

Transportation Recommendations Report

As part of Temple University's Climate Action Plan
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II. EXECUTIVE SUMMARY

In January, 2009 the members of Temple University's Transportation Committee began working on recommendations for reducing transportation-related university greenhouse gas (GHG) emissions, which represent 21 percent (or 45,000 tons) of Temple's total FY 2008 GHG emissions. These recommendations will be considered for inclusion in the university's Climate Action Plan, to be completed in the spring of 2010, and are based on an understanding of the three principal ways in which GHG emissions can be reduced in the transportation sector: (1) Reduce motorized travel associated with the university's mission, (2) Increase the efficiency of motorized travel, and (3) Reduce the carbon intensity of fuels for motorized travel.

Forty five recommendations to reduce GHG emissions in twelve categories of transportation policies and practices have been framed within the context of current university practices. Estimations of the resulting emission reductions have been quantified in metric ton equivalents of carbon dioxide (MTeCO₂) reduced or offset, where sufficient data exist.

Listed below are the twelve categories with a brief synopsis of the major, but not all, recommendations:

1. The creation of an **Office of Transportation and Parking (OTP)** with a full time director is recommended. The OTP would coordinate all transportation-related activities and programs of the university and serve as a center for transportation education, outreach, and planning. This office would also oversee a bi-annual transportation survey.
2. **Education and Communication** activities are recommended that include the development of a comprehensive web portal to promote all Temple University transportation options, information, and initiatives and a multi-media publicity campaign to support existing programs such as WageWorks pre-tax commuter benefits and the student University Pass transit discount.
3. Three principal recommendations concerning **Parking and Driving** are made: provide priority parking spaces and lower parking rates in university garages and parking lots to low-GHG emissions vehicles; initiate an alternative transportation program fee to provide revenue for carbon reduction transportation projects; and work with the City of Philadelphia to regulate on-street parking in the neighborhoods surrounding Temple's Main and Health Sciences Campuses.
4. **Carsharing** recommendations would improve communication and coordination with PhillyCarShare and ZipCar.
5. **Carpooling** would be promoted with recommendations to provide priority parking spaces, lower parking rates, and a guaranteed ride home program for employees and students who carpool.
6. **Public Transit** recommendations include developing a Universal Transit Pass program for students which would provide free or substantially discounted access to transit services and promoting employee transit use with expanded use of existing programs and creation of new transit programs and partnerships.
7. **Bicycling** initiatives include improved and expanded on-campus bicycle parking and partnerships with outside companies and agencies to provide retail discounts, low-cost bike repairs, and community outreach and education.
8. **Walking** recommendations include expanded promotion of the Employee Home Ownership Program and strategic improvements to the pedestrian environment on and near campus.
9. **Air Travel** recommendations include offsetting emissions with contributions to a University Carbon Fund to support emissions reduction projects. Other recommended policies would

encourage the use of intercity rail and buses—lower carbon intensive modes of transportation—for some university travel.

- 10. Campus Vehicle Fleet** recommendations include appointing a Director of Fleet Services to oversee the operation and maintenance of a centralized university fleet and the replacement and conversion of existing vehicles, when appropriate, with electric, hybrid, and compressed natural gas (CNG) vehicles.
- 11. Travel Alternatives** recommendations include increasing the number of online learning courses to reduce travel and offering flex time to allow employees to utilize alternative modes.
- 12. Master Plan considerations** include incorporating recommendations of the transportation committee such as installation of bike racks, development of signage for transit stop locations, and the improvement of pedestrian corridors to transit hubs.

These recommendations can be implemented in four phases: immediately (completion by the end of calendar year 2009), short-term (completion by June 2011), mid-term (completion by June 2015), and long-term (completion by June 2020). If all forty five recommendations are implemented, the reduction of GHG emissions could be 42 percent of the university's total expected transportation emissions (that is, 19,000 fewer MTeCO₂ emissions in 2020). While implementation of the recommendations will involve some costs and significant changes in commuting and travel behavior, they are designed to be revenue neutral in most cases (and to keep expenses as low as possible in others), while making energy efficient travel choices for Temple University's students, staff, and faculty more appealing through significant improvements in affordability, safety, and convenience.

III. INTRODUCTION

Temple University's Commitment to Greenhouse Gas Emissions Reductions

On April 21, 2008, Temple University President Ann Weaver Hart joined over six hundred other college and university presidents who have signed the American College & University Presidents Climate Commitment (ACUPCC). The commitment requires the university to follow a series of steps, culminating in the approval of a long-range Climate Action Plan, which will act as a road map for achieving carbon neutrality in university facilities and operations. Transportation policy and planning, the focus of this report, will be integral to the larger plan. Temple University's Climate Action Plan (CAP) will be submitted to the ACUPCC in May 2010.

In developing a Climate Action Plan, the university must consider its role in the context of national and regional aspirations, policies, and regulations concerning greenhouse gas emissions. Locally, the City of Philadelphia—under the leadership of Mayor Michael Nutter—has taken the first steps in its ambitious goal to be the greenest city in America by releasing the city's *Greenworks Philadelphia* report (City of Philadelphia Mayor's Office of Sustainability, 2009), which establishes a framework for Philadelphia to achieve significant reductions in energy consumption, improve air and water quality, create jobs, and green its landscape. Regarding transportation, *Greenworks Philadelphia* lays out several goals to accomplish by 2015: reduce the city's greenhouse gas emissions by 20 percent below 1990 levels, improve air quality toward attainment of federal standards, and reduce vehicle miles traveled per capita by 10 percent. Temple University intends to be an active participant in helping Philadelphia reach these goals, many of which may be reflected in Temple's long range Climate Action Plan.

In January, 2009 the members of the university's Transportation Committee began working on recommendations for reducing transportation-related university greenhouse gas (GHG) emissions, to be submitted as part of the university's Climate Action Plan. These recommendations, presented below, contribute to the concrete steps the university must take to meet its long-term commitment to carbon neutrality. We urge that the recommendations be implemented in the coming years in a series of changes to the way the university operates its vehicle fleet, to how university employees and students commute to Temple campuses, and the transportation modes university employees use to travel to other cities on official business.

Temple University's most recent GHG inventory (for Fiscal Year 2008) indicates that a little more than 21 percent of the university's greenhouse gas emissions, approximately 45,000 MTeCO₂, are associated with transportation. Students, staff, and faculty commuting is responsible for about 18 percent of the university's total GHG emissions; air travel on official university business and for academic conferences and meetings contributes about 4 percent; and operations of the university's vehicle fleets less than one-half of one percent.

Commuting to and from Temple's campuses in Philadelphia and Ambler is a significant emissions source. A total of 1 million miles a week are driven by Temple University commuters who drive alone. According to a survey conducted in December 2007, one-third of student commuters and half of faculty and staff commuters drive in a personal vehicle alone; this is about 40 percent of all commuters.¹ About 20 percent of all commuters use a car in combination with some other form of transportation (e.g. subway, regional rail), and 41 percent of all commuters do not use a car at any point in their commute, taking public transit, bicycling, or walking. Only 9 percent of the commuters reported carpooling.

¹ "Transportation Sustainability Survey of Temple Community" <http://www.temple.edu/sustainability/tnr>

Organization of the Report

The report begins with a summary of the impact the transportation sector has on Temple University's greenhouse gas emissions. We next describe a framework for understanding GHG emissions reductions opportunities from transportation. A detailed discussion of current university practices and recommendations for twelve categories of transportation policies and practices is followed by a concluding section that summarizes the university's potential to reduce greenhouse gas emissions from transportation by 2020.

To the extent possible, recommendations are identified by several key markers: a timeline for implementation, an estimated level of financial investment, and required internal or external institutional support. These key markers are summarized in green text boxes, referenced in more detail within the context of the report, and are summarized in a grid format at the end of the report. (See Appendix A for Cost, Timeline, Carbon Reduction.)

Timeline

Immediately Implementable- Phase 1: By 12/31/09

Short-Term Goal- Phase 2: By 6/30/11

Medium-Term Goal- Phase 3: By 6/30/15

Long-Term Goal- Phase 4: By 6/30/20

Funding

One-time Funding

Ongoing Funding

Cooperation

Internal Temple

Coordination with SEPTA, the City of Philadelphia, or other External Organizations

To quantify the resulting emissions reductions from the recommendations at Temple, estimations have been made based on prior implementation in other universities or similar settings. Reduction estimates reflect the difference between the recorded 2008 transportation emissions and expected emissions following implementation of each recommendation. 2008 information is used as a baseline because it is the most current representation of commuter habits and fleet fuel use on record. Further analysis will be necessary to permit accurate comparisons among these recommendations, and between these recommendations and those made in the buildings, operations, and academic services sectors of the Climate Action Plan.

Framework for Reducing University GHG Emissions from Transportation

Carbon neutrality is an ambitious and difficult goal to embrace. Achieving it will test the innovation, flexibility, and commitment of the entire university community of students, staff, and faculty. Carbon neutrality in *transportation* activities is especially difficult, given that the primary source of energy for motorized vehicles is petroleum refined into gasoline, diesel, and other motor fuels. Petroleum products are high-energy, convenient, transportable, and abundant (ideal for transportation purposes), but they are high in carbon content.

During the next twenty years, technological advances in motor vehicles and motor fuels will help reduce carbon emissions from transportation activities and will help Temple reduce GHG emissions. However, they will do so only gradually and, compared to the extent of the challenge, only in relatively minor ways. Technological change cannot be relied upon to eliminate GHG emissions completely. Consequently, neither Temple University nor any other modern institution of higher education will

achieve carbon neutrality in transportation activities, today or in the foreseeable future, without significant changes in the travel behavior of all members of the university community.²

Using the current model of the Clean Air Cool Planet campus emissions calculator, if all commuters switched from single occupancy trips in personal vehicles to carpooling and using mass transit with a small percentage switching to biking or walking, this would result in a 36 percent reduction in commuter related emissions, accounting for a 29 percent reduction in total transportation emissions.³

We have kept clearly in mind the difficulty of the challenge and the university's commitment to facing it as we have educated ourselves and developed the recommendations included here. The most difficult recommendations are those that discourage Temple University's students, staff, and faculty from commuting alone in personal vehicles to our campuses. Because single-occupancy vehicle commuting contributes a disproportionately high percentage of GHG emissions from Temple's transportation sector, an effective approach to reducing emissions must include policies to encourage these commuters to shift to shared and non-motorized forms of transportation. Single-occupancy vehicle trips should, therefore, become more costly, both in out-of-pocket expenses and in effort. While such changes are likely to be unpopular, their implementation will be fairer and more acceptable when combined with recommendations to make the alternatives to single-occupancy vehicle trips—public transit, carpooling, carsharing, walking, bicycling, near-campus living, and travel-replacing options such as online learning and virtual attendance at meetings and conferences—more convenient and less costly.

It is also important to be aware, in reading this report, that the recommendations that are more difficult to implement may be the more effective, higher-impact policy changes. Temple University, like every other ACUPCC signatory institution of higher education, will have to balance the costs and difficulties of potential policy changes with the expected levels of reductions in GHG emissions and climate scientists' urgent advice that earlier reductions in GHG emissions are more valuable in terms of ameliorating long-term climate change effects.

These recommendations are based on an understanding of the three principal ways in which GHG emissions can be reduced in the transportation sector:

1. Reduce all motorized travel associated with the university's mission, including student, staff, and faculty commuting, operations of the university's vehicle fleet, and travel to off-campus sites (whether across town or around the world) for university business and academic meetings and conferences.
2. Increase the efficiency of motorized travel by reducing single-occupancy vehicle travel (particularly for daily commuting to and from Temple University campuses), increasing shared travel (in carpools, Temple University shuttle buses, and public transit vehicles) and non-motorized travel (walking and bicycling), and encouraging the purchase of higher fuel-efficiency vehicles (by commuters and for the university's vehicle fleet).
3. Reduce carbon intensity of fuels for motorized travel by encouraging the purchase by commuters and university vehicle fleet managers of vehicles that operate on compressed natural gas, bio-diesel, electrical batteries, and other lower-carbon content sources of energy.

