

***Choosing the Right System:
Universal Bus Pass at the University of Waterloo
ERS 250***

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Table of Contents

- 1.0 Summary
- 2.0 Introduction
 - 2.1 Purpose
- 3.0 Background of Previous Projects
 - 3.1 Previous Studies at the University of Waterloo
 - 3.2 UPASS Implementation at Other Universities
- 4.0 Sustainability Issues
 - 4.1 Environmental
 - 4.2 Social
 - 4.3 Economic
 - 4.4 Previous Projects
- 5.0 Methods
 - 5.1 Ethics Clearance
 - 5.2 Surveys
 - 5.2.1 Limitations
 - 5.3 Interviews
 - 5.3.1 Limitations
 - 5.4 Observations
 - 5.5 Focus Group
 - 5.5.1 Limitations
- 6.0 Systems
 - 6.1 General System
 - 6.2 Actor System
- 7.0 Analysis
 - 7.1 Surveys
 - 7.2 Interviews
 - 7.2.1 Federation of Students representative: Mike Kerrigan
 - 7.2.2 Grand River Transit representative: Joanne Woodhall
 - 7.2.3 Watcard Office Manager: John Cunningham
 - 7.2.4 WATgreen representative: Patti Cook
 - 7.2.5 Alternative Transportation Group representative: Greg Powell
 - 7.3 Observations
 - 7.4 Focus Group
- 8.0 Results
 - 8.1 Housing By-Law
 - 8.2 Mandatory Cost
 - 8.3 Lack of Education and Student Involvement
- 9.0 Transportation Demand Strategy Options
 - 9.1 UPASS

9.1.1 Educational Campaign

9.1.2 Referendum

9.1.3 Final Decision

9.2 Swipe Card

9.3 Alternatives

9.3.1 Parking Costs

9.3.2 Parking Initiatives

9.3.3 Bus Costs

9.3.4 Bus Initiatives

10.0 Final Recommendations

11.0 Conclusion

12.0 Appendices

13.0 Glossary

14.0 References

1.0 Summary

In August of 1995, Grand River Transit approached the University of Waterloo's Federation of Students about the possibility of including a mandatory bus pass in the enrolment package for all full-time undergraduate students (Gilmore et al., 2002, Online). Although negotiations have been—until recently—ongoing, progress towards implementations has been limited.

We are a group of four Environment and Resource Studies students researching the issue of the UPASS as part of the ERS 250, Greening the Campus and Community course. We have identified two core actors: Grand River Transit and the Federation of Students. Beyond the core actors, we will also focus on the involvement of the following stakeholders: University of Waterloo students, the University of Waterloo Sustainability Project (formerly known as the Environment Commission), and the Region of Waterloo.

Through interviews, archival research, a focus group and personal observations, we aim to understand the reasons limiting the UPASS and offer informed recommendations. In addition we have explored alternative transit demand strategies, due to the lack of support for the UPASS. Our research project will contribute to the WATgreen initiative by building on the current knowledge base of the UPASS issue: we intend to offer adequate information to decision-makers in anticipation of furthering its implementation

2.0 Introduction

The WATgreen initiative began in 1990 as a way for the UW community to address campus activities from an environmental perspective and to explore more sustainable alternatives (WATgreen, 2002, Online). Their vision statement expresses an opportunity for the UW community to be a leader as a **sustainable** society (**all bolded words are defined in glossary**). Essentially, their goal is to create a campus that leaves minimal footprints on the surrounding ecosystems and reduces the overall operating costs while maintaining the safety and quality of university life (WATgreen, 2002, Online).

In accordance with WATgreen's vision of a more sustainable society, the following report will focus on the issue of implementing a Universal Bus Pass (**UPASS**). Effectively, the proposed UPASS is a Grand River Transit (**GRT**) bus pass that would be included as part of the registration package for the nearly 20, 000 full-time, undergraduate students at the University of Waterloo (UW). The cost would be a mandatory charge on all tuition bills, thereby greatly reducing the individual price of a four-month pass.

The issue of a UPASS arose when Grand River Transit approached the University of Waterloo in August 1995 (Gilmore et al., 2002, Online). The Federation of Students reviewed the proposal, but did not agree to hold a referendum at that time. Since then a number of Greening the Campus and Community (ERS 250, formerly ERS 285) projects have been done on campus transportation options. Recently the UPASS issue has also been the topic of many Imprint articles. Finally, in May of 2002, GRT commissioned a professional survey to be done by the University of Waterloo Survey Research Center. The survey included 1578 students, and examined the respondents' views on the UPASS. Currently, negotiations between the Federation of Students and Grand River Transit are suspended until student housing issues are addressed by the City of Waterloo.

Our research group consists of four ERS 250 students, who have a limited amount of time, money, and decision-making power in the UPASS project. Furthermore, the decision-makers, i.e. FEDS, do not currently support the idea of a UPASS (Kerrigan, 2002, personal communication).

2.1 Purpose

The significance of this project is not only to create a healthier and more sustainable campus and community, but to allow UW students to participate in an environmental decision-making process on a local scale. Dr. David Orr spoke at UW in the late 1980's and inspired WATgreen's creation; in his book The Campus and Environmental Responsibility (1992), he recognizes what the outcomes of campus projects are: "Foremost are benefits for the students who consistently report their appreciation for the chance to make a contribution to see their course projects have at least potential positive consequences for the campus. They also value the all-too-rare glimpse into the workings of the university and, especially, the contact with administrators, staff, and others who run the institution" (73).

The UW campus can be viewed as a small community, and as such should encourage experimental change. Successful endeavours would set an example of sustainable-living, and could then be applied to the greater Kitchener-Waterloo (KW) community. The UPASS provides an excellent opportunity to promote the use of public transportation, and ideally furthering awareness of health, safety, environmental, and economic issues surrounding the use of personal vehicles.

This project incorporates sustainability by creating a reliable transportation system for future students at the University of Waterloo, while taking economic, social, and environmental impacts under consideration. The UPASS will be able to supply the need for present students to travel around the campus and community without having to rely on less sustainable transportation systems, like cars, which contribute to poor air quality in the Kitchener-Waterloo region (CACAQ, 2002, Online).

Ideally, the UPASS would encourage students to use public transportation rather than personal vehicles; presumably reducing commuter traffic. With growing air-quality concerns, this alternative is an important idea to explore. Beyond air pollution, an increase in bus use could alleviate traffic congestion around the university, which in turn would improve roadway safety for pedestrians and cyclists.

Enough past investigation has been done on the UPASS that through archival research we are able to present a clear understanding of the proposal. The UPASS, however, has not yet gained enough confidence to have a referendum held on the issue. Our group will explore the current state of the UPASS and address its status, as well as some alternatives, through the following research question:

What are the factors limiting students at the University of Waterloo from accepting and implementing Grand River Transit UPASS?

Through interviews, archival research, and personal observations, we aim to understand the reasons limiting the UPASS and offer informed recommendations. Our research project will contribute to the WATgreen initiative by building on the current knowledge base of the UPASS

issue. Finally, we intend to offer adequate information to decision-makers in anticipation of furthering its implementation.

3.0 Background

The following section acknowledges previous transportation research projects at the University of Waterloo, and also explores the Universal Bus Pass systems that have been implemented at other Canadian universities.

3.1 Previous Studies at the University of Waterloo

Public transit must run efficiently and effectively within a city, increasing access to target populations and different types of people. There have been various past projects, which have evaluated the Universal Bus Pass, the Watcard Swipe System and different alternative forms of transportation. There are various reasons why the UPASS was not implemented in the past. In the 1996 project, the results of the survey demonstrated that the swipe card was the preferred method of payment for students with a 68% saying that it would increase their rider ship (Clausen, 1996). Similar results were found in the 2000 surveys with 69% of students choosing the Watcard system over the UPASS (Gilmore et al., 2000, Online). The 1996 project proved as well that the student body was not aware of previous Universal Bus Pass proposals, or the position of the Federation of Students.

The amount of students that drive cars to campus is estimated at 24%. This value doesn't seem extremely high, but it is much higher than the 12% that use public transit (Clausen, 1996). Many of those drivers are alone in the car, which has a greater effect on the environment (Clausen, 1996). The bus routes have been looked at for convenience and time management. Students have found that the buses do not always run at preferred times and they do not get students to where they need to be without making transfers or back tracking (Vanstone, 1999). In the transportation survey conducted in 1999, the idea of more frequent buses was recommended. When buses are late or at inconvenient times students don't want to attempt taking the bus again.

Additional surveys were conducted in May 2002 through the Survey Research Centre. These surveys demonstrated current transportation statistics of students, and highlighted key issues with the bus service. These surveys will act to compliment our project.

