INTRODUCTION

Transportation is a significant and increasing expense for many administrative units at Williams and transportation, particularly air travel, produces substantial greenhouse gas emissions, which the College is committed to reduce. Our study seeks to quantify the impact of transportation on fuel use and greenhouse gas emissions at Williams using existing data. In this paper transportation at Williams is divided into four general categories: College-owned vehicles, rental vehicles, including cars and buses, commuting by Williams faculty, staff and students, and air travel.

College-owned vehicles include fleets managed for: (1) Facilities (the recycling truck, trades vans, grounds trucks, and unregistered vehicles such as snowmobiles); (2) College Rental (College cars and vans available for student, faculty, and staff travel off campus); (3) Dining Services; (4) Security; (5) Student Services; and (6) small departments on campus with their own vehicles. Rental vehicles include motorcoaches and school buses rented for athletic team travel and academic field trips; student, faculty, and staff vehicles driven for Williams-related business; and the Zipcar rental program. Commuting includes round-trip travel from home to Williams and student travel from Williams to destinations such as Boston, New York and other colleges. Air travel includes Williams-related trips by faculty and staff, student travel to and from campus, and student travel to and from study-abroad programs.

In FY 2007 calculated carbon emissions due to transportation comprised 27% of the College’s total greenhouse gas emissions, or roughly 6,470 metric tonnes (T) of CO₂. Air travel was responsible for 17% of the total campus greenhouse gas emissions (~ 5000 T), College-owned vehicles accounted for 2%, or 500 T and rental vehicles accounted for 8%, or roughly 2,120 T.

Figure 1. Williams College greenhouse gas emissions FY 2007, including transportation.
The College has been served well for a number of years by the current fleet of vehicles, our relationships with several local bus companies, the system of reimbursing faculty and staff when they choose to use their personal vehicles for business, and by regular air travel. However, the challenge of global warming, coupled with fluctuating gasoline and diesel prices nationwide, demands that Williams College consider steps to increase transportation efficiency.

**SUMMARY OF TRANSPORTATION CALCULATIONS AND ESTIMATES**

Measuring emissions from Williams-related transportation provides many challenges, not the least of which is defining college travel and how commuting to the college should be quantified. Emissions can be calculated or estimated from data for distance traveled, actual fuel use or transportation cost. Williams Facilities manages most of the transportation in College-owned vehicles, but information about other College vehicles, distances traveled, fuel economy and costs and air travel is dispersed widely across campus. In addition, vehicles, fuel costs and accounting methods have changed over time, complicating the use of one consistent record to reconstruct another. In this section we introduce the methods we used for calculating fuel consumption for different categories of transportation, adding detail where necessary in the sections below.

**College-owned vehicles**

The College owns ~100 vehicles, most of them managed by Facilities. Vehicle-use records are most complete for 2007, but good records extend back to 2001. Annual mileage is currently recorded for each vehicle and the amount of fuel pumped from campus tanks is measured by vehicle class. The cost of fuel purchased is recorded (but not vehicle mileage) when college vehicles refuel off campus and is summarized monthly, but the electronic record is relatively short. We applied an index of average monthly gasoline price to convert off-campus fuel costs to fuel use.

**Rental vehicles**

The rental vehicle category includes faculty and staff business miles driven in private vehicles and reimbursed by the College, bus use related to athletic and academic travel, and Zipcar travel. Records of this travel are recorded as costs in office and department budgets and are most complete in 2007. To calculate fuel consumption in the rental vehicle category we used mileage reimbursement rates for cars and estimated mileage and fuel economy for bus travel, where costs include both vehicle rental and driver salary. Gallons consumed for rental vehicles were calculated using a combination of estimated miles driven and an assumed 25 miles per gallon (mpg) for gasoline engines and 5-7 mpg for motorcoaches. Gallons consumed for Faculty and Staff drivers were calculated using the College’s reimbursement rate of $0.505/mile in 2007. Calculated bus mileage could be checked, in some cases, where destinations were known or in those cases where mileage was recorded as part of the bus contract.

