TRANSPORTATION DEMAND MANAGEMENT PLAN FOR DALHOUSIE UNIVERSITY

DRAFT REPORT
SEPTEMBER 2011
# TABLE OF CONTENTS

1. **INTRODUCTION** ........................................................................................................ 1
   1.1 Transportation Demand Management Overview ...................................................... 1
   1.2 Study Overview and Purpose of Report ..................................................................... 2
   1.3 TDM Mission ............................................................................................................ 2
   1.4 Background Data and Studies .................................................................................. 2
      1.4.1 Dalhousie University Sustainability Plan .............................................................. 2
      1.4.2 Travel Survey .................................................................................................... 3

2. **EXISTING CONDITIONS** .......................................................................................... 4
   2.1 Detailed Travel Profile ............................................................................................. 6
      2.1.1 Trip Origins ........................................................................................................ 6
      2.1.2 Travel Times ....................................................................................................... 7
      2.1.3 Mode Split .......................................................................................................... 8
   2.2 Transit Service .......................................................................................................... 9
      2.2.1 Transit Routes ..................................................................................................... 9
      2.2.2 UPass ................................................................................................................ 10
   2.3 Parking ....................................................................................................................... 10
   2.4 Active Transportation .............................................................................................. 11
   2.5 Rideshare and Carpool ............................................................................................ 14
   2.6 University-Owned Fleet Vehicles .......................................................................... 15
   2.7 Other University Programs ..................................................................................... 15

3. **BEST PRACTICES REVIEW** .................................................................................... 17

4. **NEEDS ASSESSMENT** ............................................................................................. 21
   4.1 Policy barriers ........................................................................................................... 21
   4.2 Low parking costs ..................................................................................................... 21
   4.3 Achieving single-occupancy auto targets .................................................................. 22
   4.4 Weak connection between campuses ...................................................................... 22
   4.5 Limited transit programs .......................................................................................... 23
   4.6 Safer cycling network .............................................................................................. 24
   4.7 Underdeveloped pedestrian network ...................................................................... 25
   4.8 Limited car-sharing facilities .................................................................................... 26
   4.9 Decentralized management of University fleet ....................................................... 26
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. TRANSPORTATION DEMAND MANAGEMENT PLAN GOALS AND STRATEGIES</td>
<td>28</td>
</tr>
<tr>
<td>5.1 TDM Program Management</td>
<td>28</td>
</tr>
<tr>
<td>5.1.1 Key Strategies</td>
<td>28</td>
</tr>
<tr>
<td>5.2 Marketing and Outreach</td>
<td>28</td>
</tr>
<tr>
<td>5.2.1 Key Strategies</td>
<td>29</td>
</tr>
<tr>
<td>5.3 Parking Management</td>
<td>32</td>
</tr>
<tr>
<td>5.3.1 Key Strategies</td>
<td>33</td>
</tr>
<tr>
<td>5.4 Active Transportation</td>
<td>33</td>
</tr>
<tr>
<td>5.4.1 Key Strategies</td>
<td>34</td>
</tr>
<tr>
<td>5.4.2 Key Projects</td>
<td>34</td>
</tr>
<tr>
<td>5.5 Transit</td>
<td>37</td>
</tr>
<tr>
<td>5.5.1 Key Strategies</td>
<td>37</td>
</tr>
<tr>
<td>5.6 Rideshare/Carpool</td>
<td>38</td>
</tr>
<tr>
<td>5.6.1 Key Strategies</td>
<td>38</td>
</tr>
<tr>
<td>5.7 Build TDM Partnerships</td>
<td>39</td>
</tr>
<tr>
<td>5.7.1 Key Strategies</td>
<td>39</td>
</tr>
<tr>
<td>5.8 University Housing</td>
<td>39</td>
</tr>
<tr>
<td>5.8.1 Key Strategies</td>
<td>39</td>
</tr>
<tr>
<td>6. STRATEGY IMPLEMENTATION PLAN</td>
<td>40</td>
</tr>
<tr>
<td>7. PROPOSED TRANSPORTATION DEMAND MANAGEMENT ORGANIZATION STRUCTURE</td>
<td>47</td>
</tr>
<tr>
<td>8. CONCLUSIONS AND RECOMMENDATIONS</td>
<td>48</td>
</tr>
</tbody>
</table>
### List of Exhibits

- **Exhibit 2.1:** Map of Dalhousie Campuses ........................................................................... 4  
- **Exhibit 2.2:** Existing Transportation Network .................................................................... 5  
- **Exhibit 2.3:** Residential Locations – Halifax and Surrounding Counties .......................................................... 6  
- **Exhibit 2.4:** Residential Locations – Halifax and Surrounding Area ........................................................... 7  
- **Exhibit 2.5:** Travel Time for Transit and Driving Estimated by Postal Code Location  .......... 8  
- **Exhibit 2.6:** Mode Split for Students and Staff and Faculty ......................................................... 9  
- **Exhibit 2.7:** Existing and Planned Transit Routes Serving Dalhousie University Campuses .......... 10  
- **Exhibit 2.8:** Existing Bike Map (HRM 2009) ........................................................................... 12  
- **Exhibit 2.9:** HRM AT Plan (2006) — Proposed Cycling and Trail Routes ................................. 13  
- **Exhibit 4.1:** Types of Cyclists and Short Trips to Dalhousie by Mode ......................................... 25  
- **Exhibit 5.1:** Renewed University Avenue Illustrative Cross Section (2010) .............................. 35  
- **Exhibit 5.2:** Institutional District Bikeways Network (April 2011) .............................................. 36  
- **Exhibit 5.3:** Bikeways Plan for the Halifax Institutional District — Proposed Cross-section for University Avenue ........................................................................................................ 36  
- **Exhibit 6.1:** Implementation Plan .............................................................................................. 41  
- **Exhibit 7.1:** Proposed TDM Reporting Relationships ............................................................... 47
1. Introduction

Transportation Demand Management (TDM) is the use of policies, programs, services and products to influence whether, why, when, where and how people travel. The goals of TDM measures are to make personal travel decisions more sustainable and to make more efficient use of our existing transportation system. They work by shaping the economic and social factors behind personal travel decisions. TDM is not a substitute for investment in infrastructure, but it complements investments in walking, cycling and transit facilities by making them more effective.

Dalhousie University has gathered a great deal of information on its transportation challenges and opportunities, and has laid out a strategic direction towards achieving sustainability goals across campus. However, a comprehensive, sustainable TDM and parking plan is not yet in place. The development of TDM strategies, programs and projects are necessary to shift the demand from single-occupant vehicles and auto-oriented travel for each person to a transportation system that is focused on ridesharing, transit, parking management and active transportation. This change will be especially critical as the University grows.

1.1 Transportation Demand Management Overview

Transportation Demand Management (TDM) aims to improve the efficiency of the transportation system and to maximize the use of existing transportation investments by increasing vehicle occupancies, improving efficiency in travel time and travel routes, and reducing trip frequency and distance. Benefits of TDM policies and strategies include:

- Decreased need for parking spaces;
- Reduced auto-related emissions and improved air quality;
- Decreased traffic congestion;
- Increased travel options for students, faculty, staff and visitors; and,
- Improved quality of the campus environment

Core TDM strategies include carpooling, vanpooling, transit, bicycling, walking, as well as the promotion of teleworking for staff. TDM support strategies, such as parking management, rideshare matching, marketing and promotions, incentives and subsidies, and other services, are used to extend the effectiveness of, and support the use of the core TDM strategies. For example, the use of financial incentives or an upfront parking space can encourage carpooling. The use of support strategies further increases the effectiveness of the core TDM strategy.

In general, TDM strategies complement each other and the effectiveness of TDM can be summarized by the application of packages, or combined bundles of strategies used to create a sustainable transportation system.
1.2 Study Overview and Purpose of Report

IBI Group, in association with UrbanTrans, has been retained to develop a TDM and Parking Management Plan for Dalhousie University. The study includes the following major tasks:

- Develop a detailed travel profile of the facility in order to fully understand existing conditions and the desired directions for change;
- Complete a best practices review of Universities throughout North America in the development and implementation of TDM programs to get an accurate understanding of where Dalhousie sits in relation to peer universities and to have knowledge of potential strategies that have been proven elsewhere;
- Develop goals for the TDM Plan that can be evaluated against measurable targets;
- Develop the overall TDM Plan which will be made up of a collection of the following individual but related modal strategies: Parking; Ride Share or Carpool; Employee/Student Bus Plan; Active Transportation and Travel Avoidance; Shuttles; and University owned fleet vehicles;
- Develop a strategy implementation plan outline, including implementing agents/partners, steps, funding and responsibilities; and
- Propose a TDM organization structure that would have the necessary resources to implement the plan effectively.

This report summarizes the analysis undertaken and presents conclusions and recommendations for the Transportation Demand Management Plan at Dalhousie University.

1.3 TDM Mission

Recognizing the need to develop a TDM related mission for Dalhousie, this study has been undertaken with a view that there is a role for the University to:

Promote a balanced, multi-modal transportation system that promotes choices for students, faculty and staff and influences the demand for a limited transportation supply. Transportation Demand Management (TDM) will provide information and education about travel options and offer incentives and programs that discourage Single Occupant Vehicle (SOV) travel. TDM is an essential component of an overall sustainable transportation solution for the campus.

1.4 Background Data and Studies

1.4.1 Dalhousie University Sustainability Plan

The Dalhousie University Sustainability Plan, ratified in August 2010, “provides strategic direction for achieving sustainability outcomes in campus operations” and covers all aspects of campus operations, not just transportation: built environment, water, waste, transport, natural environment and energy. The plan lays out goals and planning framework to improve sustainability at the University, as well as targets over the next 10 years to be implemented in 3 phases. Targets related to transportation include reducing greenhouse gas (GHG) emissions and increasing travel through sustainable modes.
Among the key strategies highlighted in the Sustainability Plan are:

- Upgrades to transportation infrastructure – bicycle racks, covered shelters/paths, parking system and active transportation corridors.

- Changes to commuter behaviour – incentives and education programs for transit, carpooling, active transportation, travel avoidance and campus vehicle operations.

1.4.2 Travel Survey

Dalhousie conducted a detailed travel survey in February-March 2009 and October-November 2010 to examine travel patterns of faculty, staff and students and their attitudes towards TDM issues. The survey was also done to identify transportation trends to help inform projects such as the Campus Master Plan and others by the Office of Sustainability.

Survey questions were related to demographic characteristics, daily travel patterns and long-distance travel for both school/business and personal purposes. Two opinion surveys were conducted: one for faculty and staff, and the other for students. Surveys were distributed via email to faculty and staff, and via individual faculties/departments and Dal Sticky notes to students.

A high-level profile of the survey results is presented in Chapter 2 of this report.
2. Existing Conditions

In order to develop an effective Transportation Demand Management program, it is necessary to know details of existing travel conditions and transportation infrastructure. This chapter provides a high-level profile of current travel patterns that is mainly based on a detailed travel survey conducted by Dalhousie in 2009 (with a comparison to 2010 data), and a description of existing transportation facilities and operations.

