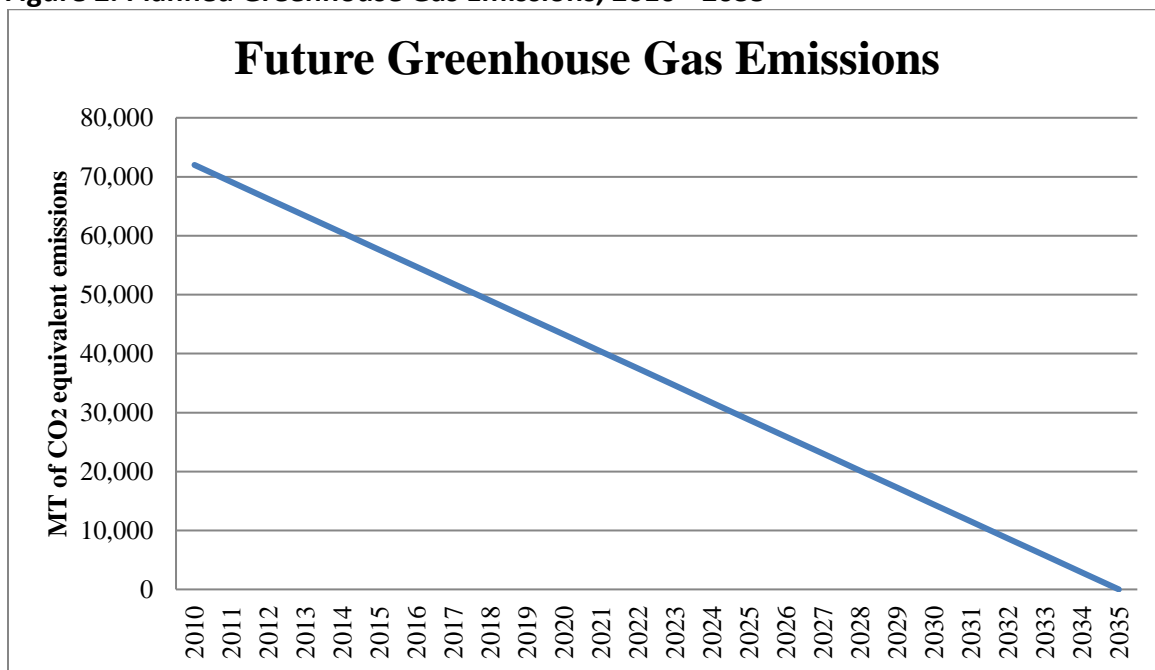
Nonetheless, at the same time UST energy use has declined. According to recent Xcel Energy consumption reports, electricity consumption fell more than 3.8 million kWh or 10 percent in the two years since our 2007 carbon audit. New facilities are replacing older, less efficient buildings. The university has been engaged with retrofitting of lighting fixtures and lamps, variable-speed HVAC motors, higher efficiency boilers, Energy Star washing machines and appliances, and installation of green building furnishings for over a decade. The UST Physical

Plant is committed to improving energy efficiency in all operations and has partnered with Xcel Energy to identify new opportunities to finance, retrofit, re-commission, and improve building efficiencies.

## **2. TIMELINE FOR ACHIEVING CARBON NEUTRALITY**

The actions outlined in this Climate Action Plan will make UST carbon neutral by **2035**. To accomplish this, we will reduce emissions by 2,851 tons per year for 25 years (Figure 2). This annual reduction is the equivalent of 4 percent of 2007 emissions.

**Figure 2. Planned Greenhouse Gas Emissions, 2010 - 2035**



## **3. STRATEGIES FOR ACHIEVING CLIMATE NEUTRALITY**

In an effort to maximize the amount of carbon reduced per dollar spent and to link the University's pursuit of carbon neutrality to student learning, this Climate Action Plan prioritizes investment in four areas:

- Green construction
- Energy efficiency
- Renewable energy
- The purchase of carbon offsets, including mission-based offsets

### **Investment Priority 1: Green Construction**

*“Campus construction projects utilize accepted sustainable building practices for new buildings and building renovations”* – Indicator of achievement of Strategic Priority #4

The most cost effective way to limit long-term carbon emissions is to ensure that all new construction incorporates energy efficient building design. Energy standards for new buildings should limit energy consumption by requiring all new construction of more than \$1 million to attain (at a minimum) the U.S. Building Council’s LEED silver rating. Additionally, significant cost savings will result from designing new buildings to be “solar ready.” These actions will reduce operating costs and produce inspiring buildings that symbolize the university’s commitment to sustainability and to future generations.

### **Investment Priority 2: Energy Efficiency**

*“Financial economies are realized through more efficient and effective use of energy and resources”* – Indicator of achievement of Strategic Priority #4

Institutions like universities can persist for centuries. The Catholic Church has a history measured in millennia. There is every reason to believe that the University of Saint Thomas will thrive for hundreds of years. While politicians focus on the next election and businesses focus on the next fiscal year, our vision should not be limited to concerns of the moment. We have the responsibility to consider the long-term benefits of campus sustainability. Early investments may have 3- to 5-year payback times, but we have the responsibility to consider projects with longer payback times as well.

Another way to maximize lifetime carbon emissions reductions per dollar spent is to directly reduce the university’s actual emissions by investing in energy efficiency. An early assessment by Xcel representatives indicated that investments in energy efficiency could reduce campus energy use by 20 percent. This would generate significant savings -- in 2009 the university spent approximately \$550 every hour on energy. Increased campus efficiency would also limit the university’s vulnerability to unexpected spikes in energy costs.

Initial projects should focus on “low hanging fruit” – investments in energy efficiency that result in significant carbon reductions and that have rapid payback time. Grants and low interest loans available from partners such as Xcel energy and the Saint Paul Port Authority are available for large projects with 3- to 4-year payback times. Investments such as retrofitting buildings, exergy (heat recycling) and IT systems upgrades are likely to result in significant long-term cost savings.

High quality energy audits are necessary to prioritize energy efficiency projects. Energy audits are also required to apply for grants that fund efficiency, renovation, exergy and systems upgrades.

### **Investment Priority 3: Renewable Energy**

The University’s carbon footprint is already declining as a result of wind power purchases from the Xcel Windsource program. In 2009, off-campus wind turbines generated 27.3 percent of

the University's electricity – *this is enough wind energy to power all of the north campus residence halls*. The Windsource program allows customers to pay a premium to support wind energy. Currently, the university pays an additional \$ 0.01 to \$ 0.015 per kWh.