**Commuting**

Commuting miles represent a substantial fraction of transportation costs and emissions related to Williams College, but we are not aware of any direct measurements of these values. Commuting miles were estimated for daily faculty/staff travel between the geographic center of the town where commuters live and Williamstown, reduced to 2 round trips a week for those
who live more than 100 miles away. For students commuting from New England and other nearby states, we used the distance (point to point) from the capital city of each student’s home state to Williamstown and assumed two round trips per year. We estimated emissions for student drivers who use personal vehicles while at school from the total number of car trips that students reported taking annually, guided by a survey of driving habits conducted in the 2007-2008 academic year (http://www.williams.edu/CES/mattcole/resources/studentpapers.htm). Total travel was subdivided into the types of trips students estimated taking during the academic year including on-campus, and local and regional off-campus trips. We estimated that on-campus trips (driving to practice, class, etc.) averaged 1 mile, and that off campus trips (Stop and Shop, local restaurants) averaged 5 miles. We converted total miles driven into emissions using the Clean Air Cool Planet’s value of 19.4 lbs CO₂/mile.

**Air travel**

Air travel by faculty, staff and students is a large and poorly documented source of emissions that can be attributed to Williams College. We used both measured values—air travel purchased using College credit cards—and estimated values for student air travel and for air travel related to study abroad. To calculate air travel emissions for travel by faculty and staff, we used data from the College’s 2007 plane ticket expenditures. Flight destinations were known for ~20% of the data. Using these destinations, we calculated round trip miles traveled for this sample of the total flights. This was a conservative calculation, because we calculated miles traveled using the shortest distance from airport to airport, not taking into account actual flight paths, layovers, etc. Using the Clean Air Cool Planet’s conversion factor of 0.28 kg eCO₂/passenger/mile flown, we converted miles to emissions for this 20% sample of the data. Finally we multiplied this figure by 5 to get total air travel emissions, assuming that the sample was representative of faculty/staff air travel. Emissions from student air travel were estimated based on two round trips per year for every student who lives outside of New England. Flying distances were calculated using the distance from the capital city of each student’s home state to Albany, New York. Emissions from study abroad air travel include one round trip for every student who studied outside of the United States in the 2007-2008 academic year. These emissions were calculated using the distance (point to point) from the capital city of each country to Albany; distances were converted to emissions using the Clean Air Cool Planet’s conversion. These values likely underestimate emissions because travel is rarely point-to-point. Actual air travel routes and layovers were not included in the calculation.

**2007 TRANSPORTATION EMISSIONS**

Williams College’s transportation emissions in FY2007, the year with the most-complete data, are subdivided below to illustrate the relative amounts of emissions from different categories of transportation (Figs. 2, 3 and 4). Descriptions of transportation categories, calculation of travel miles, and the gallons of gasoline and diesel consumed follow in the next three sections of this report.
Figure 2. All campus transportation emissions for FY 2007, in tonnes of CO₂.

Figure 3. FY 2007 transportation emissions excluding air travel, in tonnes of CO₂.
College-owned Vehicles

In 2007, Williams College owned 102 vehicles that were used for a wide variety of services (Table 1; Figs. 5, 6). Facilities maintains gasoline and diesel pumps and keeps records...
for all Williams fleet vehicles that use the pumps. Gasoline is supplied by A.R. Sandri Oil; diesel for vehicles is supplied by H.L. Fuel Company. In addition, the College Rental Fleet often fills up at pumps off-campus, using College credit cards, and Dining Services has an account at Carpinello’s Sunoco station in Williamstown.

Table 1. Categories of college-owned vehicles.

<table>
<thead>
<tr>
<th>Vehicle category</th>
<th>Description of Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities Fleet</td>
<td></td>
<td>65</td>
</tr>
<tr>
<td>Registered Vehicles</td>
<td>Trades Fleet, Recycling Truck</td>
<td>43</td>
</tr>
<tr>
<td>Unregistered Vehicles</td>
<td>Grounds Fleet (primary consumers of diesel)</td>
<td>22</td>
</tr>
<tr>
<td>College Rental Fleet</td>
<td>Cars and Vans for Student, Faculty, and Staff travel</td>
<td>21</td>
</tr>
<tr>
<td>Departments with Vehicles</td>
<td>Center for Economic Development, Center for Environmental Studies, OIT, Central Office Services</td>
<td>6</td>
</tr>
<tr>
<td>Security</td>
<td>--</td>
<td>4</td>
</tr>
<tr>
<td>Dining Services</td>
<td>--</td>
<td>4</td>
</tr>
<tr>
<td>Student Services</td>
<td>Center for Community Engagement, Outing Club</td>
<td>3</td>
</tr>
</tbody>
</table>

Figure 6. Categories of college-owned vehicles

Miles traveled by college-owned vehicles

In FY 2007, registered college-owned vehicles were driven more than 750,000 miles, representing 13% of the total miles traveled for Williams-related business, excluding air travel (Table 2). Mileage was recorded for the Facilities Fleet, College Rental Fleet, and Dining
Services vehicles. Fuel usage was measured for Security, Student Services, and departments with vehicles; distance traveled was calculated based on fuel consumed in 2007 and an assumption of 25 mpg except for Dining Services, for which we assumed 10 mpg.