Dalhousie University is spread over a number of sites at the southern end of the Peninsula. These sites are grouped into three campuses, shown in Exhibit 2.1. The diffuse nature of the University is both a strength (road traffic is not concentrated around one point) and a weakness (multiple transit stops are required to serve all trips).

Exhibit 2.1: Map of Dalhousie Campuses

Existing transportation networks are shown in Exhibit 2.2. University Avenue extending into Morris Street serves as the major thoroughfare connecting the three campuses. The campuses are located within the urban grid street network, with major collector roads framing and providing through traffic access. A major bus terminal is located on LeMarchant near the Student Union Building.
Exhibit 2.2: Existing Transportation Network

(Source: Dalhousie University Campus Master Plan – Framework Plan, September 2010)
2.1 Detailed Travel Profile

2.1.1 Trip Origins

The residential location of respondents to Dalhousie’s 2010 travel survey is shown in Exhibit 2.3 for Halifax and surrounding regions and in Exhibit 2.4 for the a narrower area centred on Halifax and Dartmouth. The exhibits show that most of respondents live in and around Halifax Regional Municipality. Within HRM, Halifax itself is the most popular, with significant numbers in Dartmouth and other communities close to Halifax.

Exhibit 2.3: Residential Locations – Halifax and Surrounding Counties

Source: Travel Behaviour Study of Commuters: Results from the 2010 Dalhousie University Sustainability Survey, DalTrac 2011
In general, the University seeks to reduce the need for students, staff and faculty to have to travel between campuses, especially between the Sexton and Studley Campuses. However, the 2010 travel survey showed that 16% of surveyed students and approximately 29% of surveyed staff and faculty travel between campuses. Some of this movement will be between Studley and Carleton campuses, which likely involves distances of 500 metres or less.

2.1.2 Travel Times

One of the difficulties in persuading people to switch from driving to taking transit is that transit travel times are perceived as significantly higher than driving. To test this perception, postal code data supplied by Dalhousie for staff and faculty was used to estimate travel times by transit and car. The resulting distribution is shown in Exhibit 2.5, where the horizontal axis shows the estimated travel time in minutes. The median estimated travel time is 8 minutes by car and 25 minutes by transit. The median increase in travel time from switching from car to transit is 17 minutes.
The postal codes for 18% of faculty and staff were outside the area serviced by MetroTransit, which indicates they would not be able to take transit to work, and an additional 13% live more than an hour away by transit. Combined, this makes a total of approximately 31% of staff and faculty who are either not served by transit or live more than one hour away by transit. However, more than two-thirds (68%) live within an hour of the University by transit, and more than half (52%) live within 30 minutes by transit.

2.1.3 Mode Split

The mode split for students and for staff/faculty for trips between place of residence and the University is shown in Exhibit 2.6 based on the 2010 travel survey. The exhibit shows that almost 40% of students walk to the University, and just over 20% use transit services. The large mode share for walking reflects the proximity of student accommodation to the various university facilities. Approximately 30% of students use a car or carpool, probably because a transit pass is included in university fees, which would mean that a car would be an additional expense.

For staff and faculty, the mode split is very different. Approximately 46% use a car to get to the University (including 6% by carpool), which may be a reflection of the amount of relatively cheap parking available to them. Around 28% of faculty and staff surveyed walk to the University. From the 2009 travel survey, approximately 40% of the surveyed staff and faculty lived within 5 km of the University, and the majority of those chose to walk. In particular, 19% of all surveyed staff and faculty lived within 2 km, and 80% of those chose to walk. The 2010 travel survey indicates transit use amongst staff is the same as amongst students, with around 20% using transit.

The proportion of survey respondents who use a bike is approximately 5% for staff/faculty and 10% for students. Cycling is most popular for trips between 2 km and 5 km, which may imply a lack of infrastructure that would encourage use of a bike on longer trips.
2.2 Transit Service

2.2.1 Transit Routes

The various campuses of the University are served by a large number of transit routes, shown in Exhibit 2.7, along with one planned route (#90). Exhibit 2.7 also shows the typical headways for peak and off-peak service. The various existing routes provide direct service to the University from most parts of the Peninsula (eastern Halifax), and some other parts of Halifax Regional Municipality (HRM). Other urban parts of HRM typically have direct bus links to downtown Halifax (also within the Peninsula), which means that the trips to the University require no more than one transfer for most urban residents.
2.2.2 UPass

Dalhousie has implemented the special Universal Pass (UPass) transit program for full-time students. Full-time students are assessed a mandatory UPass fee, which provides them access to all MetroTransit buses, ferries, and Community Transit from September to April. The UPass fee for the 2010-2011 academic year was $135.

2.3 Parking

While the majority of students and employees travelling to and from the University do so by walking, cycling, and taking transit, provision of parking remains a key service provided by the University for employees, students and visitors. Analysis of postal codes earlier in this report indicated that approximately 31% of staff and faculty are either not served by transit or live more than one hour away by transit. A description of existing conditions for parking at Dalhousie is contained in the following section. A full review of parking operations and parking supply and demand is contained in the Technical Appendix.

The University’s Facility Management Division manages over 2,000 parking spaces across the three campuses. The majority of parking is operated on a permit basis, with less than 5% of the
total parking supply available for those who wish to park on a casual basis. Over 60% of parking spaces are available to those who have purchased a general unreserved parking permit, and the remaining spaces are reserved for a specific vehicle. Current practice is to oversell the general parking spaces (currently approximately 30% more passes are sold than the number of spaces available), which results in occasions where all parking spaces are full and some permit holders are unable to park. Reserved parking permits are not oversold.

The provision of parking is controlled by the Land Use By-laws of HRM, and parking provision is currently also included in the collective agreement for the Dalhousie Faculty Association. The collective agreement limits the increase in parking rates per year, and prevents the University from reducing the number of parking spaces available (unless agreement is reached with the Association).

The extent to which parking spaces on and around the University are used was measured in a parking survey conducted in April 2011. The survey found that several key lots were occupied at more than 90% of capacity during the day, particularly at the Studley campus where the majority of lots were at the point of practical capacity during the survey.

The review of parking also found that general unreserved parking permits on campus are priced at approximately $20 per month, which appears to be a significantly lower rate than for parking in Downtown Halifax, and lower than a significant number of other Canadian Universities. The price of reserved parking spaces appears to be more comparable to both parking rates in the Downtown, and other universities.

Primarily due to the existing parking pricing, the parking revenues do not cover existing parking expenses, and the parking system is effectively subsidized by other University revenue sources by approximately $200,000 per year over the last few years.

2.4 Active Transportation

Cycling and, in particular, walking already enjoy popularity among constituents of Dalhousie University, with about 7% arriving by bike, and just under 30% and 40% of faculty/staff and students respectively arriving on foot. A summary of existing conditions for active transportation at Dalhousie is summarized in the following section.

The network of sidewalks and walkways leading to and on campus is relatively complete. However, a quality cycling network is lacking. Halifax Regional Municipality (HRM) on their 2009 Bike Map (Exhibit 2.8) identifies streets that are considered suitable for cyclists of intermediate skill level (near Dalhousie include University Ave., Morris St., Robie St., Summer St. and South Park St., and parts of South St. and Oxford St.), and local or quiet streets with generally low volume and speed of automobile traffic more suitable for novice riders (near Dalhousie include Seymour St.). Only South Park St. north of Morris St. has bike lanes.
Halifax Regional Council approved The Active Transportation Plan in November, 2006, which superseded the 2002 Blueprint for a Bicycle-Friendly HRM. The AT Plan provides policy direction for the development of an AT network within HRM, along with technical guidelines for the planning and design of the network. An excerpt in the vicinity of Dalhousie University from the proposed AT Routes network map is provided in Exhibit 2.9. The AT Plan includes proposed on-street cycling routes planned for University Avenue, a portion of South and Oxford Streets adjacent the Studley Campus, Seymour Street, Summer Street, South Park Street, and Brunswick Street. Proposed off-road routes include one through the Sexton Campus connecting Brunswick Street to Morris Street, the Halifax Urban Greenway parallel Oxford Street and along the north shore of the Northwest Arm, and the Halifax Waterfront Boardwalk.

HRM promotes walking, cycling and active living by supporting various events such as Bike Week, providing trail and bike maps, installing bike parking racks on HRM property, and provides educational and promotional brochures.
Existing active transportation programs at Dalhousie include the Campus Bike Centre, which was set up in October 2009 and is based out of the Studley Gym. The Bike Centre offers cycling maintenance and safety education programs, but has no dedicated funding and relies on grants and volunteers. Bike loan bicycles are being implemented across the University, with some available at the Bike Centre for loan on a daily and monthly basis, and others being placed at residences for loan on a daily and weekly basis. The University’s Office of Sustainability also runs a Committed Cyclists Individual Sustainability Awards program that recognizes individuals (students or employees) who reduce their environmental impact by cycling to and from the campus. Dalhousie participates in local and national events such as the Commuter Challenge and Bike Week.

On campus there are over 620 bike racks. Bike racks are identified on the campus map. Most racks are outdoors and uncovered, although there are some existing racks in buildings and underground parking lots. In the fall of 2011 over 100 more outdoor racks will be added based on a detailed analysis of bike parking criteria. Any new buildings will have indoor and outdoor racks, as well as shower facilities. In 2010 Active Transportation guidelines were developed that provide details on topics such as rack type and end-of-use facilities.

There are two key proposals that have been made that would significantly improve active transportation conditions through the University; the renewal of University Avenue proposed in the 2010 Campus Master Plan, and the Institutional Bikeways Plan prepared in April 2011.

The renewal of University Avenue was proposed as a major component of the 2010 Campus Master Plan for Dalhousie University. The vision of the renewal proposal is to connect the campus along a unified, multi-modal, elegantly landscaped civic thoroughfare, and the proposed layout includes an active transportation corridor, active University Avenue green, and a vehicular travel way.
The Dalhousie University Cities & Environment Unit prepared a Bikeways Plan for the urban Halifax institutional district (April, 2011). The institutional district is centred on University Avenue and Summer St., and encompasses Dalhousie University, Capital Health and IWK hospitals along University Avenue, and St. Mary’s University along Robie Street. The vision of the plan was to “establish a cycling environment that will attract new riders of different ages and abilities and demonstrate a new priority for cycling within the District.” The key components of the Bikeways Plan are proposed physically separated bicycle lanes on University Ave. and on Summer St. and Robie St. south of University Ave.

2.5 Rideshare and Carpool

There are two car-sharing programs available to Dalhousie students and staff.

CarShareFX is a local Halifax company with a fleet of approximately 9 vehicles across the Halifax Peninsula and in downtown Dartmouth. Membership rates range from $39 annually for regular “Open” membership to $395 annually for their “Liberty Prime” membership, which provides lower hourly and daily rates, plus the cost per kilometres travelled. There is also an additional $35 application fee and a $500 refundable membership bond for all Liberty memberships. There are also Workplace memberships for businesses, organizations and government agencies, with discounts provided to non-profit groups. There are 3 CarShareFX locations near Dalhousie campuses: one on Summer St. near Carleton campus; one on Dresden Row between Carleton and Sexton campuses; and one on Hollis St. east of Sexton campus.