Purchasing wind power is a simple, straightforward way to lower the university's carbon footprint. However, Windsource funds are invested off-campus, and offsetting greenhouse gasses by purchasing wind power is currently more expensive than purchasing carbon offsets (see below). It is also extremely difficult to link the construction of specific wind turbines to UST funding.

### **On-Campus renewables**

In early 2010, a 3.5 kW array of solar photovoltaic panels began generating electricity on the roof of Brady Hall. A grant written by environmental studies students funded this small demonstration project, but the student's vision is much larger: they plan to cover all south-facing roofs with solar arrays. To this end, they helped design a "Donate a Solar Panel to Saint Thomas" program and are creating marketing materials for the Development Office.

Solar panels are currently less cost effective than investments in energy efficiency. A recent study by Innovative Power Systems indicates that solar production on the South Campus is limited by suitable roof space and solar panels are not expected to offset more than 3 percent of the university's electrical consumption. Still, a number of factors could improve the profitability of solar panels, including connection to a smart grid, feed-in tariffs, solar rebates and technological innovation. Additionally, as energy prices increase, so too will the value of the panels.

Despite higher current costs, solar still merits consideration. Solar panels are a visible symbol of our commitment to campus sustainability. They are easily linked to student learning and act as a rooftop laboratory for a wide range of courses.

A UST study conducted in 2003 found that, at the time, solar hot water systems were more cost effective than solar photovoltaic systems. Solar hot water systems should be considered for the new athletic facility and other future campus construction.

**Off-campus renewables** - Some universities have purchased large wind turbines, built bioenergy facilities, and funded solar farms, but our urban location and sensitivity to neighborhood concerns limits similar efforts. The university may eventually consider funding off-campus projects, but these are large investments requiring a great deal of planning. Their off-site location could also limit their visibility and educational value.

### **Investment Priority 4: Carbon Offsets**

Even if the university purchased only Windsource electricity, we still use fossil fuels to heat our buildings and power our commuting and air travel. Even if the university aggressively pursues energy efficiency and solar power, we would only reduce our greenhouse gas emissions by at most 30 percent. Barring major investments in off-campus renewables, a significant portion of

UST's carbon footprint reduction will need to come from carbon offsets. Purchasing offsets would balance our carbon emissions by funding activities such as planting trees, capturing methane and funding renewable energy projects.

The university could achieve immediate carbon neutrality by purchasing enough carbon offsets to compensate for all the greenhouse gasses we emit. This would currently be the cheapest way to achieve carbon neutrality. In effect, we would be paying others to reduce carbon elsewhere. But this is an indirect and temporary way of addressing our greenhouse gas emissions. Distant off-campus offsets do little to inspire donors or actively engage UST students. Money spent on such offsets would not be invested in our campus infrastructure or lower operating costs. Offsets of this type should not be purchased until the return on investments in local energy efficiency and renewables is insufficient to achieve neutrality.

### **Mission Based Offsets and Education**

We do recommend immediately offsetting as much as possible of our greenhouse gas emissions by using *mission-based offsets*. Mission-based offsets contribute to the common good. They:

- enhance the university's educational mission
- actively involve students in projects that repair the damage caused by our greenhouse gas emissions
- are designed by members of the UST community
- benefit Minnesota landscapes or communities linked to UST (such as VISION trip sites)
- are designed to provide a number of additional benefits, such as economic development, habitat protection, watershed protection and community education
- provide opportunities for public service

Students already conduct research that mission-based offset projects could be based on. Engineering students have designed solar water purifiers that would save forests from being cut for fuel wood (while reducing illness) in Mali. Geography students used satellite data on biomass to target the optimal areas for reforestation in Minnesota. Students could design and undertake reforestation efforts, study water quality change and monitor carbon sequestration.

## **4. FUNDING EFFICIENCY, RENEWABLES AND OFFSETS**

*"Campus-wide sustainability evaluations, based on the university's energy audits and carbon footprint, demonstrate incremental reductions in energy use and decreased reliance on non-renewable energy for facilities, fleet vehicles, transportation, and commuting practices."* – Indicator of achievement of Strategic Priority #4

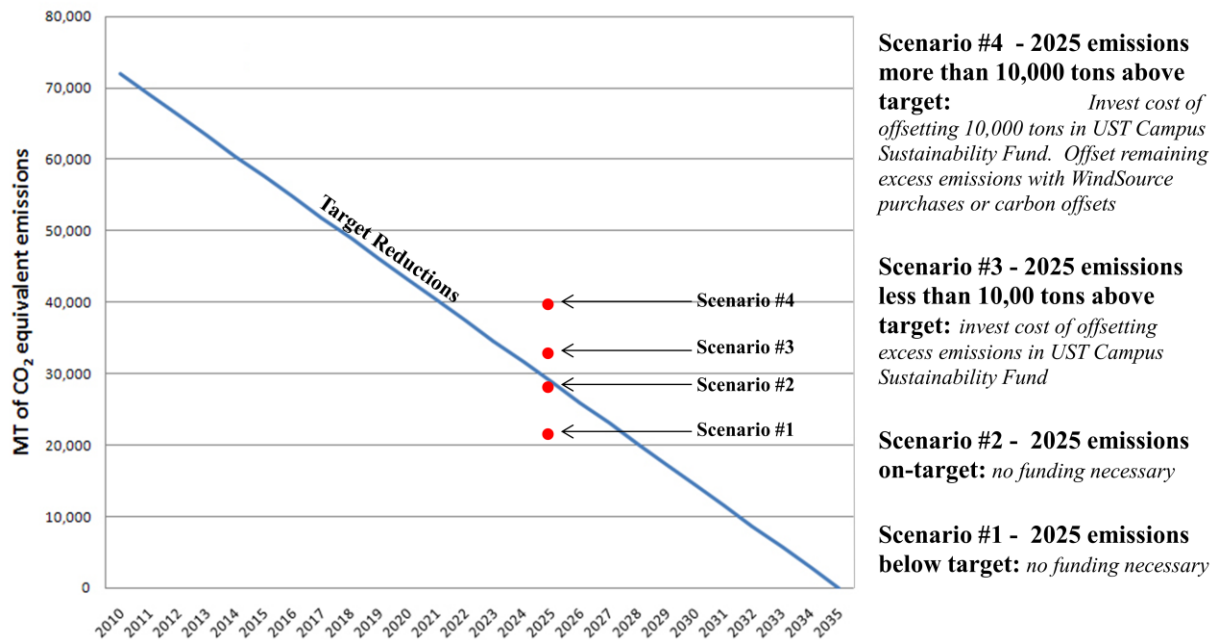
### **Internal Carbon Contract**

In order to achieve carbon neutrality by 2035, UST needs to cut or offset the equivalent of almost 3,000 tons of CO<sub>2</sub> per year for 25 years. Early investments in efficiency are expected to

have rapid payback times. These investments could be funded by available grants and low interest loans. The most cost effective projects will be funded first, but later cuts in emissions will become increasingly difficult. As efficiency improvements become more expensive to realize, financial investments in renewables and carbon offsets will become increasingly necessary.