3.2 UPASS Implementation at other Universities

University of Waterloo is not the first to consider a Universal Bus Pass system. There are many Canadian universities that have already implemented systems similar to that proposed for UW. For example, in Ontario alone there are at least six institutions that have a UPASS: University of Guelph, University of Western Ontario, Trent University, McMaster University, Nipissing University, and Queen's University. The University of Western Ontario boasts that bus usage has "gone through the roof" and almost every student who is eligible for a bus pass has picked one up (Grant, 1999). University of Victoria in British Columbia has reported fewer cars parked on campus since the implementation of their UPASS (Walker, 2000). Offering students a bus pass has proven successful at the aforementioned universities; most of which have

experienced such benefits as reduced traffic congestion in and around the university, less need for parking areas, and convenient transit for students.

4.0 Sustainability Issues

In order for the UPASS to be implemented we must look at the reasons why it will make a more sustainable campus, therefore we must take into consideration the economic, social and environmental factors.

4.1 Environmental

The move away from the use of personal cars to the use of public transit is becoming more necessary due to the declining air quality in Kitchener-Waterloo. In K-W, of 39 days, 20 smog alerts were issued in the past 2 summers; the region is in the worst top five cities for ground-level ozone and particulate matter (CACAQ presentation, 2002). By increasing the use of public transit and decreasing single car rides, we would see a change in transportation habits. In 1991, 92% of K-W homeowners had cars in comparison with the 1999 national average which was 75.9% (Head, 2000). With ratification of the Kyoto Protocol in Canada, will be required to seek solutions that produce less CO₂ emissions, the UPASS can be viewed as an element that could work in conjunction with Kyoto. The increase in traffic congestion causes road expansion, and the creation of more infrastructure networks. Natural systems are disturbed and the flow of water and movement of wildlife are effected (Clausen, 1996). Buses are not harmless to the environment but the aggregate output of increased transit use is far less than that of excess cars because more people can ride the bus. It is important to highlight that 130 cars on the road are equal to 2 buses (CACAQ, 2002, Online).

4.2 Social

Air quality problems are also related to serious health effects. In Ontario in the year 2000 there were 1,900 premature deaths, 9,800 hospital admissions, 1,300 emergency room visits and 46 million illnesses due to outdoor air pollution (CACAQ presentation, 2002). Increasing bus rider ship would be convenient for the community as a whole because other people would benefit from the more frequent buses and may have more frequent access to the Universities. There are various personal safety issues for rider ship at night, which is a concern for students. Currently bus usage is not a regular habit of student transportation, by implementing a UPASS trends of rider ship are apt to change.

4.3 Economic

There are economic effects on the population. For, more than 1 million dollars spent on health care in 2000, and these numbers are predicted to increase due to the declining air quality (OMA report, 2000). These statistics show a need for change and an effective way of reducing emissions into our common air. The Canadian Automobile Association (CAA) suggests that the annual cost of owning and operating a personal vehicle is between \$7000 and \$1200; therefore the cost for students, per four month term would be \$2000 to \$4000, as well there is the added

cost of a university parking permit (CAA, 2000). In comparison, the cost of a UPASS for the four month term would approximate \$50 (Woodhall, 2002, personal communication).

5.0 Methods

The goal of our study was to uncover the main factors prohibiting the implementation of the UPASS. Using three methods of research ensured a high level of validity in the final data (Wisner, 2002). Triangulation was achieved through researching the problem using a diverse network of techniques. The problem was researched through analysis of a previous transportation survey that were conducted in May 2002 by The Survey Research Center. This survey gave insight into bus usage statistics for undergraduate students at The University of Waterloo. This survey conducted in May was extensive, as the response rate was fairly high, yet there was a need to represent student opinions in more detail, and this was achieved through conducting a Focus Group. A focus group serves to provide insight into the UPASS. Focus groups have the ability to generate discussions and give a new perspective on the issue (Palys 1997). In order to gain an understanding of the current positions on the UPASS, interviews were conducted with key informants. The on and off campus stakeholders all have the ability to influence the UPASS decision. An additional part of our research included conducting on campus observations of current GRT advertisements. Conducting these observations allowed us to understand what areas still need to be targeted, and also what other techniques could be used to increase awareness on using the bus, and the UPASS. Using both qualitative and quantitative research methods ensured that this project was well researched and holistic (see Table 1).

Following the data collection analysis of the data, and the information was synthesized. Through analyzing the data three main prohibiting factors emerged, and each of these was analyzed. Additionally three transportation demand management strategies emerged and each of these strategies were evaluated using information from the interviews.

Table 1 *Research Methods*

<i>Qualitative</i>	<i>Quantitative</i>
<ul style="list-style-type: none"> -Key informant interviews, with face to face contact -Research is aimed at understanding different positions -An inductive approach, observing for themes that may emerge throughout the research initiatives -A human-centered approach focusing on opinions 	<ul style="list-style-type: none"> - Using previous statistical analysis to measure undergraduate bus usage - Aggregating numerical data in to graphs -Monitoring observable variables by analyzing the GRT’s initiatives on campus - Focus group brought together to discuss the UPASS and develop insights

5.1 Ethics Clearance

In order to conduct our research ethics clearance was required. Our project was reviewed and approved by the Office of Research Ethics at the University of Waterloo.

5.2 Surveys

The surveys distributed by the Survey Research Center provided the most current data on student bus usage. Their sampling techniques involved distributing a questionnaire randomly to 4000 undergraduate students on the web, 1578 responded (Dixon, 2002). The survey included both close-ended and open-ended questions. Aggregating the data was our group's initiative.

5.2.1 Limitations

The sampling techniques demonstrate high reliability, yet there was an overrepresentation of first year students. Although this does slightly reduce accountability, the results still provide great insights into students' attitudes and bus usage. Also because we were using a previous study, we could not design the questionnaire, so certain areas we wished to explore were left out.

5.3 Interviews

The key informant interviews were conducted to understand the various opinions and current progress of the UPASS. Throughout the interview process it was discovered that additional actors were involved in the UPASS decision-making deal. Specifically, John Cunningham from the Watcard office was added to the interview list, as he played an imperative role for the alternative options to the UPASS. Each interview was conducted in person, using open-ended questions. The interviews were conducted from October 15/02 until November 17/02 with the various parties (see Table 2).

Table 2 *UPASS Interview Candidates and Groups*

<i>Candidates</i>	<i>Group</i>
Mike Kerrigan	Federation of Students
Joanne Woodhall	Grand River Transit
John Cunningham	Watcard Office
Patti Cook	WATgreen
Greg Powell	Alternative Transportation (UWSP)

5.3.1 Limitations

While conducting the interviews it was evident that the UPASS was not a high priority on the Feds' agenda, and it seemed as though the project was going to have little ability to create change. The Feds are currently highly prioritizing the housing by-law issue, and were not negotiating the UPASS. As our research continued, however, additional actors such as GRT and the Alternative Transportation group showed enormous interest.

5.4 Observations

As a final method of research the observations served to locate where the current GRT Information and Bus Posters are on campus. The observations' locations had been previously

suggested through the FEDS Environmental Commission (now UWSP). In January 2001 the Commission generated a list of areas where the GRT could promote public transportation. A checklist was generated to monitor, which of the suggestions were implemented. From these observations additional suggestions were generated to increase student awareness on public transportation.

5.5 Focus Group

A Focus Group was held with six students in order to get their opinions on the UPASS. The group consisted of one Environmental Resource Studies student, a Geography student a Science student, a Computer Science student and Arts students. Their perspectives were varied. Half of the group was convinced that the UPASS would be beneficial to the University of Waterloo community, because it would encourage students to explore the city more. Also suggested by another student is how beneficial the UPASS would be for the environment, in order to lessen CO₂ emissions from vehicles. The concerns that were raised with other students dealt mainly with the cost of the UPASS. With raising tuition costs, it is a concern that paying \$40-\$50 a term is not feasible for all students. A real concern was raised by the Computer Science student, was that our tuition is a lot higher than at other schools, therefore it makes our school a lot less accepting of the UPASS, because we already pay so much. Specific concerns dealt with the fact that they didn't ride the bus enough to make it economically beneficial. Additional concerns highlighted that the buss system isn't very efficient, and therefore they don't use it very much. One comment specifically highlighted that students would not want to pay for both a parking pass and a UPASS with the cost of tuition. Also it was suggested that many UW students make a lot of money on Co-op, and can afford to have a car. They are not motivated to take the bus, for they enjoy driving their car. It was also suggested that UW is not filled with many students who are environmentally minded, and a lot of students are very apathetic. Some members of the group had cars and wouldn't want to pay, and don't like taking the bus. Students really see the need to see a bus master plan before they agree to the UPASS.

5.5.1 Limitations

The focus group is not representative of the entire population, as they are only six people of the student body. Focus groups are very informal, and do not provide fully valid or reliable results. Only four faculties were contacted through the focus group. The focus group just raises student opinions, which cannot be backed up unless more research is done.