WeCar is a car-sharing venture from Enterprise Rent-A-Car. It began offering the service on Dalhousie University on April 1, 2011 with the placement of 2 cars on campus. WeCar offers personal memberships to Dalhousie students over 21 years old for an annual fee of $45, and a business membership to Dalhousie employees and departments. Based on the Dalhousie WeCar application forms, the $20 application fee for student and for business memberships is currently being waived, and the annual business membership fee is $45 is also being waived. Rental rates are $10 per hour, with an overnight rate (6 p.m. to 7 a.m.) of $40. The first 200 kilometres are free of charge, with $0.30 per additional kilometre above this limit for business members. A hybrid and a passenger car are parked in specially-reserved parking spaces on Carleton campus by the Dentistry Building, and Studley campus by the Grad House on LeMarchant Street.

There are various ride-sharing and carpooling programs available to University members. HRMSmartTrip.ca is a free service online that helps match commuters for carpooling opportunities. Matches are based on origin and destination points, travel route, commuting hours and other carpooling elements. The University provides through its Ride Share program special carpooling parking spaces and permits for registered carpool groups made up of students or employees. There are about 10 to 12 employees currently using the Ride Share parking program. Each carpool group is required to have at least three users per car, using a space for at least four days per week. Dalhousie’s parking regulations allow for the Ride Share group to purchase a reserved outdoor parking space, and allows for up to three single day passes per member to allow flexibility for users who may have to change travel plans to accommodate an unforeseen event.

Dalhousie is also a pilot site for the HRM Guaranteed Ride Home (GRH) program. The GRH program is available to faculty and staff who commute at least three times using alternative transportation modes. This pilot program offers up to 5 taxi rides home per year to these commuters, in event of an emergency. Dalhousie has 17 registered participants in this program.
2.6 University-Owned Fleet Vehicles

The University provides a fleet roster list of all vehicles owned by the University as of the 2008-2009 academic year. This list included information about each vehicle, including the make, year, and department.

The University owns a total of 46 vehicles. This fleet is made up of 16 pick-up trucks, 13 trailers, 8 vans, 5 specialty-use vehicles, and 4 cars/sports-utility vehicles. The majority of the vehicles are used by the Facilities Management department for various services including custodial, environmental, maintenance, security and mail service. Other vehicles are operated by Departments, with Biology having the most vehicles including trailers and pick-up trucks. One car is used by the President’s Office. The median age of all university-owned vehicles is 6 years.

It appears the primary uses for these vehicles are:

- Groundskeeping and campus maintenance by the Facilities Department;
- Transport equipment or resources by Departments for research or special-use purposes; and,
- Special needs (e.g. President transport, vehicle safety research).

2.7 Other University Programs

**STARS.** Dalhousie University is a registered participant in a program that began in 2010 to encourage sustainability in all aspects of higher education. The program, called the Sustainability, Tracking, Assessment & Rating System (STARS), is administered by the Association for the Advancement of Sustainability in Higher Education (AASHE).

Under transportation in the operations category for this designation, there are a number of criteria related to active transportation: student and employee mode splits, bicycle sharing, facilities for bicyclists, and bicycle plan.

**Idle Free Education and Signage.** To discourage drivers and delivery trucks from keeping their engines running while parked, Dalhousie has posted signage and created literature including idling guidelines to encourage these drivers to turn off their engines while the vehicle is idle.

**Institutional TDM Committee with Saint Mary’s University and local hospitals.** To facilitate information sharing and possible joint projects, the major institutions in Halifax meet bi-monthly.

**Campus Bike Centre.** The Campus Bike Centre offers storefront services to host drop-in sessions and classes in bicycle repair/maintenance and cycling safety education. They also offer a bicycle term-loan program. Currently there are eight bikes at campus housing locations.

**Stepping Up:** Dalhousie participates in a regional education program which is a physical activity call to action.
Telework Policy. A draft telework policy has been developed for staff, and is planned to be released in fall 2011. The University also has compressed work week and flex-time policies.

As noted by the mode split, the campus population are using these programs. To further shift drive-alone travel to alternative modes, the University must identify funding and create a cohesive TDM program, which is further discussed in the following sections of this TDM plan.
3. Best Practices Review

This section reviews TDM programs and best practices at other North American universities and colleges.

**McMaster University**

McMaster University has an active community supporting and participating in the local Smart Commute program, and has successfully participated in many regional transportation challenges, such as Commute Challenge and Car Free Day. The university has an active bicycle community on campus, which has led to the development of a secure bike storage facility which currently houses 46 bicycles. In addition to the existing infrastructure, eight secure bicycle racks have been purchased for the campus. McMaster University is also part of the regional rideshare Carpool Zone program, which hosts a separate Carpool Zone sub-group for McMaster faculty, staff and students. The McMaster carpool program entitles each registered carpool member to 12 parking vouchers, which can be used on days where carpool team members require their individual vehicles on campus. Smart Commute assisted McMaster in working with GO Transit to allow full-time McMaster students to use their student cards when traveling via GO Transit, rather than having to go through an additional process to obtain an additional GO Transit Student Discount Transit Card.

**University of Ottawa**

The University of Ottawa has its main campus on the fringe of downtown Ottawa, and has over 36,000 students, along with approximately 6,000 faculty and staff. A high proportion of the university community commutes by means other than the private automobile - approximately 80% of the University of Ottawa population commutes to and from campus either by bus, by bike or on foot.

The University has a total of approximately 3,760 parking spaces (approximately 1 per 10 enrolled students), with approximately 60% of those parking spaces on the main campus. Off-site parking is provided approximately 1km from the main campus, linked to the main campus by a shuttle bus, and available at a significant discount. The University also provides separate free shuttle services between the main Campus and the Roger Guindon Campus (approximately 5 km), and between the University of Ottawa and Carleton University. The university community has access to transit services through a U-pass system for students and an employer pass system for staff and faculty. Bicycle parking is spread across the campus, and includes a secure gated facility that students and staff can access with a security card. A bike share program is operated on campus, with 10 bikes in two locations that area available to members for daily use. The University has partnered with a car share company (Vrtucar) to provide access to car share vehicles. There are currently two vehicles parked on campus, and many more in downtown Ottawa within a short walk. The University of Ottawa offers carpool permits, which provide for preferential parking location and includes a guaranteed ride home program for its users.

**Mohawk College**

Mohawk College created a Carpool Zone sub-group in the regional rideshare program, which has influenced the development of preferential parking spaces for active carpoolers. Carpooling vehicles using these preferential parking spaces must obtain a recognized Smart Commute carpool parking tag, and participants must be actively carpooling the day they use the parking space. Mohawk College is currently in the process of establishing a student and staff Emergency Ride Home policy and undertaking studies to understand how improvements can be made to provide secure and convenient bicycle storage.
York University

York University has demonstrated excellent success through their involvement with Smart Commute North Toronto Vaughan (NTV). In working with Smart Commute NTV, York University advocated for an increase in the number of buses traveling to campus, and experienced an approximate increase of 144% in buses traveling to campus between 2001 and 2006. Smart Commute has assisted in the coordination of a shuttle bus service that travels between York University's Keele and Glendon campuses. Smart Commute NTV also established an increase in the carpooling and cycling amenities at the Keele Campus to provide an option for every type of commuter. Today Smart Commute NTV has a commuter store located at York University, on the bus mall. This successful retail storefront assists students, faculty, staff and visitors with personalized transit routing assistance and ridematching.

Kennesaw State University

KSUrider is a transportation program offered to faculty and staff at Kennesaw State University. KSUrider provides services such as carpooling and vanpooling. People carpooling or vanpooling to campus also have the opportunity to use the preferential parking spaces, which are only dedicated to people who share a ride. Faculty and staff are also eligible to register for a regional guaranteed ride home (GRH) program, which will allow commuters using alternative modes of transportation a free emergency ride home. Participants of KSUrider are also eligible to win prizes or cash through the regional Commuter Rewards program, which rewards commuters who telework, carpool, vanpool, take transit, bicycle, or walk to work.

Virginia Tech

At Virginia Tech, faculty, staff and students have a choice from a variety of programs offering alternative options for commuting to campus. The Commuter Alternatives Program (CAP) offers two different parking permits for commuters carpooling to campus. The CAP program offers preferential carpool parking passes to students and an alternative parking pass for faculty and staff, each of which provides access to the most desirable parking locations within parking lots. The program includes access to a guaranteed ride home system, and includes five daily parking permits per semester. In addition to this parking program, commuters on campus can register their self-organized carpools or look for carpool partners through two online ridesharing programs; GoLoco, and RIDE Solutions. A vanpooling program is also available to full time, permanent employees. U Car Share is a car sharing program and has recently been introduced on campus. This program is offered to people working or living on campus at Virginia Tech.

Cornell University

Cornell created a carpool parking permit program, where two carpoolers earn the right to have free parking, depending on the location of the lot. Increasing the size of the carpool group earns reserved parking within a lot. All groups get ten one-day parking permits to allow flexibility in the commute. The carpool parking program is complemented by ZimRide, a flexible rideshare program that allows you to find a ride each day no matter where you are going. You simply put in your destination and either offer a ride, or request a ride. The result is 46 percent of faculty and staff waive purchasing any parking permit.

Stanford University

Stanford increased parking permit fees in order to offer more alternative transportation services to the campus community, including free shuttle service on campus, carshare and intensive individualized marketing and incentives. They created a one stop shop for both parking and alternative transportation services. The introduction to their parking and transportation website reads:
“Parking & Transportation Services is your one-stop shop for transportation in and around Stanford. If you drive onto campus, we’ll help you find the best place to park, and sell you a parking permit that meets your needs and budget. If you use alternative transportation to commute to campus, we can assist you in planning your commute by public transportation, finding rideshare partners, using the real-time Marguerite bus schedule, or by getting you information on the best bike routes in the area”.

Stanford experienced a 20 percent reduction in drive alone trips between 2002 and 2007, carpool occupancy increased from 2 to 2.5.

Stanford University also received the highest award level from the League of American Bicyclists (LAB) first-ever Bicycle Friendly University designations (see program description below).

Bicycle Friendly University

The League of American Bicyclists (LAB) administers the Bicycle Friendly University (BFU) program in the United States that recognizes institutions of higher education for promoting and providing a more bicycle-friendly campus for students, staff and visitors.¹ The BFU program provides the roadmap and technical assistance to create great campuses for cycling. The designation was bestowed on 20 university campuses in the U.S. in 2011, the programs inaugural year.

The BFU program evaluates applicants’ efforts to promote bicycling in five primary areas: engineering, encouragement, education, enforcement and evaluation/planning. A college or university must demonstrate achievements in each of the five categories in order to be considered for an award. Institutions with more significant achievements in these areas receive superior awards. Filling out the BFU application is educational in itself, as schools are able see where they are lacking in each of these categories.

Although this program is not open to Canadian universities at this time (the Bicycle Friendly Communities awards are now available to Ontario communities), the criteria can help to understand the range of elements that contribute to a strong and growing cycling culture. Below the criteria considered within the “5 Es” are explained further.

Engineering

Colleges and Universities are asked about what is on the ground; what has been built to promote cycling on campus and in the surrounding community. For example, questions in this category inquire about the adoption of a complete streets policy, training for engineers and planners, and the existence of both well-designed bikeways and innovative techniques for bicycle accommodation. The availability of secure bike parking and the existence of end-of-trip facilities is considered.