As greenhouse gas reductions become more expensive, a new source of funding will be required. This funding can be provided by an **Internal Carbon Contract** (Figure 3).

**Figure 3. The Internal Carbon Contract, Future Emissions and Investment**



As a signatory of the President’s Climate Commitment, the university is required to conduct a carbon audit every two years. These audits track the university’s progress toward achieving carbon neutrality by 2035. If the carbon audit shows that greenhouse gas emissions are at (or below) our target level, the university is on track to be carbon neutral by 2035. No additional offset funding would be required (scenarios 1 and 2 in Figure 3).

If the university fails to meet greenhouse gas reduction goals, additional offset funding would be required. The amount of additional funding needed would be equal to the current cost carbon markets would charge to offset our excess emissions. In other words, if the university falls behind reduction targets, the biannual carbon audit will indicate how many tons of excess carbon were produced by the university. The cost of offsetting this excess carbon would then be determined by the current market price of carbon credits. Instead of having to purchase offsets from global carbon markets to lower net carbon emissions to target levels, an Internal Carbon Contract would require the university to instead invest an equivalent amount of funds in campus projects and mission based offsets.



So, if the university misses reduction target by less than 10,000 metric tons (scenario 3 above) the Internal Carbon Contract would allocate enough funds to offset excess emissions to investments in efficiency, renewables or mission-based offsets.

The university should not fall more than 10,000 metric tons behind target reductions. If this happens, funds from the internal carbon contract will be used to purchase enough Windsource power or carbon offsets to bring the university to within 10,000 tons of the target emissions goal (scenario 4 above). The additional funds necessary to offset the remaining 10,000 tons would then be invested in efficiency, renewables or mission based offsets.

**Current Cost of Offsets and Windsource Energy**

How much money would the internal carbon market cost the university? The cost of using markets to offset *all* UST greenhouse gas emissions serves as a baseline cost for achieving carbon neutrality. Carbon markets are volatile and the price of offsetting a ton of carbon varies (a great deal) from one market to the next. Currently (April 2010), carbon is trading at \$0.10 per ton on the Chicago Climate Exchange. In Europe, carbon is trading around \$17 per ton. Table 1 displays the annual cost of offsetting *all* UST emissions with offsets purchased from these markets (based on 2010 carbon costs).

**Table 1 Annual costs of offsetting *all* UST emissions with carbon offsets, April 2010 market prices**

Year	Metric Tons to Offset	Chicago Exchange	European Markets
2010	2,850	\$285	\$48,450
2015	14,250	\$1,425	\$242,250
2020	28,500	\$2,850	\$484,500
2025	42,750	\$4,275	\$726,750
2030	57,000	\$5,700	\$969,000
2035	71,250	\$7,125	\$1,211,250

We could also reduce a significant portion of our carbon emissions by purchasing all of our electricity from the Windsource program. Xcel energy estimates that this would currently cost between \$240,510 and \$360,760 per year (based on the 2009 consumption level).

**The UST Campus Sustainability Fund**

If the university fails to meet greenhouse gas reduction goals, funds from the Internal Carbon Contract would be invested in the UST Campus Sustainability Fund. This Fund would pay for carbon abatement projects proposed by members of the university community – students, faculty, departments, Physical Plant and staff). Project proposals will be evaluated on the basis of their effectiveness in offsetting greenhouse gasses, on student involvement and on their educational value. Grants from the UST Campus Sustainability Fund would be offered each semester.

A major benefit of the Fund is it would *directly involve students* in achieving carbon neutrality. UST students are concerned about environmental issues. They are also energetic, creative and innovative, and their classroom experiences provide the knowledge and skills necessary to take a leadership role in promoting campus sustainability. Funding from the UST Campus Sustainability Fund would support student designed projects and increase the number of service-oriented learning opportunities.

Another benefit of the Fund would be to give the University flexibility. The UST CAP is a 25-year plan, and the context we are operating in is evolving rapidly. Changes in technology, carbon markets, the electrical grid, public policy and other variables make it difficult to predict what may be the best ways to pursue campus sustainability decades from now. Because the Fund will issue sustainability grants each year, it allows for needed flexibility – grant applications will evolve as new opportunities arise and as we gain experience in mission-based offsets, renewables and efficiency.

Another possible source of funding for the UST Campus Sustainability Fund could be internal offsets for air travel. While Saint Thomas could pay airlines to offset our air travel emissions, we recommend that all air travel offsets be invested instead in the Sustainability Fund.

## **5. EDUCATION, RESEARCH AND PUBLIC ENGAGEMENT**

While green construction, energy efficiency, renewable energy, and carbon offsets alone are enough to achieve carbon neutrality for the university, The President’s Climate Commitment commits the university to make climate neutrality and sustainability part of the curriculum and educational experience for all students. This is in keeping with our university mission to cultivate graduates who advance the common good. Beyond their years at university, graduates need to be equipped and prepared to live, work, and lead in the coming new, post-carbon world.

Students need hands-on experience as well as a thorough understanding of the complex systems upon which we depend (e.g., livable climate) in order to earn jobs in our transitioning economy. Preparing students for their roles will require that faculty update what they know and how it connects to this critical problem.

Most current faculty received training in an academy that did not make explicit connections to environmental consequences. Opportunities and incentives as well as resources for faculty to expand their own understanding will be necessary across disciplines. The campus as a whole will need an elevated level of commitment to understanding the current issues and dynamic changes affiliated with climate change and action. We should address this need through regular on-campus, inter-campus and public events.

See the appendix for past successes and future plans.

## **6. CAMPUS CULTURAL CHANGE**

Education about this aspect of UST's mission does not begin and end in the classroom. It is important that other offices that deal directly with students – Admissions, Residence Life, Student Affairs, and Campus Ministry – are fully invested as well. Alumni, Development, Institutional Research, University Relations, Purchasing, and other university offices that interface with the community are vital parts of how the University operates in a changing culture.