6.0 Systems

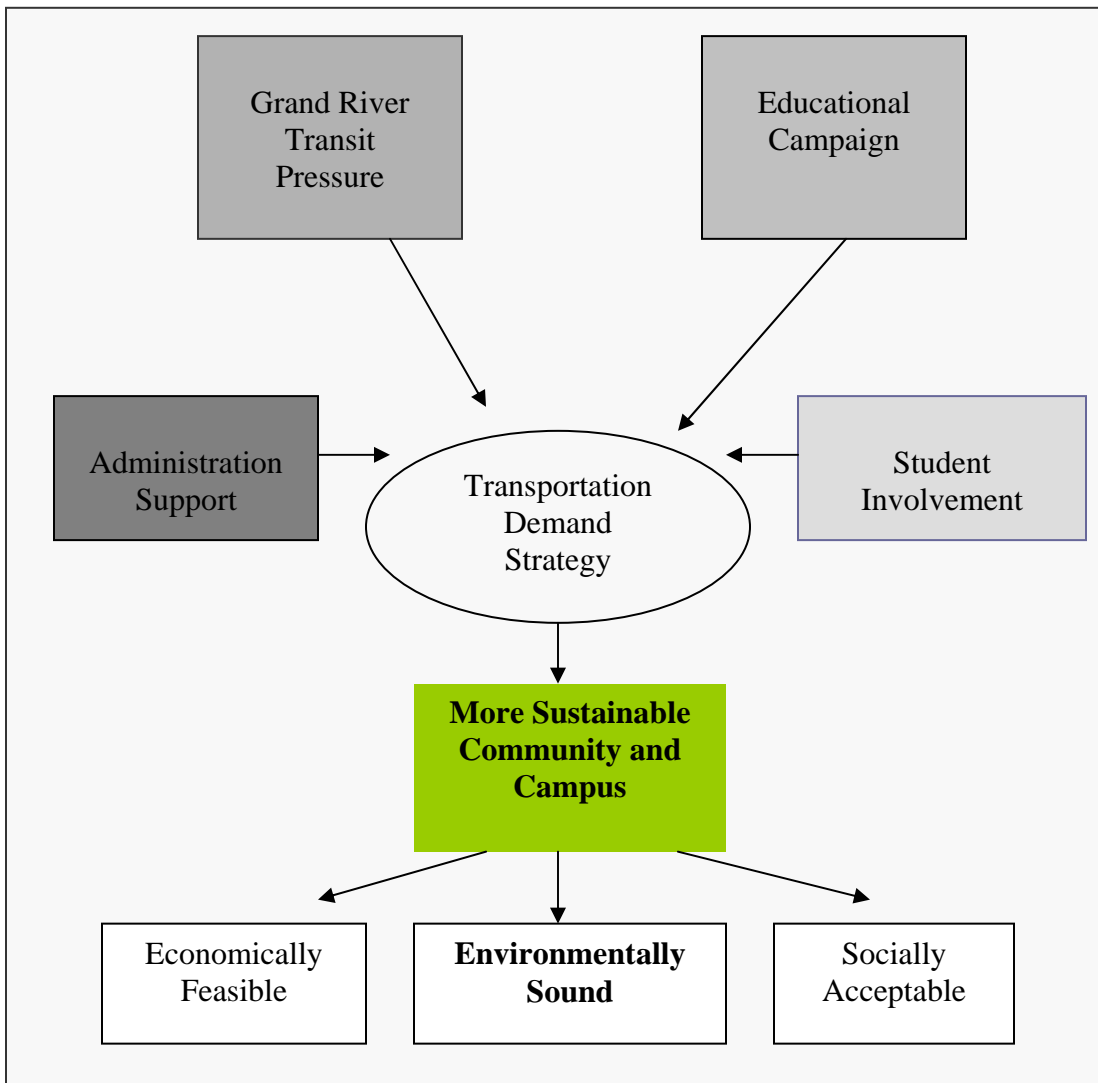
Transportation Demand Management is made up of many components, which in turn, make up a complex **system** of interactions. This system makes up an easily identifiable conceptual framework, which is explained through the general system and the actor system in the following diagrams.

6.1 General System

'Transportation Demand Strategy' is in the middle of the diagram (see Figure 1) because it is the center of discussion. The factors affecting the implementation of a transportation demand strategy are indicated by the four rectangles. *Grand River Transit pressure*, *administration support*, *educational campaigning* and *student involvement* are all subsystems to the main system. Each subsystem affects the decision of implementing the UPASS. They are all represented by different shades of gray, to represent that they all belong together, but at the same time are very different components of the system. *Grand River Transit pressure*, such as advertising bus rider-ship and pressuring the University of Waterloo to accept a UPASS affect the system. *Administration support* from the Federation of Students, staff and faculty members also affects the system. *Educational campaigning* about the need for a transportation demand strategy, such as the UPASS is a key subsystem of the system. Finally student involvement, such as participating in a UPASS referendum, affects the system. The output of this system would be to have a more sustainable community and campus, which is represented by the green box. The sustainability of this system means that the transportation demand strategy is economically feasible, environmentally sound and socially acceptable by its users. The sustainability outcomes of a UPASS, swipe card and transportation alternatives are discussed in section 3.0.

The entire system has been looked at in a **holistic** approach, which is represented by the box around the entire diagram. A holistic approach is needed when looking at transportation demand strategies at the University of Waterloo to fully understand the environmental, economic, and social factors of a UPASS, Watcard Swipe System, or other transportation alternatives.

Figure 1 *General System of a Transportation Demand Strategy*



6.2 Actor System

This Actor System represents the stakeholders/participants or actors involved in the UPASS issue. The University of Waterloo is presented at the top of this diagram to represent the main actor in this system. Without the University, a transportation demand strategy would not be an issue.

The **core actors** are those who are constantly involved with the idea of a transportation demand strategy. They are represented by all of the dark blue rectangles. They involve the Federation of Students, the Grand River Transit. These groups are the ones who will interact and implement a UPASS, swipe card system or alternative transportation demands. Specific people, such as Mike Kerrigan, representative of the Federation of Students and Joanne Woodhall, representative of the GRT, are represented by the lighter, blue boxes.

The **supporting actors** are those who are less involved but affect the UPASS decision significantly. They are representing by the purple boxes. The supporting actors in this case are

the students, University of Waterloo Sustainability Project (UWSP) Alternative Transportation Group and the City of Waterloo. Their opinion will make the UPASS available or not, but they are not directly involved with the issue.

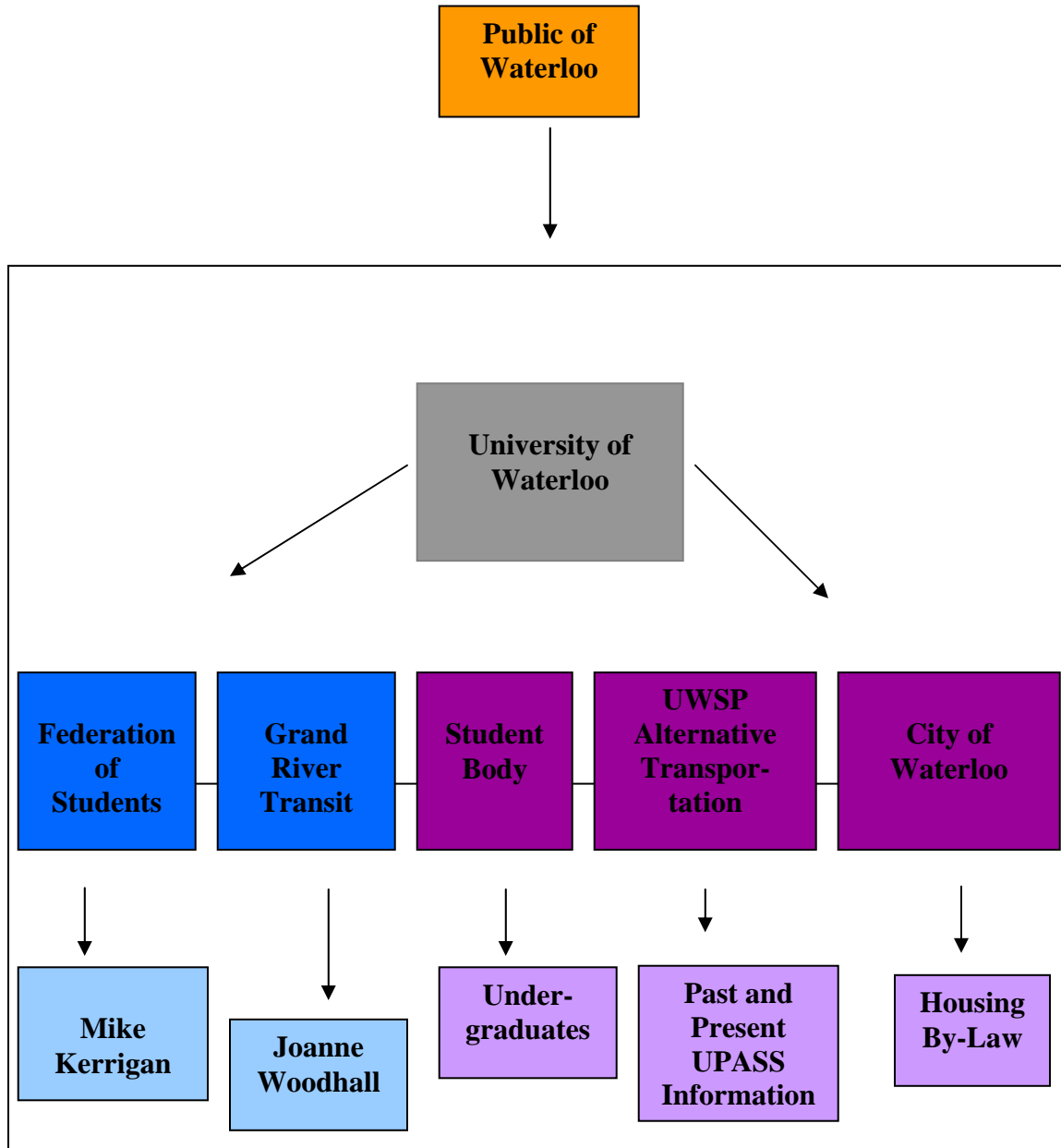
The **shadow actors** are those who are affected by the decisions made about a UPASS, but are not involved. They are represented by the orange box. In this case, the shadow actor is the Public of Waterloo.