Education

The questions in this category are designed to determine the amount of education there is available

for both cyclists and motorists. Education includes teaching cyclists how to ride safely in any area from multi-use paths to congested city streets as well as teaching motorists how to share the road safely with cyclists. Some things that reviewers look at are the availability of cycling education, related course and physical education offerings, and other ways that safety information is distributed to both cyclists and motorists on campus including bike maps, new student packets, and the school newspaper.

**Encouragement**

This category concentrates on how the college/university promotes and encourages bicycling. This can be done through organized campus rides as well as producing campus bike maps, signature cycling events, bicycle commuting incentive programs, and a bike share system. In addition, some questions focus on other things that have been built to promote cycling or a cycling culture such as a campus bike center, a BMX track and the existence of both road and mountain bicycling clubs.

**Enforcement**

The enforcement category contains questions that measure the connections between the cycling and law enforcement communities. Questions address whether or not the law enforcement community has a liaison with the student/staff cycling community, if there are efforts to prevent bicycle theft, if there are bicycle divisions of the law enforcement or public safety communities, if the campus sponsors targeted enforcement campaigns to encourage cyclists and motorists to share the road safely, and the existence of bicycling-related laws such as those requiring helmets or the use of sidepaths.

**Evaluation & Planning**

In this category, a college or university is judged on the systems that they have in place to evaluate current programs and plans for the future. Questions are focused on measuring the amount of cycling taking place on campus, the crash and fatality rates, and ways that the college or university works to improve these numbers. Institutions are asked about whether or not they have a bike plan, how much of it has been implemented and what the next steps for improvement are.
4. Needs Assessment

4.1 Policy barriers

Dalhousie University needs to work proactively with the HRM and community stakeholders to overcome policy barriers that limit the potential of TDM.

As noted in the Technical Appendix on parking provisions, parking at Dalhousie is affected by two key policies. The Land Use By-laws of HRM require a defined amount of parking, and the collective agreement for the Dalhousie Faculty Association include conditions that limit the increase in parking rates per year and that prevent the university from reducing the number of parking spaces available.

Controls on the provision of parking as contained in HRM’s Land Use by-laws and the collective agreements for faculty may limit the ability of the University to plan effectively for TDM and to implement strategies aimed at reducing single-occupancy auto trips and making sustainable modes of transportation more competitive.

A strategic review of the parking provisions outlined in the HRM by-law and the collective agreement will be needed to identify potential opportunities to more effectively manage parking and promote a sustainable transportation network for the University. Limiting the provision of parking has been shown to support the use of alternative modes of transportation such as transit and active transportation. Reduced parking provisions would also help address redevelopment and intensification challenges with limited land resources.

Parking spaces are being lost through redevelopment (approximately 300 spaces removed between 2007 and 2010) and provision of additional parking supply to serve any increased demands for Dalhousie must either be created in on-site structured parking facilities or provided in off-site park and ride lots. Provision of on-site parking facilities in the future will require significant capital expenditure due to geotechnical conditions and the value of land. Typical parking facility construction costs for planning purposes are in the order of $30,000 per space for above grade parking and approximately $50,000 per space for below-grade parking.

4.2 Low parking costs

The cost of parking at Dalhousie remains low, providing an opportunity for parking pricing-related TDM measures and an opportunity to improve the financial sustainability of parking operations.

Parking revenues are currently insufficient to cover existing operational costs and do not allow for parking revenue to be set aside for future parking improvements, or any other purpose that may improve transportation conditions at Dalhousie.

Parking rates for unreserved parking permits are lower than local market rates and for many other Canadian universities. Low parking rates may be in part responsible for inducing demand for parking; however travel surveys have indicated that approximately 30% of faculty and staff live sufficiently far from the University that commuting by non-automobile modes is not practicable.
Parking occupancy at key parking lots on the Studley campus in particular was found to be close to capacity when surveyed in April 2011.

The existing parking system caters primarily for regular commuters with parking permits and does not appear to provide for demands for short-stay or occasional parking. The provision of reserved parking spaces that are not oversold contributes to inefficiencies in the system when reserved spaces are not used but are not available for use by others.

### 4.3 Achieving single-occupancy auto targets

The proportion of single-occupant vehicles entering Dalhousie represents a substantial challenge, but also the largest target for shifts in travel behaviour.

The 2010 Dalhousie Sustainability Plan calls for single-occupancy-vehicle travel to and from the campus to be reduced by 5% by the 2013-2016 time period and by 15% by the 2017-2020 time period.

Based on the Dalhousie Sustainability Plan goals and the existing mode split information the faculty and staff drive alone rate must be reduced to 32.3% in the 2013-2016 time period and 28.9% by the 2017-2020 time period. This is equivalent to a 1.7- and 5.1-percentage point reduction, respectively, for each time period. Meeting these goals will require moving approximately 60 faculty and staff from drive alone commute modes to more sustainable modes by the 2013-2016 time period and 179 faculty and staff by the 2017-2020 time period².

The student drive alone rate must be reduced to 10.5% in the 2013-2016 time period and 9.4% by the 2017-2020 time period. This is equivalent to a 0.5- and 1.6-percentage point reduction, respectively, for each time period. Meeting these goals will require moving approximately 84 students from drive alone commute modes to more sustainable modes by the 2013-2016 time period, and 267 students by the 2017-2020 time period³.

Measurement of the drive alone reduction goals will be difficult. The estimated margin of error for the student drive alone rate obtained from the travel survey is +/- 1.7% at the 95% confidence level using a two-tailed test and assuming a normal distribution. This means that we can be 95% confident that the student drive-alone rate falls between 9.3 and 12.7%. The changes being sought, 0.5% and 1.6% are both within the margin of error. A similar issue occurs with the faculty and staff survey; however, in that case the desired change in the 2017-2020 time period falls outside of the estimated margin of error.

### 4.4 Weak connection between campuses

Expanded transportation options can serve to unify and link Dalhousie’s three campuses.

Currently, there is no university-operated shuttle that connects the three campuses during the daytime. A nightly shuttle, Tiger (Shuttle) Bus, operates between 6:00 p.m. and approximately 1:00 a.m. There are two routes with various stops along the southern Halifax Peninsula, and each route

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² Based on 3,500 faculty and staff
³ Based on 16,700 students
is served by a shuttle bus that has capacity for 5 passengers. The shuttle is operated by Security Services (Tiger Patrol) and is available to all staff, faculty and students of the University.

MetroTransit operates several east-west transit routes along Coburg Rd. and South St., providing connections between the University and other areas of Halifax, including the downtown (see Exhibit 2.7). Service frequency on these routes is 10-20 minutes in the peak period and 15-30 minutes in the off-peak hours. Only one route currently operates along University Avenue (#3), which has a 2-hour headway, although a new route (#90) is proposed that will operate at 30-minute headways during the day and every 60 minutes in the evening and Sundays. Other than the bus terminal near the Student Union Building, the other transit routes do not traverse the campuses, requiring users to walk to/from the outer edges of each campus for bus service.

Overall, travel options between campuses are infrequent and not the most convenient for connections between most campus facilities.

4.5 Limited transit programs

University communities are one of transit’s key target markets. Dalhousie has an opportunity to work with MetroTransit to leverage this potential and make transit a competitive and attractive mode choice.

Although Dalhousie is part of the UPass transit program with MetroTransit, it is only available to full-time students and is valid for the academic year only (September to April). Part-time students are not eligible for the program. The UPass is also not available during the summer months (May to August), and students enrolled in the summer term are not assessed the mandatory fee and need to purchase a regular transit pass or pay regular fare on their own if they require transit access.

Staff and faculty members of the University do not currently have a discounted transit program available to them. Employee bus programs are being explored by the University and it is understood that discussions between MetroTransit and University have resulted in the opportunity for Dalhousie to become the first participant in a MetroTransit pilot project for an employee bus program. A sample of transit-supportive programs at other Canadian universities includes:

- University of Ottawa and Carleton University students are part of the UPass program with OC Transpo. The UPass is valid between September and April, although students are eligible to purchase a monthly or semester student pass from OC Transpo. The Student Semester pass is only eligible to post-secondary students and offers a $45 discount compared to 4 student monthly passes (regular fare, not express). Faculty and staff members are eligible for OC Transpo’s ECOPASS, which provides discounted monthly passes and payment via payroll deduction. University of Ottawa employees receive a discount of about 12% with ECOPASS.4

- Students at the University of British Columbia (UBC) are assessed the UPass fees at the beginning of each semester. Therefore, students enrolled in the summer semester will have a UPass. UBC employees are eligible to enrol in the university’s Employer Pass Program (EPP), which offers an approximate 15% discount on monthly transit passes.

- A similar employee bus pass program that offers discounted transit passes and automatic payroll deductions also exists at the University of Victoria.

4 http://www.protection.uottawa.ca/en/ECOPASS.html
• University of Toronto and Ryerson employees can get discounted monthly transit passes through the Toronto Transit Commission (TTC) Volume Incentive Program (VIP).

4.6 Safer cycling network

Many trips to Dalhousie are from within a bicycle-friendly radius. Making streets safe for cyclists of all skill levels can substantially increase the number of cycle trips.

From surveys of travel behaviours, approximately 75% of student and staff / faculty trips to Dalhousie University are 10 km or less in length. Of these trips, 95% are taken in an alternative mode of travel to single-occupancy vehicles (e.g. walking, cycling, transit, passenger, carpool, etc.).

Numerous surveys have found that the number one reason people do not cycle as a mode of transportation is because of their fear of sharing the roadway with automobiles. Generally, cyclists can be divided into four categories based on their comfort level while riding on a roadway with traffic: the Strong and the Fearless – comfortable riding with traffic regardless of the condition of roadways; the Enthused and the Confident – may be comfortable sharing the road with motorists, but appreciate bike lanes and other facilities designed specifically for them, and may choose to cycle more often with further improvements; the Interested but Concerned – who may like riding a bicycle, but are afraid to ride with traffic, and would ride if they felt the roadways were safer and traffic traveled slower; and, the No Way No How – those not interested in or capable of cycling at all.

There are many cities in modern, industrialized nations around the world with bicycle use as a significant mode of transportation. They have achieved these high levels of bicycling through promoting various policies and practices. One characteristic they share is an environment where the users lack the fear normally associated with bicycling in an urban environment. These communities have created transportation systems in which bicycling is often the most logical, enjoyable, and attainable choice for trips of a certain length.

By addressing the fears of the general population “interested but concerned” about riding in traffic, it is anticipated that some of them who currently do not ride for short trips will consider riding, and those who already ride will ride more often, as illustrated in Exhibit 4.1.
In addition, as noted earlier, only South Park St. north of Morris St. has bike lanes. The lack of suitable bikeways on busier streets through campus is a significant barrier to further promotion of cycling as a mode of travel.

### 4.7 Underdeveloped pedestrian network

A safe and legible on-campus pedestrian realm needs to be a highest priority to not only encourage walking, but to support all other modes of transportation. The pedestrian environment must positively reflect upon the image of Dalhousie University.