Behavioral change can have relatively low cost. For instance, adopting the habit of switching off a TV costs less than paying for electronic switch-off technology. Indeed, behavior and culture change has an attractively small financial price tag. However, if it were free and *easy* it would be done already. We must recognize that change may be threatening, time consuming, and require financial expenditure. There are many psychological barriers, such as lack of knowledge and competence related to practicing new behavior, that require training. Habits that support old behaviors only change when people's attention is drawn to the proper behavior at the proper time for extended time (habits are by definition automatic, requiring little thought, such that we continue them even when we do not want to!). There are structural barriers such as hidden and unintended consequences which require visible feedback loops and opt-out (rather than opt-in) strategies. In order to cultivate this alternative culture we must work in a comprehensive and coordinated manner. Initiatives that enhance this kind of approach include the following:

### **Full-Time Position for Sustainability Director**

Currently, no single person has been given authority to oversee campus sustainability. For UST to fulfill our commitment to become GHG neutral and provide a model of sustainability, a position of Sustainability Director is essential. We see this position as being equivalent to other important campus offices such as Faculty Development Director, Service Learning Director, or Aquinas Scholars Director. These are not perfect models because they are entirely educational in scope, whereas the Sustainability Director's position would be multifaceted (education, operations, development, outreach, community relations). However, they are all allocated a position commensurate with the amount of work involved and the importance of the office to UST's mission.

### **Decision-Making Criteria**

UST's commitment to carbon neutrality needs to be manifest in decision making. Specifically, greenhouse gas emissions need to be an explicit criterion used by all university decision makers (new construction, facilities management, sustainable purchasing practices, class and event scheduling, allocation of resources... any part of strategic planning). This can only become reality when all decision makers are educated and aware of how their decisions increase or decrease emissions and recognize the importance of sustainable choices. Integrating this goal into day-to-day operations will require significant effort by our leadership to define and reinforce expectations and sustainable practices.

## **Orientation**

New student and staff orientation and training, as well as residence hall move-in and move-out procedures are critical periods for presenting expectations and sharing instruction about behavior (resource use, curriculum, etc.). Habits have not been fully formed yet and new people and situations allow the opportunity for the creation of sustainable habits.

## **Marketing**

Link GHG mitigation to educational mission through visibly posted marketing of goals, course and research-based data collection and indicators of progress.

## **In Conclusion**

*The world that God created has been entrusted to us. Our use of it must be directed by God's plan for creation, not simply for our own benefit. Our stewardship of the Earth is a form of participation in God's act of creating and sustaining the world. In our use of creation, we must be guided by a concern for generations to come. We show our respect for the Creator by our care for creation.*

-U.S. Catholic Bishops,  
[\*Faithful Citizenship: A Call to Political Responsibility\*](#), 2003

Many students, staff and faculty at the University of Saint Thomas are already actively involved in studying and promoting campus sustainability. These efforts are supported by the new strategic priorities of the Board of Trustees and President Dease's commitment to carbon neutrality. To build upon current work, this Climate Action Plan provides a specific roadmap to achieving climate neutrality. We will need a comprehensive and coordinated approach that includes creating carbon reduction goals, priorities for carbon reduction projects, an internal carbon market based on our target reductions and market pricing, and an internal sustainability fund that would facilitate innovative projects well into the future. These structural initiatives will benefit from educational and cultural changes that support a sustainability mindset. Over 680 colleges and universities have signed the President's climate commitment; some have already achieved carbon neutrality. To fulfill our responsibilities as a Catholic institution committed to the common good, keep pace with competing educational institutions and to ensure that the university remains viable for years to come despite a challenging, post-carbon energy economy, we must continually review our progress and renew our commitment to carbon neutrality.

# **Appendix**

## **The UST Sustainability Committee**

Elise Amel, Associate Professor of Psychology, Chair of Environmental Studies  
Peter Borden, Graphic Designer, University Relations  
Brian Brown, Director of Publications, University Relations  
Margaret Cahill, Director, Campus Life  
Jacob Cunningham, Campus Ministry, VIA & VISION  
Jeanne Cunningham, Health Educator, Wellness Center  
Laura Deuberry, Director Interior Facilities, Planning & Design, Physical Plant  
Bob Douglas, Coordinator of Recycling & Central Receiving, Physical Plant;  
Chair of the Sustainability Committee  
Simon Emms, Associate Professor, Biology  
Todd Empanger, Director, Food Service  
Jim Gooley, Executive Development Officer, Development  
Steve Hoffman, Professor, Chair of Political Science  
Bridget Kapler, Student, Chair of USG Sustainability Committee  
Timothy Lewis, Professor, Chair of Biology  
Paul Lorah, Associate Professor, Geography  
Aaron Macke, Director, Residence Life  
Marie Morzenti, Technical Process Analyst, Information Resources & Technologies

## **Information Resources and Technologies**

2010 report from Marie Morzenti and Information Resources and Technologies

### **Past Successes**

IRT has for some years studied a variety of options to make our activities “greener.” The Division of IRT has successfully implemented several “green initiatives” that promote sustainability. At the same time these initiatives have also established “best practices” demonstrating that sustainability is not only for the common good but also makes good business sense.

### **Print Management Program:**

IRT partnered with student leadership to reduce the amount of paper that is unnecessarily printed on campus. The program goals are to track campus printing activities, educate everyone who uses printing resources, and implement methods for reducing excessive paper use and printing. The University saved 1 million prints the first semester print management was implemented. Print management continues to be an important sustainability tool for the University.

- The Multifunction Devices (MFD's) replaced over the summer of 2009 use on average 20% less energy than the old systems.
- IRT replaces all network printers on a 4 year lease schedule which gives us more devices that use less energy, are faster, use toner more efficiently and run cooler.

#### **Document Management:**

IT manages the University's current document management system, Optix, which allows departments to scan paper documents and manage them in an electronic form using workflows that greatly reduce the need for additional paper copies. Forty departments use Optix, scanning and managing an average of 1,100,000 pages per year. Currently Optix contains approximately 10 million documents in 1 TB of data.

#### **Reducing paper consumption:**

In the summer of 2009, IRT completed a project to automate the student employment contract process using Murphy Online. As a result, student contracts no longer need to be printed and distributed around campus to the appropriate departments involved in the hiring process, which should save approximately 5,000 pieces of paper per year.