Table 2. Total miles, fuel consumption and estimated emissions, college-owned vehicles in FY 2007.

<table>
<thead>
<tr>
<th>Campus and local travel</th>
<th>Fleet</th>
<th>Miles</th>
<th>Fuel consumption gallons</th>
<th>CO₂ emissions tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Facilities Fleet (Registered Vehicles)</td>
<td>232019</td>
<td>29371</td>
<td>222</td>
</tr>
<tr>
<td></td>
<td>Facilities Fleet (Unregistered Vehicles)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Security</td>
<td>173875</td>
<td>6995</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Dining Services</td>
<td>15700</td>
<td>1570</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Student Services</td>
<td>3516</td>
<td>478</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Other Departments</td>
<td>5780</td>
<td>1640</td>
<td>14</td>
</tr>
<tr>
<td>Off-campus travel</td>
<td>College Rental Fleet</td>
<td>322769</td>
<td>15775</td>
<td>139</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>753659</td>
<td>55829</td>
<td>501</td>
</tr>
</tbody>
</table>

Note: mileage for unregistered vehicles is not known; fuel consumption for all Facilities Fleet.

**Fuel consumed by college-owned vehicles**

Measurements of total fuel consumed by college-owned vehicles includes well-documented amounts from the Facilities pumps and values estimated from less consistent records of fuel purchased off-campus. In addition to monthly fuel consumption records from the Facilities pumps for fleet vehicles, we included measured gasoline purchases by Dining Services in Williamstown. To calculate the gallons of gas that the College Rental Fleet pumped off-campus, we used fuel purchase information from credit card purchases going back to 2001 and the average price of gas/gallon as found online at the Energy Information Administration’s website. In 2007 total fuel consumption was 55,829 gallons.
Figure 7. Consumption of gasoline and diesel in FY 2007 by college-owned vehicles, by category.

Calculated fuel economy values should be viewed as estimates until more comprehensive data become available. Our measured and estimated values indicate that the college rental fleet averaged about 20 mpg, the Security vehicles averaged about 24 mpg and the Facilities fleet averaged a little less than 8 mpg in 2007. Low average values for the Facilities fleet may reflect short travel distances and the larger size of many of the vehicles. The College Rental fleet, in contrast, includes fuel-efficient cars and travel distances are usually longer.

Historic data suggest that annual fuel consumption by college-owned vehicles decreased from 2001-2007 (Fig. 8). The apparent decrease could be a measurement artifact, reflect
slight increases in fleet fuel economy or result from actual decreases in the driving of college-owned vehicles over the past six years. It is also possible that total annual fleet fuel consumption may have decreased and that increases in consumption may have occurred for bus transportation, and in faculty, staff and student driving for College business. The next section discusses estimates for the miles traveled, gallons of fuel consumed and emissions from rental vehicles.

**Rental vehicles**

*Overview*

Rental vehicles consist of motorcoaches for athletic and academic travel (Fig. 9), personal vehicles of faculty, staff and students who use their vehicles for Williams-related business and are reimbursed for their miles by the college, and the Zipcar rental program.
Miles Traveled by rental vehicles in 2007

In 2007 travel in rental vehicles was roughly 500,000 miles, accounting for approximately 8% of the total miles driven for college business. By far the largest category (Table 3) is reimbursed travel in personal vehicles, which includes travel for: (1) athletics; (2) conferences and meetings; (3) classes, and (4) department and office business. Athletic travel in rental vehicles, mainly buses, is a minimum estimate for all athletic travel since many teams regularly use the College Rental fleet to travel to practice and to competitions. Classes and lab sections (academic travel) also use a mixture of bus and the college rental fleet for travel. Because the college does not have records for rental vehicles, we calculated those travel miles using the college’s reimbursement rate or the cost of the trip and estimated fuel economy for bus travel, checked using trips where both costs and distances were known.

Table 3. Measured and estimated distance traveled and CO₂ emissions by rental vehicles, FY 2007.