Boundaries

There are a clear set of **boundaries** within this system. They consist of the following:

- Only University of Waterloo Students will be included
- Only full time Undergraduate students will be considered
- Past surveys and information will be used
- Environmental degradation will not be discussed in full detail
- The importance of sustainable transportation will not be discussed in full detail
- The effects that the UPASS has on the community will not be discussed in full detail
- Not looking at alternative modes of transportation

Figure 2 Actor System: Transportation Demand Management at UW



7.0 Analysis

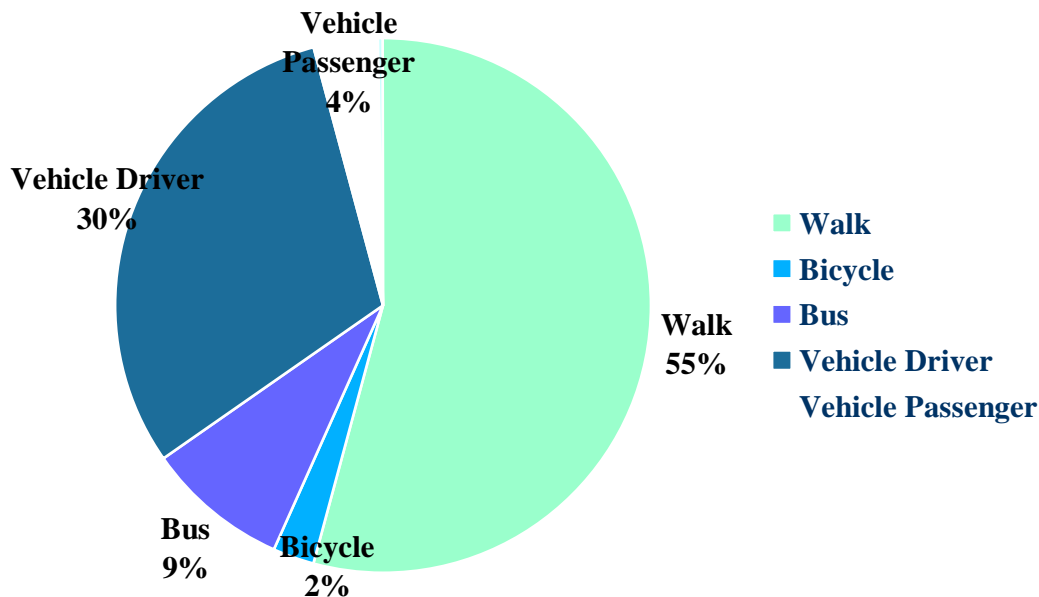
The following section is an analysis of the resources that were key sources of information for our research.

7.1 Surveys

The survey done in May 2002 by the University of Waterloo Survey Research Center, demonstrated a number of interesting statistics (Dixon, 2002). The findings indicated transportation methods of students (see Figure 3), and students' attitudes towards the UPASS. The most common mean of coming to campus is walking, less than 10% take the bus. This is attributed to the fact that most students live within close proximity of the University. Also buses were not seen as an optimal mean to come to campus; this could be due to the high level of first year respondents, who would walk to school from residence. It is also important to highlight that driving to school is a highly used mechanism of transport, and therefore alternative transportation strategies are essential, due to the poor air quality in the region.

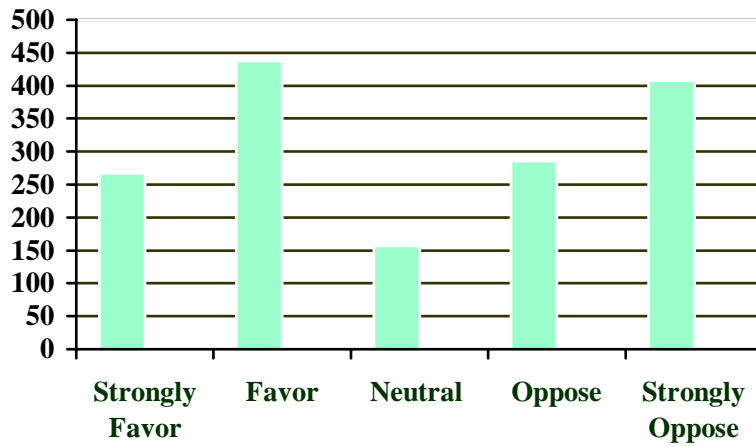
Also in this survey, five suggestions were highlighted as being the areas that need the most improvement to the bus system. These include: on campus Bus Depot, more late night service, reduce transfers, simplifying the system and alterations to the schedule.

Figure 3 Means of Coming to Campus May 2002



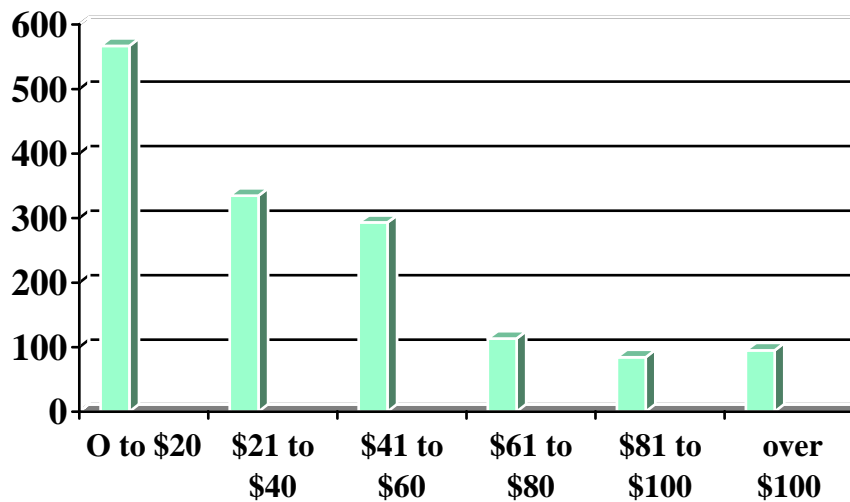
The UPASS was favoured by only about half the students. It was interesting to discover that few people were neutral on the issue, and the majority had an opinion on the issue (see Figure 4). Students need to be educated on the UPASS issue to gain an understanding of what it would involve. These surveys were conducted without promotional campaigns. The support for the UPASS could change if more people knew about its attributes.

Figure 4 *Level of Support for the Universal Bus Pass*



It was not surprising to discover that the majority of students suggested that the UPASS should cost from \$0-20 (see Figure 5). Most students would suggest that the UPASS be least amount of money as possible. It is important to highlight that some students suggest that the UPASS cost over \$100, the students may not have taken the survey seriously.

Figure 5 *Suggested Price for the UPASS*



7.2 Interviews

The interviews allowed a variety of perspectives to emerge. The current bus system and future alternatives were discussed with the various groups. Mike Kerrigan introduced our group to the idea of the swipe card, which initiated the integration of an interview with the Watcard office. Also the Alternative Transportation group from UWSP was discovered through the

research process, and they were a great help to our project. Alternative Transportation is seen as a main actor that will mobilize the issue.

7.2.1 Federation of Students: Mike Kerrigan (VP Student Issues)

The main finding from this interview was that the Feds do not see the UPASS as a current priority. They do not have any promotional ideas that could increase student bus rider ship. Mike informed us that the potential of having the UPASS implemented by Fall 2003 was impossible. There is the potential to hold a referendum on the issue, which would require 2000 students to sign a petition in support of the UPASS. Mike Kerrigan sees the UPASS as dead. Specifically there was a motion passed at Students' Council that limits the executive from negotiating the UPASS until the city removes the seventy-five meter restriction (Kerrigan, 2002, personal communication). Also Mike thought it was important to highlight that most students live close to campus, and they walk to school. The Feds see the swipe card installation in buses as the best option, because it would be voluntary.