#### **Hardware Standards**

IRT annually reviews and impresses upon our vendors the importance of continuing diligence in their push for more environmentally sustainable product improvement – in assembly, operation, packaging, and recycling.

- Dell and HP continue to be rated 1 and 2 for their environmental efforts both with their product development but also their efforts in environmental conservation.
  - Dell ranks 4th among the top U.S. corporate users of renewable energy;
  - Dell's headquarters uses 100% renewable energy;
  - All Dell desktops and laptops were developed for 25% less energy usage from 2009 to 2010;
  - Dell became carbon neutral in 2008
- Cisco and Sun rank 6 and 7 respectively on Newsweek's latest ranking of green technology companies.
  - Cisco reported in 2008 that 100% of the energy used by its operations in France, Germany, Ireland, Italy, the Netherlands, and the U.K. came from renewable sources;
  - Overall, 80% of the energy used by Cisco's European operations was renewable;
  - Renewable energy accounted for about 32% of Cisco's power in the United States.
- Apple has challenges in this space. They make small strides toward improvements, but seem to have moved slowly compared to other companies. They recently released a MacBook Pro laptop that was lauded as a step forward, but Apple continues to be criticized for their lack of disclosure as it relates to their green initiatives.

#### *Additional Hardware*

- Flat Screen/LCD Computer Monitors: IRT has replaced all of its leased computer monitors (CRTs) with flat screen LCD monitors. 3 year lease cycle for computing equipment

### **Server Virtualization:**

Server virtualization is the process by which the operations and data of several individual servers are combined into a single, physical machine. In addition to saving space, combining the operations and data of several individual servers into a single, physical machine allows users to reduce the energy spent powering huge racks of centralized computers and the air-conditioning systems needed to cool them

### **Data Center Cooling:**

In January 2008 IRT installed 3 Computer Room Air Conditioner units to cool the Data Center. Previously there were 2 ten 10 ton units circa 1986; the 3 new 12 ton units are now networked together and communicate as a team to cool the room in the most efficient manner and maintain the environment of the data center.

### **Completion of the Digital Convergence Initiative:**

The core building blocks for this initiative are 1) rewiring buildings to current standards, and 2) changing out the electronics equipment (routers and switches) to increase the size of our campus backbone from one Gigabit per second to 10 Gigabits per second.

### **Data Center Planning:**

IRT has begun planning for a possible data center re-model or relocation following the construction of the Anderson Student Center. While there may be some improvements that can be made with the existing data center, it is likely that only a newly purpose-designed data center would gain significant efficiencies in terms of cooling and power consumption. IRT has already attended a number of seminars and training sessions as has consulted with vendors such as Dell and Sun on the latest thinking on data center design. Starting this summer IRT will begin more serious planning for a new and/or relocated data center.

We have established a number of standards and completed a number of projects to “green” IT at UST.

- Virtualization: Since 2007 IRT has implemented two VMWare server clusters that now run 80 virtual servers. Our VM environment has reduced our need to purchase, run, and eventually dispose of servers. A VMWare server cluster can run 30-50 virtual servers using a fraction of the power of that many physical servers. IRT will continue to migrate in the direction of virtualization as funding, vendor support, and best practices allow. Not all systems are certified to run in a virtual mode, and some infrastructure systems may always need to be maintained on physical server.
- UPS: In July 2009, IRT installed new UPS units in the St. Paul data centers. These units serve as power supplies for the data center, and as part of their function all electricity flows through them first. The new units installed are 10% more efficient than the older unit meaning that we get the same power supply for the data center at 90% of the draw from Xcel.

- Lease Impact: Most systems in the data centers are on a three or four year lease. A benefit of this financing model is that almost all systems are no older than 3-4 years so that IRT is annually benefiting from advances in server technology that allows them to run more efficiently.
- Offices are no longer being housed inside of the data center so the environment is able to be better regulated for the equipment.
- IT moved from 110 power to 220 power

## Challenges

- The rewiring phases of the Digital Convergence Initiative are complete; the equipment replacement phases await identification of funding before being able to proceed with the project.
- We are currently out of physical space in the data center; virtualization is helping with that to a degree but we will eventually run out of room for more physical servers.
- IT is working in a space that was not designed to be a computer data center of its current size—there are ceiling height restrictions and the room is not properly insulated. Newer cooling technologies have been introduced but because of room constraints their full value cannot be realized. Cold aisle containment and proper ducting are not possible with the current room configuration.
- We have outgrown the current power capabilities of a building that is 80+ years old. The current bill from Xcel does not separate power consumption for the data center from the rest of Aquinas so measuring efficiency changes is not possible. We have not been able to justify the added cost per server of using energy efficient power supplies because we do not measure power consumption for the data center. We are currently unable to monitor or trend the resources within the existing VMware physical servers to determine the most efficient and effective use of these technologies.

## Future

- Planning for a possible data center re-model or relocation following the construction of the Anderson Student Center.
- Investigating network controls that allow “Wake on LAN” features. Those features provide the ability to shut down and start up computers while maintaining the ability to provide security patches and other upgrades to computers across campus.
- Data Center Efficiency Study: IT is having discussions with consultants about conducting a data center efficiency study in conjunction with Xcel Energy. The study would involve more detailed monitoring of energy use and possible improvements that could be made to the existing data center to save on energy and cooling costs.
- In the new Anderson consolidating our power source will use one battery in a central location which will be more efficient and use less energy. Existing buildings have multiple battery systems spread throughout.



- During the summer of 2010 IRT will be adding a 3<sup>rd</sup> VMware Cluster, moving 10 physical servers to VMware and exploring virtualization technologies from Microsoft.
- Installation of motion sensors on the lights in the data center
- Working toward installing air locks to seal the cable access points in the data center floor
- A project is in place to explore the benefits of implementing scan faxes to email decreasing paper consumption and wear and tear on the multi-function devices.
- Implement the scan to email capability on the multi-function devices.

### **Transportation**

2010 report from Peter Borden, Transportation subcommittee to the UST Sustainability Committee

#### **Past Successes**

Transit passes: The University currently offers reduced-price transit passes to faculty and staff who choose not to purchase a parking permit for a car. Annual transit passes are currently discounted about 80 percent. Student semester passes are discounted 50 percent.

Carpooling: The University currently offers preferred parking to car pools.