There is more to walking than walking: it is a complex issue. A recent project of European Cooperation in Science and Technology (COST), Pedestrians’ Quality Needs Project (PQN), identifies what people need for their safe and agreeable mobility in public space. Key quality factors for pedestrian spaces consist of connectivity, conspicuity, comfort, convenience and conviviality. Falls are noted as causing more loss and distress than crossing accidents, although crossing safety also deserves attention. The design of public spaces is seen as making the most tangible and measurable improvement to promoting walking.

A well thought-out, comprehensive and open pedestrian network with corridors that give priority to pedestrians’ safety, comfort level and accessibility will encourage more people to make their trips on foot.

As noted in the Dalhousie Campus Master Plan Framework, “although the campus enjoys a number and variety of well planted incremental spaces, scarce budgets for maintenance have allowed

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walkways to deteriorate and surface drainage to fail in many locations.” The campus also lacks a “consistent language of street furniture, lighting, materials, signage and plant material that is recognizable as a proper civic experience and gateway to the University.”

Certainly street crossings could be improved and winter maintenance of sidewalks and pedestrian corridors is an ongoing concern.

4.8 Limited car-sharing facilities

Car sharing makes car ownership less of a necessity, particularly in the urban environment in which Dalhousie University is situated.

The availability of two vehicle-sharing programs for University staff, faculty and students is good TDM strategy to reduce auto ownership and parking demand. However, there are few vehicles parked on and around campus – 2 WeCar vehicles on Studley and Carleton campuses, and 3 CarShareFX vehicles near Carleton and Sexton campuses. Although there is no information on how many University members are using these services, it is thought that in order for these programs to have a significant impact on travel behaviour and auto ownership rates, there will need to be:

- Expansion of location and fleet available near all three campus locations, particularly near student residences or major campus buildings.
- Additional support and campaigning to encourage students as well as staff and faculty to use this transportation option.

4.9 Decentralized management of University fleet

Fleet management, much like travel management, needs to be considered on a university-wide level.

Based on discussions with University staff, purchase and maintenance of university-owned vehicles is not centralized, and departments/offices are responsible for procurement of their vehicles. Equipment or vehicle specifications are up to the department or office making the purchase. Policies and procedures from the Purchasing Department only prescribe processes for purchasing activities, such as purchasing authorization, requisitions, purchase orders and quotation/bidding solicitation.

Currently, there are no university-wide policies or procedures in place with regards to sustainable or environmentally-friendly practices when purchasing a vehicle. Other universities around the world have recently implemented campus-wide policies to encourage the purchase of low-impact vehicles and other campus transportation activities. While the university fleet includes a number of specialized vehicles for maintenance services and for marine research for which there are limited options in terms of alternative fuel, there is still potential for procurement guidelines and joint procurement to yield some benefits.

The University of Guelph has a policy that defines vehicle procurement guidelines for university-owned or leased vehicles. The guidelines are intended to reduce the negative impacts on the environment by the university’s vehicle fleet and to encourage monitoring of transportation indicators such as fuel usage and emissions. The guidelines also list criteria for consideration, including:
• A needs assessment for a new or leased vehicle - is the vehicle absolutely necessary, possibility for alternatives such as carshares or transit, share vehicle among departments);

• Preference for fuel type or technology - most fuel efficient, ultra-low emission, electric, hybrid, diesel); and,

• Purchase of two stroke machines and fuel.

Another example of a sustainable vehicle policy for university-owned fleet is the University of Hong Kong\(^6\). The policy is intended to encourage the purchase and use of hybrid, fuel-efficient or environmentally friendly vehicles, encourage shared use, and employ tighter control on replacement of vehicles. The policy notes all vehicle purchases must be approved by the Council’s Committee on Transport, which take into account usage of vehicles and the policy guidelines in reviewing applications for vehicle purchases. Among criteria outlined for the acquisition or replacement of university-owned vehicles are:

• Government practice on minimum useful life of vehicles is considered when replacing vehicles: 7 years for cars and 10 years for vans, mini-bus or coach; and,

• Where possible, fuel-efficient or low-emission vehicles should be chosen. If not buying a hybrid or fuel-efficient vehicle, reasons must be provided with application.

Another strategy for university-owned vehicles is to establish a vehicle pool that is available for rental by departments and offices. This strategy is currently employed at the University of Alberta and University of Victoria. At the University of Alberta, the Operations and Maintenance department has a fleet of vehicles which are available for rental to faculties and departments. In addition to vehicle rental of its fleet, the vehicle pool services also provides: arrangement of rental of other vehicles from commercial suppliers; other vehicle services such as purchasing, disposal, and maintenance; and technical advice on the use and purchase of vehicle or equipment. Both short and long-term (annual) rentals are available, and its fleet includes various types of passenger cars, vans and trucks.

5. Transportation Demand Management Plan Goals and Strategies

5.1 TDM Program Management

Integrate TDM into Dalhousie’s organizational structure to provide visibility and legitimacy to travel demand initiatives.

The Office of Sustainability at Dalhousie University has sought out grants and promoted TDM programs, but without a dedicated department and staff person, TDM will never become a comprehensive, cohesive program at the University. The following are primarily start up activities, required to provide the framework for a sustainable program.

5.1.1 Key Strategies

- **Broaden responsibility of the Office of Sustainability.** The Office of Sustainability would be responsible for the bulk of TDM programs and initiatives, offer transit coordination, coordinate with parking services, and coordinate or potentially manage a centralized university-owned fleet of vehicles.

- **Hire TDM Program Administrator.** The TDM program is designed to be a full service program and as such will require a full time TDM Program Coordinator and support staff (students and/or interns), increasing as the program expands and matures.

- **Secure Long-Term Program Funding.** The start to any sustainable TDM program is a dedicated funding source. This is particularly true at Dalhousie. The program has taken advantage of grants and existing opportunities, but to further experience a mode shift, consistent funding must be identified. Having an upfront and realistic budget will allow the TDM program coordinator to focus on programs and services. This can be supplemented over time with funding through grants and the Region.

5.2 Marketing and Outreach

A strong brand for TDM and a responsive marketing program will build recognition and awareness of initiatives.

The key to creating a successful brand is understanding the target market. This is particularly true for marketing and branding a TDM program that is part of a university setting, where focus on target demographics is a key tool as one of the key markets – students – continuously change about every 4 years.

The two distinct markets that this program will extend services to are:

1. **The Faculty and Staff** are made up of varying demographics. This portion of the target market is not as worried about the program’s brand name. Rather this subgroup will be better served based on needs (limited transportation options), interest (social issues) or current economic situation (gas prices, budget, etc). Marketing messages should hinge on these motivating factors.
2. **The Student** target market is much different from the Faculty and Staff. Today’s college student is made up of what marketers refer to as “Millennials” – the generation born between 1980 and 1995. It is very important to understand this specific target market’s buying behaviour and lifestyle. Current Dalhousie students (Millennials) have experienced a limited set of life-experiences and were raised by a group of parents who instilled a unique outlook on life.

Millennials are close to, and often times “co-purchase” with, their parents. Millennials are also extremely focused on their grades and overall school performance. This demographic is more active in community service than other target markets, demand a safe, regulated environment and are considerate of norms and institutions. They are touted as being conventionally minded, verging on being conformists.

Millennials are attracted to well-defined and well-communicated brands because those brands strengthen their beliefs about themselves, provide a sense of comfort and home, confirm their sense of community with their peers. Moreover brands reinforce the order they seek in this world.

This is the very first generation of buyers that have always had access to up-to-date opinions, tastes, and information through the web. They are the first to have been born and raised on a relatively mature-internet. They see the Internet as a tool and resource for everything.

This group of students is also just that - students. Most of them are embarking on a brand new path of collegiate life. They have recently commenced a new chapter in their lives and are subsequently attempting to define themselves as people. It is at this stage, that they develop strong and lasting impressions on product categories, behaviours (travel) as well as brands. They associate their attitude, outlook, and persona to products. Brands are an identification of source, quality assurance and risk reduction; and they simplify complex purchasing decisions. For example, particularly expensive, life-critical decisions such as choosing the university they are attending are all made easier when effective branding is used to identify the university.

So the student market is primed and ready for an exciting brand and marketing that pushes through the clutter, gives a sense of goodwill through community involvement, and most importantly is one that they trust as offering value to their lives.

5.2.1 **Key Strategies**

- **Adopt and promote the regional TDM program branding, SmartTrip, to provide a connection with regional initiatives and provide a recognizable brand.**

In consultation with Halifax Regional Municipality and University staff, it is recommended that the regional TDM program branding, SmartTrip, be used for Dalhousie. The Dalhousie program would sit under this umbrella brand as SmartTrip Dalhousie. This effort would simplify communications and amplify the reach of combined marketing efforts towards TDM behaviour regionally.

Sample logos of this brand implementation are included for suggestion only and are based on the newly launched HRM SmartTrip brand. Dalhousie will work with HRM SmartTrip staff to create final brand standard logo and subsequent design-ready files.

The final brand should be applied throughout the TDM program recommendations including marketing materials/tools, signage, and relevant programming.
Example logo executions are included below:

- Develop and maintain an active, informational, and user-friendly website for SmartTrip Dalhousie to expand awareness and education of TDM initiatives.

The web is the first place this program’s target markets will seek out services. The website should be created with a strong framework to which the University TDM program can build upon as well as offer their input. While a website of this nature will need constant maintenance and updates as programs change and develop, a majority of the information currently exists online and only needs consolidation. The following considerations should be made to implement the website.

**One-stop shop** - The more important problem regarding Internet access is the plethora of other sites within the Dalhousie online network that offer this type of information (while out-dated and no longer valid, the information remains alive on the web). These pages must be dealt with as the highest priority.

**Student Staff Person** - SmartTrip Dalhousie should create a TDM program position that is to be filled by a part-time student staff person. This practice is one that is often done at Universities for TDM programming. This technique creates real-life implementation opportunities for the university’s students, gets the most up-to-date web techniques applied to your site, and moreover allows the program to make the most of their budget. This student would be responsible for various marketing and outreach support roles including website maintenance.

**Domain Registration** - The domain [www.SmartTripDal.ca](http://www.SmartTripDal.ca) and [www.SmartTripDalhousie.ca](http://www.SmartTripDalhousie.ca) are both available for purchase. These direct URLs will facilitate eased marketing call to action through a clear and concise web address for program details.

**Web design** - Layout, information, maps, and other important information will be tested through qualitative research after the brand visual design elements are completed. The Student Staff Person would also be a great asset to have on board when this process begins.

**Interactive Travel Guide** - Develop an interactive travel guide that includes bike routes/racks, transit routes, carpool parking locations, nearby attractions, apartments and more. The purpose of this online tool will be to generate awareness of existing TDM infrastructure and facilitate behaviour change for target markets.

- Working with regional stakeholders, including HRM SmartTrip, develop and implement an integrated marketing and outreach plan.

College campuses are known for creating an atmosphere that brings culture, opportunity, and options onto university grounds. As such, the key demographics are
easily accessible at these events. Marketing TDM programs at events is a great way to meet face to face with your target market and address any questions, concerns, or opinions regarding your services.

Work with HRM SmartTrip to determine how the marketing and outreach plan will be created and developed. HRM SmartTrip currently has a Guaranteed Ride Home Pilot Marketing Plan with efforts identified specifically for Dalhousie University.