With these three approaches in mind, the report's recommendations are organized into twelve categories: management of university transportation, education and communications with the university

² Carbon offsets must also be part of a comprehensive effort, as will be discussed in more detail in the next section, but one that should not be the primary focus of the university's GHG reduction strategy.

³ See http://www.cleanair-coolplanet.org/for_campuses.php.

community, parking and driving, carsharing, carpooling, public transit incentives, bicycling, walking, air travel, vehicle fleet operations, travel alternatives, and master plan implementation.

In order to achieve the ambitious goal to which Temple University is committed, collaboration and cooperation with organizations outside the university will be necessary. The two most important institutions are the City of Philadelphia, particularly the Department of Streets (though other city agencies will be important to our efforts as well), and the Southeast Pennsylvania Transportation Authority (SEPTA). Working with other organizations, such as car sharing companies, local small businesses, community organizations, and bicycle manufacturers, as well as other local colleges and universities, will also be crucial to the university's ultimate success.

IV. EXISTING CONDITIONS AND RECOMMENDATIONS

The following is a discussion of existing conditions and recommendations in twelve separate areas of Temple University transportation policies and practices. We make 45 specific recommendations, which are summarized in text boxes and described in more detail in the accompanying text.

1. University Management of Parking and Transportation Options

Existing Conditions

Currently, responsibilities for managing different aspects of transportation policy and planning at Temple University are distributed among numerous departments and offices. The Department of Campus Safety Services registers bicycles, distributes bike locks and owns a fleet of vehicles, the Department of Human Resources administers the WageWorks program to provide pre-tax transit and parking benefits for employees, the Bursar's Office runs the University Pass Program that allows students to buy discounted SEPTA transit passes, the Office of Facilities Management installs bike racks and manages 70 cars, pickups, vans, trucks, and buses, the Office of Parking Services plans and manages parking facilities on campus, SEPTA tokens are sold by the University Bookstore, and still more vehicles are owned or leased by the Athletics Department and other academic departments. Other university offices are involved with other aspects of transportation and travel.

This division of responsibility means that there is no single vision or strategy for coordinating transportation policies and services. Consequently, the priorities and obligations of different offices can be contradictory or unclear to students, staff, and faculty considering their commute and travel options. The implementation of a university-wide goal of reducing GHG emissions from transportation-related activities is more challenging under these conditions than it would be if there was a single department committed to transportation *and* parking services.

Recommendations

We recommend that an Office of Transportation and Parking (OTP) be established to coordinate all transportation-related activities and programs of the university including maintaining parking facilities, managing the university's fleets of vehicles, and providing commuter benefits for all modes of transportation and business travel. This office would be the center for education, outreach, and planning. This office will also be

Office of Transportation and Parking
(Recommendation #1)

- *Short-Term Goal*
- *Ongoing Funding*
- *\$75,000*
- *Internal Coordination*

accountable for setting and staying on schedule with transportation-related efforts to achieve carbon neutrality outlined through 2020 by the CAP. Many of the recommended initiatives while requiring only small upfront costs, will require changes in culture and communications involving multiple parties, specifically SEPTA, New Jersey Transit, neighboring universities, and other stakeholders. We expect that the new office will play an important part in the negotiations that will be required to move forward the more progressive and innovative transportation policies and projects. While no specific greenhouse gas reductions can be assigned to the establishment of the OTP, it is believed that a coordinating body will be integral in the success of transportation initiatives outlined in this report.

A unified transportation office is the management model currently in place in place at several universities, including Washington University, Stanford University, Georgetown University, UC Berkeley, the University of Minnesota, and Arizona State University.⁴ The OTP will require a full-time director to establish the office and oversee operations. A University Fleet Director is also recommended; this position is discussed in “University Fleet” section. Since the duties of this office largely involve a reconfiguration of existing campus functions, there is the potential to reassign current staff from several offices. Staffing needs would be determined during the planning phase.

To monitor progress in improving the sustainability of Temple’s transportation sector—including measurement of greenhouse gas emissions—a bi-annual Transportation Survey should be conducted in concert with the Greenhouse Gas

Inventory. This transportation survey should take place every other spring beginning in the spring semester of 2010. The new Office of Transportation and Parking would be responsible for collecting and assembling the transportation-related data for the GHG Inventory, as well as coordinating the Transportation Survey. The cost of the survey is estimated to be \$30,000 every other year.

<p style="text-align: center;"><u>Bi-Annual Transportation Survey</u> (Recommendation #2)</p> <ul style="list-style-type: none">• <i>Short-Term Goal</i>• <i>Ongoing Funding</i>• <i>\$30,000 every other year</i>• <i>Internal Coordination</i>

2. Education and Communication

Existing Conditions

Currently, transportation information of interest to students, staff, faculty, and visitors—regarding parking facilities and fees, transit options and benefits, campus shuttle buses, and other transportation services—can only be found by searching many separate web pages at www.temple.edu. Helpful information is available, but from a variety of sources in a large number of different places, making it difficult to understand all of the options available to the university community.

At student and new employee orientations, an effort is made to provide a comprehensive description of the multiple options for commuting to Temple University campuses. Student Orientation staff emphasize that a car is not needed to get around the city and they provide information about transit services and other travel options. In new employee orientations, employees are told about university parking policies, WageWorks pre-tax commuter benefits for parking and transit, and other transportation options. For all employees, periodic e-mail messages are provided by Human Resources to highlight the employee WageWorks program, by the Bursar’s Office to promote the student University Pass program (jointly sponsored by the University and SEPTA), and by Parking Services.

⁴ For more details see:

"Parking and Transportation." *Berkley University of California*. Berkley University of California. <http://pt.berkeley.edu/>

"Parking and Transportation Services." *University of Arizona*. University of Arizona. <http://parking.arizona.edu/>

"Parking and Transportation Services." *University of Minnesota*. 15 Sep 2008. University of Minnesota.

<http://www1.umn.edu/pts/>

Recommendations

We recommend the creation of a Comprehensive Web Portal which would provide user-friendly, easy-to-understand, one-stop access to all university transportation information. This web site should have information specific to every mode of transportation available to the university community and to each campus location in the Philadelphia region. This web site should include information about (1) SEPTA services and the agency's "Plan Your Trip" route planner, (2) University shuttle buses, (3) Parking services, (4) Bicycle policies and incentives, (5) WageWorks benefits and the University Pass Program, (6) PhillyCarShare and Zip Car maps and information, (7) Travel options for conferences and other university business, (8) Carbon offset programs for air travel, (9) Carpooling, and (10) Near-campus living incentives. Portland State University's web site is a good model for such a university transportation web portal and includes real time information on public transit routes that serve the campus.⁵ The web sites of the University of Minnesota and UC Berkley also have informative and appealing transportation pages which could serve as models for Temple's website. The website should be linked to other relevant university web sites (including the university's Office of Sustainability webpage at <http://www.temple.edu/sustainability>).

Comprehensive Web Portal

(Recommendation #3)

- *Short-Term Goal*
- *One-time Funding*
- *\$15,000*
- *Internal Coordination*

This new portal could be up and running even before the recommended Office of Transportation and Parking is created. In the short term, this can be housed on a Transportation page under the Office of Sustainability website.

We also recommend a Transportation and Parking Information Campaign be launched to direct the university community to the new web site, to encourage all students, staff,

and faculty to choose alternatives to commuting in single occupancy vehicles, and eventually to promote the new OTP. The campaign should include e-mail announcements, posters on campus, tables at events, and other efforts that are maintained throughout the year, but that would be especially active at orientation events and the beginning of each semester.

An initial awareness campaign geared toward students, faculty, and staff can be launched for the Fall 2009 semester. This would include representation at events and development of materials that highlight existing programs such as WageWorks transit and parking benefits, the SEPTA-Temple University Pass program, the existing Transportation web page hosted on the Office of Sustainability web site, Bike Temple (see Recommendation #29 below), carpooling assistance program, and air travel green guidelines.

The campaign should be kept dynamic and up-to-date. If there is a surge in energy prices, potential new mass-transit riders should be aggressively targeted. Recent evidence indicates that once individuals start using public transportation, many of them stick with it even when energy prices fall back. Transit rider retention can be as important as new ridership.

A variety of free materials is available to increase awareness of transportation alternatives. WageWorks provides handouts that can be either used as is, or modified to our own designs. In addition to distributing hard-copy materials, digital pdf copies can be linked to the web site. Philadelphia Mobility Alternatives Program, a commuter service of the Clean Air Council, will participate at events

Transportation and Parking Information Campaign

(Recommendation #4)

- *Immediately Implementable*
- *One Time Funding*
- *\$2,500*
- *Internal Coordination*

⁵ "Transportation and Parking Services." *Portland State University*. Portland State University. <http://transportation.pdx.edu/transit-board>

at Temple for free. Drawing on these materials and university-produced information, a standard set of materials should be produced, to be placed at every transportation-related tabling event.

For students, information can be disseminated at orientation and sent home to their parents / guardians. This information would include available transit options, transportation recommendations, and university transportation polices. Key people who are prominent in the lives of students, like resident assistants (RAs), should have clear information on transportation policies and resources. Welcome Week and other high profile events are good places to increase awareness.

Information can be made readily available at faculty and staff seminars or via emails announcing new initiatives. An event that has been successful at other universities is a Commuter Competition; this could be initiated for very little cost. Inclusive events such as this could aid in raising awareness of the multiple options available to commute to campus.

Effective Transportation Signage around campus for bicycle parking, transit stations, shuttle times (including real-time information), and bus routes would help with increasing overall literacy of transportation options and policies. Such signs should be consistent with the campus design elements included in the Master Plan.

Effective Transportation Signage

(Recommendation #5)

- *Short-Term Goal*
- *Dependent upon Master Plan*
- *One-time Funding*
- *Internal Coordination*

3. Parking and Driving

Existing Conditions

According to the commuter survey conducted in December of 2007, one-third of student commuters and half of faculty and staff commuters drive to campus alone in a personal vehicle; this is about 40 percent of all commuters.

Currently, there are 2,930 parking spaces on Main Campus, 1,307 spaces at Ambler, and 920 University spaces at the Health Science Campus (HSC) for a total of 5,157 spaces. (Assuming that there are an additional 20 percent permits sold, all calculations for revenue from permit holders will be based on 6,188 permit holders.) At the Main Campus, commuters can buy monthly parking passes or debit cards for daily parking, or pay hourly rates.⁶ The debit card price per day is comparable to what monthly pass holders pay, if the monthly rate is broken down over a five-day work week.. At the HSC, only monthly passes and hourly rates are available. At the Ambler Campus, only annual parking passes are available for sale.

Parking Services is an auxiliary service of the university. It grosses approximately \$5 million annually, of which 13 percent is returned to the University's general budget. With the remaining 87 percent of revenues, Parking Services covers its operating costs, which include debt service for capital projects and improvements.

Only about five hundred Temple University students officially register their cars with Parking Services at Main Campus. Some Temple community members park in the unauthorized dirt lots on the Main Campus and it is estimated that in excess of 2,000 cars are parked in the residential neighborhoods around the Main Campus on a daily basis. Parking in neighboring residential communities at the Main Campus and HSC is a source of tension between the local residents and Temple.

Street parking is limited near Temple campuses. In the commercial areas around Temple University's Main and Health Science Campuses, parking meters currently cost around \$1.00 per hour.

⁶ Debit card parking is \$66.00 for the annual hangtag and \$5.12 entering before 3pm and \$2.56 if entering after 3pm. Debit parkers do not have a reserved spot.

Although many of the streets running through and near campus have free parking, some streets have posted time limits. In the City of Philadelphia, parking meter rates are posted at either \$1.00 or \$2.00 per hour (the higher rate is currently found only in Center City).