HourCar: As of February 2010, the university became a site for two HourCars – vehicles from a local car-sharing program. So far, this has been one of the most active hubs for HourCar, in terms of number of new sign-ups. We have confirmed that at least 30 of the new HourCar members are student, faculty or staff of St. Thomas. The cars are Toyota Prius hybrids, so any mileage accrued on these cars will be more fuel-efficient than any other vehicle that person might have used for that trip. Some departments have also started using the HourCar for business travel and student field trips. Estimating the exact impact of this on the university's carbon footprint, however, is difficult.

#### **Challenges**

The university emits greenhouse gases as a result of transportation activities. These break down into categories:

- On-campus transportation
- Off-campus travel, student-related (ground and air)
- Off-campus travel, faculty/staff (ground and air)
- Commuting by students
- Commuting by faculty/staff

There are serious challenges both to measuring this carbon output and to reducing it. Transportation is by nature not centralized on campus, so direct system-wide changes are not as effective.

## **Future Plans**

Because most travel is by nature off-campus, carbon output from it is difficult to control except indirectly. Offsets would be the simplest way to do it. Other options are based on reducing travel, and making it more efficient.

*On-campus transportation:* On-campus vehicles (grounds department) could be replaced with rechargeable electric vehicles. If, in the future, UST derives a larger share of its electricity from renewable sources, this would be a reduction in carbon output for these electric vehicles. Conversion to lower-carbon vehicles would also be effective.

*Off-campus travel, student-related:* For ground transportation, student trips could be moved to mass-transit. Ultra-fuel-efficient vehicles such as the HourCar could be used. Air travel is difficult to mitigate, other than mandating a reduction in travel or travel distances. The only other option would be offsets.

*Off-campus travel, faculty/staff:* Other than mandating less travel, it is difficult to get faculty/staff to reduce carbon. “Stick” approaches would include lowering mileage reimbursement rates to push people toward carpooling and high-mileage vehicles. “Carrot” approaches would include subsidies for carpooling, using the bus, or using the HourCar. Air travel is difficult to mitigate, other than mandating a reduction in travel or travel distances. The only other option would be offsets.

*Commuting by students:* This is very difficult to measure (as described above). There might be some ways to reduce commuting, but it would be hard to measure how much effect they had. “Stick” approaches would include limiting the number of on-campus parking permits for commuting students (though they may simply park in the neighborhood). “Carrot” approaches would include offering subsidized bus passes and increased bike parking, though it would be hard to determine if those opting into these offers were reducing their car commuting.

*Commuting by faculty/staff:* Commuting is easier to measure for faculty and staff than it is for students. “Stick” approaches would include limiting the number of on-campus parking permits, or increasing the cost. The current “carrot” is to offer reduced-price bus passes for commuters who choose not to get a parking permit. This program gets some use, but would need to be expanded. Options would include incentives for carpooling, Web-assisted carpooling, and flex-parking that allows transit-users limited days of car parking in special areas. All of these options would have to be well-publicized to be effective.

It is highly unlikely that a large percentage of employees who do not use mass-transit daily now will make the switch – regardless of incentives – so mitigating all commuting carbon will have to involve some use of offsets.

### **Food Services**

2010 report from Todd Empanger, Director, UST Food Service

#### **Past Successes**

Dining services has been pursuing sustainability goals for several years. We have achieved initial success in recycling by evaluating our purchasing methods and packaging.

\*We recycle tin cans, paper, cardboard, plastics and glass. One of the goals was to reduce the food waste that was disposed through our sewer system.

\*We were contacted by a local farmer who wanted to collect our food waste, cook it into a mash and then feed it to his livestock. This particular type of recycling is considered full circle and has reduced equipment replacement and repairs. We teamed up with Barthold Farms to collect the food waste with daily pickups.

\*In an attempt to reduce Styrofoam and convert to Greenware containers made from plants and not petroleum, some BioPlus or SmartServ containers made from fully compostable 100% recycle paper. Implemented partial changes in cash locations.

\*We experimented with “Trayless Days” to limit food waste; we believe that change is necessary in fall semester when new students arrive on campus. Water usage was cut; the dish machine is not water efficient and uses 324 gallons per hour. We cut the use by 25 percent by shutting the machine down during slow periods (15 minutes) stacking dishes and then running them through. This produces significant savings. Trayless days require additional staffing to clean dining areas. Education is key to this cultural change.

\*We evaluated the purchasing process and converted to local (150-mile radius) to purchase food items. We are currently 50 percent local and working toward improving this percentage. Challenge: we are a cold climate area and thus much of our produce comes from other parts of the country. We are currently evaluating different companies that may have better sources. Cost is an issue.

\*Working with student organizations such as the Green Team and the Sustainability Committee to educate and change the habits at UST.

\*Equipment replacement: We have focused on Energy Star-rated equipment for the past 5 years. Several advancements in building materials and designs have improved the energy draw and reduced consumption.

\*Staff training has improved our knowledge of energy conservation. Example: Closing a refrigerator walk-in cooler door or turning off the oven when we are not cooking, pulling meat products from freezer 2- to 3 days in advance instead of running water over the product to thaw saves energy.

### **Challenges:**

Students and staff increasingly expect plastic bottles for water, soft drinks and other beverages. It is difficult to change habits, but we have the opportunity to teach through our menu selections. We are experimenting with flavored waters, including pineapple, cucumber, apple, and orange all prepared with water and natural flavoring.

### **Future Plans:**

Our goals are to change our menu design to promote local, organic and natural production. Our focus will also be to purchase energy efficient equipment that meets LEED Certification standards.

### **Residence Life**

2010 report from Dr. Aaron Macke, Director of Residence Life

### **Past Successes:**

- All lab and office paper purchased is “recycled paper”
- The posting policy was changed to limit the posters/flyers we accept and the postings were consolidated to one board per hall
- RHA is working collaboratively with Food Service and the Green Team to assess a “Trayless” program in food service
- Recycling containers/baskets were placed in each residence hall room and are being re-supplied each year so students can recycle in their room before bringing it to a common space recycling location in the hallway
- Working with the Green Team on providing “Smart Strips” for residence rooms
- Created a new Web page on the new web site dedicated entirely to sustainability initiatives and suggestions for the halls
- Mailings to all FY students now include information on sustainability ideas when deciding what to bring to school
- Physical Plant and Academic Affairs installed solar panels on top of Brady Hall
- Some halls/floors are turning common space lights off during less busy times

- During Hall and Floor meetings staffs are reminding residents to pay attention to length of showers, running water without use, turning off room lights, etc.

