A Greener CSS: Patrol Cars and Sustainability at Williams College

Fig. 1: sign to Office of Campus Safety and Security (M. Steer image)
Introduction

The Purpose and Function of Campus Safety and Security

Educational institutions, and especially residential colleges, must provide a wide variety of services to meet the multifaceted demands of large student populations. Colleges not only need faculty to teach classes and attract students to a school; they need support for the ambitious enterprise of thousands of people living in close proximity with little time or energy to provide for themselves. Vital support staff fills this role, including facilities workers who keep campuses functional and beautiful, dining services workers who feed the student body, and security officers whose job it is create an environment in which all associated with the college feel safe.

At Williams College, this need is met by the Office of Campus Safety and Security. This department is of medium size compared to other departments on campus, employing 24 people full-time or part-time. By comparison, Dining Services lists 120 people under its directory on the Williams website, while there are also departments such as the Provost or Dean of Faculty with only a few staff members. From the Williams webpage associated with Campus Safety and Security:

“CSS is staffed by a director, associate director, an operations supervisor, two patrol supervisors, a security systems coordinator, a departmental and systems assistant, ten full-time officers, three part-time officers, three full-time dispatchers, and three part-time dispatchers. CSS maintains four fully equipped cruisers and also offers a bike patrol. The department provides services 24 hours a day.” (www.williams.edu)

Campus Safety and Security (CSS) performs a multitude of functions for the Williams campus including crime prevention, emergency preparedness and response, fire safety, ID cards, transportation, bike registration, self-defense workshops, and education. Due to Williams’ nature as a small college, CSS is often the first line in responding to a variety of situations which would traditionally be associated with other departments; if a student notices a roof leaking after hours,
their first instinct is usually to call the 24-hour Security line (David Boyer, conversation 4/25). From Sunday to Thursday, CSS operates two vans at any one time, but on Thursday, Friday, and Saturday nights, CSS uses all four of its vans to patrol the campus. During shifts, officers generally follow routes around campus and then are dispatched to certain locations as necessary. For example, if a student needs to be transported from the Health Center to North Adams Regional Hospital, CSS will handle that function. Average mileage in a College CSS van is around 30–40 miles per day, and maximum would be 100 (Boyer 4/25). However, getting up to 100 miles in one day would be very unusual for a CSS officer.

**Issues in Sustainability**

Campus Safety and Security is a good target for sustainability initiatives designed to shrink Williams’ carbon footprint for a few reasons. It is the only twenty-four hours a day, seven days a week department on campus. This has several implications: there is an office with lights and heating constantly in use, and the vans the officers use are using fuel at any given time. There are additionally some “hidden” costs associated with maintaining a twenty-four hour department. Obviously, it would be impossible for a dispatcher, officer, or other staff member of the department to be on duty for all twenty four hours; usually, officers complete eight-hour shifts. This means that every day, officers must commute to and from the main office in order to access their vans. So, for the Sunday-Thursday shift cycles in which two officers are on duty, there are six officers total who need to commute to work, equaling twelve total trips.

There are two main components to CSS: its permanent office, located in the basement of Hopkins Hall (see Fig. 1), and its mobile van “units”. First, the permanent office. Given that CSS’s priority is student safety, there are limitations. We cannot simply shut down the permanent office site at night. While this would indeed reduce energy use, it would be...
impractical and dangerous for there not to be a dispatcher on duty in the permanent office. The lights and heat are set to automatic timers, meaning that officers using the permanent office at night are using the minimum amounts of lighting and heat necessary to complete their jobs. They also use high-efficiency bulbs in both overhead and desk lamps, and all outlets have power strips attached. Note here that I was unable to secure actual figures for the amount of energy used by Campus Safety and Security given their location in a large building which also houses many other offices. However, through the Williams Sustainability website, I was able to calculate total steam and electricity usage over a 24 hour period (Fig. 2). There does seem to be a significant drop in both steam and electricity from the period after about 6 P.M. to 3 A.M. During this period only CSS was really operational in the building, which could allow a clear picture of their energy usage; however, it is impossible to discount possibilities of other lights or heat being left on, or of other functions taking place in the building after hours, such as meetings which occasionally happen in basement classrooms or in dean’s offices. Therefore, all that can be said for certain is that CSS’ energy usage is that due to automatic heating and lighting systems, there is little besides an entire restructuring of the energy systems in the building which could increase sustainability in this area.