Recommendations

Temple University

Priority Parking and Lower Parking Rates should be given to low-GHG emissions vehicles (those with combined city-highway fuel economy ratings of 35 mpg or higher), and motorcycles. Discounts should be based upon revenue-neutral pricing, which raises parking fees for non-fuel-efficient vehicles a small amount in order to fund deep discounts for the comparatively smaller number of high-fuel-efficiency vehicles used by Temple commuters. To implement such a program would require an awareness campaign to inform commuters of the incentives, redrawing of the parking garage layout to create more priority parking spots, and additional signage.

If, for example, the university sets a preliminary target of 5 percent of the vehicles used to commute to campus should be low-GHG emissions vehicles, a discount of one third of the current cost of parking (reflective of the fuel reductions associated with an increase in fuel economy from 24 mpg to 35 mpg) could be funded with an increase of just under \$2.00 per month for non-fuel-efficient vehicles. Once 10 percent of the permit holders have begun driving more fuel efficient vehicles, a \$4.00 per month increase in fees on non participants would continue to make the program revenue neutral. Subsequent parking fee increases could be phased in as the percentage of fuel-efficient vehicles increases. Specific program goals are to increase the number of fuel efficient vehicles to 5 percent of the vehicle population by 2011, to 25 percent of the population by 2015, and to 50 percent of the population by 2020. The fuel efficiency standard has been raised to 35 mpg by 2020 for US car manufacturers which ensures a growth in fuel efficient vehicles regardless of incentives. A conversion of 10 percent of the vehicles to 35 mpg from the current fuel economy of student, staff, and faculty vehicles (average of 24 mpg) would result in a 2.5 percent reduction in transportation emissions; a 25 percent conversion would result in a 5.7 percent reduction; and a 50 percent conversion would result in a 10.3 percent reduction.

Similar discounts can be applied to vehicles used for carpooling (see Recommendation #18 below).

In addition to the fee increase to fund low-GHG emission vehicle discounts, we recommend that an Alternative Transportation Program fee be added to the existing parking fee as a funding source for transportation-related carbon reduction projects. A small increase of \$5.00 per month for the more than 6,000 students, staff, and faculty who buy parking permits would generate up to \$370,000 a year.

Every university parking facility should enforce a No Idling policy for cars as well as heavy-duty vehicles (trucks and buses). A no-idling policy exists in Philadelphia for vehicles

Priority Parking and Rates for Low-Emissions Vehicles

(Recommendation #6)

- *Short-Term Goal*
- *No Funding Required*
- *Internal Coordination*

Alternative Transportation Program fee

(Recommendation #7)

- *Short-term Goal*
- *One-time Funding*
- *Internal Coordination*

No Idling Policy

(Recommendation #8)

- *Immediately Implementable*
- *One-time Funding*
- *\$72 per sign*
- *Internal Coordination*

over 8500 pounds or carrying more than 12 passengers.⁷ This policy should be enforced by TU Police for Temple's large vehicles. In addition to the Philadelphia no-idling policy for large vehicles, we suggest a no-idling policy be enforced within university parking garages or lots for commuter vehicles. Parking attendants should be made aware of the policy, university police should enforce it, and signage should be prominently placed to inform drivers. A savings of 0.01 percent of the transportation emissions is estimated from a no idling policy.⁸ A 24" x 24". "No Idling" sign costs \$72.00 delivered (July 2009).

Debit Card Parking at HSC Campus
(Recommendation #9)

- *Short-Term Goal*
- *One-time Funding*
- *Amount Uncertain*
- *Internal Coordination*

An option should be offered for Debit Card Parking at the Health Science Campus. Debit card parking gives commuters more flexibility and an incentive to save money by not having to pay parking fees on the days when they can use public transit, bicycle, or walk.

New students should be discouraged from bringing their cars to campus. With an estimated increase of 2,000 students living on Main Campus in the coming years (such an increase is incorporated into the recently completed Master Plan) and the existing tension over Temple University parking in the neighboring communities, it is in the university's best interest to give new students strong incentives to utilize alternative transportation available at the campuses. This has been implemented on a growing number of campuses, including the University of Miami, the University of Virginia, and Tufts University. This guideline could be sent out in orientation materials that would aggressively highlight the benefits gained by Temple community members who do not bring their car. Among those benefits are hassle and tickets avoided, money saved, and independence gained. Publicizing the Bike Temple program (described below) and car sharing options can be coupled with this initiative to make it more successful. This is a strategy that has proved successful at other institutions.

Discourage New Students from Bringing Cars to Campus
(Recommendation #10)

- *Short-Term Goal*
- *No Funding Required*
- *Large Emissions Reductions Potential*
- *Internal Coordination*

City of Philadelphia

Temple University should pursue a policy of coordinating the management of campus parking facilities with the management of city street parking in the neighborhoods surrounding the Main and Health Science Campuses. The goal of these coordination efforts is to make the choice of parking in a university parking lot more attractive to students, staff, and faculty commuters than parking on city streets, while also avoiding inconvenience to residents of those neighborhoods. A detailed study of parking in the neighborhoods around the Main and Health Sciences Campuses, including locations of parking meters

Establish a Parking Benefit District
(Recommendation #11)

Increase Parking Meter Rates on City Streets
(Recommendation #12)

Establish a Zonal Parking System
(Recommendation #13)

- *Medium-Term Goal*
- *No TU Funding Required*
- *Coordination with City of Philadelphia*

⁷ The ordinance states: The maximum allowable period of idling shall not exceed two (2) consecutive minutes or zero (0) for layovers, except under the following conditions:

1. The engine may be idled for a period of up to five (5) consecutive minutes when the ambient temperature is less than 32o F (0oC).

2. The engine may be idled for a period of up to twenty (20) consecutive minutes when the ambient temperature is less than 20oF (-7oC).

⁸ "Green Business: Green Business Guides." *Natural Resources Defense Council, the Earth's best defense*. Natural Resources Defense Council. <http://www.nrdc.org/enterprise/greeningadvisor/ta-idling.asp>

and the feasibility of installing more, is necessary before moving forward with the three recommendations below.

Because altering city street parking policies requires extensive negotiations with the Philadelphia Parking Authority, the City of Philadelphia's Streets Department, and other agencies within city government, it is likely that the implementation phase would not begin for several years. While the greenhouse gas emissions reduction potentials of these policies are hard to quantify, they would serve Temple well by maintaining good relations with the surrounding neighborhoods.

The successful implementation of the recommendations below is interconnected. The first is to begin discussions with the city about the establishment of a Parking Benefit District in this area of North Philadelphia to implement a phased-in installation of parking meters in areas where parking is currently free.⁹ Any additional revenue derived may be negotiated with the city for use in carbon reduction projects.

Temple should coordinate with the city to increase per-hour parking meter rates. Economists and parking experts like Professor Donald Shoup of the University of California at Los Angeles argue that curb parking (or on-street parking) should be priced in a way that balances the demand for parking with the limited number of curb spaces available. When prices are too low, demand is higher than supply and curb parking is difficult to find. This leads to cruising for parking spots, which wastes fuel and contributes to traffic congestion. If priced correctly, about 15 percent of curb-side parking spots would be vacant at most times. A correct pricing scheme would need to be established through negotiations between the city and Temple.

Another deterrent to street parking is a Zonal Parking System in those areas adjacent to the University zone. Residents would receive parking stickers (at a small fee, currently \$30 per vehicle per year in some city neighborhoods) that would permit unlimited parking on city streets within the zone to insure that local residents have access to parking in their neighborhoods; others parking on city streets would be limited to three to four hours per day. This system exists in some areas of the city (e.g. Center City) and would be applicable to residential streets near Main and Health Science Campuses. The Philadelphia Parking Authority website explains the Residential Parking Permit program.¹⁰

4. Carsharing

Existing Conditions

In Philadelphia, there are currently two carsharing organizations that provide per hour car rentals from widely distributed curbside and parking lot carsharing "pods" to pre-approved and pre-registered drivers.

Recommendations

One major incentive for leaving a car at home (for the day or the entire semester) is the availability of PhillyCarShare and Zipcar vehicles to faculty, staff, and students. Carsharing organizations should be informed of future student housing developments, so that they can plan to serve those new residents. Expansion of car sharing opportunities should be explored for all campuses. Having carsharing in highly visible locations on

Coordinate with Carsharing Organizations (Recommendation #14)
<ul style="list-style-type: none">• <i>Short-Term Goal</i>• <i>No or Small TU Funding Required</i>• <i>Coordination with External Organizations</i>

⁹ Shoup, Donald C. The High Cost of Free Parking. Chicago, IL: American Planning Association, 2005. Print.

¹⁰ "Residential Parking Permits." Philadelphia Parking Authority. Philadelphia Parking Authority. http://www.philapark.org/permits/residential_permit.aspx

campuses will help students realize that carsharing can be convenient and will help convince parents that it is a safe alternative to a private car. In order to target freshmen and provide them with an added incentive for leaving their cars at home, the University should negotiate with the carshare organizations, as Brown University has done, to lower the age limit to 18 (from the current 21 years for Zipcar and 19 years for PhillyCarShare). The University should also pursue negotiations with both PhillyCarShare and Zipcar for their cars to be accessible to the Health Science and Ambler Campuses.

5. Carpooling

Existing Conditions

According to the university's Transportation survey conducted in December 2007¹¹, 9 percent of the commuters reported carpooling. There is currently a carpooling program offered by Parking Services, but it is neither well publicized, nor well utilized: during the 2008-2009 academic year there just were 44 carpool agreements for Main Campus and 25 carpool agreements for HSC, which is about 1 percent of the vehicles parked in Temple parking lots on a typical weekday.

Recommendations

To encourage a successful carpooling community at Temple, a comprehensive approach needs to be taken to the implementation of policies, incentives, education, and utilization of existing programs in the region.

An initial step is to more effectively publicize the existing program to encourage ridesharing¹² by enabling students and employees to find others to access the carpooling discount. There are a few ridesharing programs available at varying costs and anticipated effectiveness in encouraging participation. Locally, the Clean Air Council, Delaware Valley Regional Planning Commission, and Philadelphia City Planning Commission provide commuters with information about commute options through the Mobility Alternatives Program, or MAP, free of charge. Under the umbrella of MAP are various programs such as the Share-A-Ride, Transit Check, and Emergency Ride Home programs. The Share-A-Ride (SAR) program matches employees with carpools, vanpool groups, and walking and bicycling services. Commuter input their information into a very simple form, and that information is entered into a database. They are then sent information about other people who are commuting to and from the same area, as well as suggested public transit routes, vanpools, or Park-And-Ride services.

The *Greenride* program is a user-friendly, commercial ridesharing service provided by Ecology and Environment, Inc. and we recommend the university purchase a license for this product. The ridesharing program would be designed specifically to serve the Temple community. The program can produce reports that quantify emissions reductions and cost savings to the university. *Greenride's* Campus Edition ridesharing program is currently utilized by a dozen colleges and universities, including Duke, Purdue, the University of Florida, and the University of Michigan. Among the large universities (20,000 to 50,000 students) that *Greenride* has served, 800 to 3,300 community members have joined the program. *Greenride* is working on a Commuter Competition module that would register participants

Publicize Existing Ridesharing Program

(Recommendation #15)

- *Immediately Implementable*
- *No TU Funding Required*
- *Internal Coordination*

Encourage Ridesharing with Greenride Online Software Program

(Recommendation #16)

- *Short-Term Goal*
- *Ongoing Funding*
- *\$10,000 first year; 8,000, 7,500*
- *Internal Coordination*

¹¹ Transportation Sustainability Survey of Temple Community" <http://www.temple.edu/sustainability/tnr>

¹² Ridesharing and carpooling are interchangeable terms.

and track usage and emissions reductions. The first-year cost to develop and launch the site and provide hosting, maintenance and technological support is about \$10,000. The second- year fee is \$8,000, and the fee is reduced by 5 percent each successive year. A reduction of 1,000 commuters would reduce 859 MteCO₂, 2.4 percent of commuting, or 2 percent of total transportation emissions.