7.2.2 Grand River Transit: Joanne Woodhall

The interview with Joanne highlighted what the GRT has done to improve student rider ship. These strategies include:

- Development of bus passes \$54 a month and \$136 for three months
- Tried to develop a bus terminal on campus, but there strong opposition from the University who didn't want it at the front of the campus
- More service around the city
- Increase in the number of buses on the route 7, important for downtown service
- Information available: web site, info posters and bus schedules available on campus

The UPASS costs and benefits were also discussed in the interview. The cost of the UPASS would be \$35-50. The average for most universities is \$44. This price is determined through analyzing current levels of rider ship and how much service would need to increase if implemented. The final price can only be decided in negotiations with the Feds. The GRT is also in negotiations with Wilfred Laurier University, who has been more supportive on the idea.

Also the GRT has been very willing to add advertisements and information boards on campus. Currently the GRT has implemented a variety of advertising strategies, and ensured that information is available through the following avenues:

- Transit boards
 - Turnkey desk
 - Visitor center
- In the student hand book this year (GRT stops on campus map)
- Imprint (map of routes)
- Made attempts to come to student life 101 and make presentations, but only on campus businesses allowed
- Next year, bus tickets in frosh kits and information packages for residence dons
- Land use decision class that used to take the bus to different places around the city for a course

The interview with Joanne demonstrated that GRT is highly supportive of the UPASS. It is important to highlight GRT does not see the relation between the housing issue and the UPASS. Also GRT sees the swipe card option as expensive and time consuming. Joanne did show a great deal of enthusiasm for alternative transportation, but it must also be highlighted that GRT would benefit greatly economically from the UPASS. The economic benefits could be seen as a bias. Joanne was willing and ready to pursue the UPASS, and offered her services to encourage the use of the bus.

7.2.3 Watcard Office: John Cunningham

The interview with John Cunningham explored the option of implementing the Swipe Card System into buses. The Swipe card would use the same Watcard technology: the bus would read your card, and send a signal back to access your account. The card would immediately be approved and the proper amount would be taken off your account. The incentive would be that if you ride the bus a certain number of times, you would get a price break. Therefore the more you ride the less you pay. There are two options suggested here, the price breaks could be experienced personally, whereby the student would get a break at a specified point. Or the university as a whole would get a break after a certain number of rides. For example after 6000 uses the price goes down to \$1.75 for all Watcard holders. The cost of the technology to implement the system would be shared between the Universities and the GRT. This is justified through the idea that the University would be concerned about the greater distances students would need to travel to campus, due to the by-law, and the UPASS could be an option to offer students an accessible and convenient mode of transportation to school and elsewhere (Refer to 7.1). This option wouldn't force people to pay, but it costs a lot of money and time to implement.

7.2.4 WATgreen: Patti Cook

Patti Cook is heavily influential in facilitating projects. She was not seen as a key stakeholder in the issue, but she was a helpful informant. Patti is not fully supportive of the UPASS, and she is still exploring the idea. Her support would be imperative to the UPASS's implementation. WATgreen could put pressure on administration.

7.2.5 Alternative Transportation (UWSP): Greg Powell

The Alternative Transportation group demonstrated immense support for the UPASS. Their position was that they wish to see more sustainable transportation in the city, and they see the UPASS as a great way to facilitate this. This group wishes to pursue the issue, and is willing to generate educational campaigns, and organize a referendum. They are a key pressure group, as they could encourage the implementation.

7.3 Observations

Various locations on campus were recognized as prime locations for Bus Signs and Information boards. These locations were suggested by the Environmental Commission in 2001. On November 2, 2002 our group analyzed which locations had implemented bus advertisements, and how visible these signs were. The following (Table 3) is a chart of our observations at each on-campus location:

Table 3 *Observation Chart*

<i>Location & Suggestion</i>	<i>Implemented Yes/No</i>	<i>Visibility Scale 1-low 5-good</i>
Student Life Center - Additional tidbits of information, and visual improvement	No- no extra information same as other boards	4
Davis Center -Open space right hand side when entering the building from Ring Road- good location for info board	Yes, same as others -near phones -no personal maps to take	4
South Campus Hall -Anywhere in from of the visitor's center, bookstore of UW shop	Yes, by Travel Cut, on back not at front	3- Should be at the Visitors Center
Math & Computers Building - Right Angle Coffee Shop	No	
Needles Hall -Map/info board near the doors facing Ring Road	No	
Ron Eydtt Village -Map/ Info board by the Internet Café	No	
Village One -Near the cafeteria or Internet café	Yes	2- Behind pole, not visible
Modern Languages Coffee Shop -Map/Info board near coffee shop/cafeteria	Yes- Map is there, some information, and advertisement for bus pass, but limited information, personal maps empty	2- Difficult to find, should be closer to Tim Hortons line

Additional Suggestions:

The need for more bus advertisement would be essential in increasing student awareness of the transit system, and may ultimately lead to a greater desire for a UPASS. Additional techniques are needed to increase bus awareness. These will be discussed in the recommendations. There is a need for more bus information in the Environmental Studies Building. In the residences it would be great to put bus information in the cafeteria, in order to catch people attention while their eating. Due to the low bus rider ship, additional strategies need to be explored to educate the student population to use the bus. If rider ship could increase, the need for a UPASS would vastly increase.

7.4 Focus Group

The results of this focus group proved that students see the benefits and limitations of a UPASS, but are not fully convinced they would gain from it. This focus group gives insights into what concerns need to be addressed in order to make the UPASS more attractive. The ideas raised in the Focus Group could be taken into account when the GRT is creating a master plan. In addition these ideas should be addressed into the educational campaign.

8.0 Results

After intensely researching the original research question (identified in section 2.1), there were three main results that arose. The main results or factors that were prohibiting a UPASS from being accepted and implemented at the University of Waterloo are: the current housing by-law; the mandatory cost of the UPASS; and the lack of education and student involvement with the issue.

8.1 Housing By-Law

The Corporation of the City of Waterloo By-Law No. 00-140 limits the implementation and negotiation of a UPASS until the city removes the 75 m restriction. (Regional Municipality of Waterloo, 2002) It is understood that "...the 75 m restriction must be removed to provide quality affordable housing near the university for the growing student population" (Kerrigan, 2002).

The Federation of Students representative, Mike Kerrigan, explained that a UPASS is currently of no importance to the University of Waterloo: "...removal of the 75 m restriction should be of greater priority than the implementation of the UPASS..." (Kerrigan, 2002). Furthermore, Kerrigan explains that "...the amount of extra money that cash-strapped students pay in inflated rents because of a housing shortage —due in part to the 75 m restriction—is way more than what they would save by having a UPASS instead of paying for a bus pass" (Kerrigan, 2002).

The Federation of Students represent the student body, and if they do not believe that a UPASS has a place on the University's agenda, then it is difficult for the student body to implement a UPASS.

8.2 Mandatory Cost

Students do not have a choice of paying a non-refundable \$40-50 dollars for a UPASS on their tuition fees. This may be perceived as unfair to many students who claim to walk, ride their bike or take their car to school. “The main problem is that students who don’t use the bus would have to pay for service for those who do. When the majority of students who would benefit from the cheaper pass are those living further from campus—and thus paying lower rent—and students living at home—and thus having fewer living expenses—the perceived equity of a UPASS comes into question” (Kerrigan, 2002). Through the Focus Group the mandatory cost on tuition fees presents a problem to many students, “I don’t like the idea of not being able to get my money back if I’m not going to use it” (Anon 2002).

8.3 Lack of Education and Student Involvement

Students are not aware of the benefits of a UPASS. Some students may not see the UPASS as a personal benefit because they can walk to school, ride their bike or drive a car. However, they may fail to recognize that a UPASS can be used throughout the entire Kitchener-Waterloo community. For example, students may take the bus to go to the Fairview or Conestoga Mall, to do grocery shopping, or to visit their favorite pubs. Students may also not be educated on the benefits of a UPASS in general. The Sierra Club suggests UPASS benefits that students may not be aware of, such as: universal access for students, especially in the cold winters; more freedom for students in choice of housing location; cost savings for transportation; better, more tailored bus service for students; less pollution through fewer cars; less health effects from air pollution, especially during hot, muggy summers; quieter neighborhoods; and the reduced need to build costly parking facilities and repairing roads (Sierra Club, 2002).

Despite the wide advertising on campus, (see section 7.3), many students may not be aware of the new routes and payment options that GRT offers (GRT Online). There is also a need for greater Campus involvement in the area of policy making. The Federation of Students are elected by University of Waterloo students to represent our views; however they cannot represent every single view of 22,000 people. To become more involved with policy/decision making on campus, students may attend municipal and student council meetings to understand their views and to present yours (Imprint, 2002). Voting for a mayor who represents your views, or voting for a Federation of Students Executive who represents your views is also a good way of being involved in policy issues, such as the implementation of a UPASS.