Outreach activities should be tailored to the messaging and to the audience. An outreach events calendar should be created and updated on an annual basis to ensure participation in regional opportunities (BIKE-CAN classes, SmartTrip Lunch and Learns, etc) and national events (Bike to Work Day in late May, International Car Free Day on September 21st, etc) and to strategically plan outreach events throughout the campus and throughout the year. Outreach efforts should include scheduled student/staff orientations, campus-wide events, meetings, and fairs to spread awareness. To the extent possible, work with the various departments on campus and the local media to advertise the TDM programs.

As the program gains momentum, each target market (faculty/staff and students) will have different needs that can be met through outreach and marketing. To increase TDM participation, materials and outreach should be tailored to the specific users. For example, to increase student usage of the transit system, host a Transit to School Day where students receive special prizes for taking transit to school. For faculty and staff host a lunchtime Meet Your Match event, where each postal code is promoted and matches can be made over a free lunch.

Marketing items necessary for successful outreach events include:

- **Banner or Tablecloth** - Screen printed with the logo on the front. Logo and website should be easily legible from 20 feet.

- **Outreach tools** - The target markets’ expect a degree of professionalism and convenience with respect to TDM programming. Wireless iPads should be secured for outreach efforts and utilized to sign-up prospects to relevant programs like carpool matching, as well as promotion of existing tools like the interactive travel guide. The iPads themselves will draw the target market out of curiosity and interaction with the iPads will secure program participation.

- **Outreach Giveaways** - Outreach items are a proven method to open communication program prospects. When dealing with two extremely different markets (students and staff), you should take into consideration the different wants/needs. College students often times enjoy a free T-shirt (one less day till laundry day) whereas a professor might enjoy a bottle of hand sanitizer (as they try not to bring home the infinite number of germs they are exposed to each day).

- **Food/Drinks** - Same principle as giveaway items, just shorter shelf life. A free piece of pizza will really draw the university students. Whereas free coffee in the morning will get everyone talking about you. Partner up with nearby restaurants, cafes, etc to promote a sense of community as well as to introduce pedestrian friendly retail options to visit while on campus.

- **Collateral** - Custom postcards are a great informational handout that can be inexpensively developed and printed. Postcards are also more environmentally friendly than a generalized brochure because materials are developed for specific
events/campaigns/messages rather than for generalized program information. A postcard template design should be designed for custom messaging. University print house opportunities should be identified for less expensive printing costs.

**Informational Kiosks and other Campus Awareness Strategies** - Supplementing the information provided on the website and in the Office of Sustainability, program information kiosks can be located around campus, including at the library, student union and bookstore. The degree to which kiosks can be executed ranges from informational bulletin boards to stand-alone informational displays. Existing bike rack infrastructure can be highlighted via signage or other creative methods to establish awareness of existing TDM facilities.

**Incentives/Rewards Based Programs** - A portion of the budget should be allocated towards incentives to create initial behaviour change. Tim Horton’s gift cards (of a small denomination, for example, two dollars) are a successful monetary incentive that has proven to motivate the target market into signing up to carpool matching services, or to reward for “being caught doing a sustainable travel mode”.

### 5.3 Parking Management

Improved parking management will increase the efficiency of operations, achieve financial sustainability, and rebalance costs to provide more incentive to use alternate modes of transportation.

HRM’s existing zoning by-law and the DFA collective agreement currently limit the ability of the University to change the amount of parking provided on campus. Together, the existing zoning by-law and the collective agreement combine to reinforce the status quo, and to generate a response to additional development of providing more automobile parking at low rates. In order to allow for a sustainable solution to future travel needs, changes would need to be made to both the collective agreement and the zoning by-law to allow more flexibility in meeting the travel demands of the University.

The zoning by-law parking requirements should be modified to remove the requirement for a set number of parking spaces on campus, with an allowance for the provision of off-site parking, or reductions in the amount of parking provided based on measured automobile mode splits.

To support sustainable travel options, the collective agreement should be modified to include benefits for faculty traveling to the campus by modes other than the private automobile (approximately 60% of faculty and staff surveyed in the 2010 travel survey arrived at campus by means other than the private automobile). The collective agreement should also allow for a reduction in automobile parking spaces if warranted, based on measured changes in automobile mode splits.

For parking enforcement, Dalhousie University should take full control of parking enforcement, and adopt a practice used by some other universities of installing a boot on vehicles where towing is the current practice. Advantages of the boot method is that the University will gain full control of enforcement since the boot would only be released on payment of an instant fine, the University would get to keep enforcement revenues, and University parking enforcement staff could carry out targeted action against repeat offenders.

If parking enforcement was fully controlled by Dalhousie, the amount of tickets issued in 2009-2010 would have resulted in approximately $55,000 in ticket revenue (depending on the ticket price
structure), along with approximately $5,300 in boot removal fees. Moving to University control of parking enforcement could save vehicle owners approximately 50% of the current costs of enforcement.

5.3.1 Key Strategies

- **Increase parking rates** for general unreserved parking to $50 per month to ensure parking revenues can at least cover the true costs of the parking system.

- Provide **off-site remote parking linked by a shuttle**, preferably in partnership with adjacent institutions.

- The University should seek to **negotiate an amendment to the parking provision and parking pricing clauses** in the collective agreement to allow flexibility in parking provision and to include other transportation benefits.

- The University should seek to **amend the parking requirements contained in the Secondary Plan** to allow flexibility to reduce parking provision to account for off-site parking and shifts to non-automobile modes.

- Look at high usage unreserved outdoor lots (e.g. Dunn lot) and **convert some or all of the spaces to reserved outdoor lots**.

- **Discontinue practice of having individual reserved outdoor spaces** and convert some outdoor lots to general reserved outdoor lots with access controls.

- **Bring parking enforcement** on campus property **under the sole control of Dalhousie University** to allow more effective control of undesirable parking activity and allow the university to retain revenue from parking fines.

- Look at **introducing pay and display parking** where lots could be used for short-stay parking in high demand areas, for example using the lower level of the CSB parking garage for casual parking that would be suitable for visitors or students, staff or faculty with occasional needs to park a vehicle at the University.

- **Create a reserve fund to pay for future capital expenses** such as construction of new parking to offset losses due to planned new construction on campus. This will ensure parking expenses reflect the true costs of maintaining and replacing parking supply.

5.4 Active Transportation

Walking and cycling will play a major role in accommodating mode shift, given adequate and safe environments.

Active transportation is a key strategy for Dalhousie University, addressing both the commute and access around the University. A separate Active Transportation Plan is in progress, which will address necessary infrastructure and parking necessary to support this mode choice. The Dalhousie TDM program and staff can further support active transportation through its marketing and promotional efforts and by implementing the following TDM approach and strategies.
Continued support and growth in the number of people accessing Dalhousie University on foot and by bicycle requires investment in quality infrastructure. Current levels have been reached with modest investments in bicycle parking, and using the existing network of sidewalks, campus paths and streets. One needs comfortable and attractive places to walk and bicycle that will result in the active transportation choice being the most logical, enjoyable, and attainable for short trips.

Thus, the TDM approach for active transportation is centered on working with HRM and other stakeholders to create a quality network of continuous and interconnected active transportation corridors that lead from surrounding neighbourhoods to and through the campuses and to destinations such as the waterfront, downtown and retail centres. This includes two key projects:

### 5.4.1 Key Strategies

- **Enhance public realm**, including landscaping, rest areas, shade and wind breaks, and attractive urban design, as well as pedestrian crossing facilities using such techniques as accessible pedestrian signals, curb extensions, high visibility crosswalks, countdown pedestrian signals at multi-lane signalized intersections, accessible median refuge islands to allow crossing one direction of traffic at a time at non-signalized locations, and signal phasing that prioritizes pedestrians such as a leading pedestrian phase or scramble (Barnes dance) where crossing volumes warrant it.

- **Develop and implement wayfinding and signage program**. Destination / distance / direction way-finding signage for bicycle and pedestrian routes that deviate from more obvious vehicle travel routes;

- **Pursue alternative funding to implement and expand the quality network of active transportation corridors** including the donations, sponsorship, gas tax transfers, infrastructure renewal grants, etc.

- **Review and address sidewalk and bikeway winter control practices** to meet pedestrian and cyclists needs and expectations, and reduce injuries.

- **Continue to support current cycling programs and facilities** such as: the bike centre, including increased programming of promotional events, individualized marketing, and safety education; end-of-trip facilities, such as a range of bicycle parking options, showers and lockers in new / renovated buildings, access to existing showers / lockers, and do-it-yourself bicycle repair stands; and, the implementation a bicycle loan / share program to make bicycles accessible to students and employees at Dalhousie.

### 5.4.2 Key Projects

**University Avenue Renewal Project**

Renewing University Avenue is a major component of the Campus Master Plan for Dalhousie University approved in October 2010. It presents a concept for the renewing of University Avenue, recognizing the need to involve and consult with multiple partners (Dalhousie University, HRM, other property owners and members of the public) to further develop the technical plan. The vision for University Avenue is to connect the campus along a unified, multi-modal, elegantly landscaped civic thoroughfare.
The concept consists of an active transportation corridor, active University Avenue green, vehicular travel way, and private / public realm and building forecourts. The illustrative cross section is provided in Exhibit 5.1.

Exhibit 5.1: Renewed University Avenue Illustrative Cross Section (2010)

The renewal of University Avenue as a showcase for active transportation requires careful planning of the AT linear facilities, intersections, and accesses to destinations / buildings balanced with other functions (move and load / unload / park people in cars and transit, move and load / unload goods, location for utilities, public spaces, landscape, etc.). A quality corridor can be created with attention to design, operations and maintenance within the cultural and legislative environment of Halifax. This may result in significant changes to the visions laid out in the Campus Master Plan and the Institutional District Bikeways Network. For example, a two-way cycle track on one side of the avenue can be evaluated in terms of its directness, comfort and safety along with one-way cycle tracks on each side of the avenue, or left-side cycle tracks adjacent the median; intersections need to be well-designed and incorporate traffic control devices that will be acceptable in Halifax; accessible pedestrian rights-of-way and crossings are to be respected and enhanced, all while creating “a unified, multi-modal, elegantly landscaped civic thoroughfare.” Courage, collaboration and innovation in context will be key to creating this showcase.

Bikeways Plan—Urban Halifax Institutional District

The Dalhousie University Cities & Environment Unit prepared a bikeways plan for the urban Halifax institutional district (April, 2011). The institutional district is centred on University Avenue and Summer Street, and encompasses Dalhousie University (King’s, Studley, Carleton, and Sexton campuses), Capital Health hospitals (IWK Health Centre, and QEII Health Science Centre’s VG Site and Halifax Infirmary Site), and St. Mary’s University. The vision of the plan was to “establish a cycling environment that will attract new riders of different ages and abilities and demonstrate a new priority for cycling within the District.”