Employees who commit to sharing a ride to work at least three times a week and are participating in the Share-A-Ride (SAR) or the Mobility Alternatives Program (MAP) can register for the Emergency Ride Home service, which guarantees a ride home when ride-sharing students, staff, or faculty have emergency transportation needs during the day. If the university does not participate in the SAR or MAP carpooling program or opts for the Greenride program, it is recommended that as a security measure to those who join other carpooling programs, that the university provides a guaranteed ride home program that would reimburse the cost of taxis or public transit. This will come at an estimated \$10 per incident. 200 incidents a year will cost the university \$2,000.

Guaranteed Ride Home Program
(Recommendation #17)

- *Short-Term Goal*
- *Ongoing Small*
- *\$2,000*
- *Internal Coordination*

Incentivizing carpooling through priority parking spots and discounted parking rates is an important additional step. For those who participate in the carpooling program, or pledge to carpool 3 days a week, we suggest a reduction comparable to the proposed low-GHG emissions vehicle reduction in parking fees: \$75 per month, instead of the current \$112 for Main Campus. Rates for commuters driving alone could be increased in increments in response to the participation rate of the carpooling program to ensure that rate changes remain revenue neutral for Parking Services. Even if the participation in the program increased to 5 percent of the permit holders, accounting for a 33 percent reduction in permit holders due to carpooling, a \$2 increase per month on non-carpoolers would keep the program revenue neutral for Parking Services.

Priority and Discounted Parking for Carpoolers
(Recommendation #18)

- *Short-Term Goal*
- *Onetime Funding Required*
- *Small Emissions Reductions Potential*
- *Internal Coordination*

An enforcement system of some sort would be needed to ensure that drivers do not take advantage of the carpooling discount. This may include checking the IDs of both (or more) of the occupants in the car upon arrival at the parking lot to ensure that it is the two or more passengers that are signed up for the program. A option that has worked well is a hang-tag. At Boston College, for example, multiple vehicles can be registered on one hang tag, which can be transferred to the vehicle being driven on any particular day by the carpoolers. All carpoolers get priority parking in the garages and surface lots. The discount is also given to those employees who can prove that they participate in the regional carpooling service. This could be done at Temple as well. Boston College, along with many universities, also provides a guaranteed free ride home.

According to research by York and Fabricatore (2001), ridesharing programs typically reduce commute trips by 5-15 percent if they offer only information and encouragement, and 10-30 percent if they also offer financial incentives. The most effective programs tend to have paid parking, subsidies for alternative modes, and other incentives to encourage reduced automobile commuting. A reduction of 20 percent drive-alone trips among faculty and staff switching to carpooling would reduce Temple's greenhouse gas emissions by 1,245 MTeCO₂ per year, or a 3.4 percent reduction in commuter emissions and 2.8 percent in total commuter emissions.

There is a Zimride Application that can be utilized by members of the social networking site, Facebook, which is used by students at many colleges and universities. Users create a ridesharing profile stating where they want to travel to and from, and others are able to send them a message to ask for a ride. This is a no-cost option for the university. The Zimride

Zimride
(Recommendation #19)

- *Immediately Implementable*
- *No TU Funding Required*
- *Internal Coordination*

Application has had success at universities like Cornell, UCLA, and Stanford. The program could be publicized in Fall 2009 to see what sort of response and participation is generated. The application can be used for inter-city and non-habitual ridesharing, for students returning home after the end of a semester, for example.

6. Public Transit

Existing Conditions

According to the Transportation survey conducted in December 2007, about 20 percent of all commuters use a car in conjunction with some other form of transportation (e.g. subway, regional rail), and 41 percent of all commuters do not use a car at any point in their commute. We hope to increase the number of people using the multiple public transportation options that serve Temple by increasing awareness of the existing programs and implementing new incentives.

WageWorks is a program currently available to full-time Temple employees which allows transit riders to purchase tickets and passes, using pre-tax dollars, on all public transit providers in Pennsylvania, New Jersey, and Delaware (this includes NJ Transit and PATCO, which serve many New Jersey commuters). The benefit can also be applied to vanpool, park-and-ride programs, and for tokens. The monthly pre-tax benefit limit for commuting expenses—set by federal legislation—was recently raised to \$240, to match the monthly tax benefit allowed for parking. WageWorks for public transit is currently being utilized by 12 percent of the eligible full time employees.

The condition and appearance of the transit stations and stops on and near Temple University's campuses is of great interest to the university—safer, more appealing and convenient transit infrastructure helps make the choice of public transit a better one for students, staff and faculty. Temple University is not directly responsible for the condition of SEPTA property (subway stations, rail stations, and bus shelters), but can communicate with SEPTA about priority facilities from the university community's perspective.

Recommendations

Students

The University Pass Program for students is an existing program that we recommend continue to be supported. This program is semester-based and offers full-time Temple students approximately 10 percent discount on regular transit pass prices, with the cost of providing the discount shared by Temple and SEPTA. Although the University Pass Program has been growing in popularity with the large number of students who commute via public transit, there is potential for more students to take advantage of this discount. If it is to remain hosted on the Bursar's Office website, it needs to be better explained, as it is on the University of Pennsylvania's Transportation website¹³. Promoting the University Pass Program is a short-term goal; it would be replaced if the Universal Transit Pass Program was adopted, as discussed next.

Continue to Promote University Pass Program

(Recommendation #20)

- *Immediately Implementable*
- *Funding as part of Education and Communication*
- *Internal Coordination*

We support negotiating a Universal Transit Pass program with SEPTA to provide no-fee transit passes for all registered students. For the implementation of this pass, universities negotiate with transit

¹³"Penn Pass." *Penn Transit*. University of Pennsylvania. <http://www.business-services.upenn.edu/transportation/partnership/>

agencies an annual contribution that pays for free or substantially discounted access to transit services throughout a semester (generally only full-time students are eligible). Some programs utilize a valid, current student identification card or special stickers or passes that are issued to eligible students at the beginning of each semester or quarter. Universal Transit Pass programs at North American universities and colleges are funded through student fees (often approved through student referenda), university administration contributions (sometimes obtained through a portion of fees paid for parking in campus parking facilities), or a combination of the two.

Universal Transit Pass Program
(Recommendation #21)

- *Medium-Term Goal*
- *No or Small TU Funding Required*
- *Coordination with SEPTA*

Over 100 universities in the United States have negotiated Universal Transit Pass programs, including Arizona State University, six campuses of the University of California, and two campuses of the University of North Carolina. A complete list can be found on the Association for the Advancement of Sustainability in Higher Education (AASHE) web page links.¹⁴ Universal Transit Pass programs have been found to increase student transit use in the time period immediately following their institution in the range of 71 to 200 percent (Brown, et al., 2001). Temple University's public transit ridership is already relatively high, so the increase might not be quite as substantial. Nevertheless, if, with the implementation of a Temple University Universal Transit Pass program, there were a 40 percent increase in student ridership on all public transit modes (e.g. subway, regional rail, and bus), an increase of 10 percent in students riding multimodal transport, and a conversion of 15 percent of the student commuters who currently drive to some form of public transit, there would be a 15 percent reduction in commuter emissions, or 6,067 MTeCO₂.

SEPTA would likely benefit from increased student ridership because student transit use spans both peak and off-peak hours. Negotiations with SEPTA would likely take a full year or more. An effort to gain student support for instituting a student fee could also take a year. The institution of a Universal Transit Pass is a medium-term goal and would supersede the existing University Pass program.

NJ Transit
(Recommendation #22)

- *Short-Term Goal*
- *No TU Funding Required*
- *Partnership with NJ Transit*

NJ Transit has a University funding option which saves students 25 percent on a NJ TRANSIT Monthly Pass when the school participates in the University Partnership Program. The program is being revamped and Temple will be contacted when it reopens for enrollment from universities. Both the University of Pennsylvania and Drexel University are partners with NJ Transit. It does not appear that the university is required to fund this option.

Employees

We strongly support increased participation in the WageWorks Program for full-time employees. To that end, we recommend setting a goal of increasing participation in the program from 12 percent to 20 percent in three years. This can be achieved through more aggressive educational campaigns that highlight the pre-tax savings potential, as many Temple staff and faculty are seemingly unaware of the potential savings, or the variety of applications for the Wage Works pre-tax incentive to multiple modes of transit and fare types.

Wage Works Program
(Recommendation #23)

- *Immediately Implementable*
- *No TU Funding Required*
- *Internal Coordination*

¹⁴ "Campus Universal Transit Passes." *Association for the Advancement of Sustainability in Higher Education*. Association for the Advancement of Sustainability in Higher Education. <http://www.aashe.org/resources/upass.php>

In combination with full-time student Universal Transit Pass programs at many universities, University Transit Pass programs are established for faculty and staff as well. These programs typically provide steep discounts of one-third or more on standard transit pass prices and are funded through partnerships between universities and transit agencies. We believe such a program would be helpful in encouraging more employees to use public transit for their daily commutes to the university and we support negotiating a staff and faculty Universal Transit Pass discount.

Employee Universal Transit Pass Discount
(Recommendation #24)

- *Medium-Term Goal*
- *Ongoing Funding Required*
- *Coordination with SEPTA*

Campus Community

Benches, shelters, and emergency communications technology should be provided in all Temple University area stops and stations where they are not already in place. We recommend that the University be active in conversations with SEPTA to improve comfort, convenience, and security of Transit stops and stations on and near Temple’s campuses. Basic improvements, such as aesthetic and security enhancements to subway and regional rail campus gateways, could be completed, at relatively low cost, within one year. Over the longer term, the university could assess additional safety and aesthetic concerns by including more detailed questions in future campus transportation surveys, as well as organizing focus groups with current and potential transit users.

Improve Transit Stops and Stations
(Recommendation #25)

- *Short-Term Goal*
- *No TU Funding Required*
- *Coordination with SEPTA*

While the university does not control renovations to campus transit stations, keeping the pedestrian pathways clear, safe, and attractive should be incorporated into the campus master-planning process. This could be done by sprucing up areas around the stations with upgrades to lighting, safety services, landscaping, and furniture.

In addition, improvements to major transfer hubs such as the North Philadelphia Regional Rail station—particularly additional security measures—may help draw in riders from distant locations. More extensive improvements—such as an expanded regional rail station with an enclosed waiting and ticket-sales area—would have to be negotiated with SEPTA.

For some Temple University students, staff, and faculty, commuting via public transit often involves multiple transfers and stops, leading to long travel times which discourage greater use of buses, subway and regional rail. As a long-term goal, we recommend that Temple University take an active role in promoting higher-quality, more convenient, safe, and affordable transit service, including the development of bus rapid transit routes to Temple’s North Philadelphia campuses from major service areas. Successful bus rapid transit routes in other cities around the world are usually implemented with designated travel lanes, signal preemption technology, and bus stops spaced every half mile. Should such service along Broad Street and other major arterials be initiated, commuter travel times along these main corridors could be significantly cut, leading to higher use of public transit to get to and from campuses.

Support Bus Rapid Transit Service
(Recommendation #26)

- *Long-Term Goal*
- *No Direct TU Funding Required*
- *High Potential to Encourage Greater Use of Transit and Reduce Commuting GHG Emissions*
- *Coordination with SEPTA*

Support Transit Reinvestment District
(Recommendation #27)

- *Short-Term Goal*
- *No TU Funding Required*
- *Coordination with SEPTA and other External Organizations*

The Temple University regional rail station, located on Berks Street between 9th and 10th Streets, is one of two stations in Philadelphia designated as part of a Transit Revitalization Investment District (TRID) under TRID legislation enacted by the Commonwealth of Pennsylvania in 2004. Temple would benefit from the proposed transit-oriented development around the station. Should the anticipated office,

residential, and retail development (see Econsult 2008, Neighborhoods Now 2007, and Neighborhoods Now et al. 2008 for more details) come to fruition, then rail ridership would increase and the area to Temple’s east could become a significant destination and transfer point, significantly boosting President Hart’s program to encourage faculty and staff to live in zip-code areas adjacent to the University. We suggest Temple take an active role in pushing this development forward.