A second major consideration is paper usage. While completely online systems would reduce paper usage in the office, according to Mr. Boyer CSS is required to keep various paper files on hand by law. However, they are switching to a more fully online system for non-essential documents and are working on ways to make student car registration an online process. The impetus for this change was convenience, not sustainability, but since reduction of paper use is already occurring it does not seem the best target for a green initiative.
In investigating the sustainability of these two units, permanent office, and vans, I found that the permanent office was much closer to reaching reasonable sustainability goals than the vans. The remainder of this paper will explore the current situation of the Williams CSS transportation and propose an alternative system of car usage. I believe that this project could provide valuable feedback to one of Williams’ most integral offices on their use of campus resources.

**Patrol Vans**

*Current Models*

As previously mentioned, the primary form of transportation for the ten full-time and three part-time officers are four mini-van vehicles. Specifically, the College buys Toyota Sienna models (Figs. 3, 4) which must be replaced every four years. During this time the vans only accrue about 85,000 miles. This might seem a small amount of mileage for replacing a car, but the mileage belies the actual amount of usage of a van. An average day puts 30-40 miles on the van in 24 hours; this amounts to fewer than two miles put on the odometer per hour. The rest of this time is spent either parked or idling. Since the car is continuously running for 24 hours for 4 years, however, it is easy to see how mechanical and comfort features of the car might become worn out more quickly than an average car which is driven to and from work or the grocery store in an average day. Specifically, the four vans in one year (May 2011-May 2012) drove 68,312 miles.

The reason the College uses Toyota Sienna vans, as explained to me by Mr. Boyer, was that they suit the space requirements of the functions of the van and may be bought locally in North Adams from a dealer. However, these vans are not the most fuel-efficient vehicles. In the same time-frame, May 2011-May 2012, the vans consumed 5,536 gallons of regular gasoline at
a cost to the College of $20,207.00. Each vehicle consumed gasoline at the rate of 12.34 mpg (all figures from David Boyer).

The Possibility of Bicycles

A topic which was discussed during my meeting with Mr. Boyer and also my conversations with Zilkha Center was the real usage of the bicycle units the College advertises on its website. Mr. Boyer was not optimistic about the ability of CSS officers to utilize bicycles effectively. He listed several concerns in this matter. First, officers on bicycles would not be able to transport supplies which are typically in the mini-vans, including an AED, first-aid kit, radios, and laptop. Second, officers on bicycles would not be able to transport students, a major function of the CSS vans. Third, he raised legitimate concerns about the efficacy of bicycle transportation in the cold New England winters. Finally, and most crucially, officers on bicycles would have a longer response time to an emergency call. Mr. Boyer expressed that if there were more officers on duty at any given time, the possibility of one being able to be on a bicycle patrol would be higher; however, since only two officers are generally on duty, bicycles are not a practical option.

Given this, it seems that the most practical option is not to attempt to implement bicycles but to use vehicles which are slightly larger, can transport emergency medical equipment, and can reach a high enough speed to be effective at reaching students in a crisis.

Options Available

A first, obvious option would be switching the regular Toyota Sienna mini-van to a similar hybrid option. If size requirements really are fixed for CSS officers to be able to perform the variety of duties they do on campus, then keeping the mini-van would be the best option.
However, hybrid mini-vans appear to be a rare commodity. Toyota has a hybrid mini-van option in Japan, the Toyota Estima (Fig. 5), and there seem to be signs that they are moving towards a hybrid option for American release in 2014 (www.hybridcars.com). For the moment, there are no hybrid mini-van options available. Keeping size requirements in mind, I looked at other hybrid cars, such as the Toyota Highlander, which would match the requirements given through my conversations with CSS officers. In fact, it turns out that the Toyota Highlander is the only seven-seater hybrid vehicle available on the American market. CSS did experiment with a hybrid vehicle in 2006, and purchased one of these Toyota Highlanders. However, it was a bad experience, according to Mr. Boyer, because the vehicle was both more expensive and not much more fuel efficient than the regular mini-vans, and so CSS abandoned the possibility of buying this model vehicle.