<table>
<thead>
<tr>
<th>Category</th>
<th>Miles</th>
<th>Fuel consumption</th>
<th>CO₂ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reimbursed College travel</td>
<td>325,902</td>
<td>13036</td>
<td>116.73</td>
</tr>
<tr>
<td>Athletic travel</td>
<td>122,507</td>
<td>24501</td>
<td>219.40</td>
</tr>
<tr>
<td>Academic travel</td>
<td>24,501</td>
<td>4900</td>
<td>43.88</td>
</tr>
<tr>
<td>Zipcar travel</td>
<td>23,267</td>
<td>931</td>
<td>8.33</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>496,177</td>
<td>43368</td>
<td><strong>388</strong></td>
</tr>
</tbody>
</table>

Reimbursed College and Zipcar travel miles are measured.
Athletic and academic travel (in buses) are estimated based on measured costs and 5 mpg for bus travel (see text). Fuel consumption for College and Zipcar travel is calculated based on 25 mpg.

Commuting

Substantial amounts of fuel are consumed and greenhouse gases released in the commuting to campus by faculty, staff and students, and for student travel while they are in
residence at Williams. A portion or all of these greenhouse gases should be considered as part of the college’s carbon footprint and at least some of the travel could be reduced by changes in habits. There are no formal or informal records of miles driven or fuel used by commuting activities, so the values we discuss are estimates. In 2007, based on the assumptions discussed above, the average faculty/staff member drove 81 miles per week while the average student with a vehicle drove 67 miles per week.

Table 4. Estimated commuting distance traveled and CO$_2$ emissions by category, FY 2007.

<table>
<thead>
<tr>
<th>Category</th>
<th>Miles</th>
<th>Fuel consumption</th>
<th>CO$_2$ emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students driving (campus)</td>
<td>20,303</td>
<td>812</td>
<td>7.16</td>
</tr>
<tr>
<td>Students driving local and regional</td>
<td>821,363</td>
<td>32855</td>
<td>289.72</td>
</tr>
<tr>
<td>Students driving to/from campus</td>
<td>30,739</td>
<td>1230</td>
<td>10.84</td>
</tr>
<tr>
<td>Faculty and staff commuting</td>
<td>3,828,975</td>
<td>153159</td>
<td>1350.58</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4,701,380</td>
<td>188055</td>
<td>1658.30</td>
</tr>
</tbody>
</table>

Commuting miles are estimates (see text) and fuel consumption is calculated based on 25 mpg

**Gallons of fuel consumed by rental vehicles and commuting in 2007**

In 2007, commuting and rental vehicles drove nearly five million miles and used approximately 231,000 gallons, almost 82% of the transportation fuel consumed by the Williams College, excluding air travel. Commuting and rental consumption is approximately four times the quantity of fuel that College-owned vehicles used in 2007. Faculty and Staff personal vehicles consumed ~166,000 gallons, students followed with ~35,000 gallons, athletic buses accounted for 24,500 gallons, academic field trips consumed 4900 gallons, and the Zipcars used 930 gallons. Fuel economy per rider for a loaded bus is probably similar to that of a loaded College rental van, but we have no figures for actual ridership.

Because data were available only in 2007 for student drivers, athletic team travel, and academic travel, we were not able to examine temporal changes in emissions from this class of travel. Changes in emissions from reimbursed travel (Fig. 10) are relatively small from 2002-2008.
Air Travel

We estimate that in 2007 air travel related to Williams College activities accounted for nearly 70% of the College’s transportation emissions and produced ~4,500 metric tons of CO₂ from an estimated 16 million miles of air travel. These estimates are based on a 450 ticket sample (from the ~2200 plane tickets purchased for Faculty and Staff business travel) and information about destinations for these tickets. Estimated student travel to and from campus and flights for students who studied abroad (Table 5) are also included in the total. At least some plane tickets purchased for grant-related travel are not included in our calculations and actual student travel is probably greater than values listed in Table 5, so our estimates for air travel are probably low. To put this figure in perspective, 4,500 metric tons of CO₂ is equivalent to the

<table>
<thead>
<tr>
<th>Category</th>
<th>Approximate cost $</th>
<th>Number of round trips</th>
<th>Total distance miles</th>
<th>Emissions (metric tonnes CO₂)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students studying abroad</td>
<td></td>
<td>239</td>
<td>2297769</td>
<td>644</td>
</tr>
<tr>
<td>Faculty and staff</td>
<td>1180000</td>
<td>&gt;2000</td>
<td>9565445</td>
<td>2683</td>
</tr>
<tr>
<td>Students commuting from home</td>
<td></td>
<td></td>
<td>4171400</td>
<td>1168</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>16034614</strong></td>
<td><strong>4496</strong></td>
</tr>
</tbody>
</table>
annual greenhouse gas emissions from 823 passenger vehicles or the energy use of 397 homes for one year.\(^1\) In 2007 air travel alone accounted for nearly 17% of all campus greenhouse gas emissions (Fig. 11).