7. Bicycling

Existing Conditions

The Temple community is becoming increasingly bike oriented, and a geographical analysis of current faculty and staff addresses confirms the potential for increasing bicycles as a form of transportation, including for commuting to Temple campuses. Over 3,300 faculty and staff (including student workers), or 31 percent, live within four miles of Main Campus, while over 5,100, or 48 percent, live within six miles. While student address information is not readily available, we do know that there are thousands of students living a “bikeable” distance from campus. As confirmed by responses to a bike survey conducted in May 2009, there is a growing interest in maintenance and riding skills training and facilities such as parking and showers to enable more people to travel by bike and to do so safely.

Currently, the number of bikes on Main Campus throughout the year routinely outstrips parking available at bike racks, leading to ad-hoc parking that poses aesthetic and safety concerns. The Bicycle Counting Project conducted in Fall 2008 by the Office of Sustainability with student volunteers revealed that in low biking season there are approximately 500 bikes coming to campus each day, and this is likely to increase by at least 50 percent in peak season. Parking is available for approximately 500 bikes; this figure includes racks that are not used often because of their inconvenient location. The installation of more bike racks would meet an existing aesthetic as well as convenience need.

Currently, Parking Services provides locations in both surface parking areas and parking garages to accommodate motorcycle parkers; this is funded by a motorcycle registration fee.

Recommendations

These recommendations come together in a proposal for a comprehensive project called *Bike Temple*, which is described in more detail in the Bicycle Sub-Committee’s report (see Appendix B). Resources and models available regionally and nationally were used by the Bicycle Subcommittee to develop recommended programs and facilities to improve the overall bike culture at Temple University. The implementation of specific goals ranges from immediate through those requiring a long-term timeframe. While the cost of implementation is meant to provide funding for programs that would spur increased ridership, many of the recommendations also serve existing riders. Thus, estimating an accurate cost per unit of emissions reduction is not possible at this point.

On-Campus initiatives include improved and expanded bicycle parking, including guarded bicycle parking in parking garages. Specifically, we recommend that 61 bike racks be installed within two years on all campuses at an estimated cost of \$48,800. In addition, another 22 bike racks at a cost of \$13,200 could be placed in parking garages and parking lots on Main Campus. The feasibility of putting bike racks in the parking areas should be explored at the Health Science Campus as well.

Improved and Expanded Bicycle Parking

(Recommendation #28)

- *Short-Term Goal*
- *One-time Funding Required*
- *\$62,000*
- *Internal Coordination*

Because of common complaints about safety near HSC expressed repeatedly by HSC residents in a bicycle survey conducted by the Bicycle Sub-Committee, bicycle racks placed close to the guard stations in parking lots and garages may encourage some additional bike commuting.

Promotion of and advocacy for expanded use of bikes by Temple students, staff, and faculty via the comprehensive Bike Temple program will include (1) bicycles and service/maintenance at discounted prices (in collaboration with Fuji and Breakaway Bikes & Fitness), (2) educational and community services (in collaboration with Neighborhood Bike Works), (3) a volunteer repair shop, (4) Earn-a-Bike Youth Program, and (5) adult maintenance training and safety education (in collaboration with Neighborhood Bike Works and Breakaway Bikes & Fitness). Bike maintenance training and safety education will be provided in collaboration with Breakaway Bikes & Fitness and Neighborhood Bike Works. To create a biking community and to keep cyclists up to date on events and services, a bike-related and social networking web site will be operated by volunteers. Another goal is to improve access to and awareness of available shower facilities for bikers once they arrive on Main, HSC, and Ambler Campuses.

Bike Temple Program
(Recommendation #29)

- *Short-Term Goal*
- *No TU Funding Required*
- *External Coordination*

Some of the reasons stated in the bicycle survey for not riding to campus have to do with conditions within the city and not on Temple's campus. For this reason, increased overall communication and collaboration with city, non-profit, and academic partners under the umbrella of Bike Temple will be pursued in order to develop a citywide bike sharing program, create additional bike lanes, create and distribute "bike-friendly" maps, and coordinate "bike pools" and group rides for cyclists.

Collaborate to Improve Bicycling Conditions
(Recommendation #30)

- *Short-Term Goal*
- *Low to No TU Funding Required*
- *External Coordination*

8. Walking

Existing Conditions

Under the Employee Home Ownership Program, the university currently offers employees an incentive to purchase homes in zip codes near the Main and HSC Campuses. This program is highlighted on the Human Resources website¹⁵ and is discussed in employee orientation.

Recommendations

Increased participation in the Employee Home Ownership Program would increase the potential number of campus commuters who walk, bike, and take public transit. Publicizing the program more widely may help increase participation. Temple may also want to partner with developers or local organizations to increase awareness of the attributes of these areas. Beyond the zip codes which are currently included in the program, the university should highlight other areas that are easily accessible to the university via public transit. This responsibility would ideally fall under the university's Office of Community Relations, with the assistance and cooperation of the recommended Office of Transportation and Parking.

Special attention should be paid to keeping the

Employee Home Ownership Program
(Recommendation #31)

- *Immediately Implementable*
- *Ongoing Funding Required*
- *Funding part of Education and Communication*
- *Internal Coordination*

¹⁵ "Employee Home Ownership Program." *Temple University Human Resources*. Temple University. <http://www.temple.edu/hr/departments/benefits/homeownership.htm>

pedestrian walkways safe and clean so commuters are not discouraged from using this mode of transportation. Better signage indicating the locations of the regional rail train station, bus stops, and subway stations is critical in order for newcomers to quickly and efficiently utilize these services. Improving the pedestrian environment will complement other policies (e.g., universal transit pass), making them likely to be more successful, and may increase the number of transit riders.

Improve Pedestrian Environment

(Recommendation #32)

- *Short-Term Goal*
- *Ongoing Funding Required*
- *Funding as part of Master Plan*
- *Internal Coordination*

9. Air Travel

Existing Conditions

As a mode of transportation, air travel has particularly high emissions per passenger mile. There are currently no university guidelines or policies regarding air travel's emissions impacts. Employee travel expenses are reimbursed by the Bursar's Office, and Business Services maintains the travel information.

Recommendations

While air travel is required in some cases, the university should attempt to reduce unnecessary air travel, encourage alternative forms of transportation, and offset emissions. This can be accomplished through both mandatory and voluntary programs.

Initially, information about the carbon footprint of air travel should be available to travelers to increase awareness. A simple set of suggestions could be posted, along with general travel information that is found on the university's travel web site. These suggestions might include, but would not be limited to, the following: (1) take direct flights to destinations (fuel consumption is highest on take-offs and landings), and (2) travel economy class (first and business class seats occupy more cabin space and increase per passenger energy use). A round-trip flight from Philadelphia International to Phoenix Sky Harbor on US Airways, for example, emits 1,189 lbs of CO₂ per person flying economy class¹⁶. This same trip is responsible for 1,707 lbs of CO₂ per person traveling first class, a 40 percent increase.

A carbon calculator should be placed on the university's travel web site so that individuals can see the carbon footprint for each mode of transit taken, hopefully encouraging travelers to choose less carbon intensive mode of transit, such as a train. There are many flight calculators available¹⁷. A recent study by Ecobusinesslinks.com showed that third-party certified offsets can be purchased for a range of \$2.75 to \$33.00 per MteCO₂¹⁸.

Provide Information on Carbon Footprint of Air Travel

(Recommendation #33)

- *Short-Term Goal*
- *No Funding Required*
- *Internal Coordination*

Establish University Carbon Fund

(Recommendation #34)

- *Short-Term Goal*
- *One-time Funding Required*
- *Internal Coordination*

¹⁶ "Carbon Footprint Calculator." TerraPass. TerraPass. <http://www.terrapass.com/carbon-footprint-calculator/>

¹⁷ The calculators return results dependent upon the Radiative Forcing Index(RFI) used. 2.7 RFI is standard. ("Carbon Offset Flight Calculator Analysis." *Carbon Emissions for Flight Calculators*. EcoBusiness Links.

¹⁸ "Carbon Emissions Offset." *EcoBusiness Links*. EcoBusiness Links. http://www.ecobusinesslinks.com/carbon_offset_wind_credits_carbon_reduction.htm The calculators return results dependent upon the Radiative Forcing Index(RFI) used. 2.7 RFI is standard. (<http://www.ecobusinesslinks.com/carbon-emissions-test-flying.htm>)

The option could be available to voluntarily purchase carbon offsets. Philadelphia is initiating a carbon-offset program to plant trees in the city called Erase Your Trace, and the Philadelphia Zoo also has a carbon offsetting program. Temple could also establish its own university carbon fund for Temple’s emissions reductions projects. The success of voluntary programs will be dependent upon how well the carbon reduction projects are displayed and the importance communicated on the website. The OTP website could be linked to the Sustainability website which would display the current carbon reduction projects Temple is working on or towards implementing.

The university could enforce limits on the amount of travel each department or office is allowed per year, perhaps in the form of “carbon travel credits”. Each department, college, or office would be allocated a set number of credits and when they are used up, the school or office would have to purchase carbon offsets to cover additional carbon emissions. The limit could be based on such criteria as number of faculty or students. More carbon intensive forms of transportation would require more credits. Recording travel miles would be monitored by the department administrator who submits the travel reimbursement to Business Services. This kind of record keeping would also ensure that the university has accurate air travel miles for the GHG inventory. The amount of travel credits allotted could be reduced each year, so eventually all travel would be covered by carbon offsets. We recommend a goal of having all air travel offset by 2020. Assuming that through conservation the emissions associated with air travel can be reduced by 50%, it may take approximately \$40,000 to offset emissions from air travel, with an average of \$10 per ton of carbon offset annually.

Establish Carbon Travel Credits Policy
(Recommendation #35)

- *Short-Term Goal*
- *No Funding Required*
- *Internal Coordination*

Air travel could be limited to trips more than a certain distance, perhaps 300 miles. Boston is approximately 270 miles from Philadelphia and is a five- hour Amtrak train ride on an express service trip. Pittsburgh is about 260 miles. The limit could also be set by the amount of time it will take to arrive at the destination via bus or train; for example, if travel time by train or bus exceeds five hours, then purchase of a plane ticket would be allowed.

Establish Minimum Miles for Air Travel
(Recommendation #36)

- *Short-Term Goal*
- *No Funding Required*
- *Internal Coordination*

Increasing the teleconferencing capabilities of the university would increase the viability of attending conferences from a remote location. The current telecommuting technology should be analyzed and upgraded if possible, and new areas for teleconferencing within colleges should be identified. Video teleconferencing equipment can be borrowed from the Office of Telecommunications for \$82.40/hr in the daytime and \$123.60/hr in the evening, including installation.

Use Tele-conferencing to Replace Travel
(Recommendation #37)

- *Medium-Term Goal*
- *One-time Funding Required*
- *Internal Coordination*

10. Campus Vehicle Fleets

Existing Conditions

The university vehicle fleet is comprised primarily of vehicles managed by the Office of Facilities Management, which runs Grounds Services and Safety Services, and Campus Safety Services. In addition, some vehicles are owned and leased by the Athletics Department and other academic departments, each of which has fewer than 10 vehicles.

Shuttle services run between Main Campus and Ambler Campus, and between Center City (Podiatric Medicine and Temple University Center City campuses) and the Main Campus and HSC. The

shuttles serve staff and students who work and have classes on both campuses. The Ambler shuttle currently is used as a Park-And-Ride by many faculty and students who park in the Ambler parking lot because of low cost and proximity to the suburbs. The Center City shuttle service will be discontinued in the Fall of 2009 due to its expense and the redundancy of running a shuttle on Broad Street, which already has ample public transportation.

Recommendations

We recommend unification of all University Fleet under one centralized "pool", and the appointment of a Director of Fleet Services within Facilities Management or the new Office of Transportation and Parking. Centralizing the fleet has a number of benefits. The ability to respond to the demands of increased fuel efficiency and reduced emissions is made easier by centralized management of the fleet. Consolidating the fleet could mean that there could be fewer university owned vehicles which would reduce costs and improve efficiencies. The Director would be responsible for enforcement of university standards across the entire university fleet regarding repairs, maintenance, and purchasing of new vehicles. Having the fleet centrally managed will ensure consistency in policies and practices across the university in departments that are currently independent such as Athletics or Safety, and across campuses. The Director would interact with vendors and conduct strategic planning. Administrative support staff, if required, would need to come from reallocation from existing positions.