9.0 Transportation Demand Strategy Options

Through out our research three main options emerged in analyzing the bus system. These include the UPASS, the Watcard Swipe System, and the current bus system. Each of these was examined in the following sections.

9.1 UPASS

The UPASS would require each undergraduate student at the University of Waterloo to pay approximately \$35-\$50 on their tuition. This fee would allow students to ride the bus freely

for the semester. The benefits of the UPASS are numerous, as the result would be less auto dependency (Sierra Club, 2002). Although the major downside is that students would not have a choice to pay the fee. Therefore students that don't ride would still have to pay.

The following table (see Table 4) examines the how students may benefit or be limited by the implementation of a UPASS.

Table 4 *Benefits and Limitations of a UPASS*

<i>Benefits</i>	<i>Limitations</i>	<i>Costs to students</i>
- more freedom for students in choice of housing location	-all full-time undergraduate students pay, whether or not they use transit	- approx. \$50 for each full-time undergraduate student
-less pollution through fewer cars	-many people within walking/cycling distance of campus	
-savings for University and city, through reduced spending on parking facilities and repairing roads	-decision-makers currently using UPASS as a bargaining tool	
-improved mobility and convenience		
-helps University achieve Green objectives		

9.1.1 Educational Campaign

An educational campaign about a UPASS should include *mass advertising*, *public relations*, and *student and faculty outreach* (Clean Air Campaign, 2002). A clear goal of what is wanted out of the campaign needs to be set before the campaign starts. The goal should be to educate University of Waterloo students about a UPASS. The focus group proves that students need to be convinced that they would benefit from a UPASS, and how it would be economically beneficial. Part of the Educational Campaign could help convince those student who are neutral on the topic to want a UPASS. Next, there should be a time limit to the campaign. “Phases” or “stages of implementation” of a few weeks at a time will help ensure that a clear time limit is set.

Mass Advertising should include a variety of colorful posters, with target locations, such as the Student Life Center or the on-campus bus stops, to target the audience of interest. Fact and Fiction Sheets about the UPASS should also be displayed and available for students to take. Educational displays, such as a booth with pamphlets about a UPASS and GRT route maps should also be apart of the mass advertising.

Public Relations should include letters to Editors, asking to print articles relating to a Universal Bus Pass. Attaching resources to help the Editor is also helpful. Television advertisements on

the local television station encouraging bus rider-ship, as well as Spotlights or interviews with the Federation of Students, GRT, “community experts” and University of Waterloo Students about the UPASS will help students and community members understand and support transportation demand strategies, such as a UPASS.

Newspaper articles that are 500-1000 words can be given to campus and community newspapers such as the Imprint and the Kitchener-Waterloo Record. Newspaper ads promoting bus rider-ship and the benefits of a UPASS can also be located here.

A Radio script that is 30 to 60 seconds long advertising how a UPASS can improve your life, can be given to local and campus radio stations. The campus radio station may also have a Radio Spotlight at a peak listening hour, to present to issues concerning a UPASS.

The last part of an Educational Campaign concerning a UPASS includes *Student and Faculty Outreach*. This outreach can be provided in a variety of ways: A debate could be held to educate students and faculty members about both sides to the UPASS; a guest speaker (i.e. Joanne Woodhall from GRT) and slide show could be held for students of interest; an interactive Website and online discussion room could be created, containing views, facts and links about the UPASS; and an ‘Action Day’ could be apart of the Educational Campaign, to educate interested students on how they can get involved and pressure a UPASS from being accepted at the University of Waterloo (i.e. signing a petition, voting in a referendum).

The Educational Campaign could be a joint effort with the Municipal Region of Waterloo, as it is indicated in their “Transportation Master Plan”, that they want to educated people about Transportation Demand Management (Municipal Region of Waterloo, 2002). The next step following an educational campaign would be a referendum.

9.1.2 Referendum

A referendum requires 2000 signatures, that is, 10% of the student population to sign a petition to bind Student Council into holding a referendum on a question (Kerrigan 2002). If the majority of the student population votes in favour of the UPASS, the FEDS and final decision makers would be obligated to negotiate a UPASS.

9.1.3 Final Decision

The Board of Governors at the University are responsible for business and other operations. The Board would be the body who negotiates the final details of the UPASS (Helmer, 2002).

9.2 Watcard Swipe System

A survey of undergraduate students done in 2000 as part of an ERS 250 group project found that 69% of UW students surveyed preferred the idea of a Watcard Swipe System for GRT over the UPASS (Gilmore et al., 2000, Online). Students were likely more attracted to this option because it does not require a mandatory fee, therefore only those who actually use transit would pay for the service. The aforementioned statistics roughly indicate that UW students see the Watcard Swipe System as a good option, and as a result, it is an important consideration.

The system itself is essentially the same technology that is currently used on campus at the bookstore, food service outlets, vending machines, photocopiers, etc.. It is a debit-type

system that would be on all GRT buses and would immediately access and approve your account. The cost of the technology would most likely be shared between GRT and UW since they each have their own interests in the implementation of such a system. As the issue of student housing intensifies, UW needs to be able to offer students accessible and convenient transportation; the bus is an appropriate transport option. Theoretically, any system installed on GRT buses for the benefit of university students, would increase their rider ship thereby increasing revenue.

There are both benefits and limitations to a Watcard Swipe System; our group identified the following:

Table 5 *Benefits and Limitations of a Watcard Swipe System*

<i>Benefits</i>	<i>Limitations</i>
-only those who use transit pay for the service	-expensive system to install and maintain
-able to pay with your watcard, which is convenient	-system would only be used by UW and WLU students; not available to the rest of the community
-offers an alternative option to the UPASS for UW students and administration	-initially the system might not be on all buses, just those used most frequently by students
-potential for increase in bus rider ship because of the convenience	-presumably less rider ship than with a UPASS

If a Watcard Swipe System were implemented, John Cunningham, who is manager of the Watcard Office, proposed the idea that there be set points at which the fare price decreases. That is, after a specified number of bus rides, you get a price break (2002, personal communication). A variation of this idea is that rather than a personal set of points for each rider, there be a set for the university as a whole. Each time a watcard is used, it adds to an accumulation of rides and at a specified point the fare price goes down for all watcard holders.

In general, the more you ride, the less you pay; and this again focuses on the view that only those students who actually use public transit would pay for the service but it also offers them an opportunity to save money. Once the idea of a Watcard Swipe System is more concrete and more public, another survey should be done to determine whether students still see it as a good option. Perhaps GRT needs to consider implementing a similar swipe-card technology for the bus passes that are available to the entire community; presumably their own system could then be implemented in conjunction with a system for both the University of Waterloo and Wilfrid Laurier University.

9.3 *Alternatives*

There are other forms of improving transit rider ship without the implementation of a Universal Bus Pass or Watcard Swipe System.

9.3.1 Parking costs

Currently at the University of Waterloo staff, faculty and students pay \$21 a month for parking, which is \$84 a semester (Parking Services Online). There are also parking lots that are for day use only and range from \$1-\$3 (Parking Services Online). These prices are more expensive than the proposed price of a UPASS.

9.3.2 Parking Initiatives

There are ideas in place for parking reductions and building more student housing on campus. In a report done by grade student in 2000 there was a recommendation to close the B1 parking lot (Head, 2000). This has been done for new construction on campus. There have also been additional parking lots made on campus. At present time there are 5600 spaces available for parking, 2000 of these spaces are for visitor parking (Parking Services Online). Whereas the transportation project done in 1999 found that there were 6000 spots available with 5710 for permit parking (Vanstone, 1999). Therefore there has been a decrease in spaces available and more spaces for user pay which has shown a decrease in the use of cars in other studies. In many business companies are subsidized for parking and when given the option to get cash back for their spots there has been a reduction in people driving solo to work, as well as an increased use in public transit. In a study done on eight firms in California with the cash out incentive the increase in car-pooling went from 14%-23% and the increase in transit use went for 6%-9% (Holmes, 1998). By increasing costs on campus for people who are single drivers or having designated lots that cost less when more than one passenger is in a car would be an asset to campus sustainability. There is a general movement to having parking outside of ring road which causes the campus to have a more walking oriented feel with transit service around the exterior. The services offered by the University are regulated and a part of the Ontario Campus Parking Association (OCPA). This is a group that connects information and technology from 50 different Universities and Colleges across Ontario (OCPA Online). Much of their mandate is to generate revenue and most studies are based on cost effective ways to run the parking lots. There has been a realization within the group that have concern for the increasing number of students in the next year they have ideas to look into different methods of transportation and to promote and implement these ideas. Some include van/car pools, subsidized bus passes, integrated environmental awareness, education and addition of bike lanes, paths and racks (OCPA Online). These ideas demonstrate that while parking does want to generate revenue they can only accommodate and expand so much therefore must look into alternatives to parking.