![Figure 11. FY 2007 campus emissions from air travel, including faculty and staff traveling on Williams business, student travel to and from campus, and students flying to and from study abroad programs.](image)

**A SECOND LOOK AT 2007 TRANSPORTATION EMISSIONS**

The College’s 2007 transportation emissions can be recast as Getting To and From School, School Related Student Travel, and Work Related Travel (Fig. 12). These categories offer a basis for thinking about how the College could encourage reductions of campus transportation emissions by different groups. Getting To and From School includes faculty and staff commuting and student travel to and from campus. School Related Student Travel includes students driving their personal vehicles both on and off campus, athletic travel, academic field trips, and air travel emissions for studying abroad. Work Related Travel includes emissions from all College-owned vehicles, faculty and staff air travel, faculty and staff business miles, and the Zipcar rental program. Transportation emissions, driven by air travel, thus account for about a quarter of all greenhouse-gas emissions related to Williams College activities.

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\(^1\) [http://www.epa.gov/solar/energy-resources/calculator.html](http://www.epa.gov/solar/energy-resources/calculator.html).
CURRENT INITIATIVES ON THE WILLIAMS COLLEGE CAMPUS

As part of Williams College’s commitment to reducing its greenhouse gas emissions by 10% below its 1990-1991 levels by 2020, several initiatives are already in place to improve transportation efficiency on and off campus.

1.) Over the past four years Facilities has purchased 3 Toyota Priuses as part of the College Rental Fleet. On average a Prius gets twice the mpg as the other vehicles in the Rental fleet, which consists of Ford Tauruses, Honda Civics, Toyota Camrys, Toyota Siennas, and Dodge Caravans.

2.) Facilities and Dining Services also use 5 small electric cars. Although these vehicles do use electricity, emissions/mile are likely less than emissions from other campus vehicles.
3.) In 2008 Williams began using Zipcar, a rental car system for Williams students, faculty, and staff. Zipcars are primarily hybrids, parked around campus, and available for a fee to help reduce the need for having personal vehicles on campus.

4.) To further reduce the amount of students driving on campus, Williams does not provide first year students with parking spaces. The administration hopes that students will get used to walking or biking around campus and carpooling off campus.

5.) The Williams Motor Coach is available to pool rides for students to nearby airports during vacation times.

6.) All new buildings include bike racks to encourage students, faculty, and staff to bike around campus. In addition, College Security will be using bikes more often in the 2008-2009 academic year to get around campus.

7.) Williams Students Online includes a section where students can both request and offer rides (e.g. Williamstown to the Albany airport) to encourage carpooling longer distances.

8.) This year students involved in the Williams Center for Community Engagement tutoring program have been utilizing school buses that are already en route to the local high school, eliminating the need for a college vehicle.

INITIATIVES AT OTHER SCHOOLS IN 2008

Middlebury College

Middlebury College’s commitment to reduction of transportation emissions is the most thorough of all the NESCAC schools’. For a complete study of transportation emissions and strategies for reduction on the Middlebury Campus, go to http://community.middlebury.edu/~c-neutral/. In “Carbon Neutrality at Middlebury College,” a 200-page online report that summarizes Middlebury’s sources of emissions and recommendations to reduce them, Middlebury has categories similar to Williams within the larger category of transportation: faculty and staff commuting, student travel to and from campus, student car use on campus and in town, and college fleet driving (varsity/JV/club sports teams, admissions, facilities maintenance, golf course, student activities, and academic field trips).

Not including air travel, in 2000 Middlebury’s total emissions for transportation was 5,772 metric tons of carbon dioxide and approximately 16% of their total campus emissions. Middlebury’s campus population is larger than that of Williams. Middlebury’s transportation emissions in 2000 were roughly 3,000 metric tons more than Williams’s transportation emissions in 2007 without air travel. This was due to a 1,000 metric ton difference in emissions from Middlebury’s college fleet, because Middlebury uses its own vehicles to travel to athletic and administrative events off campus. In addition Faculty and Staff commuting at Middlebury emits 400 tons more carbon than Williams, and student drivers at Middlebury emit 1000 more tons
carbon than Williams students. Middlebury’s strategies to reduce transportation emissions are summarized below.