Departments that wanted to use vehicles would need to register for one of the vehicles ahead of time. Having fewer vehicles at departments' disposal may mean they are more likely to take other forms of transportation if traveling locally.

The University of Minnesota has been recognized as having one of the 100 Best Fleets in North America for 2006 for the performance of its fleets operated by a centralized Parking and Transportation Services. Along with its rent and lease services, UM's Fleet Services conducts driver- training programs for the university and maintains a full-service shop on campus. Fleet Services is charged with meeting federal mandates concerning commercial vehicle and driver regulations, and Clean Air Act regulations pertaining to alternatively fueled vehicles. We recommend a movement towards this model.

Temple recently installed a natural gas distribution point at the Facilities building on Main Campus. Depending on the campus involved and resources available, an acquisition policy in line with the reduction of the carbon footprint goals of the University is suggested which would require that all future fleet purchases be either electric, hybrid, and/or Compressed Natural Gas (CNG) vehicles.

Since not many CNG vehicles can be bought off the shelf, we recommend that eligible existing fleet vehicles and replacement fleet vehicles be converted to CNG by a local vendor. Temple can purchase bulk CNG conversions, with a minimum of 25 vehicles, for \$11,000 per unit of the existing light duty fleet. For non-profit institutions the IRS will credit 80 percent or \$4,000 per unit, whichever is lowest, under an existing CNG Federal Tax credit program¹⁹. These vehicles would be 8 cylinder Fords, Chevys or Dodges (vans, pick-ups or cars). Assuming a

Centralize Vehicle Fleet

(Recommendation #38)

- *Long-Term Goal*
- *One-time Funding Required*
- *Internal Coordination*

Director of Fleet Operations

(Recommendation #39)

- *Short-Term Goal*
- *Ongoing Funding Required*
- *Staff relocated from existing positions*
- *Internal Coordination*

Fuel-Efficient Vehicles Purchasing Policy

(Recommendation #40)

- *Medium-Term Goal*
- *No Funding Required*
- *Small Emissions Reductions Potential*
- *Internal Coordination*

¹⁹“New Energy Tax credits for Alternative Fuel Vehicles.” http://www.fueleconomy.gov/feg/tax_afv.shtml

lifetime of 17 years for 1 vehicle, using the current annual fuel usage, and a savings of 23 percent in GHG emissions,²⁰ the conversion of a diesel vehicle to CNG will cost \$258 per MTeCO₂ reduced, and the conversion of a gasoline vehicle to CNG will cost \$444 per MTeCO₂ reduced.

The feasibility of requiring this of safety vehicles would be dependent on the availability of hybrid or CNG vehicles that have a prior record of success in other safety programs, and whether or not the CNG vehicles could also refuel at public gasoline stations.

If a unified fleet profile were implemented, based on CNG-Hybrid/Electric-Bio-diesel technology, the reductions in the fleet's carbon footprint would be significant as compared to the current profile, and would show the university's dedication to achieving carbon neutrality. Fleet cost per mile and fleet miles per gallon are the best efficiency metrics. There should be immediate improvements in both these metrics with centralized fleet management.

To recoup some of the fuel costs associated with moving the many people who use the Ambler parking lot as a Park-And-Ride, it is recommended that there be a charge for shuttle service from the Ambler Parking lot to Main Campus. Allowing this shuttle service to serve that population will continue to keep cars away from Main Campus but may also push some commuters to utilize the regional rail. Those students and faculty who need to travel on the shuttle for classes would get a free pass to ride the shuttle for that semester, distributed by Facilities Management.

Establish Ambler Campus Shuttle Fee
(Recommendation #41)

- *Medium-Term Goal*
- *Administrative support required*
- *Internal Coordination*

11. Travel Alternatives

Existing Conditions

Travel replacement strategies could reduce the number of commute trips to campus by students, staff and faculty. The university is currently offering about 185 course titles online. Many Temple Schools and Colleges are expanding their online course offerings. For example, the College of Health Professions now offers a Bachelor of Science Degree in Nursing (BSN) for Registered Nurses completely online and the Fox School of Business will begin offering the Fox Online MBA program starting in Fall 2009. There is also a movement toward blended courses, with some course meetings taking place on campus and others taking place online.

Recommendations

Online learning (web-based and video-conferencing courses) is an effective method of reducing greenhouse gas emissions while continuing to provide high-quality educational services. One study recently estimated that full time online university students are responsible for less than one-sixth of the greenhouse gas emissions of full time traditional, on campus university students, in large part because commuting to and from campus is eliminated (Roy *et al.*, 2005). We support proposals currently under review to expand the number of online courses offered by Temple University from 185 to 500 within five years. Attributing a greenhouse gas reduction to an increase in online courses is complicated because an emissions reduction can only be attributed to those online courses which replace existing traditional courses. Offering additional online courses may

Support Online Learning Programs
(Recommendation #42)

- *Short-Term Goal*
- *Unquantifiable*
- *Internal Coordination*

²⁰ "Alternative Fuels and Advanced Vehicles Data Center." *Energy Efficiency and Renewable Energy*. US Department of Energy.

decrease future emissions from students, but may not significantly affect existing commuting habits. Without exact course details, the precise extent of emissions reductions are not quantifiable.

We recommend that employees have the option to alter their arrival and departure times slightly to accommodate commute schedules and encourage the use of public transportation or ride sharing. Flextime is employed in facilities using a variety of methods ranging from a set daily schedule to a 15 to 30 minute window of arrival time, ensuring the employee achieves his/her full hours.²¹ The option of Flextime should be communicated to employees in employee orientation.

Flex-Time
(Recommendation #43)

- *Long-Term Goal*
- *No Funding Required*
- *Internal Coordination*

Another travel-replacing strategy is to permit staff and faculty whose professional obligations and schedules permit to work on a four-day work week. The university has reviewed this possibility in the past and concluded that this would be most feasible during summer months, when classes could be compressed to four days. Some of the issues that would need to be addressed before this could be implemented are union considerations, summer school needs, logistics of what happens when only some people in a department agree to work four days, long work days (approximately 10-hour days), and employees' child-care and school needs. Were these issues to be adequately addressed, a 20 percent reduction in commuting emissions for some employees could be accomplished in the summer months. With 50 percent of the employees choosing a 4 day work week for 10 weeks in the summer, it is estimated that 166 MTeCO₂ could be saved annually, or 0.4 percent of total transportation emissions.

Four-Day Work Week Option
(Recommendation #44)

- *Long-Term Goal*
- *No Funding Required*
- *Internal Coordination*

12. Master Plan

Existing Conditions

A Master Plan, which includes recommendations through 2020, has been developed for the Main Campus. The Master Plan is a flexible document which strives to support the academic mission of the university and other goals, of which sustainability is a principal one. Recommendations for the Main Campus include elimination of several of the surface parking lots to create more green space and to provide space for new buildings. More student housing is expected to be built to increase capacity by 2,000 beds on Main Campus in the coming years. A new parking garage is being contemplated that will increase parking spaces by four percent. Maintenance and improvement of transit stops on Temple's campus is not currently part of the Master Plan.

Recommendation

It is important that there be an integration of the recommendations of the Climate Action Plan into the Master Plan, as the Climate Action Plan will be comprised of physical and academic recommendations and will represent a serious commitment by the university. Some specific transit-oriented recommendations that should be part of the Master Plan are to ensure that there is adequate bike parking near buildings and that public transportation access and walk ability are considered in each new building being constructed, as well as for major renovations. Particularly, the pedestrian connections to public transit options should be designed and maintained so as to make people feel comfortable getting

²¹ "Alternative Work Schedules." *Delaware Valley Regional Planning Commission*.
<http://www.dvrpc.org/MobilityAlternatives/Schedules.htm>

- *Medium-Term Goal*
- *No Funding Required*
- *Internal Coordination*

to and from public transit at all hours of operation, and should be developed so that they are attractive to newcomers.

Leadership in Energy and Environmental Design (LEED)-certified buildings (“green buildings”) receive credits for transit-related amenities. A few items for which LEED credits are given are: access to bicycle networks; bicycle rooms; access to transit networks; carpool parking with signage; covered, partially enclosed, and adequately lit shelters; signs and/or bulletin boards providing transit information; and Transit Passes with a minimum 50 percent discount to residents, employees, and students during at least the first three years of project occupancy. We support these recommendations for consideration in new buildings and major renovations. Pearson and McGonigle Halls are slated to begin remodeling. These buildings have shower facilities which could be used by bikers. In seeking to foster an awareness of sustainability at Temple, LEED-certified building(s) would demonstrate the university’s dedication to this goal in a high-profile way.

Specific recommendations that are dependent on the Master Planning process are additional bike racks, development of signage for the location of transit stations and stops, additional anti-idling signage, and improving the appearance, cleanliness and safety of pedestrian corridors to transit stops.

V. CONCLUSION

The forty five recommendations in this report are designed to help Temple University meet the terms of the American College and University Presidents Climate Commitment that President Hart signed in April 2008. The ACUPCC’s ultimate goal of carbon neutrality in university activities is an ambitious one that will require strong efforts and wide collaboration from all members of signatory institutions—students, staff, and faculty—and their many municipal, neighborhood, academic, and business partners. The authors of this report have kept that challenge—and the cooperation and coordination of approaches and stakeholders that it demands—clearly in mind as we have developed these recommendations.

If implemented in four phases over the course of the next 10 years, we estimate that these recommendations could reduce greenhouse gas emissions by 42 per cent compared to FY 2008 emissions, or almost 19,000 MTeCO₂. Four recommendations would have the greatest effects: 1) Offsets of all air travel could reduce emissions by almost 8,000 MTeCO₂, 17 percent of FY 2008 transportation emissions; 2) Incentives to commuters who drive to campus to use vehicles that obtain 35 miles per gallon or more could reduce emissions by about 4,700 MTeCO₂, or 10 percent of FY 2008 transportation emissions; 3) A Universal Transit Pass program for students could lead to a reduction of about 5 percent, or 2,300 MTeCO₂; and 4) Higher commuter participation in carpools could reduce emissions by almost 3 percent, or about 1,250 MTeCO₂.

Other recommendations are not expected to result in equally large reductions in greenhouse gases, but play important roles in the coordinated approach that can provide the excellent transportation choices students, staff, and faculty need. The key to success in implementing these recommendations is thus to coordinate policies in a way that provides incentives linked to larger sustainability goals and gives students, staff, and faculty appealing and environmentally responsible transportation choices. To make acceptable and effective the proposal to increase parking fees for drive-alone commuters and use the proceeds to fund other, lower-emission transportation alternatives (this is likely to be the most controversial proposal), Temple University must *publicize* its commitment to carbon neutrality, *educate* the university community about the impacts of transportation and commuting choices, and *provide* high-quality alternatives to drive-alone commuting by making transit, bicycling, walking, and travel-substituting options more convenient, cheaper, safer, and more appealing. No single recommendation in this report can, on its own, help Temple meet the challenge, but together, these recommendations can

effectively give the Temple community the high-quality options they need to make lower-emissions commute and travel choices.