The next question to ask is, is it necessary to maintain the size? Cutting down the size of a CSS patrol car would increase hybrid options. Indeed, if size were no longer a factor, the College could even justify purchasing electric cars which use no gasoline, cutting down on both cost and emissions. My proposal is as follows: To purchase two smaller, electric cars such as the Nissan LEAF (Fig. 6), which at $28,800 gets 129 MPG. The Nissan model is fully chargeable in four hours, making it a good option for security vehicles which must be used essentially full-time. Dealers in both Bennington, VT and Pittsfield, MA are certified Nissan LEAF dealers. While the price of these vehicles would be higher than buying more Toyota Siennas (starting at $26,585), the fuel savings would more than make up for the cost difference. The benefit of having two electric cars such as the LEAF would be that while one was charging, the other could be in the field. So, on any given shift, there would be one full-size Toyota Sienna and one Nissan LEAF on duty patrolling campus. On Thursday, Friday, and Saturday nights, when all four cars
need to be in the field, this scheduling would be a bit challenging. The way it could be done would be to have both Sienna models being used in the shifts directly prior so that the LEAFs could charge; however, this might not even be necessary since the LEAF gets 129 MPG.

This system of two electric cars and two larger vehicles would allow CSS officers to reduce their annual budget by $16,000 dollars and their vehicle emissions by 50%. If an officer needed to transport a student, they could do so in the larger van while the smaller LEAF stayed on campus. The LEAF would also allow officers to still transport with them the lifesaving equipment, such as AEDs and first aid kits, they need to have on hand. Because of these benefits, electric cars are a good, cost-and-fuel efficient option for Williams College.

Other Schools

Small, liberal-arts colleges such as Williams often compare themselves in terms of sustainability goals to Middlebury College, which has a reputation for “green” living. Middlebury, then, is a useful standard. Middlebury’s Department of Public Safety website states, “The DPS maintains two fully equipped patrol vehicles. Through the use of these vehicles, foot patrol and seasonal bike patrol, officers patrol the College's buildings and grounds. All officers carry radios and are CPR, First Aid and Automated External Defibrillator certified.”

(www.middlebury.edu) The DPS website makes no mention of sustainability goals; however, from looking at this description of the way their officer patrols are structured it is clear that sustainability is a factor. Middlebury’s security office has half the number of vehicles as Williams, with other officers on foot. The department does provide transportation around campus for mobility-impaired students and transportation to and from the health center and hospital, like Williams, but does not provide transportation to doctor’s appointments or physical therapy. Transportation is a significant amount of Williams’ CSS responsibilities, and it is for this reason
that I believe it would be challenging to reduce to two total vehicles the fleet used by CSS. Also, this option presents challenges in terms of maintenance and reliability of vehicles. Only owning two vehicles means that both vehicles will be used much more heavily, causing them to deteriorate more rapidly. As for officers on foot and bike patrol, the bike option has already been explored earlier in this paper. The on-foot option would be possible, but again would not allow for carrying of first-aid equipment or availability to transport students. Middlebury has 11 full-time Patrol Officers and two full-time Sergeants, meaning that they have a larger staff available to patrol campus. Were Williams to hire another officer, we might be more able to adopt the kind of system which Middlebury uses. However, assuming that this is not within the budget, electric cars are a more reasonable option.

**Conclusion**

Campus Safety and Security is a vital department which performs important work for the Williams community. By purchasing two electric cars, CSS would not only decrease its budget but also half its fuel emissions, allowing CSS to be a leader in the campus-wide effort to increase sustainability.

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Figures

Fig. 2: Steam usage (L) and Electricity usage (R) for Hopkins Hall, 2/19/13

Fig. 3, CSS Toyota Sienna van (M. Steer image)
Fig. 4: CSS Toyota Sienna van (M. Steer image)

Fig. 5 Toyota Estima, available only in Japan (www.hybridcars.com)

Fig. 6, Nissan LEAF (www.nissan.com)
Works Cited


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