### **Challenges:**

- Our residence halls are buildings like any other and have issues with leaky windows, temperature control, inefficient fixtures/appliances (to add to the positives is that we are trying to replace appliances with more energy efficient appliances)  
With more than 2,400 residents it is ultimately the responsibility of each resident to be more sustainable in their living choices. This is hard to achieve with diverse opinions on what that means, how that looks and whether they choose to be committed or not.

### **Future Plans:**

- Continue to commit to and support the current initiatives – don't let them fade away which can quickly happen in a University setting
- Expand the communication/programming with our residents to provide better suggestions, information and support for sustainable efforts
- Continue to collaborate with other departments, student groups and interested parties on sustainability initiatives

### **Curriculum**

2010 report from Dr. Elise Amel, Curriculum subcommittee to the UST Sustainability Committee

### **Past successes**

Progress is already being made on several curricular fronts. The goal will be to ensure that students, no matter their major, understand their interdependence with climate and environment.

- Conversations to extend curricular coverage are in progress with Angie Barretta-Herman and Michael Jordan, Core Curriculum Committee, Academic Divisions, and programs such as Aquinas Scholars and Service Learning.
- The Office for Mission has started an environmental book group that will bring together over a dozen students, faculty, staff and alumni. The Office of Mission have also committed to introducing this mission-based effort during new faculty orientation.
- Thirty faculty have developed strategies for including environmental issues into their courses through Faculty Development seminars run by Elise Amel
- CAS Dean Marisa Kelly located external funding to support 10 \$1,000 CAS Environmental Stewardship Grants, which will fund faculty integrating issues such as climate change into their courses. Sponsored projects represent a broad range of disciplines including art history, English, geography, justice and peace, philosophy, biology and chemistry.

- Student groups will be encouraged to continue hosting programming and symposia such as this year's Aquinas Scholars symposium, which brought together geology, biology, engineering, justice and peace and psychology experts to discuss climate change.
- Every other spring Environmental Studies and Environmental Science programs host a research colloquium highlighting faculty-student collaborative research projects about issues such as climate change.
- Environmental Studies and Environmental Science program directors continue cultivating relationships with local high school environmental programs to recruit active and knowledgeable students who will serve as role models to their classmates.

## **Future plans**

### **Student support:**

We expect the UST Campus sustainability fund to play a major role in funding student campus sustainability projects.

- Provide climate change and sustainability oriented research for students, prioritize funding from Young Scholars and Collaborative Inquiry programs.
- Increase financial support, access to university decision makers, opportunities and visibility for green team, USG sustainability Committee, ESW, BEAST, Social Justice, Environmental Law Society, NetImpact and other student clubs working on the environment & sustainability.
- Connect coursework and internships with our greenhouse gas inventory and campus environmental audits.

### **Faculty preparation:**

- Measure what faculty are currently doing in their courses as a preliminary step to setting university-wide goals for course coverage
- Make a priority commitment to hire new faculty with expertise and interest in climate change and sustainability
- Establish fellowships or other financial support mechanisms for research related to climate change and sustainability
- Strengthen environmental studies and environmental science programs
- Encourage faculty to integrate environmental issues into coursework through grants, sabbaticals and faculty development workshops
- Endow a teaching Chair for Sustainability
- Include students and faculty on design committees for new buildings (or research projects intended to look at alternatives to new construction)

### **On-Campus Initiatives:**

- Connect research initiatives to the GHG emissions challenges our campus is facing including the development of renewable energy technologies and local sources of biofuels, carbon neutral engine technologies for autos and aircraft, hyper-efficient building systems to make zero emissions, net-energy producing buildings the norm rather than a rare exception, etc.
- Billboard/web page displaying campus emissions and renewable energy generation

- *Regularly* highlight alumni, staff, and student sustainability work in university publications such as St. Thomas Magazine.
- Invite students and faculty to join and fully participate in campus sustainability committees as well as CAP committees and sub-committees.
- We would like to see stewardship as the President's university theme in the near future.

#### **Intercampus and Community Initiatives:**

- Organize an annual campus climate summit
- Invite national speakers on climate change and sustainability to campus
- Participate in national climate change awareness raising and action initiatives like "Focus the Nation" and the "National Teach-In on Global Warming" and 350.org

#### **Student Involvement Report**

2009-10 report from Bridget Kapler, Chair of USG Sustainability Committee & Margaret Cahill, Director, Campus Life

#### **Past Successes**

- Speakers on Sustainability topics 2009-10
  - **Climate change...the harbinger of a green economy (USG Sustainability Committee) Apr '09**
    - Jennifer Jones, National Wildlife Federation
    - Lois Quam, Tysvar, a Minnesota-based green-economy and health-care-reform incubator
  - **"A Sustainable Economy: Why we need equitable Green Jobs now!" (Green Team) Apr '09**
    - Panel Discussion
  - **"Global Warming: Make a Difference" (Engineers for a Sustainable World) Sep '09**
    - U.S. Representative Betty McCollum
    - Dr. John Abraham, UST Engineering
    - Margaret Levin, the Sierra Club
  - **"Environmental Health Lecture" (USG Sustainability Committee) Nov '09**
    - Mac the Mold Man
  - **"Climate Change: What We Know and What We Can Do About It" (Aquinas Honors Symposium) Apr '10**
    - Dr. John Abraham, Engineering
    - Dr. Elise Amel, Psychology
    - Dr. Michael Andregg, Justice and Peace

- Dr. Jack Nelson-Pallmeyer, Justice and Peace
  - Dr. Kevin Theissen, Geology
- Community Clean-up bi-annual event (Green Team)
- River Clean-up: (Green Team, Recycling Team) students clean the east bank of the Mississippi River between Ford Pkwy & Marshall Avenue every fall and spring
- Clothing Drives (several student organizations, Recycling Team)
- Bike-Share Program: (BEAST) student bike club works on rehabbing bikes to make them available for the UST bike-share program and they take on the responsibility of their upkeep
- BEAST annual Lube-otomy during Earth Week offering free bike tune-ups to the students and surrounding community
- Earth Week Celebrations: (USG Sustainability Committee, Green Team, BEAST, Biology Club, Chemistry Club, Engineers for a Sustainable World) complete with a educational sustainability trivia game, a biodiesel engine, and free ice cream tokens to Izzy's (local ice cream shop that uses green power from roof-top solar energy panels to make their ice cream)
- Student support, advocacy, and petitions collected for the successful placement of two HourCars on UST Campus
- Advocacy of Trayless Dining (Green Team) petitions, tabling, monitoring of trayless dining days to record & evaluate student comments about the initiative
- Inclusion of Sustainability module in new student orientation (USG Sustainability Committee)
- Collection of unwanted books at the end of each semester for Books for Africa program (Omicron Delta Kappa)
- Community Garden Proposal: (Green Team and Biology Club) Student Initiative to create a community garden in cooperation with neighbors and the Biology Department 2009-10
- UST Solar Initiative: student activism that resulted in the purchase of solar panels using Pepsi grant funds and their final installation on Brady Residence 2009-10
- Student attendance and participation in the Annual UMACS Conference in River Falls, Apr '10 (USG Sustainability Committee)
- Local Foods Week: a week of local foods, food movies, and events designed to highlight local eating options and showcase the importance of eating local (STAR and Green Team and USG Sustainability Committee)
- The Chemistry Club won the National ACS (American Chemical Society) Green Chemistry Award for their work to promote green chemistry on our campus and in their own research projects