VI. APPENDICES

Appendix A: Grid of Recommendations

Recommendations	MfC ₂ reduction (%) From FY 2008	MfC ₂ reduction (tons)	Immediate (12/31/09)		Short-term (6/30/11)		Mid-term (6/30/15)		Long-term (6/30/20)		Master Plan (6/30/20)	
			\$ One Time	\$ Ongoing	\$ One Time	\$ Ongoing	\$ One Time	\$ Ongoing	\$ One Time	\$ Ongoing	\$ One Time	\$ Ongoing
COST, TIMELINE, CARBON REDUCTION												
Total FY 2008 MfC ₂ = 45,056												
University Transportation Management												
1. Office of Transportation & Parking	Uncertain											
2. Bi-annual Transportation Survey	0.0%				\$75,000							
3. Comprehensive Web Portal	1.0%	451			\$15,000							
4. Transportation & Parking Information Campaign												
5. Effective Transportation Signage												
Parking												
6. Priority Parking & Rates for Low-Emission Vehicles (35mpg, 50% of permitted vehicles)	10.3%	4,661										
7. Alternative Transportation Program fee	0.0%	indirect										
8. No idling Policy	0.0%	5										
9. Debit Card Parking at HSC												
10. Discourage New Students from Bringing Cars to Campus	Uncertain											
11. Establish a "University Zone"	Uncertain											
12. Increase Parking Meter Rates on City Streets	Uncertain											
13. Establish a Zonal Parking System	Uncertain											
Carpooling/Karpooling												
14. Coordinate with Carsharing Organizations	CS/CP											
15. Publicize Existing Ridesharing Program	Ed & Comm											
16. Encourage Ridesharing with Greenwise Online	Ed & Comm											
17. Software Program	1.91%	859.3										
18. Guaranteed Ride Home Program	CS/CP											
19. Priority/Discounted Parking for Carpoolers	CS/CP											
20. Zonable	Uncertain											
Public Transit												
21. Continue to Promote University Pass Program	Ed & Comm											
22. Universal Transit Pass Program	5.2%	2,336										
23. NU Transit	0	0										
24. Wage Works Program	Uncertain											
25. Employee Universal Transit Pass Discount	Ed & Comm											
26. Improve Transit Stops and Stations	1.8%	807										
27. Support Bus Rapid Transit Service	Uncertain											
28. Support Transit Reinvestment District	Uncertain											
Bicycling												
29. Improved & Expanded Bicycle Parking	Uncertain											
30. Bike Temple Program	Uncertain											
31. Collaborate to Improve Bicycling Conditions	Uncertain											

		MtCO ₂ reduction from FY 2008	MtCO ₂ reduction (tons)	Immediate (12/31/09)	Short-term (6/30/11)	Mid-term (6/30/15)	Long-term (6/30/20)	Master Plan (6/30/20)
Walking								
31. Employee Home Ownership Program	Uncertain							
32. Improve Pedestrian Environment	Uncertain							
Air Travel								
Provide Information on Carbon Footprint of Air Travel								
33. Travel	Ed & Comm							
34. Establish University Carbon Fund	Uncertain							
Establish Carbon Travel Credits Policy (Offset)								
35. 100%	17.6%	7,950						
36. Establish Minimum Miles for Air Travel	Uncertain							
37. Use Teleconferencing to Replace Travel	Uncertain							
University Fleet								
38. Centralize Vehicle Fleet	Uncertain							
39. Director of Fleet Operations	Uncertain							
40. Fuel Efficient Vehicle Purchasing Policy	50% of fleet	402						
Establish Ambler Campus Shuttle Fee for								
41. Computers	Uncertain							
Timed Replacement								
42. Support Online Learning Programs	Uncertain							
43. Fleet time	Uncertain							
44. Four-Day Work Week Option	0.6%	166						
Master Plan								
45. Coordinate Climate Action and Master Plans	Uncertain							
Base line FY 2008, total 213,928* MtCO ₂				\$40,500	\$41,000	\$0	\$0	\$0
TOTAL Emissions Reduction		18,882						
TOTAL % Reduction		4.2%						
TOTAL (\$/MtCO ₂)		\$0.08						
*After correction to 2006 value from commuting survey								

Appendix B: Bicycle Subcommittee Report

Bicycle Subcommittee Report June 15, 2009

Contents Summary

Introduction

On-Campus Activity

- **Bicycle Survey**
- **Faculty Staff Address Geocoding**
- **Bicycle Parking**
- **Shower and Locker Facilities**

Government Relations and Community Outreach

Bike Temple

Appendices

Summary

The Bicycle Subcommittee was charged to recommend measures that will assist Temple's effort to achieve carbon neutrality. The subcommittee's efforts in the spring of 2009 had two thrusts:

- Creation of a unified and productive on-campus effort to support bicycle use and reduce reliance on auto transport. This required substantial data gathering, bridge building, and prioritization of activities.
- Collaboration and cooperation with organizations outside of the University such as the City of Philadelphia, the Southeast Pennsylvania Transportation Authority (SEPTA), Philly CarShare, local small businesses, community organizations, bicycle manufacturers, and local universities.

These proposals come together in the overarching project, *Bike Temple*. Specific recommendations include:

On-Campus initiatives:

- Improved and expanded bicycle parking
- Improved access to shower facilities
- Promotion of and advocacy for expanded use of bikes by Temple students, faculty and staff, coordinated via the unified *Bike Temple* program
- Bicycles and service/maintenance at discounted prices (in collaboration with Fuji and Breakaway Bikes & Fitness)
- Educational and community services (in collaboration with Neighborhood Bike Works)
- Volunteer repair shops, Earn-a-Bike Youth Program, and adult bike education (in collaboration with Neighborhood Bike Works)
- Bike maintenance training and safety education in collaboration with Breakaway Bikes & Fitness and Neighborhood Bike Works
- A bike-related website, social networking, and organized events for cyclists

Off-Campus:

- Development of a citywide bike sharing program
- Bike lanes
- "Bike-friendly" maps

- "Bike pools" for cyclists; group rides Increased overall communication and collaboration with city, non-profit, and academic partners under the umbrella of *Bike Temple*.

Introduction: Charge to the Subcommittee; Membership

In the spring of 2008, Temple University joined American colleges and universities by signing a pledge to achieve carbon neutrality over time, a commitment that requires substantial coordinated action within the complex culture of each university. The need to reduce motorized commuting led to the formation of our subcommittee, which was charged to provide:

... recommendations for bicycle related programming to serve the best interests of the University community, with the goal of contributing to Temple's move toward carbon neutrality. This report will make recommendations for promoting increased safe bicycle use by students/faculty/staff as alternative form of transportation in their daily lives, including commuting. The report will include recommendations regarding bike parking and other, related facilities, bike share program models, community involvement and education, and opportunities for collaborating with government, non-profit, and private sector groups and organizations.

Subcommittee members have worked as a team since December 2008 to formulate this report.

The subcommittee members are: Robert Gage, Chair, Staff, Director of Sponsored Research Programs
Leigh-Golding DeSantis, Graduate Student, Engineering, Office of Sustainability Glenn Eck, Staff,
Senior Facilities Specialist, Office of Facilities Management Bradley Flamm, Assistant Professor,
Department of Community and Regional Planning, School of Environmental Design Wanda
Gordon, Clinical Assistant Professor, Department of Endodontics, Kornberg School of Dentistry
Heidi Grunwald, Staff, Program Director, Public Health Law Research Program, Beasley School of
Law John Gurcsik, Undergraduate Student, Business and Management, President of Temple Bike
Club Philip Hine, Professor, Department of Psychology, CLA Dusha Holmes, Undergraduate
Student, Communications and Theatre Sandra McDade, Staff, Director of Sustainability, Office of
Sustainability Sarah Sanders, Undergraduate Student, CLA, Students for Environmental Action
Gregory Szczepanek, Staff, Technical Support Specialist, Ambler Campus Daniel Tompkins,
Associate Professor, Department of Greek and Roman Classics, CLA

The subcommittee's meetings this spring included productive and worthwhile visits by several guests:

Brittany Bonnette, *Sustainability Initiatives Coordinator in the Office of Facilities and Real Estate Services, University of Pennsylvania*, informed us about Penn's bicycle program and shared perspectives on topics such as bicycle sharing;

Charles Carmalt, *Pedestrian & Bicycle Coordinator for the Mayor's Office of Transportation, City of Philadelphia*, discussed bicycle lanes and related matters;

Patrick Cunnane, *President, Fuji America*;

Roy Hough, *National Sales Manager*, Patrick Leslie, *Fleet Sales Representative*, and Frank Zimmer, *Philadelphia Metro Territory Manager, Advanced Sports, Inc.*;

Glenn Krotick, *President*, and Joe Wentzell, *Vice President*, Breakaway Bikes & Fitness;

Leland Mayne, *President*, and Andy Dyson, *Executive Director*, Neighborhood Bike Works, spoke about NBW programs in Philadelphia and potential for collaborating with Temple.

The *Office of Facilities Management* contributed materially to the work of the committee. We now have a full and useful body of information on current and potential parking arrangements for bicycles, and on availability of showers for commuters.

The subcommittee's efforts this spring had two thrusts:

- Creation of a unified and productive on-campus effort to support bicycle use and reduce reliance on auto transport. This required substantial data gathering, bridge building, and prioritization of activities.
- Collaboration and cooperation with organizations outside of the University such as the City of Philadelphia, the Southeast Pennsylvania Transportation Authority (SEPTA), Philly CarShare, local small businesses, community organizations, bicycle manufacturers, and local universities.

The product of this activity is a set of proposals comprising *Bike Temple*, a comprehensive program designed to enable more people to travel on a bike, to do so safely, and to build a great bike culture at Temple that supports the University's commitment to sustainability and reputation for innovative, green programs.

On-Campus Activity

Bicycle Survey

The subcommittee developed a survey and sought responses from students, faculty and staff on both the Main and the Health Sciences Campuses, first through personal interviews, then with an e-mailed solicitation to participate via a web-based system that did not require all subjects to respond. The two efforts brought somewhat different results: in the first survey, only 15% of respondents reported riding “frequently,” while in the second survey 54% did. Thus, while rigorous alignment of the results is impossible, both populations emphasized the same reasons for not bicycling to campus, in approximately the same order of priority:

- 1 Safety (riding in the city, cars, street quality)
- 2 Appearance (being sweaty or tired for school)
- 3 Distance (live off campus or outside the city)
- 4 Security concerns (bicycle theft, etc.)

Both sets of responders gave the same ranking to “amenities or accommodations” that would make cycling to Temple more inviting:

- 1 Safety improvements: bike lanes on roads, clearer bike routes
- 2 Parking on campus: more bike racks or covered shelters, more secure areas, on-campus repair services, and volunteer shops where participation might “earn” a bicycle.
- 3 On-campus bike sharing.

These results suggest practical next steps: working with the City of Philadelphia and other Philadelphia universities and organizations to provide additional bike lanes; providing or posting “bike-friendly” maps for the Temple population; promoting “bike-pools” for cyclists; public service announcements for cyclists. On-campus parking and showers are clear desiderata (see *Showers and Locker Facilities* below for more detail on this item.)

Another inhibitor for students was availability; several commented that they simply could not afford a bicycle or did not know exactly where to find one. A university partnership with companies like Fuji and Breakaway Bikes & Fitness Bicycles would help to provide affordable bikes and readily accessible bike maintenance services for students and staff, as would advertisements on campus for local bike shops. The distance of these shops from campus makes the case for on-campus bike sales and service stronger. More is said about Fuji and Breakaway Bikes & Fitness below under *Bike Temple*.

Neighborhood Bike Works in West Philadelphia could serve as a campus/community resource either on or adjacent to Temple’s Main Campus, providing important educational and community services, training local students in bicycle maintenance and safety, and enabling them to earn bikes of their own. For more detail on this group see below under **Government Relations and Community Outreach: Other Organizations**.

There is also interest in bicycle sharing. Multiple bicycle sharing programs currently exist in some regions of Europe and America. Experience in other cities indicates that bicycle sharing is hard to maintain economically in a small geographical area (such as a university campus) and would work best on a wider, possibly citywide, basis. Such a structure would fill in gaps in public transportation, allowing, for instance, one-way trips to the Italian market. See Appendix X for more information on bike sharing (aka public use bicycle programs).

Faculty/Staff Address Geocoding

Referring to information from Temple’s Department of Geography and Urban Studies, we note that many faculty and staff live within cycling distance of main campus. This is a population that with the proper incentives might be moved to cycle rather than drive to work.