1.) Limit Student Vehicles.
2.) Implement incentives and fees for student, faculty, and staff carpooling.
3.) Reduce campus fleet use.
4.) Replace vehicles such as golf carts with electric vehicles.
5.) Replace gas fleet with diesel vehicles.
6.) Switch diesel fleet to biofuel.
7.) Charter only biofueled coach buses.
8.) Student shuttles.
9.) Collaborate with public shuttles.

Several of these recommendations may be practical for Williams College as well and are included in this report’s Recommendations section.

Bowdoin College

Bowdoin’s statistics reveal that the average faculty member drives over 95 miles per week commuting to and from campus, and the average student drives 47 miles per week on and off campus, some 15% more and 20% less, respectively, than values from the Williams campus.

Like Dartmouth and Middlebury, Bowdoin is encouraging rideshare programs for faculty and staff commuting and has implemented a yellow bike program to encourage biking around campus instead of driving. Bowdoin is also making efforts to upgrade their campus vehicle fleet to greener vehicles such as the Toyota Prius, Highlander Hybrid, Camry Hybrid, Honda Civic Hybrid, and a GEM electric vehicle along with golf carts and Suzuki mini-trucks. Other efforts include fueling Bowdoin’s Grounds Department’s diesel powered maintenance tractors with B-20 bio-diesel during the summer months, and maintaining a no-idling policy for all of their fleet vehicles.

Tufts University

In 2006 transportation at Tufts University accounted for 863 metric tonnes of CO₂—less than 4% of its total greenhouse gas emissions². This figure includes faculty commuting based on zip codes as well as the fleet of vehicles that Tufts owns.

Tufts is currently working toward reducing its transportation emissions in several ways³:

1.) The Tufts Medford campus uses two RAV4 electric vehicles. Donated by Toyota, these zero-tailpipe emissions vehicles run entirely on battery power and are being used by mail services and public safety.
2.) Tufts faculty, staff, and students are using the same Zipcar rental system that Williams does, helping reduce driving personal vehicles.
3.) Tufts has successfully tested biodiesel in all of its grounds vehicles. Because the Tufts fleet is small and contributes only a small fraction to the total

² http://www.tufts.edu/tie/tci/Inventory.htm
³ http://www.tufts.edu/tie/tci/Transportation.htm
emissions, Tufts does not plan on switching to biodiesel. Yet, the Tufts Climate Initiative supports the use of biodiesel and encourages other colleges and universities to consider the use of biodiesel on their campuses.

**RECOMMENDATIONS FOR WILLIAMS COLLEGE**

Because transportation emissions account for 27% of the overall campus emissions, we suggest that, as part of Williams College’s initiative to reduce its emissions by 10% below its 1990-1991 levels by 2020, the College focus on ways of reducing the amount of air travel, driving, and the use of inefficient vehicles. Keeping up-to-date records of miles traveled, gallons of fuel consumed, and emissions will facilitate making changes to the College’s current transportation system. Several options for reducing transportation emissions include:

1.) Video conferencing and flying only when necessary.

2.) Implementing a rideshare program or bus system in the area to help reduce the amount of individual commuting.

3.) Upgrading College vehicles—especially those in the College Rental Fleet and Security Fleet—to ones with better fuel economy. This option would elicit the least resistance from the faculty, staff and students. Members of Facilities look forward to this upgrade in years to come.

4.) Holding students with vehicles more accountable for driving on and off campus. To minimize hassle and ensure a greater percentage of student cooperation, we suggest that if students own a car on campus, they should be encouraged to record the type of car they own and its fuel economy and filling out starting and ending mileages for the time they are on campus. From these data, the College should continue to be able to calculate gallons of gas consumed and emissions for student drivers.

5.) Moving parking toward the edges of campus to encourage walking or biking instead of driving around campus. Other strategies for reducing campus driving could include charging students, faculty, and staff parking permits or implementing the LEED strategy for providing desirable parking for fuel-efficient vehicles.

6.) Purchasing carbon offsets for certain categories of transportation, such as air travel and athletic travel, where the College would have difficulty reducing emissions.

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