9.3.3 Bus Costs

It currently cost \$2 for every trip made on a GRT transit bus. There are many different ways used to attract bus use on campus. At the turnkey test in the SLC a book of 5 tickets can be purchased for \$7 compared to \$2 a ticket, a \$2 map of the entire transit system can be purchased and one is on hand for signing out and viewing. The GRT has also made costs more effective by having monthly adult fees of \$54 a month and a University discount of \$136 for 3 months (GRT Online). Tickets are also sold at other places of business so if students are off campus they can find another place to purchase tickets. The GRT has also been able to keep their prices at \$2

since 1996 even though costs in bus maintenance and other areas have increased (Joanne Woodhall, 2002).

9.3.4 Bus Initiatives

The GRT has created individual route system pamphlets, which are available on the bus as well as at the turnkey desk, they show times and specific routes. (Joanne Woodhall, 2002). There are various other locations on campus other than the SLC with spaces available for these pamphlets but from our observations we found that they were not filled. The GRT has introduced various other initiatives for improvement in the system. For example bike racks on the route 8 and soon to be implemented on other routes, stopping for females, children and elders in the evening at un-scheduled stops and making buses more frequent at peak hours (GRT Online). Express buses and changes in the GRT routing system could have improvements on rider ship. The GRT held a workshop on November 14th 2000. There was information and discussions of the two new terminals in place at major plazas in Kitchener. The first one is being implemented and eight buses will all come to this location (GRT Online). The University needs to be a part of the planning. They could orient some of the routes according to university needs. There were two main ideas that came from the people at the meetings. Using a system that goes around the city in a circular fashion stopping at all major destinations and from these points' people could transfer to local routes. As well as the idea of creating a grid pattern using the major roads in K-W as places to transfer buses and go different directions. Changes in the system would give more convenience and would possibly then make more sense for student use. The following table compares two current transportation options for students:

Table 6 *Benefits and Limitations of Current Bus and Car Systems*

	<i>Benefits</i>	<i>Limitations</i>	<i>Costs to Students</i>
<i>Bus</i>	<ul style="list-style-type: none"> -Bus pass is cheaper than the cost of a car -Ticket booklets are available on campus -There is a route going through ring road on campus 	<ul style="list-style-type: none"> -The bus pass only lasts for 3 months, whereas a school term is 4 months -Students don't always have tickets with them when they need to take a bus -Connecting buses can be inconvenient 	<ul style="list-style-type: none"> -\$136.00 for 3 a three month bus pass -Ticket packets are 5 for \$7.00 -paying on the bus is \$2 per ride
<i>Parking</i>	<ul style="list-style-type: none"> -Time saving -Parking is on campus -Costs less than a bus pass -Convenience of not waiting for a bus 	<ul style="list-style-type: none"> -Single passenger driving causes more air pollution -The campus is less of a pedestrian environment -more traffic congestion -limited parking spaces on campus 	<ul style="list-style-type: none"> -\$84.00 for four months -Visitor parking is \$1-\$3 each time -Cost of owning and operating a car

10.0 Final Recommendations

Following the completion and compilation of our research, we recommend that the University of Waterloo reconsider the Universal Bus Pass. Specifically, we would like to see the UPASS back on the Federation of Students' agenda. It is the most economically feasible, socially acceptable, and environmentally sound option for student transportation. A UPASS would create the most habit forming transportation initiative, due to its radical nature that will force change.

The actors involved directly in exploring bus pass options, should be UWSP, Alternative Transportation, GRT, and the FEDS. It is especially important for the FEDS to explore and educate themselves more about the UPASS. It is futile for the FEDS to think that the housing by-law is prohibiting bus pass negotiations, as these are two separate issues that need to be addressed individually. Rather than arguing with the city, it would be more beneficial for the Federation of Students to explore alternative transportation strategies, as our air quality is declining rapidly (CACAQ, 2002).

Ultimately there are five main steps in implementing the UPASS. We recommend these steps be taken immediately by the next ERS 250 groups, or other campus interest groups, such as UWSP Alternative Transportation:

1. *Contact the main actors immediately.* Do not undermine the knowledge of campus interest groups or past research. Research past transportation demand management strategies through WATgreen and contact UWSP Alternative Transportation to see where the UPASS is on their agenda. GRT, FEDS, the student body, and City of Waterloo are all actors who are quite willing to explain UPASS issue and contain the end-result and decision that is needed to implement a UPASS. They contain valuable progress information, and are groups of student community members who know a variety of political and environmental issues.
2. *Go to Community meetings.* It is necessary to uncover the most current issues surrounding the implementation of a UPASS; currently, the most important issue is the housing by-law (refer to section 8.1). To understand these issues, attend community and campus-held meetings. When your group feels equipped to make a rational, informed opinion, state it for community and campus members to hear. This will let decision-makers know that students are actually interested in better transit options on campus. The FEDS are not the only people who represent your (or the student body's) views; you can represent them too.
3. *Develop an educational campaign.* There could be a huge focus on the development of an educational campaign, for the next actors (ERS 250, various interest groups) involved with a UW UPASS. This could be funded in part by GRT or the FEDS. This campaign will educate students about the benefits of a UPASS, encourage students to vote and will allow them to make an informed decision for the referendum. Using the elements of the Focus Group will help develop specific suggestions for the educational campaign. Problems with the UPASS should be addressed in the Section 9.1.1 gives a variety of suggestions, as to what is needed to hold an educational campaign.
4. *Hold a referendum.* It is ultimately up to the student body to decide whether they want a UPASS or not. A referendum will give them a chance to make this decision. Presenting the results will force the decision-makers to make change. Refer to section 9.1.2 for more information on holding a referendum.
5. *Present your project to the decision-makers.* Ultimately, the Federation of Students are the decision-makers. Generally, there is consensus among all of the other main actors to implement a UPASS at the University of Waterloo. Holding a referendum (after an educational campaign), presenting student opinions, and UPASS benefits (through surveys and past research) to the FEDS, is the only way to convince the FEDS that a UPASS is the best and most needed transportation demand management strategy. The FEDS are currently not willing to negotiate the UPASS (Fall 2002), therefore it is necessary to target the Fall 2003 FEDS executive, and put the UPASS on their agenda as soon as possible. Section 8.3 explains some of the ways in which students can be more politically involved, while section 9.1.3 explains who the decision-makers are at UW.

11.0 Conclusion

Currently there are 17 992 full-time undergraduate students enrolled at UW, and this value is expected to increase significantly in the next few years as a result of the elimination of Ontario's grade 13. In addition there is a need for transportation options for the architect students who will be commuting to and from Cambridge where their new school will be located. The growing student population and the dispersion of campus buildings amplifies the need for a more sustainable transportation system in Waterloo Region. The proposed Universal Bus Pass offers an option that would make public transit more accessible for UW undergraduates. Students, however, need to be aware of all aspects of the UPASS issue before they agree to pay for the service; therefore an educational campaign should be initiated before a referendum is held.

Ultimately, we believe that the implementation of a Universal Bus Pass at the University of Waterloo would encourage student use of public transportation and decrease personal vehicle dependency. The UPASS would be a fixed source of income for GRT, allocating the means for improving services, especially the convenience of routes that have significant student use. Ideally, the use of public transportation would alleviate traffic congestion around UW, minimize excessive vehicle emissions, and act as a less expensive mode of transportation. All of these benefits would foster safer and healthier roadways for pedestrians and cyclists.

12.0 Appendix

Interview Questions

GRT Representative: Joanne Woodhall

1. What initiatives has GRT made to improve student rider ship?
 - How much would students be charged for the UPASS?
 - Is there an interest in incorporating the other post-secondary institutions in Kitchener-Waterloo in the plans for the UPASS?
 - How many of the suggestions made previously by the Environmental commission have been implemented?
 - How do you view students as a portion of your target?
2. Under what conditions would you consider running express routes from campus to populated student housing? Or popular student area? For example, Conestoga and Fairview mall.
3. Do you know what type of transit advertising is currently on the Waterloo campus?
4. If our study found a need for more advertising could you provide an informative pamphlet on routes and how the bus system works for new students arriving to Waterloo?
5. Have you considered other incentives for University students to use the bus (i.e. lower ticket prices)? If so, what?

FEDS Representative: Mike Kerrigan

1. In your opinion, what are the reasons why students do not use public transit? What are the reasons why they do use public transit?
2. Do FEDS have the ability to make more information about the GRT available to students? If so, how?
3. In your view, is there sufficient advertising on campus about bus prices and routes? Could students and FEDS generate more? If so, how?
4. In your opinion, what would motivate students to use the UPASS?
 - Do you think informative pamphlets would help?
 - Do you think a change in routes or express buses would increase student bus use? If so can you suggest changes?
5. What is the probability of implementing the UPASS by fall 2003?
6. Who is in control of the decision?
7. Is the University willing to subsidize a portion of the bus pass? If so, how much?
8. Explain the current lodging issue that is also prohibiting the bus pass from being implemented.
9. What steps could be taken in order to ensure that the bus pass does not get eliminated from the universities agenda?
10. Could there be a trial program of UPASS?