An excerpt from the Bikeways Network map developed in the plan is shown in Exhibit 5.2. Of particular significance to Dalhousie University are the proposed bicycle lanes on University Avenue separated by a physical / landscaped buffer from adjacent travel lanes; and bicycle crossing and two-stage queue box treatments at intersections. The proposed cross-section is illustrated in Exhibit 5.3. The implementation costs are estimated in the plan to be $1.6 M for the 1.6 km section of University Avenue with it being the first project to be implemented in a 5-year phasing plan.
Exhibit 5.2: Institutional District Bikeways Network (April 2011)

Bikeways Network: Legend
- Bikeways (highest comfort and safety; includes separated bike lanes and on-street bike lanes)
- Off-street Bikeways (highest comfort and safety; includes off-street bike paths and multi-use paths)
- Upgraded on-street bike routes
- Halifax Urban Greenway
- Halifax Urban Institutional District

Exhibit 5.3: Bikeways Plan for the Halifax Institutional District—Proposed Cross-section for University Avenue
The Bikeways Plan for the Halifax Institutional District also recommends bikeway way-finding and route signage, bike share program, end-of-trip facilities (bicycle parking), cyclist and motorist educational programs, annual events, social marketing campaigns, and promotion campaigns.

5.5 Transit

Transit’s role will be two-fold: to provide an attractive and competitive alternative to longer-distance driving trips while serving as a linkage between Dalhousie’s campuses.

Pre-paid transit service (UPass) is a core component of any successful University based TDM program and has proven to be a success at Dalhousie. To further encourage transit usage for staff and faculty, parking must first be priced at an equivalent level as transit passes. Once that is achieved, additional transit improvement measures such as expanding the UPass program and pursuit of advocacy for improved transit services should be undertaken.

5.5.1 Key Strategies

- **Explore a campus shuttle.** An inter-campus shuttle would allow quick and easy trips by staff and students between the various campuses, and provide frequent and convenient access across each campus. Assessment of an inter-campus shuttle bus is provided in the Technical Appendix.

- **Explore park-and-ride facilities and shuttle bus.** There are currently a large number of parking spaces on Dalhousie University land. A park-and-ride scheme would allow people to park at a remote location, and then use a shuttle bus to reach the University. This would also allow the University to redevelop parking lots into alternative uses. An assessment of a park-and-ride shuttle bus is provided in the Technical Appendix.

- **On-going advocacy and support for improved routes.** The University should continue to market and promote transit services as part of overall campus transportation system, focusing on the following improvements:
  - Improved local circulation and improved connections to the urban core
  - Promote express lanes, buses, etc.
  - Consider time of day improvements

- **Summer Pass Pilot Program.** The TDM coordinator should meet with MetroTransit and discuss the pricing for a summer pass program.

- **Faculty/Staff Transit Passes.** MetroTransit is commencing a pilot employer pass program. The SmartTrip pass will be a 12-month pass. Both Halifax Regional Municipality and the employer would subsidize the cost of the pass, resulting in an employee receiving 12 months of transit for the cost of eight.
5.6 Rideshare/Carpool

Strategies to encourage and support ridesharing or carpooling can substantially reduce the number of single-occupant vehicles entering the university.

Ridesharing is a core TDM program and many Universities have successful Rideshare programs that rely on ridematching and carpool parking. Dalhousie should encourage ridesharing through its TDM marketing and incentive programs, but also by ensuring the proper services are in place to further incentive this mode choice.

5.6.1 Key Strategies

- **Improve Carpool Parking Permit System.** To further create incentives to carpooling, carpool parking should be allowed in every lot on campus and should include five percent of the premium spaces. These designated spaces should not be assigned, but rather should be a zone within a lot or garage designated for carpool permits. A limited number of scratch-off permits or temporary permits should continue being made available for those days when carpooling is not an option.

- **Formalized Guaranteed Ride Home Program.** All registered faculty and staff carpoolers should become automatically enrolled in the GRH program, providing a safety net for emergency situations. This will be an additional incentive for carpooling. This program can be reviewed in the future for student involvement.

- **Instant Ridesharing.** Smartphones have brought a whole new dimension to ridesharing. Web sites and smartphone apps have been creating virtual gathering spots to match drivers and passengers and this is particularly appealing in university settings. The use of G.P.S. coordinates of both riders and drivers, pickups can be arranged with relatively little advance planning and currently several companies are working on programs to put safeguards in place. This will be a trend to watch and potentially promote in Dalhousie’s setting.

- **Vanpooling.** A strategy for faculty and staff may be vanpooling, which is similar to carpooling but involves more passengers in each vehicle (typically 7 to 15). Vanpool vehicles are multi-passenger vans that would be leased or owned by the University, rather than by the driver. Vanpools are efficient for long distance commuters, that don’t have access to transit services. Vanpool drivers must meet eligibility criteria and all passengers pay a monthly fare, generally based on their commute distance. To determine if vanpooling is an attractive mode choice for Dalhousie faculty and staff, this question should be integrated into future mode choice/commute preference surveys.

- **Telework/AWS.** While the telework and alternative work schedule policy will be implemented by the Department of Human Resources, the TDM coordinator should monitor any issues and be proactive with solutions.

- **Coordinate Carshare Expansion.** WeCar has implemented Carshare at Dalhousie University. The TDM coordinator should meet with WeCar representatives monthly to determine usage, issues, opportunities and the best methods to market this program on campus. If this program is successful after its initial launch, the TDM Coordinator should work with WeCar on where to place additional vehicles.
- **Continue Idle Free Education and Signage.** This program should be continued and monitored through the Office of Sustainability with support from the TDM Coordinator.

### 5.7 Build TDM Partnerships

Building partnerships with and supporting other regional TDM efforts allows for greater coordination and the sharing of resources and ideas. Partnerships should also be explored within the University itself to identify community leaders and champions.

#### 5.7.1 Key Strategies

- **Develop TMA Feasibility and Business Plan.** Dalhousie shares common transportation problems with nearby institutional facilities, such as Saint Mary’s University, nearby hospitals, etc. To address this, a TDM Institutional Committee was formed. It is recommended that this group be formalized into a Transportation Management Association (TMA). A TMA is an organized group, all working toward the common goals of improved access and mobility. The TMA should be a private, non-profit organization led by the private sector, but work in partnership with HRM to solve the area’s transportation problems. To identify if a TMA is sustainable in Halifax and to form this organization a study should be implemented. The study will determine the exact boundaries for the TMA, who are likely partners and whether or not it should include more of the downtown and waterfront business district. The study should also identify the organizational framework, services and fee/dues structure. A business plan will identify an appropriate host agency and organizational structure for the delivery of TDM services, the types of TDM services to deliver, initial membership recommendations, fees for service, budget information and a service delivery timeline.

- **Develop Professional Relationships with Key Professors.** Establishing relationships with professors within the university will be key to finding the best talent in the student population for student assistance and identify research opportunities. Also, it encourages the mentorship outlook that all universities strive for.

### 5.8 University Housing

Increasing the supply of student and staff housing within walking, cycling, and transit connections to Dalhousie could substantially change travel behaviour.

#### 5.8.1 Key Strategies

- **Increase campus housing opportunities.** By increasing student and staff housing choices on and near campus, more university members have the opportunity to live closer and reduce the time and distance of their daily commute to the university.

- **Encourage initiatives with private sector to increase supply and improve management of rental units.** Partnership with private developers or landlords to ensure housing units near campus would provide an active operating relationship that would: encourage neighbourhood property owners to list and maintain adequate rental
units; provide landlords with a list of potential tenants; and, assist students and staff to access housing choices with convenient access to campus.

### 6. Strategy Implementation Plan

The proposed implementation of the strategies contained in the previous section is outlined in the table below:

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<thead>
<tr>
<th>Strategy</th>
<th>Implementation Plan</th>
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### Exhibit 6.1: Implementation Plan

#### TDM Program Management

*Integrate TDM into Dalhousie’s organizational structure to provide visibility and legitimacy to travel demand initiatives.*

<table>
<thead>
<tr>
<th>Key Strategies</th>
<th>Implementation Year(s)</th>
<th>Implementation Lead</th>
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<td>Start Up (2011-2012)</td>
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<td>Short Term (2-4)</td>
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<td>Medium Term (5-9) years</td>
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<td></td>
<td>Long Term</td>
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<tr>
<td></td>
<td>Annual FTE for TDM staff*</td>
<td>Annual Estimated Costs</td>
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<td>Annual FTE for TDM staff*</td>
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<td>Annual FTE for TDM staff*</td>
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<td>Annual FTE for TDM staff*</td>
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</table>

- Broaden responsibility of the Office of Sustainability
- Hire TDM Program Administrator and student assistant(s)
  - Annual FTE: 80,000
  - Annual Estimated Costs: 87,000
  - Medium Term: 120,000
  - Long Term: 180,000
- Secure Long-Term Program Funding
  - Annual FTE: 80,000
  - Annual Estimated Costs: 87,000
  - Medium Term: 120,000
  - Long Term: 180,000

#### Marketing and Outreach

*A strong brand for TDM and a responsive marketing program will build recognition and awareness of initiatives.*

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<tr>
<th>Key Strategies</th>
<th>Implementation Year(s)</th>
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<td>Long Term</td>
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<tr>
<td></td>
<td>FTE*</td>
<td>Costs</td>
</tr>
<tr>
<td>Adopt and promote the regional TDM program branding, SmartTrip</td>
<td>0.15</td>
<td>0.05</td>
</tr>
<tr>
<td>Develop and maintain an active, informational, and user-friendly website for SmartTrip Dalhousie</td>
<td>0.1</td>
<td>5000</td>
</tr>
<tr>
<td>Develop and implement an integrated marketing and outreach plan</td>
<td>0.5</td>
<td>5,000</td>
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</table>
Parking Management

Improved parking management will increase the efficiency of operations, achieve financial sustainability, and rebalance costs to provide more incentive to use alternate modes of transportation.

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<th>Key Strategies</th>
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<tr>
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<td>Start Up (2011-2012)</td>
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<tr>
<td>Increase parking rates for general unreserved parking</td>
<td>FTE*: 0.05 Costs: 0.05</td>
<td>Facilities Management</td>
</tr>
<tr>
<td>Provide off-site remote parking linked by a shuttle, in partnership with adjacent institutions</td>
<td>FTE*: 0.05 Costs: 0.05</td>
<td>Office of Sustainability, with support from TDM staff.</td>
</tr>
<tr>
<td>Negotiate flexibility into parking provision and pricing clauses in the DFA collective agreement, including adding other transportation benefits</td>
<td>FTE*: 0.025 Costs: 0.025</td>
<td>Human Resources Department with support from TDM staff.</td>
</tr>
<tr>
<td>Seek to amend the parking requirements contained in the Secondary Plan to allow flexibility in parking provision</td>
<td>FTE*: 0.025 Costs: 0.025</td>
<td>Planning Department with support from TDM staff.</td>
</tr>
<tr>
<td>Convert some or all of the spaces at high usage unreserved outdoor lots to reserved outdoor lots</td>
<td>Costs: 10000</td>
<td>Facilities Management</td>
</tr>
<tr>
<td>Discontinue practice of having individual reserved outdoor spaces</td>
<td>Costs: 5000</td>
<td>Facilities Management</td>
</tr>
<tr>
<td>Bring parking enforcement on campus property under the sole control of Dalhousie University</td>
<td>Costs: 10000</td>
<td>Facilities Management</td>
</tr>
<tr>
<td>Introduce pay and display parking where lots could be used for short-stay parking in high demand areas</td>
<td>Costs: 20000</td>
<td>Facilities Management</td>
</tr>
<tr>
<td>Create a reserve fund to pay for future capital expenses for the parking system</td>
<td>Costs: 0.05</td>
<td>Facilities Management</td>
</tr>
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</table>
Active Transportation

*Walking and cycling will play a major role in accommodating mode shift, given adequate and safe environments.*

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<tr>
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<tr>
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<td>Start Up (2011-2012)</td>
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<td></td>
<td>FTE* Costs</td>
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<tr>
<td>Enhance public realm and pedestrian crossing facilities</td>
<td>0.05 0.05</td>
<td>Office of Sustainability, with support from TDM staff.</td>
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<tr>
<td>Develop and implement wayfinding and signage program.</td>
<td>0.025 0.05</td>
<td>Office of Sustainability, with support from TDM staff.</td>
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<tr>
<td>Pursue alternative funding to implement and expand the</td>
<td>0.025 0.05</td>
<td>Office of Sustainability, with support from TDM staff.</td>
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<tr>
<td>quality network of active transportation corridors</td>
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<tr>
<td>Review and address sidewalk and bikeway winter control</td>
<td>0.025 0.025 0.01 0.01</td>
<td>Office of Sustainability, with support from TDM staff.</td>
</tr>
<tr>
<td>practices</td>
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<tr>
<td>Support current cycling programs and facilities</td>
<td>0.1 0.1 0.15 0.2</td>
<td>Office of Sustainability, with support from TDM staff.</td>
</tr>
</tbody>
</table>
Transit

Transit’s role will be two-fold: to provide an attractive and competitive alternative to longer-distance driving trips while serving as a linkage between Dalhousie’s campuses.