Geocoding Addresses of Temple Faculty and Staff

	N	%
Total addresses in file:	13,266	100
Total addresses in file from PA, NJ, DE:	12,511	94
Total addresses from PA, NJ, DE that geocoded:	10,650	85

Tabulating Faculty/Staff within Distance Radii of Temple University

Euclidean Distance from Temple (miles)	N	%
1	570	5
2	1,478	14
3	2,434	23
4	3,302	31
5	4,274	40
6	5,120	48
7	5,913	56
8	6,473	61
9	6,919	65
10	7,265	68

The key finding here is that over 3,300 faculty and staff, or 31%, live within four miles of Main Campus; over 5,100, or 48%, live within six miles of Main Campus. While student address information is not readily available, we do know that there are thousands of students living a “bikeable” distance from the University. See Appendices IVa –IVd for geocoding results and maps with geocoded address locations identified.

Bicycle Parking

Overview

An important consideration for the bicycle commuter is the consistent availability of secure and convenient bicycle parking when the cyclist arrives at his or her destination. Cyclists on faculty or staff seek parking as close to the office as possible, making it important to provide bicycle racks in sufficient quantities to meet demand. Bicycle racks must balance unobtrusiveness with visibility and be easily accessible to cyclists and visible enough to deter theft. Placement beneath existing overhead building canopies, such as those already in place at Paley Library, protects bicycles from rain and weather.

Existing Conditions

Although the increased acceptance of bicycle commuting comes at an opportune moment for Temple’s efforts to reduce carbon emissions, University’s facilities are put under stress. Ad hoc bicycle parking poses aesthetic problems on campus, and becomes a danger when bikes are locked to ADA wheelchair ramp hand railings. It also impedes pedestrian flow and attracts bicycle thieves.

A Main Campus bicycle parking survey conducted in autumn 2008 found approximately 450 designated bicycle parking “spaces” on racks of three different designs (see Appendix VII); the number is now a bit over 500. On nearly all days of the year, the number of bicycles on campus is far higher. Ad hoc parking is also

the norm at the Ambler campus, the Health Sciences Center and Temple University Center City. Only the School of Podiatric Medicine has adequate facilities. Bicycle commuting is rare at our leased facilities at Fort Washington. See Appendix VI for the full survey report.

Recommendations

Even without increased bicycle commuting, the Main Campus and TUCC, where space is at a premium, require increases of 50% over the current 500 spaces or an additional 252 spaces or 42 racks (assume 6 spaces per rack). To provide convenient options at the Health Sciences and Ambler campuses, an even greater percentage increase of new racks is required. At the Health Sciences Campus we recommend an additional 12 racks or 72 spaces, and at Ambler Campus we recommend that the two racks at the north end should be supplemented by another seven racks or 42 spaces. These recommendations which total 61 racks are for Phase I, since the number of spaces in this recommendation is a minimum number to accommodate existing cyclists. If ridership were to increase, additional racks would be required. See Appendix V for more details regarding existing bike parking facilities and recommendations for additional parking racks, in priority order, by campus.

The Office of Facilities Management has managed rack acquisition and installation. Some traditional “comb” racks are still in place, but the current Temple standard is the Dero Company’s Rolling Rack (\$600-\$800 per rack shipped and installed), or the Dero heavy duty Hoop Rack (\$300) to accommodate 2 bikes per hoop where space is at a premium. Installation has followed, not preceded, demand, adding racks in areas of demonstrated need. For the short term, the committee recommends that this practice of “responsive installation” continue.

We recommend continuation in the residence halls of Temple Housing’s practice of providing free interior bicycle storage rooms. These are secure and safe from the elements and reduce outdoor bicycle clutter. We also encourage bicycle tolerance inside campus workplaces where feasible, additional indoor bicycle storage facilities, and even exterior weatherproof bicycle lockers. Temple Parking Services has very usefully identified vacant space for over 130 bicycles in its guard-staffed Main Campus surface lots and garages without impacting the existing number of auto parking spaces. This approach merits serious consideration.

The subcommittee discovered interest among segments of the bicycle manufacturing and retail industry in potentially donating or financing bicycle racks. Little wonder, as increasing ridership is obviously in their best interest. City of Philadelphia incentives such as the “Adopt a Rack” program should also be explored. Adequate designated bicycle parking will result in a more secure and less cluttered campus. Temple should at the same time introduce education, signage, and enforcement to keep bikes off of handrails, stairways, and wheelchair ramps, improving the campus for all users.

In the long term, integrated campus master planning and new construction design must treat bicycle parking and storage as essentials. The funding associated with large construction projects provides the best opportunity to provide enhanced, sheltered, more secure bicycle storage solutions such as interior storage rooms, blocks of lockers, or covered exterior corrals with video surveillance, which are especially useful for enthusiast cyclists with more valuable bicycles. See Appendix IX for recommendations of the Bicycle Coalition of Greater Philadelphia for provision of bicycle facilities at new residential and commercial buildings.

Shower and Locker Facilities

Overview

All Temple bicycle commuters will appreciate shower and locker facilities where they can bathe and change

into appropriate dress. Improved access to these facilities will serve the cause of bicycle commuting.

Existing Conditions

All Philadelphia area Temple campuses with the exception of Center City and Fort Washington offer some shower and locker facilities, primarily attached to gyms or weight rooms, with varying access requirements.

Recommendations

Available shower and locker facilities are probably adequate to the number of cyclists. Formalized or standardized access requirements, coupled with publicity, would be useful to current bicycle commuters and would also encourage others to take up cycling and to use their bicycles as transportation to and from the campus. See Appendix VII for more information.

Government Relations and Community Outreach

City Government

We have identified three especially relevant contacts at Philadelphia City Hall. These individuals and their offices can assist in coordinating city-wide concerns and developments with Temple's carbon reduction initiatives, especially if we keep in mind the specific priorities noted above.

Stephen M. Buckley, *Deputy Commissioner for Transportation, Philadelphia Department of Streets*. Mr. Buckley, who is involved in long-term planning, is known to favor increasing bicycle commuting within the city. He expressed interest in data from the Subcommittee concerning numbers of Temple staff and students in specific neighborhoods within the city. Such "mapping data" would aid efforts to target Temple-related bicycle routes.

Charles Carmalt, *Pedestrian & Bicycle Coordinator, Mayor's Office of Transportation*. Mr. Carmalt is involved in near-term accomplishments that exploit "targets of opportunity," such as bike lanes that can be delineated whenever appropriate streets are re-paved. He attended a meeting of Temple's Bicycle Subcommittee, and is aware of some of our salient needs, including bicycle-friendly alternatives to Broad Street. For example, he expressed interest in establishing bike lanes on 13th &/or 15th street (one-way south) and 12th &/or 16th street (one-way north) that could connect the Temple campus to major bike-friendly east-west routes such as Lehigh Avenue and Spring Garden Street. (At the Health Sciences Campus, train tracks cut off 13th and 15th street, so Broad Street may be preferable.)

Debby Schaaf, *Chair of the Bicycle/Pedestrian Advisory Task force of the City Planning Commission*. Ms. Schaaf has organized community informational meetings with focus-group activities, with the apparent agenda of identifying and modifying specific intersections or circumscribed regions that present special danger and difficulty to pedestrians and/or cyclists.

Other Organizations

Organizations outside of government are also relevant to bicycle-based linkage between Temple and the city. A **Neighborhood Bike Works** facility adjacent to the University campus could service bicycles (thus making bicycle use more convenient), teach individuals to maintain their own bikes, and offer instruction in safe riding skills, as well as strengthening friendly-neighbor relationships through its youth-oriented **Earn-a-Bike Program**. By completing the program's classes and fixing up used bikes donated by the community, students can earn a bike for themselves with a helmet and a lock. Graduates of the basic program continue to participate through drop-in repair sessions, by coming along on rides, by helping with other community events, and by taking advanced classes. **Neighborhood Bike Works** also features adult programs.

The **Bicycle Coalition of Greater Philadelphia** has a record of effective lobbying in the city and region for bike-parking facilities, and for cyclists' access to SEPTA trains and busses. The Coalition's priorities are substantially compatible with the University transportation priorities, making outreach promising.

The **League of American Bicyclists** is a source of information on a wide variety of issues, including tax policy that enables employers to underwrite expenses of commuting by bicycle. As an organizational member, Temple could be in contact with other institutions promoting bicycle commuting as part of a green policy.

Bike Temple

All of the above activities can be brought together under the proposed "*Bike Temple*" program. *Bike Temple* has been inspired by a similar program at Emory University (<http://bike.emory.edu/>), but molded to fit the Philadelphia setting. The overall goal of the program is to enable more people to travel on a bike, to do so safely, and to build a great bike culture at Temple that supports the University's commitment to sustainability and reputation for innovative, green programs.

The successful and widely recognized program at Emory University was built on a partnership with **Fuji Bicycles** and an established local bicycle shop. **Fuji Bicycles**, whose headquarters for the Americas is located in northeast Philadelphia, and **Breakaway Bikes & Fitness**, one of the premier bike retailers in Philadelphia, are offering to provide the operational and communications framework for a program providing the Temple community with:

- an organizing website, including a calendar of bike-related services/events/programming
- a venue for social networking to promote connection with cyclists in and around Temple and the Philadelphia region
- bike maintenance training and safety education
- significant discounts on a selection of quality bicycles and equipment
- professional, reasonably priced on-campus bike maintenance and repair service

Through *Bike Temple*, **Fuji Bicycles** would offer a selection of seven reduced-price bike models to suit a range of uses and interests. Bike types would include road, mountain, hybrid, comfort, and single speed (fixed gear and freewheel), and would be offered at prices beginning below \$300. Bikes could be ordered on campus through program representatives or on-line. **Breakaway Bikes & Fitness** would assemble, tune, and deliver bikes to Temple campus locations. In addition, **Breakaway Bikes & Fitness** has committed to investing in a vehicle (emblazoned with the *Bike Temple* logo) to provide professional, reasonably priced on-campus maintenance and repair services two or three days a week, along with bike skills education and maintenance training.

Events organized through the program would promote bike use and involvement in bike-related group activities. Examples include group rides, bike to work day, bi-monthly bike commuter breakfast, commuter of the month programs, bike buddy program, commute referral programs, and raffles and student events on campus.

A key benefit of the program is the opportunity for student involvement. Interest and participation in biking and bike culture has increased dramatically at Temple over the past few years, and we anticipate it will only continue to grow. *Bike Temple* could provide an effective point of contact and interaction for students,

provide excellent volunteer opportunities, and, perhaps most importantly, promote safe bike use and proper parking techniques for students, faculty and staff.

This effort depends on student participation in management, planning, programming, marketing and promotion, website maintenance, coordinating events, and other activities. The mission statements of such groups as the Temple Cycling Team, Students for Environmental Action, Students for Responsible Business, and Outdoors Club support increased bicycle ridership and accommodations on all Temple campuses. Continued student involvement will be crucial in keeping the program sustainable and accessible.

Bike Temple would also provide the opportunity to develop bike programs for the community, including earn-a-bike programs, bike maintenance training, and bike safety education for neighborhood children and adults. **Neighborhood Bike Works**, a well-established and respected non-profit organization that currently provides youth and adult bike programs in several West Philadelphia locations is extremely interested in expanding their programs to North Philadelphia. (<http://www.neighborhoodBikeWorks.org/index.html>) A standing program at Temple would provide an excellent basis for organizing that expansion and the related opportunities for serving the surrounding community.

Bike Temple would also build and coordinate relations with city and other officials on matters such as traffic control, bike lanes, road quality, safety and other matters.

The cost to Temple for implementing this program, tied largely to marketing and sponsoring on-campus events, is relatively low. This cost can be covered with external funding available from the Pennsylvania Department of Health by tying the activities into a larger research project measuring the health impact of this programming. This would also provide research opportunities for faculty and students.

The Bicycle Subcommittee and the larger Temple Transportation Committee join in supporting this proposed program. These groups, charged by the Office of Sustainability with developing recommendations for moving the University toward carbon neutrality, are comprised of students, faculty, and staff representing a wide range of perspectives and interests, but united in supporting the *Bike Temple* concept. It is important to note that, with the support of University leadership, this program could be in place in time for the Fall 2009 semester, including information and marketing tied in with Summer 2009 orientation activities.

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