WATgreen Representative: Patti Cook

1. What have previous UPASS projects focused on?
2. How could a universal bus pass contribute to sustainability on campus?
 - Is there a need for UPASS on campus?
 - What are the steps the need to be taken in order to see that the bus pass is implemented?

Environmental Commission/UWSP Representative: Sandy Kiang

1. What is your involvement with the UPASS?
2. What information do you have on the UPASS?
3. What successes and failures has your group had in attempting to implement the bus pass?

12.0 Glossary

Boundary: “an imaginary line which separates the objects that are in the system from the objects not in the system” (Rowlands, slide 13)

CACAQ: Citizens Action Committee on Air Quality. A local group that works with the community in Waterloo Region to improve air quality and reduce the impact of air pollution on personal health and the environment.

Core Actors: “those who are continuously and intensively involved with the problem and/or issue of concern” (Murphy 37)

Exploratory research: “To achieve new insights, formulate research questions” (Palys 81)

FEDS: Federation of Students at the University of Waterloo

Holistic: (holism) “theory that certain wholes are to be regarded as greater than the sum of their parts” (Barber, ed. 673)

Output: “forms of information flowing out of a system” (Miller 59)

Qualitative: “Research methods that are grounded in day-to-day realities of the people being studied. An attempt to uncover truths, embracing phenomenological understandings” (Palys 423)

Quantitative: “Research methods that emphasis numerical precision” (Palys 423)

Reliability: “The degree to which repeated observation of a phenomenon-the same phenomenon at different times, or the same instance of the phenomenon by two different observes-yields similar results” (Palys 424)

Shadow Actors: “those who are affected by what happens but for some reason are not involved” (Murphy 37)

Subsystems: “a system which is part of the studied system” (Rowlands, slide14)

Supporting Actors: “those who are less involved but ca exert a significant effect on decisions” (Murphy 37)

Sustainable/Sustainability: “development that meets the needs of the present without comprising the ability of future generations to their own needs” (Brundtland Commission)

System: “consists of a set of components that function and interact in some regular and theoretically predictable manner” (Miller 56)

14.0 References

- Air Pollution Costs in Ontario. Online. 22 November 2002.
www.oma.org/pcomm/pressrel/pr270600.htm.
- Anon. Focus Group Participants. 2002.
- Barber, K., ed.. Canadian Oxford Dictionary. Toronto: Oxford University Press, 1998.
- BC Transit. University of Victoria: Universal Bus Pass. Online. 15 October 2002.
<http://www.uvss.uvic.ca/services/u-pass/u-pass.html>.
- Brundtland Commission. Our Common Future. New York: Oxford University Press, 1987.
- Citizens' Advisory Committee on Air Quality for Waterloo Region. Online. 2 October 2002.
<http://www.airqualitywaterlooregion.org>
- Clean Air Campaign. Online. 15 November 2002. <http://www.cleanaircampaign.com>
- Cook, P.. Personal Communication. 8 October 2002.
- Cunningham, J.. Personal Communication. 13 November 2002.
- Dixon, S. Universal Bus Pass Report. Waterloo: University of Waterloo Survey Research Center, 2002
- Eby, E. J.. 2002. "Universal bus pass (UPASS)." Imprint [Waterloo] 25(8) 2002: 5.
- Eby, E. J.. "Student representatives stand up to municipal government." Imprint [Waterloo] 25(19) 2002: 6.
- Gilmore, A., N. Stewart, and B. Vogel. Campus Transit 2000: Analyzing Student Attitudes. ERS 250 Project. Online. 2 October 2002.
<http://www.adm.uwaterloo.ca/infowast/watgreen/projects/library/s00campustransit/campustransit.html>
- Government of Canada. "Smog in Canada". Online. 25 January 1999.
<http://www2.ec.gc.ca/smog/index.html>
- Government of Canada. "Automobile Emissions, Individual Health and the Environment." Online. 25 January 1999. <http://www2.ec.gc.ca/emission/2-6e.html>
- Government of Ontario. Ontario Drive Clean Program. Online. 15 October 2002.
www.driveclean.com.
- Grant, S.. "UPASS Initiative Creeps Along." E-Peak [Simon Fraser's Independent Student Newspaper]12(101) 1999.
- Helmer, J.. "Who makes the decisions around here?" Imprint [Waterloo]26(28) 2002.

Holmes, J.R... "Parking Cash-Out Incentives: Eight Case Studies". Environment Protection Agency. California: 98(3) 1998.

Kerrigan, M.. E-mail. 10 October 2002.

Kerrigan, M.. Personal Communication 23 October 2002.

Kerrigan, M.. "Unjustified urban planning." Imprint [Waterloo] 25(12) 2002.

Kiang, S.. Suggestion List. Environment Commission and Grand River Transit, 2001.

McDonald, S. "The Bus Pass Referendum: A Brief History." University of Western Ontario. Online. 15 October 2002. <http://www.uwo.ca/sogs/features-news/2000-03-02.htm>

Miller, G. T.. "Chapter 3: Critical Thinking: Sciences, Models, and Systems." Living in the Environment. 10th ed.. Wadsworth Publishing Company, 1998: 50-67.

Ministry of Environment. Air Quality. Online. 15 October 2002. www.airqualityontario.com.

Mollisson T.. "Mayor disappointed with Feds motion." Imprint [Waterloo] 11(25) 2002.

Murphy, S.. ERS 100 Course Reader. Waterloo: Courseware Printing, 2001.

Ontario Campus Parking Association. Online. 22 November 2002. www.OCPA.com

Ontario Medical Association. "Air Pollution Costs Ontario More Than \$1 Billion a Year." Online. 27 June 2000. <http://www.oma.org/pcomm/pressrel/pr270600.htm>.

Orr, D., and D. Eagan. The Campus and Environmental Responsibility. California: Jossey-Ball Inc. Publishers, 1992.

Palys, T.. Research Decisions. Toronto: Harcourt Canada, 1997.

Parking Services. Online. 22 November 2002. www.adm.uwaterloo.ca/infopark/

Regional Municipality of Waterloo. Waterloo Region Clean Air Program. Online. 2000. www.region.waterloo.on.ca

Regional Municipality of Waterloo. Transportation Master Plan. Online. 15 October 2002. www.region.waterloo.on.ca

Rowlands, I.. "Systems." ERS 218 Lecture Slides. 12 September 2002.

Sierra Club. "Smart Growth Solutions for University Expansion." Online. 11 November 2002. <http://prairie.sierraclub.ca/Sprawl/solutions.htm>

Steffler, D. Personal Communication. 2 October 2002.

Trent University. Universal Bus Pass. Online. 15 October 2002. <http://www.trentu.ca/admin/bus/businfo.html>.

University of Victoria. Universal Bus Pass. Online. 15 October 2002.
http://www.uvss.uvic.ca/services/bus_pass.html.

Walker, H.. "Fewer Cars Parked on Campus as New Bus Pass System Catches On" The Ring [University of Victoria's Community Newspaper] Online. 21 January 2000.
<http://www.peak.sfu.ca/the-peak/99-1/issue12/initiative.html>

WATgreen. Online. 2 October 2002. <http://www.adm.uwaterloo.ca/infowast/watgreen>

WATgreen Project. Transportation to Campus: Project Draft. Online.1991.
http://www.adm.uwaterloo.ca/infowast/watgreen/projects/project_records/270.html

WATgreen Project. Campus Transit Commission. Online. 1996.
http://www.adm.uwaterloo.ca/infowast/watgreen/projects/project_records/870.html

WATgreen Project. Micro-Commuting on Campus. Online. 1997.
http://www.adm.uwaterloo.ca/infowast/watgreen/projects/project_records/1030.html

WATgreen Project. Transportation Study - Reducing the Need to Drive to Campus. Online.1999.
http://www.adm.uwaterloo.ca/infowast/watgreen/projects/project_records/transportation.html

WATgreen Project. Campus Transit 2000: Analyzing Student Attitudes. Online. 2000.
<http://www.adm.uwaterloo.ca/infowast/watgreen/projects/library/s00campustransit/campustransit.html>

WATgreen Project. Transportation Demand Management. Online. 2000.
<http://www.adm.uwaterloo.ca/infowast/Transportation/720FinalFolder/720Final.html>

Wismer, S.. "Study Design II" ERS 250 Lecture. 1 October 2002.

Woodhall, J.. Personal Communication. 25 October 2002.

Woolstencroft, L.. "Student Housing: One Perspective from City Hall." Imprint [Waterloo] 25(14). 12 September 2002.