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<tr>
<td></td>
<td>FTE*</td>
<td>Costs</td>
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<tr>
<td>Explore a campus shuttle</td>
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<tr>
<td>Explore park-and-ride facilities and shuttle bus</td>
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<td>On-going advocacy and support for improved routes</td>
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<td>Summer Pass Pilot Program.</td>
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<td>Faculty/Staff Transit Passes</td>
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## Rideshare/Carpool

Strategies to encourage and support ridesharing or carpooling can substantially reduce the number of single-occupant vehicles entering the University.

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<th>Key Strategies</th>
<th>Implementation Year(s)</th>
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<td>0.025</td>
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<td>Improve Carpool Parking Permit System</td>
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<td>Formalized Guaranteed Ride Home Program.</td>
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<td>0.5</td>
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<td>Long Term</td>
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<td>0.05</td>
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<td>Facilities Dept with support from TDM staff</td>
</tr>
<tr>
<td>Coordinate Carshare Expansion</td>
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<td>0.025</td>
<td>0.025</td>
<td>0.01</td>
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<td>TDM staff</td>
</tr>
</tbody>
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## Build TDM Partnerships

Building partnerships with and supporting other regional TDM efforts allows for greater coordination and the sharing of resources and ideas. Partnerships should also be explored within the University itself to identify community leaders and champions.

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<td></td>
<td>Short Term (Years 2-4)</td>
<td></td>
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<tr>
<td></td>
<td>Medium Term (5-9 years)</td>
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<td></td>
<td>Long Term</td>
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<tr>
<td></td>
<td>Annual FTE for TDM staff*</td>
<td>Annual Estimated Costs</td>
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<tr>
<td></td>
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<td>Annual FTE for TDM staff*</td>
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<td>Annual FTE for TDM staff*</td>
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<tr>
<td></td>
<td></td>
<td>Annual FTE for TDM staff*</td>
</tr>
<tr>
<td>Develop TMA Feasibility and Business Plan</td>
<td>0.05</td>
<td>5,000</td>
</tr>
<tr>
<td>Develop Professional Relationships with Key Professors</td>
<td>0.03</td>
<td>0.03</td>
</tr>
</tbody>
</table>

## University Housing

*Increasing the supply of student and staff housing within walking, cycling, and transit connections to Dalhousie could substantially change travel behaviour.*

<table>
<thead>
<tr>
<th>Key Strategies</th>
<th>Implementation Year(s)</th>
<th>Implementation Lead</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start Up (2011-2012)</td>
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</tr>
<tr>
<td></td>
<td>Short Term (Years 2-4)</td>
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<td>Medium Term (5-9 years)</td>
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<td></td>
<td>Long Term</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FTE*</td>
<td>Costs</td>
</tr>
<tr>
<td>Increase campus housing opportunities</td>
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<td>0.025</td>
</tr>
<tr>
<td>Encourage initiatives with private sector to increase supply and improve management of rental units.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>1.465</td>
<td>199000</td>
</tr>
</tbody>
</table>

*FTE is estimated annually and only included for activities related to the TDM Program Administrator or their direct reports for the purposes of determining staffing for that department.*
7. Proposed Transportation Demand Management Organization Structure

Due to the nature of the work that would be carried out by a TDM program, the scope and responsibilities cross over between several existing departments.

With Dalhousie University’s existing structure in mind, a possible reporting relationship could be as shown on Exhibit 7.1.

Exhibit 7.1: Proposed TDM Reporting Relationships

The Office of Sustainability would have responsibility for transit, active transportation and shared transportation, with the Facilities Management Department maintaining responsibility for parking operations. The Human Resources department would have responsibility for issues relating to faculty and staff. The TDM coordinator should be part of Dalhousie’s Transportation and Security committee and report directly to the Director of the Office. This would allow a joint transportation plan and implementation schedule to be developed with Facilities Management and Human Resources.
8. Conclusions and Recommendations

Based on the analysis contained in this report, the key conclusions and strategic directions are summarized below. It is recommended that Dalhousie University proceed with the following recommendations in order to move towards a sustainable transportation system in the future.

**TDM Program Management**
Integrate TDM into Dalhousie’s organizational structure to provide visibility and legitimacy to travel demand initiatives.

It is recommended that:

- One department should be responsible for all TDM programs and initiatives, offer transit coordination, coordinate with parking services, and coordinate or potentially manage a centralized university-owned fleet of vehicles.

- The TDM program be set up with a full time TDM Program Coordinator and support staff (students and/or interns), increasing as the program expands and matures.

- For continued success, the TDM program must secure long-term program funding.

**Marketing and Outreach**
A strong brand for TDM and a responsive marketing program will build recognition and awareness of initiatives.

It is recommended that Dalhousie:

- Adopt and promote the regional TDM program branding, SmartTrip, to provide a connection with regional initiatives and provide a recognizable brand.

- Develop and maintain an active, informational, and user-friendly website for SmartTrip Dalhousie to expand awareness and education of TDM initiatives.

- Work with regional stakeholders, including HRM SmartTrip, to develop and implement an integrated marketing and outreach plan.

**Parking Policies and Parking Management**
Improved parking management will increase the efficiency of operations, achieve financial sustainability, and rebalance costs to provide more incentive to use alternate modes of transportation.

It is recommended that Dalhousie:

- Increase parking rates for general unreserved parking to a minimum of $50 per month to ensure parking revenues can at least cover the true costs of the parking system.

- Provide off-site remote parking linked by a shuttle, preferably in partnership with adjacent hospitals.
• Seek to negotiate the amendment of parking provision and parking pricing clauses in
the DFA collective agreement to allow flexibility on parking provision and to include
other transportation benefits.

• Seek to amend the parking requirements contained in the Secondary Plan to allow
flexibility to reduce parking provision to account for off-site parking and shifts to non-
automobile modes.

• Look at high usage unreserved outdoor lots (e.g. Dunn lot) and convert some or all of
the spaces to reserved outdoor lots.

• Discontinue practice of having individual reserved outdoor spaces and convert some
outdoor lots to general reserved outdoor lots with access controls.

• Bring parking enforcement on campus property under the sole control of Dalhousie
University to allow more effective control of undesirable parking activity and allow the
University to retain revenue from parking fines.

• Introduce pay and display parking where lots could be used for short-stay parking in
high demand areas.

• Create a reserve fund to pay for future capital expenses, such as construction of new
parking, to ensure parking expenses reflect the true costs of maintaining and replacing
parking supply.

**Active Transportation**

Walking and cycling will play a major role in accommodating mode shift, given adequate and safe
environments.

It is recommended that Dalhousie works to:

• Enhance the public realm, including landscaping, rest areas, shade and wind breaks,
and attractive urban design, as well as pedestrian crossing facilities.

• Develop and implement a pedestrian and cycling wayfinding and signage program.

• Pursue alternative funding to implement and expand the quality network of active
transportation corridors.

• Review and address sidewalk and bikeway winter control practices to meet pedestrian
and cyclists needs and expectations, and reduce injuries.

• Continue to support current cycling programs and support facilities such as the bike
centre, end-of-trip facilities, and the implementation a bicycle loan / share program to
make bicycles accessible to students and employees at Dalhousie.

**Transit**

Transit’s role will be two-fold: to provide an attractive and competitive alternative to longer-distance
driving trips while serving as a linkage between Dalhousie’s campuses.

It is recommended that Dalhousie:
• Explore an inter-campus shuttle to allow quick and easy trips by staff and students between the various campuses.

• Explore use of off-site park-and-ride facilities linked to the campus with a shuttle bus.

• Continue with on-going advocacy and support for improved transit routes.

• Meet with MetroTransit and discuss the pricing for an optional summer pass program.

• Work with MetroTransit to join the pilot employer pass program to make discounted transit passes available to faculty and staff.

**Rideshare/Carpool**

Strategies to encourage and support ridesharing or carpooling can substantially reduce the number of single-occupant vehicles entering the university.

It is recommended that Dalhousie:

• Create further incentives to carpooling by placing carpool parking in every lot on campus at a rate of five percent of the premier spaces.

• Implement a formalized Guaranteed Ride Home (GRH) program for all registered faculty and staff carpoolers, providing a safety net for emergency situations and an additional incentive for carpooling.

• Review the potential for vanpooling to be an attractive mode choice for Dalhousie faculty and staff, by integrating a question into future mode choice/commute preference surveys.

• Assign the TDM coordinator to monitor any issues with the Telework/AWS policy and be proactive with solutions.

• Ensure the TDM coordinator watches the trend towards instant ridesharing through web sites and smartphone apps, and potentially promote instant ridesharing within the Dalhousie community.

• Coordinate carshare operation and expansion by meeting with WeCar representatives monthly to determine usage, issues, opportunities and the best methods to market this program on campus.

• Continue Idle Free education and signage and monitor through the Office of Sustainability with support from the TDM Coordinator.

**Build TDM Partnerships**

Building partnerships with and supporting other regional TDM efforts allows for greater coordination and the sharing of resources and ideas. Partnerships should also be explored within the University itself to identify community leaders and champions.

It is recommended that Dalhousie:

• Develop a TMA Feasibility and Business Plan with nearby institutional facilities, such as Saint Mary’s University, and nearby hospitals.
- Develop professional relationships with key professors to find the best talent in the student population for student assistance and to identify research opportunities.

**University Housing**

Increasing the supply of student and staff housing within walking, cycling, and transit connections to Dalhousie could substantially change travel behaviour.

It is recommended that Dalhousie:

- Work to increase campus housing opportunities.
- Encourage initiatives with private sector to increase supply and improve management of rental units.