- SIFE (Students in Free Enterprise) team were 2010 regional champions in the national Sam's Club Environmental Sustainability Challenge by identifying and working with two businesses to implement sustainable practices in the areas of waste and recycling, nature and natural resources, energy and water, and people and community.
- Recyclemania: (USG Sustainability Committee, SIFE) promoted recycling and recycling awareness while participating in the national competition. Students put on a "Get Caught Green-Handed" event where students "caught" recycling were rewarded with a Chipotle chips and guacamole.

### **Challenges**

- Annual turnover of student leadership in student-run clubs and organizations – student organizations do a wonderful job but need to balance involvement with academics and work commitments
- Access to funds to invest in long-term projects
- Changing the culture of “college” – giveaway trinkets, the cultural conception of “free” electricity to power electronic items such as residence hall room size refrigerators, microwaves, coffee makes, televisions gaming systems, etc.
- Travel – number of cars students bring to campus and education needed for using metro transit systems

### **Future Plans**

- Complete the development of community garden on campus
- Continue to educate student groups on ways to advertise and market without massive amounts of unusable giveaways or paper
- Continued Earth Day celebrations and providing year round education on wide variety of sustainability efforts and affects
- Sustainability lecture series
- Continued student representation on UST Sustainability Committee
- Raise student awareness of the particulars of sustainability
- Incorporate how to ride the Metro Transit into new student orientation

### **Physical Plant**

2010 report from Bob Douglas, Coordinator of Recycling and Central Receiving, Physical Plant

### **Past Successes**

The Physical Plant began purchasing wind power from the **Xcel Windsource** program in January, 2007. In 2009, UST purchased 8,565,200 kWh of Windsource energy. That is enough green energy to make all residence halls on the north campus climate neutral. UST recently became a member of the **EPA Green Power Partnership**. The Green Power Partnership publishes an annual ranking of colleges and college conferences that sign up for renewable energy. As a conference, just with the inclusion of Augsburg and St. Thomas, the MIAC would be the 15th largest purchaser of renewables in the country.

At the Xcel Energy Expo in February, 2010, **Xcel Energy** recognized UST with an award for the largest gas savings by a commercial customer: 93,433 therms in 2009.

UST's new Construction Manager, Jim Brummer, is a **LEED Accredited Professional**. The Anderson Student Union under construction will be LEED Silver certified.

UST **Building Service Workers** have been using 3M green cleaning chemicals in UST buildings since 2000. The chemicals are dispensed in an auto-dilute system that helps eliminate chemical waste and increases environmental safety for the service workers. Ecolab green chemicals were added in 2008 in specific cleaning applications. Environmentally friendly cleaning procedures employed at UST include low moisture carpet cleaning with water recyclers, rechargeable cell batteries in many of the automated cleaning machines, restroom cleaning without the use of disposal towels and sponges, quieter vacuums with treated filters for cleaner air, and replacement of disposable mops and towels with washable microfiber.

In spring 2010, cleaning schedules are being changed to eliminate almost all night positions and move those positions to day hours. This change will affect energy use in our administrative and classroom buildings allowing both lighting and mechanical HVAC system use to be reduced.

**Interior Design** purchases building furniture and furnishing for University buildings from Steelcase, a LEED-certified company. Interior Design purchases of institutional furniture have Cradle to Cradle (C2C) certification. This means they are constructed with environmentally safe and healthy materials, design for material reutilization by recycling or composting, and are produced with efficient use of water and energy.

In the last few years, retrofitting of light fixtures has been completed for all 13 residence halls serving over 2000 students. Fifteen major **retrofit projects** were completed in classroom, academic, and library buildings in the summer '09.

Energy-efficient burners were installed in the Owens Science building in the summer of 2009 and energy-efficient ventilator units were installed in two residence halls in the summer of 2008.

28,860 **Christmas lights** decorating the campus were replaced with LED bulbs saving energy and over \$5,000 in energy costs over the 2007 Christmas season. The energy savings has continued through the subsequent Christmas seasons.

Over 100 feet of additional **bicycle** racks have been installed on campus since the fall of 2008.

The Physical Plant office uses recycled paper for all its copying, printing, and scanning operations.

With the provision of 1,100 small recycling containers in 2008, every residence room and suite now has a recycling container in addition to the recycling areas on each floor. There are now well over 2,000 recycling containers on our campuses.

UST annual end-of-school clothing drive has collected clothing and household items for charity for the past 13 years. **UST Recycling** diverted over 2,600 pounds of clothing and household goods from the waste stream in the last spring's move-out in 2009.

The recycling effort continues to grow at St. Thomas. In 2007: UST recycled more than 425 tons, in 2008: more than 446 tons, in 2009: more than 475 tons. Our recycling diverts well over a ton of recycling every day of the year from landfills and incineration. UST has participated in Recyclemania for the past two years.

### **Challenges:**

With the near completion of the Anderson Athletic and Recreation Complex and the construction of the Anderson Student Center, there will be considerable growth in building space with a corresponding increase in energy use. Construction guidelines need to be determined and institutionalized to keep future growth within sustainable limits.

UST buildings are not individually metered. In order to determine priorities for recommissioning of buildings, installation of metering needs to become a priority. Under current budgeting, deferred maintenance is not being funded. This puts Physical Plant operations into a reactive rather than proactive posture and needed maintenance becomes much more expensive in a crisis rather than preventative mode. Administrative financial priorities need to shift for operations to become more sustainable and cost effective.

To make best use of new carbon-neutral energy technologies, the electric outside and on campus needs to be upgraded to a smart grid. Cost and economic priorities keep that from happening for the foreseeable future.